

**Report to the Legislature**

**A Comprehensive Program  
For Alcohol and Drug Abusing Mothers  
And Their Young Children**

**Response to  
RCW 13.34.803  
(Chapter 13, Laws of 1998, Section 40)**

January 1999

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## EXECUTIVE SUMMARY

RCW 13.34.803 requires the Department of Social and Health Services (DSHS) and the Department of Health (DOH) to design a comprehensive program for Medicaid-eligible women who gave birth to a drug or alcohol exposed infant. That program is to be based on an inventory of program services and gaps and a fiscal impact analysis. This report summarizes the results of those reviews and analyses and presents the proposed program.

### **The Comprehensive Program**

The comprehensive program seeks to improve the health and welfare of substance abusing mothers and their children by early identification of pregnant substance abusers, improved access to and coordination of health care services and chemical dependency treatment, and family-oriented early intervention services for mothers and their children. This program, described in detail on pages 33-43, involves expansion and coordination of the following six core services.

***Targeted Intensive Case Management (TICM):*** This comprehensive plan is built around intensive case management for these women and their families. Ideally this case management would begin prenatally and continue until the child's third birthday. The targeted intensive case management team would: provide active outreach; develop and monitor the case plan; refer and establish linkages to community; coordinate the professionals working with the family; screen for delays in the children; provide early childhood development skill training for parents; offer family planning education and referrals; provide behavioral health services and education to families, and monitor or provide in-home child development activities.

***Flexible Funding for Rural Areas:*** Ten percent of these mothers and children live in the 24 counties with fewer than 25 substance-using women and children per year. In these areas, it would be extremely costly to provide the full team for Targeted Intensive Case Management. However, under this section, these communities could apply for funds to train current Maternity Case Management staff in child development/parenting techniques or to hire on a contract hourly basis a behavioral health counselor to bring those component activities into rural communities.

***Child Development Services:*** The period from birth through three years of age is critical for brain development. Appropriate child development activities, coordinated by the case manager, would be delivered in child care centers or at home. The standards for the appropriate amount and kind of child development activity would be the Early Head Start standards.

***Family Planning Services:*** Family planning education and referral to appropriate services would be part of intensive case management and chemical dependency treatment.

***Enhanced Residential and Outpatient Chemical Dependency Treatment for Pregnant and Parenting Women:*** Traditional chemical dependency treatment would be enhanced to include on-site child development services and education, child care, family planning education, family issues including domestic violence, and enhanced vocational services.

***Transportation and Housing Funds:*** To support women and families as they transition from residential to outpatient treatment modalities, transportation and housing funding would be needed to decrease barriers to accessing services and provide housing supports necessary for stability and maintenance of recovery programs for women and their children.

The plan also includes a central evaluation component, for monitoring and development and implementation of a program evaluation.

### **Inventory of Community-based Programs**

A continuum of family-oriented services was identified. These include: chemical dependency treatment; mental health services; housing; family planning; outreach; First Steps (Maternity Support Services and Maternity Case Management; parenting education/parent support; Women, Infants and Children (WIC); vocational programs or employment; financial support; medical services; medical coverage for pregnant women in county jails; child care; early intervention services for children at high risk for health, behavioral, and developmental problems; and child welfare/child protective services. **Most of these services are also utilized by families without chemical dependency issues, but are especially critical for this vulnerable population.**

Details on these community-based services and the gaps in their coverage may be found in Appendix F. The most important gaps include: a shortage of residential and recovery beds for pregnant and parenting women; no case management after age one; limited outreach or intensive case management during pregnancy and the first year of life; no systematic developmental screening or developmental planning for these children; limited child development training for parents; limited mental health counseling or training dealing with family issues, and ongoing problems with transportation and housing which foster treatment attrition.

### **Fiscal Impact Analysis and Literature Review**

The studies reviewed indicate that the following characteristics of a comprehensive program are most likely to yield successful outcomes:

- Family-focused services that address the needs of both mother and child.
- A continuum of services from early pregnancy through childhood, with varying levels of intensity appropriate to individual needs.
- Coordinated or, ideally, collocated services (such as health care, drug treatment, family planning, parenting education, and early intervention).
- Chemical dependency treatment tailored to the needs of women, with a continuum of care including detoxification, intensive treatment (residential or outpatient), with aftercare and follow-up outpatient care.
- Parenting skills training and family relationship enhancement to promote continually-improving parent-child relationships.

Nearly three hundred published reports were reviewed to determine (1) rates of use of publicly-funded services (medical, juvenile justice, public assistance, and dependency) by substance-abusing mothers and their children and (2) changes in the baseline service use rates that would potentially result from a comprehensive plan. Actual data from Washington State were compiled when available. (The literature is discussed on pages 5-12; the fiscal impacts on pages 13-29)

The fiscal impact analysis suggests potential long-term reductions in government expenditures per 100 mothers and children fully served in a comprehensive program of \$6.26 million (\$3.5 million general fund state). These impacts were, as directed by the legislature, in the areas of medical, juvenile and adult justice, public assistance, special education, and dependency systems. They accrue gradually, between the birth and nineteenth birthday of the program child. Most occur after the program child is six years old.

## Conclusions

Three-year new costs to implement the comprehensive program for each 100 mother-child pairs were estimated at \$3.4 million overall, \$2.1 million general fund state. These costs include start-up costs and initial administrative overhead. The costs for program services which the family would already use (such as TANF childcare) were displayed in the budget spreadsheets, but were subtracted from the overall program costs, since they were not new services. (These costs are detailed for the average mother/child pair in the program in Table 3, page 51).

As Table 1 below shows, the difference between the estimated three-year new program costs, and the fiscal impact over 18 years following program implementation indicates a potential savings of \$2.8 million, \$1.4 million general fund state, for each 100 mother-child pairs fully engaged in the program.

Table 1: Costs to Serve 100 Mother/Child Pairs in the Comprehensive Program, Compared with Potential Fiscal Impacts (Savings) in Medical, Juvenile and Criminal Justice, Public Assistance, Special Education, and Dependency Systems		
	Overall Potential Impact for 100 Mother-Child Pairs	State Share of Potential Impact for 100 Mother-Child Pairs
Fiscal Impacts (Savings) while program child is under 6 years of age	\$ 826,858	\$ 330,611
Fiscal Impacts (Savings) while program child is between 6 and 19 years of age	\$ 5,431,796	\$ 3,170,759
Total Fiscal Impacts (Savings) through program child's 19 <sup>th</sup> Birthday	\$ 6,258,654	\$ 3,501,370
New Program Costs, delivered while program child is under 3 years of age)	(\$ 3,427,000)	(\$ 2,104,000)
<b>NET SAVINGS</b>	<b>\$ 2,831,700</b>	<b>\$ 1,397,370</b>

Despite these savings, the comprehensive program could be difficult to fund statewide. Enrolling and serving all the 2,600 women and children eligible in one year would cost over **\$30 million each year (\$14.4 million in general fund state)**. (For details, see spreadsheet page 55).

The recommended strategy for reducing implementation costs for this comprehensive program is to identify a set of pilot sites to test three versions of this comprehensive plan. With a preliminary evaluation at these initial sites, it could be determined whether outcomes change more or less than predicted and whether efficiencies in program operations could be gained. (Costs, pilots and other cost-reduction options are discussed on pages 45 through 58).

Decision-making around this program should recognize that limited program areas were addressed by the fiscal impact analysis. The fiscal impacts do not represent all direct or indirect potential savings that might result for the mother and her child, or to the state if such a comprehensive program were implemented. A number of intangible benefits are likely to occur in addition to those identified; these could include reduced mortality, reduced crime victim costs, and improved self-esteem and life accomplishments for mothers and their children.





## **PART 1: SCOPE OF THE PROBLEM**

### **A. Overview**

A 1997 report prepared by the Research and Data Analysis division of the Department of Social and Health Services (Cawthon 1997) estimates that 8,000 to 10,000 Washington infants each year are born to women who used alcohol or drugs during pregnancy. This is about ten to twelve percent of the approximately 80,000 births each year to Washington women. Infants born to these substance abusing women would be considered *drug-exposed*. The number of infants with measurable effects which can be attributed to substance use during pregnancy (*drug-affected* infants) is more difficult to identify and much smaller (approximately 800 to 1000 per year, or about one percent of Washington births).

Separating the effect of illicit drugs from the effects of alcohol is very difficult in this literature and in the field. Most women who use illicit drugs also drink alcohol and frequently are smokers as well. The number of affected children and difficulty in identifying the drug(s) used by the women prevent us from reliably distinguishing pregnancy outcomes for women who used alcohol only from those who exclusively used other drugs. For those reasons, mothers described in this report used either illicit drugs or alcohol or both, and often smoked cigarettes.

In most of the report, we call these women “substance abusing” or “drug and alcohol using” rather than “chemically dependent.” Because these women used drugs and alcohol and in so doing have endangered their children’s health, almost all would at least meet clinical criteria for “abuse” of a substance. They might not all be diagnosed as “dependent” on a substance (although many would be). However, we do refer to treatment for those women as chemical dependency (CD) treatment.

RCW 13.34.803 requires the Department of Social and Health Services (DSHS) and the Department of Health (DOH) to design a comprehensive program for Medicaid eligible women who gave birth to a drug or alcohol exposed or affected infant. That program was to be based on a literature review, a fiscal impact analysis, and an inventory of program services and gaps. This report summarizes the results of those reviews and analyses and presents the proposed program.

### **B. How many women and children would potentially be eligible for this program?**

Two independent analyses suggest that there would be between 2,600 to 3,000 women per year who would be potentially eligible for this program, which includes both drug-exposed and drug-affected infants and their mothers. The larger estimate involves the 1993-94 household survey of Washington State residents, which indicates that 9.6 percent of low-income women of childbearing age are in need of CD treatment (Kabel et al 1997). In 1996, there were 32,734 Medicaid-funded women who gave birth. Therefore, we would expect that 3,142 (9.6 percent) might be in need of CD treatment.

The second estimate, from the First Steps Database, used existing public agency records (drawn from the birth certificates, the medical diagnoses on Medicaid claims, and chemical dependency detoxification or treatment records) to identify the substance abuse status for all Medicaid-eligible Washington State women who gave birth in 1992. These records permitted identification of particular women as substance abusing during their pregnancy or up to two years after their pregnancy. That process identified 2,598 women in 1992 as substance abusing. This represents a rate of 9.3 percent of all Medicaid births in 1992.

The women identified as substance abusing through the First Steps Database, and their children, represent most of the women and children who would have been eligible for the program proposed here, had that program been in effect in 1992. What has happened to them since 1992 represents outcomes which should improve if the program proposed here is implemented. Therefore, the First Steps Database staff developed tables of characteristics and outcomes for these mothers and their children. These tables may be seen in Appendix A and are used throughout this report, particularly in the analysis of fiscal impacts.

These estimates suggest that improved screening and detection such as the system recommendations identified in the RCW 70.83E.020 report will not greatly increase the number of women eligible for this program. What it will more likely (and more importantly) do is identify these women **earlier** in their baby's life: ideally, as early as possible during pregnancy.

In 1992, only 58 percent of the 2,598 low-income substance abusing mothers were identified during their pregnancy (the first two groups from Table 1 of Appendix A). Only 38 percent received chemical dependency treatment prior to the birth of their child. Identification and treatment of chemical dependency as early as possible during pregnancy increase the chances that a pregnant woman will abstain from substance use and deliver a healthy and drug-free infant.

Treatment for chemical dependency during pregnancy is associated with a reduction of about 20 percent in the rates of poor birth outcomes. Rates of low birth weight, admission to neonatal intensive care units, Apgar scores, and prematurity are lower for treated substance abusers compared to untreated women, but remain 1.4 to 1.9 times greater than the rates for women with no diagnosed substance abuse (Deschamps et al., 1997).

### **C. How do these women differ from other Medicaid women?**

The First Steps Database tables show that in some ways, low-income substance-abusing mothers are similar to other low-income mothers and to non-Medicaid mothers. The three-year subsequent birth rates are almost identical. Neither group of low-income mothers was more likely to have another baby between 1992 and 1995 than the group of non-Medicaid mothers (Table 5 in Appendix A).

There are two ways in which substance abusing, low-income mothers resemble all other low-income mothers (Table 1 in Appendix A). When compared with non-Medicaid mothers at delivery, both groups of low-income mothers:

- Are much less likely to have completed high school
- Have their babies at a younger age

However, Table 1 in Appendix A shows that during pregnancy, the low-income substance abusing mothers differ from other low-income mothers in that they are:

- Much more likely to smoke cigarettes
- Much less likely to be married
- Less likely to be Hispanic or Asian-American
- Somewhat more likely to have had prior children.

National research suggests other differences between women who use drugs and alcohol while pregnant and other low-income women. The substance using women are:

- Much more likely to live in stressful environments which may include past and present physical and sexual abuse (Scheckel, 1993)
- More likely to be depressed (Burns et al., 1985)
- More likely to have low self esteem, to be controlled by a significant other and to receive little or no emotional support (Wetzel, 1991)
- More likely to have limited financial and social support from friends and family (Scheckel, 1993)

#### **D. How do these women and their children fare over time?**

The subsequent outcomes for Washington State's low-income substance abusing women and their children reveal the impact of all these difficulties in family life:

- 57 percent of the children were investigated because of allegations of child abuse or neglect sometime during the five years after their birth. That is over three times the 17 percent rate for other low-income children (Appendix A, Table 4).
- 28 percent of these children were removed from their homes by the Children's Administration during the five years after their birth. That is ten times the 2.7 percent rate for other low-income children (Appendix A, Table 4)
- Poor birth outcomes for these children were generally about twice the rates for other low-income mothers. These outcomes included infant mortality, low birthweight, and small size at gestation (Appendix A, Table 3).
- Over 9 percent of these children were enrolled in the Infant Toddler Early Intervention Program (ITEIP). That is three times the 3 percent rate for other low-income children (Appendix A, Table 4).

- These women remained eligible for grants and Medicaid about a year longer than the other low-income mothers (Appendix A, Table 5).

### **E. Case History**

One Washington woman's story illustrates some of the difficulties faced by these women and their children, and the complex problems they present to social service providers.

*At 32, a Pierce County woman went to the local welfare office asking for help with her alcohol addiction. She had been physically abused as a child and had endured years of domestic violence as an adult. She had five children, four placed with relatives and one in foster care. She was referred to and entered residential treatment in Spokane. She struggled with domestic violence, the fear of trying to make it on her own, and the guilt and shame that came with her substance abuse, especially as a mom. She explained the pain of having her daughter ask her why she would choose alcohol over her own daughter-- and not being able to explain to her daughter about the addiction.*

*After her residential treatment, she moved into transitional housing while continuing outpatient treatment. While living in transitional housing, her children came back to live with her. She then moved into federally subsidized housing. Through a referral to Project Self Sufficiency (which provided help on getting enrolled, applying for grants, etc.), she started going to college and working part time. Her job became full time, and she has been there the last two years. She is now supporting herself and her children on her own income and child support. She just celebrated three years of being clean and sober.*

## **PART 2: LITERATURE REVIEW**

### **A. Program Design Issues**

The literature review raised several issues that seemed important in the design of the comprehensive program.

#### ***1. Comprehensive programs are felt to be the most successful.***

“The best programs are the most comprehensive ones (Kumpfer 1994, 1997b). This suggests that a comprehensive family support program or center that includes all the needed basic services for drug-abusing mothers would be the most successful model program.” (Kumpfer, 1998)

“A full continuum of care is needed that begins with prenatal care and extends through childhood. Without collocation and redefinition of services, a therapeutic case management approach currently appears to be the best solution to help mothers negotiate the maze of diverse services required to meet their multiple needs ... The best solution may be to redefine the categorical services system and collocate or integrate most basic services into small personal agencies or walk-in centers.” (Kumpfer, 1998)

“Early therapeutic parenting supports by parent training and family skills training and therapeutic child care are important prevention interventions for drug-exposed children.” (Kumpfer, 1998)

#### ***2. Programs that address only the needs of mothers or only those of children just do part of the job.***

“The children of drug-using mothers may be most effectively served by the development of available, efficacious, and welcoming services for women and families.” (Chavkin, 1991, cited in Paltrow, 1998)

Two major philosophical approaches suggest very different directions for program development for interventions for mothers. The first approach is the traditional chemical dependency treatment model: that abstinence from all drug and alcohol use is necessary before the client can deal with other issues in her life. Chemical dependency treatment for mothers may be a *necessary* component of a model program for drug-abusing mothers and their children. However, it is plainly not *sufficient*.

For women unable or unwilling for whatever reason to complete chemical dependency treatment successfully and maintain abstinence (become clean and sober), the harm reduction model suggests that they can reduce harmful behaviors and exposures in their lives (reduced frequency of drug use, substitution of a less harmful drug for a more harmful drug, improved nutritional and health status, for example) that may improve outcomes for themselves and their children. According to Rosenbaum and Irwin (1998), those who subscribe to a harm reduction perspective deplore, yet accept, the inevitability of drug use. They advocate working with users to minimize the harms brought about by

abuse, even if the drug use cannot be stopped completely (Nadelmann et al., 1994). Women who continue to use drugs and who participate in supportive programs that do not judge clients harshly due to continuing drug use receive sufficient reinforcement from changes in their lives (such as more successful parenting) that may allow them to reduce significantly or discontinue their drug use. The Strengthening Families Program (Kumpfer et al., 1989) found that improving maternal parenting skills reduces subsequent behavioral and emotional problems of the children which leads to reduced drug use by the mother, even if they are not in drug abuse treatment.

***3. Early intervention programs provide a model of individualized, comprehensive services.***

One of the premises of early childhood intervention is that services are individualized: the array of needed services for any individual child, taking into consideration child and family needs and preferences, may be unique. Some authors describe early intervention programs for drug-affected children as being very similar to those for the general population of children with delaying or disabling conditions. This would suggest that existing early intervention service providers represent one appropriate setting for planning and delivering these services to drug-exposed children.

On the other hand, the goals and methods of child-focused interventions (cognitive-behavioral skills training or therapy for school age children) are recognized as being similar to the skills training approaches used to treat drug abusers. Programs that offer chemical dependency treatment for mothers and early intervention services for children at the same site are intuitively appealing and have some demonstrated improved outcomes. Kumpfer (1998) suggests that “staff members trained in cognitive-behavioral methods of structured interventions, interactive role-play, guided practice, homework, and rewards for behavioral changes will be prepared to work in either the parent’s drug treatment program or the children’s therapeutic child-care program.”

Kumpfer further summarizes a number of studies that indicate improved treatment outcomes for mothers when preventive services for children are incorporated into the chemical dependency treatment setting. Reduced parenting stress and depression facilitates recovery and reduces frequency of relapse (Catalano 1996; Kumpfer et al 1996; and others). With children also receiving services, parents tend to stay in drug treatment longer (Stevens et al., 1989). Finally, free child care services and transportation were associated with greatly improved retention of mothers in treatment (Lewis et al., 1996).

Characteristics of early intervention programs for drug-exposed children are described in detail by Olson and Burgess (1997). Some key components identified by Olson and Burgess and other authors include the following: long duration of care, stability and consistency in care giver, opportunity for free-play (Howard 1989), language development (Lester 1988) and parenting skills.

“The most important process is to involve women in parenting skills training and family relationship enhancement programs to promote a continually improving parent-child relationship after treatment.” (Kumpfer, 1998)

Prevention components of comprehensive programs are described by Kumpfer (1998). They include maternal education about harmful effects of drugs; pregnancy prevention for drug-abusing women; incentives to increase recruitment of drug-abusing women and their children (aggressive and culturally sensitive outreach); and recruitment of *pregnant* drug-abusing women. According to Kumpfer, “few drug treatment agencies want to treat pregnant women because of concerns about legal liabilities.”

#### ***4. Comprehensive program examples involve children and parents***

In a qualitative study of clients’ self-perceived needs, Nelson-Zlupko (1996) reported:

- Reproductive health and sexuality education, parenting education, help with obtaining child care, and on-site child care were seen as the least available services.
- Services rated as most helpful included transportation assistance; help obtaining such basic needs as food, clothing, and housing; recreational activities; on-site health care; and 12-step meetings.
- Clients stated that the respect and genuine concern by their individual counselor was the single most important factor affecting their decision to remain in treatment.
- Women indicated that when child care services were accessible, they were among the most helpful services for improving attendance at drug treatment. Parenting skills training was the most frequently identified need by study participants.

An example of a comprehensive program based in a residential chemical dependency treatment program is described in the literature on PAR Village in St. Petersburg, Florida. In a randomized clinical trial at the PAR Village therapeutic community, Coletti et al. (1992) found that provision of specialized on-site child care services that permitted women to keep their children with them while in treatment resulted in increased retention in chemical dependency treatment. Over 80 percent of clients who had their children with them were still active in treatment three months after intake, compared to 50 percent of women who did not have their children with them.

Coletti describes the development of the program, its philosophy, and elements in a subsequent paper (1995). PAR Village uses a social learning based model of care, in which the program attempts to create and strengthen skill and families within a supportive and nurturing environment. Successful completion of residential treatment requires on average eighteen months to progress through six progressively less restrictive levels of care. Life and family skills include parenting and child care skills (e.g., meal preparation, education on normal child development); health care counseling (e.g., prenatal care, nutritional counseling, health education for child care); psychosocial interventions for coping skills enhancement; and vocational or on-the-job training.

Children residing with their mothers at PAR Village receive day care and targeted health and developmental interventions at a specialized on-site therapeutic nursery. Specialized services include a pediatric exam and comprehensive psychological and developmental assessment; consultative evaluations for special problems (e.g. speech, language, hearing tests); age-appropriate developmental stimulation; and refusal skills and assertiveness training for older children.

Another model program, the Mothers Project at Yale-New Haven Hospital, provides a comprehensive, multidisciplinary, family-centered treatment approach for cocaine using mothers and their children. The program emphasizes the developmental needs of the mother and child and their dyadic relationship, a feature deemed to be essential in designing services for substance-abusing pregnant women and mothers. Service elements include: prenatal care; individual and group therapy focused on developing coping and problem-solving skills; partners' services; home and outreach services by family support workers; and therapeutic day care services, with early intervention for such developmental problems as expressive language delay, disorganized and aggressive behavior, extreme passivity, and absence of expressed emotions.

## **B. Program outcomes for substance using women and their children**

In the last decade, substance abuse policy and research has expanded more broadly to include exposed infants and children (Olson and Burgess, 1997). It is generally agreed that children born to substance-using women benefit from developmental and behavioral assessment and educational programs designed to meet their individual needs, and that interventions for the drug-exposed child need to be accompanied by intervention for the mother. "Children have the best opportunity to recover from effects of prenatal drug exposure when child development services are combined with drug treatment in a family context." (Zuckerman and Bresnahan, 1991)

Two-generation early intervention programs, designed to serve both children and parents simultaneously, have served as models for programs for drug-abusing mothers and their children. Research, although limited, indicates that family-focused treatment can help alleviate physical and cognitive symptoms of drug-affected infants, increase the quality of parent-child interactions, and increase the quality of the home environment. In addition, women who are able to keep their children with them show better retention in treatment (Coletti, 1992; Hughes et al., 1995; Stevens et al., 1989).

Twelve published studies were identified which described program outcomes for drug-abusing mothers and their children. One study (Carten, 1996) used qualitative methods only, and a second study (Peterson, Gable, and Saldana, 1996) described a conceptual model of parenting with an emphasis on prevention of child maltreatment. These two studies are not included in the following summary. The remaining ten studies were assigned to one of the following six program focus areas. Washington's Yakima First Steps Community Mobilization Project, the HCFA demonstration project, is described separately.

Most of the studies which were reviewed explored outcomes for specific treatment components, including home visits by a public nurse or paraprofessional, case management and support services, and parenting training. Another study examined outcomes related to infant massage. The effects of a comprehensive treatment program were explored by only one study. In addition, Washington State was one of five states which participated in the Demonstrations to Improve Access to Care for Pregnant Substance Abusers, funded by the Health Care Financing Administration (HCFA).

Limitations present to varying degrees in the studies reviewed included small sample size, attrition, self-report and observational bias, selection bias, lack of appropriate comparison or control groups, and limited generalization potential. Since early intervention programs serving drug-exposed children and their mothers were developed in the late 1980s and early 1990s, only a few outcomes for children and mothers have been studied, and the follow-up periods are typically short.

### ***1. Home nurse visits***

In a series of home visits, Butz et al. (1998) documented frequent health and social problems and a lack of basic parenting information which the visiting nurse was able to address specifically. Saylor et al. (1991) also explored growth and development in drug-exposed infants visited by a public health nurse and concluded that early, intensive, basic care strategies are effective in mediating these infants' symptoms. In a randomized, clinical trial, Black et al. (1994) examined the effects of adding 18 months of biweekly public health nurse home visits to the existing multidisciplinary treatment. Mothers in the intervention group showed marginally more responsible behavior in reducing drug abuse, complying with primary care (although levels were still low, at 62 percent), and providing a responsive and stimulating environment for their children. Children in the intervention group achieved marginally better cognitive development during infancy, although the differences did not persist.

### ***2. Comprehensive case management added to residential program***

Lanehart et al. (1996) compared women's behavior before intervention to behavior during/after treatment for women who received intensive case management and support services during and after residential drug abuse treatment. The study group showed improvements in:

- employment status (43 percent more likely to be employed and/or enrolled in training).
- likelihood of incarceration (6 times more likely to have been arrested before the intervention than during/after, and 10 times more likely to have been incarcerated before intervention than during/after).
- likelihood of drug use (more likely to have been substance-free).
- social support outside of the program (1.6 times more likely to use an agency as a source of social support at intake than at discharge, with the percent of women

relying on personal sources of support increasing from 38 percent at intake to 49 percent at discharge).

In addition, women were more likely (by approximately 1.5 times) to deliver a low birthweight infant before entering intervention than during/after.

### ***3. Paraprofessional home visits to high-risk women and their children***

Ernst et al. (1998) studied the effects of three years of home visits by a paraprofessional to extremely high-risk women and their babies. In comparison to a drug-using control group, these women showed:

- greater success in achieving abstinence of one year or longer (67 percent of most involved and 40 percent of the least involved, vs. 32 percent of the control group).
- higher levels of regular birth control use (73 percent vs. 52 percent).
- more satisfactory connections with needed service providers.

Clients with the highest level of involvement were more likely than less involved clients to complete drug and alcohol treatment (67 percent and 33 percent, respectively).

### ***4. Parenting training as an added component of a treatment program***

Camp and Finkelstein (1997) found that women who received parenting training as part of a residential substance abuse treatment program demonstrated significant improvement in parenting attitudes and knowledge, and dramatic improvements in self-esteem, suggesting that women gained skills to raise children in a more nurturing environment.

### ***5. Infant massage***

Wheeden et al. (1993) found that when cocaine-exposed newborns who received 10 days of massage therapy were compared to a drug-exposed control group, the intervention group demonstrated fewer postnatal complications, more weight gain (28 percent) from similar amounts of formula and calories, improved motor skills, improved orientation behaviors, and fewer stress behaviors.

### ***6. Comprehensive program***

Field et al. (1998) compared young mothers who participated in an intervention program with both a drug control and nondrug group. Participants in the four-month program received drug and social rehabilitation, parenting and vocational classes, and relaxation therapy. At 12 months the intervention mothers, when compared to the drug control group, exhibited decreased levels of depression and stress; lower incidence of repeat pregnancy and drug use; a higher percentage continuing school, obtaining a high school diploma or GED; and higher job placement success. Their children, when compared to controls, demonstrated significant advantages on the Early Social Communication scales and the Bayley mental scale, although the nondrug group still scored higher. Intervention infants also had significantly greater head circumference, and significantly fewer pediatric complications, with scores similar to those of the nondrug group.

### **C. Washington's Yakima First Steps Community Mobilization Project for Pregnant Substance Abusers (First Steps PLUS)**

First Steps PLUS was a demonstration project which provided services in Yakima from July 1993 through June 1996 funded by the Health Care Financing Administration. The project's goal was to improve health outcomes of pregnant, substance abusing women and their infants by enhancing existing perinatal services provided through Washington's First Steps Maternity Care Program and by integrating and coordinating maternity care services with comprehensive substance abuse intervention services.

Key program components of First Steps PLUS included outreach, training for prenatal care providers, standard screening to identify pregnant substance abusers, parenting education, case management, and substance abuse treatment in residential settings.

In general, the First Steps PLUS project succeeded in improving access and early intervention to both diagnosed prenatal substance abusers and also women identified as being at risk of substance abuse during pregnancy. Prenatal substance abusers received a fuller continuum of care: the proportion of women who received both residential and outpatient treatment for chemical dependency rose by 32 percent in Yakima while it declined by 8 percent statewide. Comparison of free-standing versus hospital-based medical stabilization programs revealed that Sundown M Ranch (a free-standing facility offering chemical dependency treatment) was a safe and less costly alternative to the hospital-based programs for chemical-using pregnant women which emphasizes medical stabilization of the fetus. The First Steps PLUS screening tool successfully identified many women at risk of substance abuse during pregnancy that might otherwise have gone undetected, and its success is evident in the continued use of the First Steps PLUS screening form in Yakima County today although project funding ended more than two years ago.

Prenatal substance abusers exhibited better birth outcomes over the course of the demonstration project. Comparing pre-project (1991-92) and post-project (1994-95) time periods:

- In Yakima County, premature births to pregnant substance abusers declined by 30 percent, compared to a 13 percent decline in the comparison counties and a 17 percent decline statewide.
- Low APGAR scores, indicating a newborn's overall health, for infants of pregnant substance abusers declined by 46 percent in Yakima County while they remained fairly constant across the rest of the state.
- Out-of-home (foster care) placements declined by 21 percent for children born to pregnant substance abusers in Yakima County while they increased slightly statewide.

Mathematica Policy Research, Inc., in its national evaluation of the five demonstration programs concluded with a recommendation for a demonstration model based on the

lessons from this evaluation (Howell et al., 1997). The model demonstration program would include:

- Linkages between Medicaid, substance abuse, and health agencies at the state level, and between prenatal care and substance abuse treatment at the local level.
- Screening, based on a standardized protocol, and uniform training in how to screen, within a variety of traditional and nontraditional providers and agencies.
- Referral to on-call outreach workers trained in substance abuse counseling.
- A continuum of care, including prenatal care, detoxification, intensive substance abuse treatment (either residential or outpatient), and follow-up outpatient care for at least three months, with support services such as case management and child care to increase retention.

Mathematica also recommended more rigorous studies to evaluate program impacts, including an evaluation design with random assignment to either outpatient or residential care after detoxification. The overall evaluation of these HCFA demonstration projects focusing on short-term outcomes for pregnant substance abusers (i.e., birth outcomes) revealed enormous complexity in both program administration and outcome evaluation. Challenges in achieving unambiguous results and in generalizing the findings to other settings underscore the challenges we faced in determining outcomes for programs serving drug-abusing women and their children.

#### **D. Conclusions**

In conclusion, the literature and studies reviewed indicate that the following characteristics of a comprehensive program are most likely to yield successful outcomes:

- Family-focused services that address the needs of both mother and child.
- A continuum of services from early pregnancy through childhood, beginning with screening to identify women as early as possible, and with varying levels of intensity appropriate to individual needs.
- Coordinated or, ideally, colocated services (such as health care, drug treatment, family planning, parenting education, and early intervention).
- Chemical dependency treatment tailored to the needs of women, with a continuum of care including detoxification, intensive treatment (residential or outpatient), with aftercare and follow-up outpatient care.
- Parenting skills training and family relationship enhancement to promote continually-improving parent-child relationships.

## PART 3: FISCAL IMPACT ANALYSIS

### A. Introduction and general issues

RCW 13.34.803(2) requires an analysis of the fiscal impact of the comprehensive plan by calculating “the potential long-term savings to the state resulting from reduced use of the medical, juvenile justice, public assistance, and dependency systems by children and mothers receiving services under the plan.”

The fiscal impact calculations depend on determining the following variables:

- The number of women and children served.
- The frequency and costs of their use of the specified services.
- The effectiveness of the program in reducing or eliminating their use of other services or involvement in other systems, such as the criminal justice system.

In particular, it was necessary to identify the amount of the specified services which substance-abusing women and their children would use *without* implementation of a comprehensive plan and to estimate the change in service use that would occur *with* the implementation of a comprehensive plan.

**It was clear that we would need to use innovative strategies in this analysis, since no readily available Washington State data and no published research studies directly address the fiscal impact questions posed.**

Our strategy led us to explore the following issues:

#### ***1. How effective are comprehensive programs serving substance-abusing mothers and their children in changing measurable outcomes?***

Twelve published studies were identified that evaluated programs for substance-abusing mothers and their children. The studies are summarized in the following section, and in more detail in Appendix C.

These studies provided very few answers to the specific questions for the fiscal impact analysis. Only a few different outcomes for children and mothers were reported, and these were generally not directly relevant to the services specified in RCW 13.34.803. In addition, the length of follow-up in these studies is typically less than three years. This is not unexpected because the first programs serving substance-abusing women and their children were developed in the late 1980s and early 1990s. Not enough time has elapsed since the programs were started for mothers and children to grow older, for data to be collected and analyzed, and findings published.

Individual components of the programs were not systematically evaluated in these studies, and the programs varied greatly in the relative emphasis on services for mothers versus services for children, the timing and length of interventions, and the outcomes

assessed. A number of these programs had their foundations in broader early intervention services: substance-abusing mothers and their children represent a special group of at-risk families who benefit from early intervention (EI) services. This observation suggested a new avenue for exploration—program outcomes for early intervention programs in general.

***2. How effective are comprehensive early intervention programs serving high-risk families in changing measurable outcomes?***

More than forty published studies were identified which evaluated outcomes for early intervention programs for high-risk families and their children. These studies are summarized in detail in Appendix D. This review relied extensively on a recent publication from the Rand Corporation, *Investing in Our Children: What We Know and Don't Know About the Costs and Benefits of Early Childhood Interventions* (1998).

These studies offered a broader array of measured outcomes of interest, and some high-risk families who received early intervention services have been followed for more than twenty years. Thus, we relied on the program impacts reported in these studies when no other data were available. Although some of the mothers in these families were not abusers of alcohol or other drugs (others were but their outcomes were not reported separately), the families shared many risk factors which affect families with substance abuse issues, including poverty, violence, and social disruption.

Two further questions were of particular concern in assessing the generalizability of these early intervention outcomes to substance-abusing mothers and their children: (1) do baseline rates for service use differ for substance-abusing mothers and their children, as compared to those for high-risk families in general? and (2) do children exposed to alcohol and other drugs in utero experience developmental delays or disabling conditions that would predict significantly different needs and outcomes from the general population of children receiving early intervention services?

***3. What are the baseline rates for service use by substance-abusing mothers and their children?***

Some of the articles reviewed provided measures of use rates for the services of interest; however, the subjects in many of the studies appeared not to be representative of substance-abusing mothers and their children in Washington. We sought better estimates, specific to substance-abusing mothers and their children in Washington State, whenever possible.

For a number of services (medical, public assistance, and dependency), actual five-year follow-up data for 1992 Washington births in the First Steps Database were used to measure baseline use of services by substance-abusing mothers and their children. These findings are presented in Tables 4 and 5 in Appendix A. While eligibility for certain programs (for example, AFDC versus TANF) has changed between 1992 and the present time, and more changes may occur in the future, the service use rates which were

measured for substance-abusing women and their children provide the best available estimates.

When actual data were not available, estimated service use rates were based on those reported in published studies.

***4. To what extent do children with in utero exposure to illicit drugs demonstrate specific developmental delays or disabling conditions?***

Sixteen published studies, with appropriate control groups, were reviewed to assess the effects of substance abuse during pregnancy on the child's subsequent development. These studies are summarized in Appendix C. One hundred twenty-five articles were screened to determine if they met the selection criteria for inclusion in the detailed literature review.

Fetal Alcohol Syndrome (FAS), recognized for over twenty years, is the only well-established birth defect due to *in utero* exposure to alcohol or drugs. Alcohol-Related Neurological Deficits (previously known as Fetal Alcohol Effects) is a milder form of FAS. Children with FAS and their families are eligible for early intervention services in Washington through the Infant Toddler Early Intervention Program, which serves infants and toddlers with developmental delays and disabilities from birth to age three.

Many research studies have examined the effects of use of drugs other than alcohol on the unborn child; **no studies have consistently shown that exposure to a specific drug other than alcohol *in utero* leads to a specific developmental dysfunction** (Zuckerman and Bresnahan, 1991). The effects which have been described are either transient or subtle in nature. Future studies or more sophisticated analyses may reveal effects that have not yet been demonstrated. For example, a recent meta-analysis (Lester et al., 1998) has shown that *in utero* exposure to cocaine is associated with reliable but subtle decrements in cognitive development. The effects are subtle in that they are small in magnitude (decrease in IQ of less than four points) for global IQ tests. Larger effects were found in more subtle domains of function, specifically language abilities.

Certain program components, such as consistency in caregiver, opportunity for free-play, and emphasis on language development, are felt to be important in early intervention programs for drug-exposed children. No evidence was found to suggest that drug-exposed children would benefit from early intervention in different ways from children without *in utero* exposure to drugs.

***Summary***

In summary, nearly three hundred published reports were reviewed to determine (1) rates of use of publicly-funded services (medical, juvenile justice, public assistance, and dependency) by substance-abusing mothers and their children and (2) changes in the baseline service use rates that would potentially result from a comprehensive plan. Actual data from Washington State were compiled when available.

## **B. Methods**

The fiscal impact analysis assumed that mothers and children participate in a hypothetical comprehensive program such as the one described on the following pages. This program would offer comprehensive case management, needed social and health services, substance abuse treatment opportunities, and parenting education to the mothers. The child would experience developmentally appropriate learning experiences, either in an enhanced center or at home, screening, and if necessary, therapeutic childcare. While some of the individual program components (such as treatment for chemical dependency or early childhood intervention) have been evaluated separately, no systematic evaluation has been performed of the individual components in the context of a comprehensive program. Therefore, it was not possible to estimate the fiscal impact of each component individually.

The impact in each program area is measured as the change in rate of service use per 100 program participants who got an adequate “dose” of the program. Not all mothers who are eligible would agree to begin such a program, and some who begin would drop out. For the 100 mother-child pairs in the fiscal impact analysis, it was assumed that all entered voluntarily, and all mothers and their children completed up to three years of program services. For clarity, the tables depict baseline rates for service use for each mother-child pair. Because of fixed costs that would occur in administering such a program and delivering services, it is unlikely that savings could be realized at the level of a single mother-child pair. Therefore, the fiscal impact is stated per 100 mother-child pairs.

Four areas of program service use were specified by RCW 13.34.803: medical, juvenile justice, public assistance, and dependency. Two additional program areas were added to the analysis after discussion with legislative staff: criminal justice (to parallel juvenile justice for the child) and special education. Since the extent of youth involvement with juvenile justice typically peaks at age 17, it was clear that the analysis would need to extend through the child’s school years.

Baseline rates for service use during the first five years after the child is born were known with considerably more precision than service use rates after age 5. For this reason, the analysis was separated into two periods:

**Years 1 – 5:** the first five years after the birth of the child; and

**Years 6 – 19:** the next fourteen years (for the child from age 5 through age 18).

Some of the program areas (medical and public assistance) are potentially used by both the mother and her child; other programs serve one or the other. (For example, children (youth) are clients of juvenile justice and mothers are clients of criminal justice; special education serves children, not mothers). Clients of dependency system services were assumed to include the mother and her child as a unit.

The following example may assist in interpreting the data in the fiscal impact tables:

During the first five years after the birth of her child, the “average” substance-abusing mother received medical coverage through Washington’s Medical Assistance program for 40 months. With a comprehensive program of services, a 10 percent reduction in use of this service is anticipated; this is equal to four months. With a unit cost of \$155 per month (on average) for medical coverage, the savings would be \$620. Considering the state and federal shares of this service (48 percent and 52 percent, respectively), the state’s potential savings would be \$260, or \$2,600 for 100 mother-child pairs.

The detailed methods section, which follows the tables, describes the rationale for the calculations, the specific sources of data, and assumptions that were made. Estimates for the unit costs for each service area were provided by the DSHS Budget Division.

### **Limitations**

The most important limitation of the fiscal impact analysis is that the program service areas included are not comprehensive. The fiscal impacts do not represent all direct or indirect potential savings that might result for the mother, for her child, or to the state if a comprehensive program were implemented. A number of intangible benefits might occur in addition to those identified; these could include reduced mortality (fewer deaths of mothers and children), reduced victim costs (with reduction in criminal behavior by mothers or their children), and improved self-esteem and life accomplishments for mothers and their children.

Additional technical limitations apply to this fiscal impact analysis:

***Studies Reflect Many Different Models:*** This analysis is hampered because studies which focus on drug-using mothers (1) do not test all components of the ideal program model and (2) were funded in the early 1990s and hence have not had time to analyze longer-term outcomes. Therefore, the impact analysis also relied upon studies which analyzed the impacts of enriched early intervention programs aimed at groups of low-income, high-risk women and their children.

***Study Populations are Not All Drug-Users:*** The mothers in the enriched early intervention programs are not all drug-users. Therefore, they do not perfectly reflect the drug using population defined in this legislation. Effects seen in these studies could either be overstated or understated when compared with the same program’s impacts upon drug-abusing mothers and children.

***Study Populations are Different from Washington State Populations:*** The samples in both the general and the drug-using early intervention studies differ from Washington state’s drug-abusing mothers in several other ways. For example, many of these studies involve mostly African-American mothers and children who live in inner city neighborhoods. Most drug-abusing mothers in Washington state are Caucasian, and many of them live in smaller cities or towns or in working-class suburbs of Seattle, Spokane, or Tacoma. Many of the studies had very high proportions of women who grew up in

welfare families and/or in foster care. It is not clear that the same is true for drug-abusing mothers in Washington State, and it is not clear how these population differences might affect the hypothesized fiscal impacts of the program.

***Study Samples Are Small and Most Designs Are Quasi-Experimental:*** Most studies had very small samples and probably had large confidence intervals around their point estimates (often not reported). Random assignment was not usually the study design. Instead, matched comparison groups were selected, or participants were compared with similarly eligible groups who did not select into the programs. These designs tend to overstate effects when compared with full population or random assignment studies, even when appropriate statistical controls are used to partially correct for differences between treatment and comparison groups.

### **Positive Effects for Program Participants Do Not Always Indicate Government Savings.**

Even when program participants change in ways which should cost state and local governments less money, those government programs may not be able to “capture” those savings. This can occur for three reasons. First, some “savings” actually flow to for-profit and not-for-profit contractors (such as managed care providers). Some of these savings could be “captured” eventually in reduced capitation rates based on history of costs, but that requires negotiation as well as a savings history.

Second, some “savings” are consumed by the next person in line for a capped or lidded service (as when the police begin to work on the backlog of unsolved crimes, or the child abuse caseworker investigates another case). Of course, the program effects represent real benefits to society: there is, overall, less child abuse and fewer arrests. But there may not be less cost to government programs.

Third, some of the positive outcomes for program participants are caused by screening and referrals into other government-funded services which the participant might not have used without the referral (sometimes called the “gatekeeper” effect). A good local example is the Infant Toddler Early Intervention Program (ITEIP), which by screening and referring clients with developmental delays to services, appears to have caused an increase in the proportion of eligible people applying to become clients of the Division of Developmental Disabilities (DDD). Society benefits from ITEIP because some ITEIP clients improve and no longer are eligible for DDD services.

Because of all these factors, these fiscal impact estimates should be regarded as probable rather than proven. These are the best fiscal impact estimates which can be drawn from the existing literature and available data. They indicate program areas where potential savings would be likely to occur but they are not certain.

### **C. Fiscal Impact Analysis and Explanation of Table Format**

The first column identifies the program service area and denotes whether the service was used by mothers or their children.

**Baseline Rates** (the second column) shows the amount of service which the average mother/child pair might use without a comprehensive program. In the first table, Years 1 to 5, the average substance-abusing mother would be expected to be eligible for Medical Assistance (Medicaid) for 40 months over the first five years after the birth of her child.

**Anticipated Outcomes** (third and fourth columns, “Percent Change,” “Amount Change”) estimate the anticipated change in the baseline rate for a mother/child pair that successfully completes the program. Using the above example, we might expect to find a 10 percent reduction in the months this mother would be eligible for Medical Assistance, or a 4-month decrease in the number of months.

**Unit Cost** refers to the average cost for the program service or event. The DSHS Budget Division provided unit costs for this analysis. The average cost for each month (the unit measure) a woman receives Medical Assistance is \$155.

**Potential Savings** are based on the amount of anticipated change from baseline times the unit cost. Potential savings are shown for each mother-child pair and per 100 mother-child pairs. A 10 percent reduction (4 months) would equal \$620 in potential overall savings per each mother/child pair over the first five years, or \$62,000 for 100 mother-child pairs.

**Federal and State Percentages of Savings** describe the proportion of program funding supplied by federal and state monies. For Medical Assistance, the federal match rate is 51.8 percent and the state’s share of the cost is 48.2 percent.

**State’s Potential Savings** shows the potential savings of state funds if the comprehensive program serves 100 mother-child pairs. For maternal medical costs funded through Medical Assistance, Washington State might expect \$29,884 (48.2 percent) of the \$62,000 potential savings estimated for 100 mother/child pairs.

The detailed methods section provides additional detail on assumptions for each calculation in the table.

## FISCAL IMPACT ANALYSIS

### Assuming a Comprehensive Plan for Substance-Abusing Mothers and Their Children

#### Years 1 to 5

	Baseline Rates per Mother-Child Pair	Anticipated Change		Unit Cost (\$)	Potential Savings		Federal Percentage of Savings	State Percentage of Savings	State's Potential Savings per 100 mother-child pairs
		Percent Change	Amount Change		Per mother- child pair	Per 100 mother- child pairs			
<b>Mother-Related Measures</b>									
Medical Assistance	40.00 months	10%	4.00	155	\$620	\$62,000	51.8%	48.2%	\$29,884
Public Assistance	32.00 months	15%	4.80	470	\$2,256	\$225,560	100.0%	0.0%	\$0
Subsequent Births	0.52 births	30%	0.16	9,710	\$1,515	\$151,476	57.1%	42.9%	\$64,983
Subsequent Births: Other Potential Savings					\$227	\$22,669			\$16,810
Avoided Births: Other Potential Savings					\$530	\$53,024			\$39,132
Criminal Justice*	0.45 months	50%	0.23	3,141	\$713	\$71,316	NA	77.0%	\$54,913
<b>Dependency Systems</b>									
Child Protective Service Referrals	0.99 referrals	10%	0.10	460	\$46	\$4,554	33.0%	67.0%	\$3,051
Referrals with Dependency Court Hearings*	0.26 referrals	20%	0.05	524	\$27	\$2,683	0.0%	0.0%	\$0
Out-of-home Placements	6.88 months	20%	1.38	832	\$1,145	\$114,497	22.3%	77.7%	\$88,964
<b>Child-Related Measures</b>									
Medical Assistance	44.00 months	10%	4.40	155	\$682	\$68,200	51.8%	48.2%	\$32,872
Public Assistance	32.00 months	15%	4.80	106	\$509	\$50,880	100.0%	0.0%	\$0
Births to teen females	NA	NA	NA	NA	NA	NA	NA	NA	NA
Juvenile Justice	NA	NA	NA	NA	NA	NA	NA	NA	NA
Special Education	NA	NA	NA	NA	NA	NA	NA	NA	NA
<b>TOTAL (NET)</b>					\$8,269	\$826,858			\$330,611

\*Costs to local systems are included in the overall Potential Savings and are not included in the State's Potential Savings.

Note: Columns may not add to totals due to rounding.

## FISCAL IMPACT ANALYSIS

### Assuming a Comprehensive Plan for Substance-Abusing Mothers and Their Children

#### Years 6 to 19

	Baseline Rates per Mother-Child Pair	<i>Anticipated Change</i>			<i>Potential Savings</i>		Federal Percentage of Savings	State Percentage of Savings	State's Potential Savings per 100 mother-child pairs	
		Percent Change	Amount Change	Unit Cost (\$)	Per mother- child pair	Per 100 mother- child pairs				
<b>Mother-Related Measures</b>										
Medical Assistance	112.00 months	10%	11.20	155	\$1,736	\$173,600	51.8%	48.2%	\$83,675	
Public Assistance	28.00 months	15%	4.20	470	\$1,974	\$197,365	100.0%	0.0%	\$0	
Subsequent Births	0.26 births	30%	0.08	24,125	\$1,882	\$188,175	53.9%	46.1%	\$86,749	
Subsequent Births: Other Potential Savings					\$7,991	\$799,090			\$535,576	
Avoided Births: Other Potential Savings					\$12,851	\$1,285,099			\$698,845	
Criminal Justice (includes jail time)*	1.27 months	50%	0.64	3,141	\$1,997	\$199,685	NA	77.0%	\$153,757	
<b>Dependency Systems</b>										
Child Protective Service Referrals	0.90 referrals	20%	0.18	460	\$83	\$8,280	33.0%	67.0%	\$5,548	
Referrals with Dependency Court Hearings*	0.29 referrals	20%	0.06	524	\$30	\$3,018	NA	0.0%	\$0	
Out-of-home Placements	19.26 months	20%	3.85	832	\$3,206	\$320,591	22.3%	77.7%	\$249,100	
<b>Child-Related Measures</b>										
Medical Assistance	123.00 months	10%	12.30	155	\$1,907	\$190,650	51.8%	48.2%	\$91,893	
Public Assistance	28.00 months	15%	4.20	106	\$445	\$44,520	100.0%	0.0%	\$0	
Births to teen females	0.59 births	58%	0.34	24,125	\$8,186	\$818,561	53.9%	46.1%	\$377,357	
Juvenile Justice*	1.44 months	50%	0.72	4,084	\$2,940	\$294,028	5.7%	93.7%	\$275,504	
Special Education*	36.50 months	43%	15.70	579	\$9,091	\$909,133	9.1%	67.4%	\$612,756	
<b>TOTAL (NET)</b>						\$54,318	\$5,431,796			\$3,170,759

\*Costs to local systems are included in the overall Potential Savings and are not included in the State's Potential Savings.

Note: Columns may not add to totals due to rounding.

## FISCAL IMPACT ANALYSIS

### Assuming a Comprehensive Plan for Substance-Abusing Mothers and Their Children

#### Potential Savings Associated with Subsequent Births (All Years)

	[A] Subs. Birth #1	[B] Subs. Birth #2	[C]=[A]+[B] Total Units	Anticipated Change		Potential Savings			Federal Percentage of Savings	State Percentage of Savings	State's Potential Savings per 100 mother-child pairs	
				Percent Change	Amount Change	Unit Cost (\$)	Per mother- child pair	Per 100 mother- child pairs				
<b>Years 1 to 5</b>												
<b>Dependency Systems</b>												
CPS Referrals	0.26	NA	0.26 referrals	10%	0.03	460	\$12	\$1,192	33.0%	67.0%	\$799	
Referrals w/Dependency Court Hearings*	0.08	NA	0.08 referrals	20%	0.02	524	\$9	\$869	0.0%	0.0%	\$0	
Out-of-home Placements	1.24	NA	1.24 months	20%	0.25	832	\$206	\$20,607	22.3%	77.7%	\$16,012	
<b>TOTAL FOR YEARS 1 to 5</b>								\$227	\$22,669		\$16,810	
<b>Years 6 to 19</b>												
<b>Medical and Public Assistance Costs</b>												
Medical Assistance	44.28		44.28 months	10%	4.43	155	\$686	\$68,634	NA	NA	NA	
Public Assistance	10.08		10.08 months	15%	1.51	106	\$160	\$16,027	NA	NA	NA	
<b>Dependency Systems</b>												
CPS Referrals	0.33	0.17	0.50 referrals	20%	0.10	460	\$46	\$4,567	33.0%	67.0%	\$3,060	
Referrals w/Dependency Court Hearings*	0.11	0.05	0.16 referrals	20%	0.03	524	\$17	\$1,665	0.0%	0.0%	\$0	
Out-of-home Placements	6.93	3.47	10.40 months	20%	2.08	832	\$1,731	\$173,063	22.3%	77.7%	\$134,470	
<b>Child-Related Measures</b>												
Juvenile Justice*	0.47	0.18	0.64 months	50%	0.32	4,084	\$1,311	\$131,109	5.7%	93.7%	\$122,849	
Special Education	11.83	4.40	16.23 months	43%	6.98	579	\$4,040	\$404,026	9.1%	67.4%	\$272,314	
<b>TOTAL FOR YEARS 6 to 19</b>								\$7,991	\$799,090		\$532,692	
<b>TOTAL (NET)</b>								\$8,218	\$821,759			\$549,502

\*Costs to local systems are included in the overall Potential Savings and are not included in the State's Potential Savings.

Note: Columns may not add to totals due to rounding.

**FISCAL IMPACT ANALYSIS**  
**Assuming a Comprehensive Plan for Substance-Abusing Mothers and Their Children**  
**Potential Savings Associated with Avoided Births (All Years)**

	[A] Subs. Birth #1	[B] Subs. Birth #2	[C]=[A]+[B] Total Units	Anticipated Change		Potential Savings			Federal Percentage of Savings	State Percentage of Savings	State's Potential Savings per 100 mother-child pairs	
				Percent Change	Amount Change	Unit Cost (\$)	Per mother- child pair	Per 100 mother- child pairs				
<b>Years 1 to 5</b>												
<b>Dependency Systems</b>												
CPS Referrals	0.12	NA	0.12 referrals	100%	0.12	460	\$53	\$5,299	33.0%	67.0%	\$3,550	
Referrals w/Dependency Court Hearings*	0.04	NA	0.04 referrals	100%	0.04	524	\$19	\$1,932	0.0%	0.0%	\$0	
Out-of-home Placements	0.55	NA	0.55 months	100%	0.55	832	\$458	\$45,793	22.3%	77.7%	\$35,581	
<b>TOTAL FOR YEARS 1 to 5</b>								\$530	\$53,024		\$39,132	
<b>Years 6 to 19</b>												
<b>Medical and Public Assistance Costs</b>												
Medical Assistance	19.68		19.68 months	100%	19.68	155	\$3,050	\$305,040	NA	NA	NA	
Public Assistance	4.48		4.48 months	100%	4.48	106	\$475	\$47,488	NA	NA	NA	
<b>Dependency Systems</b>												
CPS Referrals	0.15	0.07	0.22 referrals	100%	0.22	460	\$101	\$10,149	33.0%	67.0%	\$6,800	
Referrals w/Dependency Court Hearings*	0.05	0.02	0.07 referrals	100%	0.07	524	\$37	\$3,699	0.0%	0.0%	\$0	
Out-of-home Placements	3.08	1.54	4.62 months	100%	4.62	832	\$3,846	\$384,584	22.3%	77.7%	\$298,822	
<b>Child-Related Measures</b>												
Juvenile Justice*	0.21	0.08	0.29 months	100%	0.29	4,084	\$1,165	\$116,541	5.7%	93.7%	\$109,199	
Special Education	5.26	1.96	7.21 months	100%	7.21	579	\$4,176	\$417,598	9.1%	67.4%	\$281,461	
<b>TOTAL FOR YEARS 6 to 19</b>							\$12,851	\$1,285,099			\$696,281	
<b>TOTAL (NET)</b>								\$13,381	\$1,338,123			\$735,413

\*Costs to local systems are included in the overall Potential Savings and are not included in the State's Potential Savings.

Note: Columns may not add to totals due to rounding.

#### **D. Fiscal Analysis: Detailed Methods**

The fiscal impact is equal to the amount of change (per mother-child pair) multiplied by the unit cost and the number of mother-child pairs served (100, in this exercise).

***Maternal Medical Assistance:*** We assumed that all substance-abusing mothers served through the comprehensive plan would be covered through Healthy Options, Medical Assistance Administration's managed care plan. With this assumption, the cost of medical care is directly related to the duration of eligibility for Medicaid. The First Steps Database was used to determine a baseline for the actual duration of eligibility for Medicaid-covered Washington women who gave birth in 1992 and were identified as substance abusers. The average duration of eligibility for the first five years was 40 months (see Appendix A, Table 5). This length of eligibility was assumed to apply to years 6 to 19, resulting in an estimated 112 months (2/3 of 14 years) of Medicaid coverage for those years.

A modest 10 percent change due to program effect was assumed. While Olds et al. (1997) showed a 12 percent decrease in the number of months on Medicaid at fifteen-year follow-up, this difference was not statistically significant. A significant decrease in use of welfare (Aid to Families with Dependent Children, AFDC) was found in this study. Eligibility for Medicaid may extend beyond the time a woman is eligible to receive welfare through Temporary Assistance to Needy Families (TANF), now limited to 5 years. A smaller change was predicted for medical coverage (10 percent) than for public assistance (15 percent).

While it is well established that successful alcohol treatment results in lower medical care expenses, this finding has not been duplicated for illicit drug abusers (Smart et al., 1997). Additionally, because cost savings experienced by the managed care plans may not be directly passed on to Medicaid under a capitated system, we estimated costs as directly related to the monthly capitation fee of \$155 per month.

***Public Assistance:*** The First Steps Database was used to measure actual length of stay on welfare (AFDC) for women who gave birth in 1992 and were identified as substance abusers. The average length of stay on welfare for identified substance abusing women during the five years following the birth of the child was 2.7 years, or 32 months (see Appendix A, Table 5). Assuming a similar rate of use during years 6 to 19, most women who remained on welfare would reach the five-year (60-month) limit for TANF. The time on welfare during the 6 to 19 year follow-up period was estimated on average to be 28 months.

Very few studies have measured early intervention program effects on maternal welfare stays over the long-term. One study, the Prenatal/Early Infancy Project in Elmira, New York, reported a 33 percent reduction in the number of months on AFDC at 15-year follow-up (Olds et al., 1997). For this analysis, a smaller reduction of 15 percent in welfare duration was assumed.

The average cost of TANF grants for single parent families, provided by the DSHS Budget Division, is \$5,639 annually, or \$470 per month.

**Subsequent Births:** The total number of subsequent births was estimated at 78 per 100 women over the entire follow-up period: 52 births per 100 women in the first five years and 26 births per 100 in years 6 to 19. Based on previous analysis by the First Steps Database of subsequent births to women who gave birth in 1990, approximately one-half of women giving birth at any time in Washington are having their last child; however, a small proportion of women may have a number of additional children. Most women have their children in a short-time frame, about half within five years. Since some women have a second or third additional birth within five years, a baseline rate of 52 births per 100 women in the first five years was assumed. The rate for years 6 to 19 was estimated to be half that rate, or 26 births per 100 women.

A study of low-income first-time mothers in Elmira, New York, found that providing prenatal and early childhood home visitation by nurses reduced subsequent births within 2 years by 29 percent and subsequent births within 15 years by 31 percent (Kitzman, et al., 1997; Olds, et al., 1997). In another study of very high-risk substance abusing mothers in Seattle, Ernst and colleagues (1998) found that home visits by a paraprofessional advocate over a three-year period led to changes in effective family planning methods. Nearly three-fourths (73 percent) of the clients were using birth control regularly versus one half (52 percent) of those in the control group. We assumed a 30 percent reduction in subsequent births for the entire period, a rate comparable to that reported in the Elmira study and somewhat lower than what would be predicted by the increased use of birth control in the Seattle study.

The cost of each subsequent birth includes a one-time delivery cost (\$4,000), capitation fees (\$155 per month) for the child's Medical Assistance coverage, and the marginal cost of the increased welfare grant to the mother for an additional child during the first five years. Assuming the average subsequent birth occurred 2.5 years after the index birth, the subsequent birth would incur medical assistance costs for the child for 2.5 years (30 months) and additional public assistance for 10 months following this birth. For subsequent births within the first five years, a total unit cost of \$9,710 was applied:  $\$4,000 + 30(\$155) + 10(\$106)$ .

During years 6 through 19, a total unit cost of \$24,125 was applied:  $\$4000 + 123(\$155) + 10(\$106)$ , assuming the duration of medical assistance coverage was the same for this child as for the index child. In addition, subsequent births during the first five years would continue to incur costs for medical coverage for an additional 123 months on average.

**Subsequent Births: Other Potential Savings:** Approximately 36 births per 100 women were estimated to occur in Years 1 to 5 and 18 births per 100 in Years 6 to 19 for women who receive the comprehensive program. Subsequent births were assumed to occur within 2.5 years (30 months) of the first child in Years 1 to 5 and in the beginning of Years 6 to 19.

Subsequent children born to women who complete the program were assumed to benefit from the comprehensive program in ways similar to their siblings, offering potential savings outside of the initial delivery charges, public and medical assistance explained in "Subsequent Births." Baseline rates were adjusted to account for the reduced number of children born per mother-child pair and for the younger age of these children. (At the end of the study period, subsequent children born in Years 1 to 5 would be around 16 years old; children born in Years 6 to 19 would be around 14 years old.)

Baseline use rates for CPS referrals, referrals with dependency court hearings and out-of-home placements were additionally adjusted to account for differences in placement and referrals due to the child's age. For example, if the first subsequent birth occurs, on average, 2.5 years after the original birth, for Years 1 to 5 this first subsequent child would have a referral rate similar to that of children less than three years old (see Appendix A, Table 4). For Years 6 to 19, the referral rate would be slightly lower until the child reached 5 years old. The second subsequent child, born in Year 6, would have the same rate as measured for the target child in the first five years, and then drop to the lower baseline rate for later years.

***Avoided Births: Other Potential Savings:*** The comprehensive program is expected to result in a reduction of subsequent births (see Methods, Subsequent Births). In Years 1 to 5, 16 births per 100 women would be avoided; in Years 6 to 19, 8 births per 100 women (.16 and .8 births per mother-child pair, respectively). All costs associated with subsequent births would be avoided, thus providing a 100 percent reduction in all associated baseline costs. A separate table details these costs.

***Criminal Justice:*** We estimated the total number of female inmates in jails and prisons that had recently given birth and needed substance abuse treatment. Since many misdemeanors do not result in lengthy incarcerations, only felony data were included for our calculations. Jail (1995) and prison (1998) data for admissions and average lengths of stay were provided by the Washington Association of Sheriffs and Police Chiefs and the Department of Corrections, respectively.

In 1995, 3,122 women were newly admitted to Washington jails, and 600 to state prisons in 1998. The National Institute of Justice reported that in 1991 one in four female felony inmates had a pregnancy during incarceration or in the previous year (Harlow, 1994). We estimated that 1 in 8 (12.5 percent) female felony inmates gave birth since not all pregnancies end in birth. For Washington, this would mean that approximately 390 women in jail and 75 women in prison had recently given birth [ $3,122 * 12.5$  percent +  $600 * 12.5$  percent].

A substance abuse treatment need of 60 percent and 55 percent for King and Yakima counties was reported in *The Arrestee Estimates of Substance Abuse Treatment Need* (Ryan, 1997). Assuming this rate, 234 newly incarcerated females in jail and 45 in prison (279 total) who had recently given birth needed substance abuse treatment ( $390 * 60$  percent;  $75 * 60$  percent). We assumed these women were likely to have been previously

identified as Medicaid-eligible since low income and substance-abusing women are over-represented in the criminal justice system.

The total length of time these women served in jails and prisons was divided equally among the approximate 2,600 Medicaid-eligible identified substance-abusing women that give birth annually to find an average length of time per identified substance abuser. Recently released females had remained in jail an average of 34 days, or 1.1 months, while the average length of stay for a female state prison inmate was 20.3 months. Over 266 months are estimated to have been served in jails ( $234 \times 1.1$  months), and 913 months in prisons ( $45 \times 20.3$  months) by the target population, an average of approximately one-half month for each person [ $(266+913)$  months /2600 person]. The average of months would change only slightly to 0.4 months per each person if only prison data were used.

Average jail costs (\$3122/month) were provided by the DSHS Budget Division. We assumed only one incarceration period in the first five years and a similar rate in the next fourteen years.

Program effects have been shown in limited studies to cause reductions in criminality as high as 50 percent for chemical dependency treatment alone. Early intervention programs have found reductions in the number of jail days as high as 96 percent at 15-year follow up for high risk populations (Berrueta-Clement, 1984). One might expect similar results with a successful comprehensive program incorporating both substance abuse treatment and intervention programs; thus a conservative 50 percent reduction was used.

***Dependency Systems:*** The number of accepted referrals for child abuse and neglect was measured using the 1992 birth cohort from the First Steps Database with linkage to CAMIS. In the first five years of life almost 60 percent of children born to substance-abusing women had an accepted CPS referral. Many children had more than one referral, yielding a rate of almost 100 (99.3) referrals per 100 children born to substance abusing women. A similar referral rate was assumed for the baseline rate in years 6 to 19.

Baseline rates for referrals with dependency court hearings were estimated from a study of children born in 1991 to 266 substance abusing women in Seattle (Pearson and Thoennes, 1995). Pearson and Thoennes found that 80 percent of children had a Child Protective Service case opened for at least 90 days and that 32 percent of those cases resulted in a court dependency hearing. We applied the same rate of dependency hearings (32 percent) to the referral rate measured for years 1 through 5.

Out-of-home placements were measured using the 1992 birth cohort from the First Steps Database with linkage to CAMIS. Over the first five years of life, nearly 30 percent of the 2,634 children born to nearly 2600 identified substance abusers were or had been in foster care placement. These children spent a total of 18,126 months in foster care placement, for an average of 6.9 months ( $18,126/2634$ ).

It is challenging to estimate program effects in this area. The study of low-income first-time mothers in Elmira, New York, found that an intervention providing prenatal and

early childhood home visitation by nurses reduced subsequent child abuse and neglect through age 15 from 54 percent to 29 percent (Olds et al., 1997). Other studies in this area have failed to find such high reductions, and it has been suggested that the studied cohort of low-income first-time mothers, many of whom were teens, may have been particularly impacted by an intervention program. The increased surveillance accompanying involvement in a comprehensive program may well increase identification. From birth to age five, the program effect was estimated at 10 percent for referrals and 20 percent for court dependency hearings and out-of-home placements. The longer term effects were all estimated at 20 percent.

Costs vary according to the type of foster care placement. DSHS Budget Division estimates that, annually, placement in a group foster care home averages \$38,712 (\$3,226/month) while family foster care placement averages \$7,656 (\$638/month). Based on the RDA Needs Assessment Database DSHS County Data Report for FY94, we estimate 92.5 percent of the out-of-home cases receive services in family foster care compared to 7.5 percent placed in group homes. Using these data, the cost of out-of-home placement averages \$832 per month:  $(0.925 * 638) + (0.075 * \$3,226)$ .

***Child Medical Assistance:*** Children, like their mothers, were assumed to be covered by managed care. For years one to five, actual eligibility data were obtained using the First Steps Database for children born to substance abusing women in 1992. The average duration of Medicaid eligibility for these children during their first five years of life was 3.7 years, or 44 months (see Appendix A, Table 4). A similar use rate for subsequent years would result in 123 months (approximately ten years) in the remaining years 6 to 19. We assumed the children would experience similar reductions as their mothers due to program effects. The unit cost is derived from the monthly capitation fee of \$155 per month.

***Public Assistance:*** The child was assumed to remain eligible for welfare for the same duration as the mother and to experience the same program effects due to intervention. A unit cost of \$106, the additional grant money provided to a family with one more child, was estimated.

***Births to teen female children:*** Early intervention programs (some continuing through school age) have been shown to impact teen pregnancy rates significantly. At the Perry Preschool Project in Ypsilanti, Michigan, the teen pregnancy rate for females was 117 per 100 in the control group and a 58 percent reduction in teen pregnancy rates was observed with the early intervention program. Since not all pregnancies end in births, we assumed a birth rate of 58.5 per 100. This birth rate is considerably higher than the birth rates we have measured for children in AFDC families (4.6 births per 100 for 15-17 year olds, and 8.6 births per 100 for 18-19 year olds), but may approximate rates that would be predicted for children in very high risk families where the mother is a substance abuser.

***Juvenile Justice:*** Juvenile delinquency has been found to be strongly associated with poverty, low parental educational attainment, and single-parent families (Huizinga, 1994). These risk factors occurred more frequently among identified substance abusers

who gave birth in 1992, compared to other Medicaid women (see Appendix A, Table 1). Based on their greater number of risk factors, children born to substance abusing women were assumed to be overrepresented in juvenile facilities by five to one compared to the general population:  $5(2600):77,400$ . This is equivalent to saying 14.4% of the juvenile population would be children born to substance abusing women:  $(5*2600) / (5*2600+77,400)$ .

We compared this rate with that reported in a twelve-year follow-up study of maltreated and at very high-risk children in Seattle: twenty to twenty-four percent of children in their control group had been involved with juvenile justice systems (Moore, 1998). The lower rate we estimated seems more appropriate for children born to substance abusing women, who are generally not in such high-risk environments as those described by Moore.

The average placement was estimated to be 200 days with 1.5 placements per placed child (DSHS EMIS Program Review, 1996). If 14.4 percent of children spend 300 days in juvenile facilities, then, on average, each child spends 43.2 days or approximately 1.44 months in juvenile facility during their teenage years.

We assumed a 50 percent reduction based on findings from three early intervention programs that described various outcome measures for juvenile crime. Findings from the Perry Preschool Project included a 39 percent reduction in the proportion of youth ever arrested by age 19, a 44 percent reduction in the number of lifetime arrests by age 19, and a 50 percent reduction in petitions to juvenile courts (Schweinhart et al., 1993). Findings from the Syracuse Family Development Research Program included a 70 percent reduction in the proportion of youth referred to probation by age 15 (Lally et al., 1988). The Prenatal/Early Infancy Project reported a 56 percent reduction in the incidence of arrests through age 15 and an 81 percent reduction in the incidence of convictions and probation violations through age 15 (Olds, 1997).

**Special Education:** Overall, 11.25 percent of Washington students (ages 3 to 21) received special education services in 1995-96 (Office of the Superintendent of Public Instruction, 1997). Baseline number of months in special education for children born to substance abusers was estimated at 36.5 months from ages 6 through 19. In Washington, children born to Medicaid mothers with diagnosed substance abuse were three times as likely to be developmentally delayed than children to mothers without substance abuse (Keenan, 1996). Since developmental delay is a key risk factor for enrollment in special education, it was assumed that children born to substance-abusing mothers are three times more likely to be enrolled in special education. Studies indicate that early intervention can produce a 43 percent reduction in special education enrollment rates (Karoly et al., 1998).



## **PART 4: THE SERVICE INVENTORY**

### **A. Overview and Summary**

RCW 13.34.803 (2) requires an inventory of the community-based programs that may be accessed to provide services to these mothers and their children. A workgroup with representatives from the Department of Health; the Department of Social and Health Services (including the administrations of Economic Services, Children's, and Medical Assistance, and the divisions of Alcohol and Substance Abuse, Research and Data Analysis, and Budget); the Washington Council for the Prevention of Child Abuse and Neglect; and the University of Washington came together to determine:

- necessary services for substance abusing pregnant and parenting women and their children, and
- the availability of these services.

A continuum of family oriented services was identified. Most of the services in this continuum also are used by families without chemical dependency issues, but are especially critical for this highly vulnerable population. Services in this continuum include, but are not limited to:

- Chemical dependency treatment
- Mental health services
- Transportation
- Housing
- Family planning
- Outreach
- First Steps Services (Maternity Support Services and Maternity Case Management)
- Parenting education/parent support
- Women, Infants, and Children (WIC) services
- Vocational programs/employment
- Financial support
- Medical services
- Medical coverage for pregnant women in county jails
- Childcare
- Early intervention services for children at high risk for health, behavioral, and developmental problems
- Child welfare/child protective services

*An inventory of current services and identified gaps is located in Appendix F. The inventory represents services available in the state to serve this population, but may not reflect all services provided in individual communities.*

## Response to RCW 13.34.803

The gaps described in Appendix F suggests that, statewide, certain key services which would be important to this population are missing or in short supply. These include:

- Shortage of residential and recovery programs designed around the needs of pregnant and parenting women (84.5 long-term residential slots and 7 recovery slots for pregnant and parenting women statewide).
- No maternity case management after age one.
- Limited outreach or intensive case management during pregnancy and the first year of life for this hard-to-serve group.
- No systematic developmental screening or developmental planning for these children.
- Limited mental health counseling dealing with family issues, or training in child development for these parents.
- Ongoing problems with transportation and housing which foster treatment attrition

## **PART 5: THE COMPREHENSIVE PROGRAM**

### **A. Program Mission, Outcome Goals and Measures**

RCW 13.34.803 (1) requires the Department of Social and Health Services and Department of Health to develop a comprehensive plan for serving mothers who give birth to alcohol or drug exposed or affected infants, through age three of the child's life. The two departments have prepared the comprehensive program proposed in this section.

**This program seeks to improve the health and welfare of substance abusing mothers and their children by early identification of pregnant substance abusers, improved access to and coordination of health care services and chemical dependency treatment, and family-oriented early intervention services for mothers and their children.**

The program would be designed to accomplish all of the following goals for these chemically dependent women and their children. While most of these goals would be monitored at a program level, it would not be economically feasible to evaluate the program based on all of them. Therefore, these program goals have been divided into three groups as follows:

- ***Program outcomes measured with public agency records:*** These program outcomes would show change within five years after the program begins. Because they are based on data from public records, they could be measured both for program participants and comparison groups by a central evaluation staff. For this group of outcomes, changes related to societal forces that affect all these women and children could be separated from changes occurring only to the women and children who participate in the program.
- ***Program outcomes measured by program staff:*** These program outcomes would be measured by program staff for program mothers and children (usually before and after the participant experiences some part of the program). They would tell the staff whether the particular service is achieving desired changes in the woman or her children.
- ***Longer-term outcomes:*** This program is designed to break a cycle for these families and children, by intervening at critical points in family and child development, for a very high risk group of mothers and children. Some goals for these families could not be evaluated for at least seven years after the inception of the program. Other goals, for the children, would need to wait until those children were adolescents or young adults. For the field as a whole, it would be useful to examine some of these long-term (prevention) outcomes. However, such an evaluation would be very costly and would probably require federal or foundation funding.

**1. Program outcomes measured with public agency records (Goals and Measures)**

- Reduce substance use as early as possible during the pregnancy, to reduce or prevent problematic birth outcomes and increased medical costs. (*Mother Measures: earlier identification of these women, increased rate of CD treatment amongst these women early in pregnancy. Child Measures: reductions in low-birthweight births and other problem health outcomes for infants*).
- Reduce or eliminate substance abuse among these women, to increase self-sufficiency and prevent harm to their children. (*Mother Measures: reductions in detoxifications and alcohol or other drug arrests*).
- Increase employment rates for these women and their partners, to encourage family solidarity and self-sufficiency. (*Mother Measures: employment data from the Employment Security Department unemployment insurance files, TANF participation*).
- Reduce arrest rates and involvement with the criminal justice system for these women. (*Mother Measures: arrest rates from the Criminal History Database maintained by Washington State Patrol; incarceration in State prisons from DOC*).
- Reduce rates of child welfare services and out-of-home placement for the children. (*Child Measures: service use rates and placement rates from the Children's Administration database, CAMIS*).

**2. Program outcomes measured by program staff (Goals and Measures)**

- Increase parenting skills and knowledge among these women and their partners, to improve child development and family life. (*Mother Measures: pre-post tests of parenting skills administered by program staff*).
- Provide appropriate developmental stimulation for the children, as early as possible, to reduce preventable developmental delay. (*Child Measures: reductions in the developmental delays found in ITEIP screening or program administered screens*).
- Protect the children from harm as their mothers struggle with their substance abuse. (*Child measures: Difficult. We could examine injury rates, but this outcome probably needs a service measure such as "appropriate placements."*)
- Improve school performance for these children. (*Child Measures: Difficult to measure because school data is hard to get. May be limited to "in special education." Might explore getting standardized test scores for this group of children, since all fourth graders in Washington State take standardized tests*).

### 3. *Longer term outcomes (Goals Only)*

- Reduce subsequent births and develop higher wages for these women, to encourage self-sufficiency and less dependence on medical assistance.
- Reduce rates of substance abuse in these children as adolescents and young adults: in other words, reduce intergenerational transmission of substance abuse.
- Reduce rates of delinquency and juvenile incarceration in these children as adolescents.

## **B. Overview of Program Services**

This comprehensive program involves the expansion of six core services. Given the literature review, the inventory of services and gaps and the fiscal analysis, we believe that the availability and coordination of these core services brings the greatest likelihood of improved outcomes for substance abusing women and their children. These services are described briefly below, and in more detail on the next pages.

***Targeted Intensive Case Management (TICM):*** This comprehensive plan is built around targeted intensive case management for these women and their families. Ideally, this case management would begin prenatally, continue intensely until the child is 18 months old and gradually decrease in intensity until the child's third birthday. The targeted intensive case management team would: provide active outreach; develop and monitor the case plan; refer and establish linkages to community resources including those funded under this plan; coordinate the professionals working with the family; screen for delays in the children; train parents in early childhood development; offer family planning education and referrals; provide behavioral health services and education to families, and monitor or provide in-home child development activities.

***Flexible Funding for Rural Areas:*** Ten percent of these mothers and children live in the 24 counties with fewer than 25 substance-using women and children per year. In these areas, it would be extremely costly to provide the full team for Targeted Intensive Case Management. However, under this section of the comprehensive plan, these communities could apply for funds to train current Maternity Case Management staff in child development/parenting techniques or to hire on a contract hourly basis a behavioral health counselor to bring those component activities into rural communities.

***Child Development Services, from birth through age three of the child:*** These services would be either center or home-based, and would be coordinated by the case manager. The standards for the appropriate amount and kind of child development activity would be the Early Head Start standards. When the mother is living in the community, these activities would be provided in the home by the case manager, through contracts administered by the case manager, or through licensed child care centers. While the mother is in residential treatment, her children would be with her, and they would be getting these experiences in site-based therapeutic childcare.

***Family Planning Services:*** Family planning education, counseling, and referral to appropriate services would be part of intensive case management and chemical dependency treatment.

***Expanded Residential and Outpatient Chemical Dependency Treatment Programs for Pregnant and Parenting Women:*** A subset of these mothers need enhanced opportunities to be in residential chemical dependency treatment with their children. To serve this population well, the non-specialized residential chemical dependency treatment must be enhanced to include the following services on site: child development, child care, child development education, family planning, family issues including domestic violence, and enhanced vocational services. The women's progress through chemical dependency would be coordinated and enhanced, and her family's connections back into the community would be eased by the availability of intensive case management.

***Transportation and Housing Funds:*** To support women and families as they transition from residential to outpatient treatment modalities, additional resources are needed to decrease barriers to transportation and/or housing necessary for stability and maintenance of recovery programs for women and their children. We suspect that for some areas housing would be the major concern; in other areas (rural) the more pressing concern would be transportation.

***Evaluation:*** If funded, the comprehensive plan should include an evaluation designed to analyze the impact of program services upon the program outcomes. The cost of that evaluation does not depend upon program size, but it would vary with timelines, reporting goals and the choice of comparison groups.

### ***1. Targeted Intensive Case Management***

Currently, as a part of First Steps, Maternity Case Management (MCM) is available to women and their families who meet target criteria. Substance use by the woman or in her environment is one of several target criteria. In FY97, each month an average of 1400 families met this target definition. While MCM is an important intervention in the lives of these women, the population currently served is not comparable to the much smaller and higher-risk population that is the focus of this comprehensive program. MCM is reimbursed on a flat rate monthly basis and only if a face to face contact has been made. An MCM client might not have more than one face-to-face contact per month with her MCM provider. And, MCM is only available for one year after birth.

The current MCM service does not last long enough and is not nearly intensive enough for the population to be served under RCW 13.34.803. To meet the needs of those women and their children, a more narrowly targeted and much more intensive intervention, Targeted Intensive Case Management, is recommended.

Targeted Intensive Case Management (TICM) is a staff model, team approach. Each team would be made up of full time intensive case managers, a child development/parenting specialist, a behavioral health counselor, and a supervisor.

The intensive case manager ensures that a chemically dependent woman and her children receive and appropriately utilize a variety of services needed for improved long-term functioning. Targeted intensive case management incorporates active outreach to engage the woman in services and advocacy to be sure needed services are accessed and used. The women targeted for this service can be hard to find, difficult to engage in services, and not trusting of government services. The intensive case manager must have the time to focus on the needs of each woman and her family.

A vital function of TICM is to ensure that chemically using women receive and appropriately use a variety of services necessary for improved functioning. TICM is central to the success of the proposed comprehensive plan. TICM would be initiated anytime up until the child's third birthday. Ideally, it would begin prenatally, continue intensely until the child is 18 months old and then gradually decrease in intensity until the child's third birthday.

TICM is a critical link between the needs of the woman and her family as well as the chemical dependency treatment system. The intensive case manager would be provided specialized training in how to work with these women, and would work in partnership with the chemical dependency treatment system to ensure that the woman is engaged appropriately in treatment.

Another vital function of TICM is to bring child development expertise into the family home. Given the critical birth to three year period in the brain development of the child, sustained environmental support for the enhancement of the child's cognitive skills is critical to improved child functioning. TICM staff would be trained in early childhood development and bring this focus into the work with the woman and her family. An early childhood development specialist would be a member of each TICM team. This specialist would provide consultation to the intensive case managers and directly to the family as needed.

An additional member of the team would be the behavioral health counselor. Many of these women have counseling needs in addition to their need for chemical dependency treatment. These counseling services are not generally available from the mental health agencies. The counselor would work with the women individually or in groups.

Key functions of the intensive case manager are:

- Active outreach to engage the woman in services and treatment
- Development of an individualized family plan
- Referrals/linkage to community resources such as Early Head Start and Head Start, ITEIP for children with developmental delays, WIC, safe housing, work training and readiness (WorkFirst), transportation, childcare, family planning/unintended pregnancy prevention services
- Regular consultation with other professionals working with the woman and her family to ensure consistency and continuity
- Early childhood development skill training and support for parents

- Involve early childhood development/parenting specialist and behavioral health counselor as needed
- Monitor the women and children's progress
- Follow-up as needed if appointments are missed
- Data collection for evaluation activities
- Regular reassessment of individualized case plan to modify as needs change

To accomplish these tasks and work intensively with each family, each intensive case manager's caseload should average between 15 – 25 families per month receiving varying levels of intensity of service. With about 176 hours of work time available monthly, the intensive case manager would have approximately 5-12 hours per month for each family. Some families would need more service while others would need less. The hours spent per woman/family would include face-to-face contact with the family, linkage with needed additional services and providers, travel, case conferencing, supervision, and data collection activities.

If TICM is not a statewide program, a federal Medicaid demonstration waiver would be needed. Given the team approach of this intervention, only counties with larger populations of chemically dependent pregnant women could support this staff model of intensive intervention. According to First Steps Database, ninety percent of the 2,598 women live in fifteen counties. The geographic distribution of low-income, substance abusing women giving birth in 1992 would suggest the following geographic distribution of TICM teams.

- King (14),
- Pierce (7),
- Snohomish (6),
- Yakima (4),
- Spokane (3),
- Thurston (2)
- Clark and Cowlitz (3)
- Whatcom (2)
- Grays Harbor (1)
- Chelan and Douglas (1)
- Kitsap (1)
- Benton and Franklin (1)

This component of the comprehensive program would be administered by the DSHS Medical Assistance Administration.

## ***2. Flexible Case Management Enhancement for Rural Areas***

About 10 percent of these 2,598 women identified in 1992 lived in counties in which the total population of pregnant/parenting Medicaid women each year was less than 50. These counties are too small to support a Targeted Intensive Case Management team. Under this program component, counties could apply for funds to train current MCM

staff in child development/parenting techniques or for funds to hire on a contract hourly basis a behavior health counselor to bring those component activities into rural communities.

This program would be administered through DSHS-Medical Assistance Administration

### ***3. Child Development Services***

The children living with drug and alcohol using mothers are at high risk of developmental problems, both because they live in families stressed by continued drug and alcohol using parents and because they have been exposed *in utero* to alcohol, other drugs, and tobacco. It is critical to get these children screened early for developmental delays, and to prevent delay and enhance brain development by reaching them with developmentally appropriate activities from birth on.

Early Head Start is a federal program which provides enhanced child development and family support activities to parents and children in low-income families. Early Head Start has developed screening tools and standards for the amount and kind of child development activities appropriate to low-income children generally, to improve their cognitive performance. These activities can be provided through a child care center or at home, by parents (once trained) or by child development professionals. The comprehensive program proposed here would adopt those standards.

The needed child development activities would be part of the family plan developed by the intensive case manager. We anticipate that for some families, particularly those with newborns, the intensive case managers and the child development specialist would be providing some of these activities, as well as teaching their parents to provide them. As the children grow older, they would be expected to be in childcare part of the day, and some of those activities could be provided on-site. While the children's mothers were in residential treatment, the children would be with them, and the child development activities and education for the parents would be provided at the treatment site.

The community portions of this program component would be administered by the DSHS Medical Assistance Administration through the intensive case manager. The residential treatment portions would be administered by DSHS Division of Alcohol and Substance Abuse.

### ***4. Family Planning***

Family planning and unintended pregnancy prevention education services would be integrated into TICM and chemical dependency treatment services. Currently family planning health care coverage is limited for low-income women. Only some low-income women have family planning health care coverage. Women with Medical Assistance Administration issued medical identification card, those able to access a Title X funded family planning clinic or to a lesser extent those with Basic Health Plan have access to birth control yearly exams and methods. Many other low-income women have no access to this resource or do not have the funds to pay for this service. The state of Washington

is currently developing a request for a federal Medicaid family planning waiver. If approved, men and women with incomes at or below 200 percent of the federal poverty level would become Medicaid eligible for family planning related services.

This component would be wrapped into both the TICM and the alcohol/drug treatment.

***5. Expanded Residential and Outpatient Chemical Dependency Treatment Programs for Pregnant and Parenting Women***

In 1996, a total of 1,354 pregnant low-income women received publicly funded chemical dependency treatment, mostly outpatient treatment. Based on the household survey, we would have estimated that 9.6 percent or 3,142 low-income pregnant women actually needed treatment during that year. Unmet need in this population was therefore 57 percent. Additionally, many of the 43 percent who got some treatment were underserved, receiving only outpatient treatment because no residential treatment beds for pregnant and parenting women were available.

If more women are to be treated early in their pregnancy, screening for drug and alcohol problems among Medicaid women (such as those identified under RCW 70.83E.020) needs to be enhanced. Even more importantly, residential treatment capacity for this population needs to be increased. Outpatient treatment also needs to be expanded. Therefore, this program would create new residential treatment capacity in small (sixteen bed or less) residential treatment centers designed to serve pregnant and parenting women. These small centers permit retaining Medicaid match, which larger centers would not allow. Existing outpatient capacity could be easily expanded by simply increasing funding, tied to this population.

To serve this population well, residential chemical dependency treatment must be enhanced as well as expanded. The treatment centers for these pregnant and parenting women would include the following services on site: child development, childcare, family planning education, and counseling around family issues including domestic violence. The centers would be staffed with a multidisciplinary treatment team composed of chemical dependency counselors, an Advanced Registered Nurse Practitioner (ARNP) with prescriptive authority; a child development specialist, and a mental health professional to identify and respond to the special needs of women and their children in recovery programs.

In this comprehensive program, each woman's progress through chemical dependency treatment would be coordinated and enhanced, so that she achieves a full continuum of the treatment services she needs. For some women, this would involve a sequence such as detoxification and/or fetal stabilization, residential treatment, transitional housing, and gradually decreasing outpatient treatment. For others, the only chemical dependency treatment needed would be safe and sober housing and intensive outpatient treatment.

Throughout treatment, child development, childcare, family planning education, and counseling around family issues including domestic violence need to be "wrapped around" the woman and her children. While in residential treatment, these services would

be provided by the treatment provider. While in the community or in safe and sober (transitional) housing, these services would be provided and coordinated through the TICM team. Linkages to safe and affordable housing and transportation services would always be coordinated through the TICM.

It would also be critical, in the later parts of chemical dependency treatment, to add vocational programs to begin to prepare these women for self-sufficient lives. These would be more intensive vocational services than would be available through Work First program, and would be provided by contract with the DSHS Division of Vocational Rehabilitation.

This program would be administered through the DSHS Division of Alcohol and Substance Abuse.

### ***6. Housing and Transportation RFP***

In some areas, particularly crowded and rapidly growing cities, safe and affordable housing is very difficult to find. In other areas, particularly sparsely populated rural areas, transportation is difficult to find. In developing the inventory of services (Appendix F), transportation and housing support came up over and over again as key barriers to keeping women in treatment and keeping their families engaged in the recovery process.

This component of the comprehensive program allows communities, through an RFP process, to apply for transportation and/or housing funds to decrease barriers to comprehensive program participation while the participants live in the community. This money would be distributed through community RFP's. It is presumed that for some areas (urban) housing would be the major concern; in other areas (rural and suburban) the primary concern would be transportation.

For some women and their children, this funding would be used to provide expanded transitional (safe and sober) housing. The expansion of transitional housing would be administered through DSHS Division of Alcohol and Substance Abuse. For women and children living in their own housing in the community, this funding would be used to by the TICM to provide housing and/or transportation assistance to the families.

### **C. How would these services be provided and coordinated in the community?**

At the state level, the First Steps Work Group would provide policy oversight and coordination for this comprehensive program. The group is an intra- and inter-agency oversight and coordination work group for publicly funded maternity programs and services related to the health and welfare of women and children. It includes representatives from the Community and Family Health section of the Department of Health; from three key DSHS administrations (Medical Assistance, Children's, and Economic Services); and from three key DSHS divisions (Alcohol and Substance Abuse, Budget, and Research and Data Analysis).

In Washington state, chemical dependency treatment, maternity case management, family support services, and child development services are primarily provided by local not-for-profit agencies. State and federal government fund some of the services provided by these agencies (such as chemical dependency treatment and maternity case management). Local governments and private citizens fund other services provided by these agencies (such as housing, transportation, and youth service bureaus).

This plan would not replace those community providers with state staff. Instead, it would both increase state funding for comprehensive program services aimed at substance abusing mothers and their children under age three and enhance the coordination and effectiveness of those services. It would fund intensive case management targeted to these clients, expanded and enhanced residential and outpatient treatment, consistent developmental activities for the child, and child development training for the parents. These enhanced services would be provided under contracts by local providers, just as are the current services. The local housing and transportation infrastructure that supports each woman and her children within their community would be enhanced through an RFP process.

Coordination of services would happen throughout, but the heart of the plan would be the TICM team, because the intensive case manager would usually be in contact with the mother before the child's birth, and throughout the first three years of life. The intensive case manager would be planning with the adults in the families, coordinating community-based services, monitoring the child's development, and ensuring that Early Head Start standards for child development activities are part of the case plan and followed. The intensive case manager would draw on the behavioral health and child development specialists to help in the development of plans and parent teaching, and on the chemical dependency treatment specialists once the woman enters treatment.

A second center of service coordination would be the residential treatment site for those women who need residential treatment. Services to the mother and child would continue in that treatment site. The sites would also have behavioral health and child development specialists, and would be able to coordinate care for the mother and her children. The treatment centers would include enhanced vocational services as part of the continuum of care, to assist the mothers in moving towards self-sufficiency. The TICM would be part of the treatment team so that the family plan continues during treatment.

#### **D. What other alternatives were considered?**

##### ***Other Services***

The work group considered a number of other services and service models in designing these programs. However, enhanced chemical dependency treatment, targeted intensive case management, child development focus and family planning were core services supported by the literature, which focuses on intense individualized programs designed around each family's strengths and needs. We considered not adding the wraparound housing and transportation services, but decided we had heard too often that they were a special problem for this group of women.

### ***Coordination through County RFPs***

An alternative way to design this program would be to fund all the services through a county RFP and require the counties to assess service needs and ensure service coordination for this population. The primary advantage to this approach would be county investment in the comprehensive program and population, because they would be assessing the need and designing the program. A second advantage is that counties vary in their local provider networks, and the needed services could be provided differently in different places.

However, the county RFP approach was not recommended for the following reasons:

- Many counties do not have sufficient population to support their own residential treatment for pregnant and parenting women. That treatment needs to be provided and coordinated consistently across the served counties.
- The literature review and expert opinion suggested some key components which needed to be enhanced in every location: intensive case management and child development services. These services needed to be provided in a consistent, quality manner in any part of the state with the population to support them. They were not options to be administered in different ways in different places. This suggests a state-administered program, delivered through contracted providers.
- A county-based program would be inefficient, because it would require substantial administrative support in each county.

### ***Coordination only through the Residential Treatment Centers***

This program could also have been designed only as an enhanced residential treatment program. Residential treatment could be used to create a therapeutic community in which each component reinforces life changes around parenting and adult life. Indeed, the enhanced residential treatment capacity proposed here was designed with those components in place. Once the residential treatment was over, services could be wrapped around transitional housing which was offered to every program participant.

However, concentrating only on enhancing residential treatment had several disadvantages:

- It would not have helped women and children during the time they were not in residential treatment. Some women do not need residential treatment at all, and they would not have experienced the service coordination provided by the TICM.
- If residential providers were to be asked to keep in touch with the families when they left the treatment center, we would have re-created targeted intensive case management.
- Concentrating all program services in treatment sites would increase costs by encouraging women to stay in treatment longer than necessary.



## PART 6: PROGRAM COSTS & TIMELINE

### A. Average Costs and Savings per Woman/Child Pair

The average **new** funds required over three years to serve a single women and her children who were fully engaged in treatment and intensive case management would be \$34,270 (\$21,040 in state dollars). This calculation involves many assumptions which are described in more detail on Table 3 on page 51. The most important assumptions are:

- Fully engaged women would receive both TICM and chemical dependency treatment, and both services would be Medicaid-matchable.
- Some program services (such as child care and chemical dependency treatment) would have already been provided to some of these women and children under current policies. New program costs, then, are total program costs with the services already provided subtracted.

The fiscal analysis suggests that implementing this program would reduce subsequent expenditures on the average fully engaged program mother, her program child, subsequent children born to her and children not born by \$62,587 (\$35,014 state).

Table 1 below combines program cost and fiscal impact estimates. Subtracting the new program costs from savings identified in the fiscal analysis suggests that **between the pregnancy and the program child’s nineteenth birthday, federal, state and local government would save over \$28,000 for each woman and family who is fully engaged in this program. The state savings would be almost \$14,000 per woman.**

Table 1: Costs per Mother/Child Pair to Implement a Comprehensive Program for Substance-Abusing Mothers and their Children, Compared with Associated Fiscal Impacts (Savings) through the Program Child’s Nineteenth Birthday

	Total Funds	GFS- State
<b><i>Average Program Costs for a program mother/child pair and her <u>prior</u> children</i></b>		
Total program costs, conception through age 3 of program child.	\$50,251	\$24,563
<u>(Cost of services already provided to mother and program child)</u>	<u>(\$15,981)</u>	<u>(\$3,526)</u>
Total <b>new</b> program costs per woman, from conception to age 3 of program child	\$34,270	\$21,040
<b><i>Average Program Savings for a program mother/child pair and her <u>subsequent</u> children</i></b>		
Program savings, conception to age 6 of program child	\$8,269	\$3,306
<u>Program savings from ages 6-19 of program child</u>	<u>\$54,318</u>	<u>\$31,708</u>
Total program savings per woman, from conception to age 19 of program child	\$62,587	\$35,014
<b>Average Net Savings (Total savings minus new program costs)</b>	<b>\$28,317</b>	<b>\$13,974</b>

Some additional savings would be likely to accrue to state, federal and local governments, other than those estimated in the fiscal analysis, for the following reasons.

- In most cases, the fiscal analysts interpreted the literature conservatively.
- No literature was found which evaluated the effects of intervention programs such as these upon the older siblings of the program child. Hence we assumed no savings to government for those children. This is not realistic; there will probably be some savings, but we had no guide as to how much savings might be found.
- Some areas of government savings, such as victim costs, were not investigated. (If, for example, these women continue to abuse alcohol and other drugs, some will have automobile accidents. Some of those accidents will injure other people, who may then need government services).
- No assumptions were made about gains in tax revenues from the increased salaries earned by these women, even though such gains would probably occur.

Intangible societal benefits were not measured. Some are benefits to people who would otherwise become victims: decreases in crimes and accidents. Others are less easily estimated, such as the benefit of having fewer children in classrooms who are difficult to teach and disruptive. And clearly, with this program, the lives of these women and children would be longer, healthier and more productive.

Table 2 below shows how quickly these costs and associated fiscal impacts (savings) would grow, per 100 women and children served in the comprehensive program.

Table 2: Comprehensive Program Costs per 100 Mother/Child Pairs, Compared with Associated Fiscal Impacts (Savings) in Medical, Juvenile and Criminal Justice, Public Assistance, Special Education, and Dependency Systems

	Overall Potential Impact for 100 Mother-Child Pairs	State Share Potential Impact for 100 Mother-Child Pairs
Fiscal Impacts (Savings) while program child is under 6 years of age	\$ 826,858	\$ 330,611
Fiscal Impacts (Savings) while program child is between 6 and 19 years of age	\$ 5,431,796	\$ 3,170,759
Total Fiscal Impacts (Savings) through program child's 19 <sup>th</sup> Birthday	\$ 6,258,654	\$ 3,501,370
New Program Costs, delivered while program child is under 3 years of age)	(\$ 3,427,000)	(\$ 2,104,000)
<b>NET SAVINGS</b>	<b>\$2,831,700</b>	<b>\$1,397,370</b>

Given the estimated savings outlined in the fiscal impacts, and the additional areas of savings discussed above, why not implement this comprehensive program? **Because, if the state fully implemented the comprehensive program for all 2,600 women, the estimated annual program cost would be almost \$30.6 million dollars (\$14.4 million from the state general fund).** (See the spreadsheet on page 52 for details). The savings would also be considerable, of course, but they would be delayed.

This analysis led us to seek options for reducing program expenditures without sacrificing outcomes.

### **B. Pilot studies could teach us how to scale down program costs somewhat**

A number of questions about this comprehensive program cannot be answered without some program experience. They include the following:

- What sorts of chemical dependency treatment would these women need clinically and what sorts of treatment would they accept? Particularly, how many of these women would need and accept residential treatment, and how much would they need?
- If these women get enhanced substance abuse treatment earlier in their child's life, could the case management costs be reduced because less intensive case management will be needed than has been assumed in this design?
- If chemical dependency treatment options for pregnant and parenting women were not increased at all, but targeted intensive case management was provided, what sorts of program outcomes would occur?
- Would program outcomes be as expected?

Three pilot programs, implemented simultaneously in different areas of Washington state, and coupled with intense program evaluation and monitoring activities, could answer many of these questions and permit some program fine-tuning.

The three pilot programs defined below test the impact of various components and intensities of program services. Each program would enroll and serve a full complement of 100 women and children for two and a half years, and then stop enrolling new women and spend the next three years serving the women already enrolled. Continued monitoring of services and outcomes would help us learn how much we gain in outcomes from each added component or intensity.

***Pilot 1: The No Expanded Residential Treatment Model:*** No expansion or enhancement of residential chemical dependency treatment programs. The pilot would include TICM for the full three years, expanded outpatient capacity, expanded transitional housing and transportation funds, and the child development activities. This pilot would cost \$8.7 million total funds (\$5.4 million state if a Medicaid waiver were obtained).

**Pilot 2: Expanded Residential Treatment, 3 month version:** This plan would add expanded and enhanced residential chemical dependency treatment for 38 percent of the target women pregnant and parenting women to the services in Pilot 1. The average length of stay in residential treatment would be 3 months. This pilot would cost \$ 9.7 million over six years (\$5.9 million in state dollars if a Medicaid waiver were obtained).

**Pilot 3: Expanded Residential Treatment, 5 month version:** This plan is the “full meal deal” as described in the report. It adds expanded and enhanced residential chemical dependency treatment for 38 percent of the pregnant and parenting women to the services. The average length of stay in residential treatment of 5 months. This pilot would cost almost \$10.4 million total (\$6.2 in state general fund dollars with a waiver).

***Choice of Pilot Sites and Comparison Communities***

As designed, these pilot programs would need to be implemented in some of the fifteen counties or county pairs that contained at least 50 substance abusing women and their infants in 1992. Only those counties could support TICM teams. Ninety percent of the 2,598 women and their children identified by the First Steps Database lived in those counties or county pairs.

Those counties or county combinations with at least 50 substance abusing mothers and children per year are listed below. Those with an asterisk all contain at least one existing pregnant/parenting woman’s residential treatment center. These counties vary a good deal in size and density. Judicious placement of pilots would allow these program combinations to be tested and compared in a variety of geographic settings.

King *	Spokane *	Chelan and Douglas
Pierce *	Clark and Cowlitz	Kitsap
Snohomish *	Whatcom	Benton and Franklin
Yakima *	Grays Harbor	

***Problems with Pilot Studies***

The pilots waits seven years to begin delivering services statewide which would work effectively and save money if begun today. Fine tuning could be done without a pilot, by properly monitoring the program as it is implemented. And the cost differentials evaluated by the pilot programs are not likely to change the fundamental political problem with this program. It would save money in government services, and improve the lives of both participants and community. However, most of those savings and improvements occur over the long run, while all the program costs are concentrated in the short run.

**C. Other Options for Scaling Down Costs**

There are other ways to scale down the cost of this program, discussed below. They are: (1) remove the housing and transportation subsidy; (2) reduce the program years covered to the child’s second birthday, and (3) limit enrollment in the program.

### ***1. Remove the Housing/Transportation Subsidy***

**Description:** This option simply removes the housing and transportation subsidy from the program, for women who are not living in transitional housing.

**Benefits:** This option saves \$4,016 per woman over three years of program operation. Those are all state funds, there was no identified federal match in this area.

**Problems:** Makes it more difficult to serve these women and children, particularly those who do not enter residential treatment or live in transitional housing. It removes one small incentive to treatment: assistance with housing and transportation (because that money was tied to participating, at least in outpatient treatment. Both these changes may reduce program outcomes by discouraging participation.

### ***2. Reduce the program years covered to the child's second birthday.***

**Description:** This approach would deliver the same services, but only until the target child is two years of age.

**Benefits:** Reduces program costs. We did not create a budget for this option, because it seemed too risky. It could reduce the program outcomes dramatically.

**Problems:** Probably also reduces program outcomes to a considerable degree, for two reasons: some women will not complete chemical dependency treatment, and most women who use residential treatment and then live in transitional housing will not be working with the TICM team for very long when this program ends. These women would be those who were more severely addicted and whose previous home, extended family and peer groups did not support a non-using lifestyle. They are a very important group for the TICM to work with, to maintain a strong family plan and make sure they are linked with needed services and supports, once they are clean and sober.

### ***3. Limit Participation***

This approach simply caps the program. It is funded, but only to serve a limited number of women and children.

**Benefits:** Reduces costs without reducing service for those who are served. So presumably, the state would experience the full cost savings impacts of the program, for those who gain access to it.

**Problems:** Neither the literature review nor clinical experience suggest what sorts of women “should” be served in this comprehensive program, either because they would be more likely to succeed or have higher “need.” So we would need to simply limit access to the program based on first-come, first served. This approach would also require an 1115 waiver.

**Costs:** Doesn't change the unit costs, simply changes the number served. Cost depends on amount allocated.

#### **D. General Issues Around Scaling Down Costs**

Several issues need to be discussed around the scaling down options, particularly with regard to obtaining an 1115 Medicaid waiver.

- **Timing:** At best, a waiver will take a year. At worst, it will take two or even three years. And implementation cannot begin until that waiver is approved.
- **Need for a Medicaid match for full implementation:** To fully implement the program, Medicaid matching is essential. For full implementation, a waiver should be relatively easy to obtain (although still required, because the TICM could not be funded easily in the more rural counties, and that violates the “statewidedness” rule for Medicaid funding).
- **Added cost and uncertainty with a waiver:** Designing around Medicaid match adds some state staff costs which loom large in relation to benefits for small pilot programs. It is also difficult to count on obtaining a commitment from federal agencies, even in principle, to a six year program budget.
- **More federal involvement:** A waiver includes a good deal of federal involvement, which adds to the administrative overhead for DSHS.
- **Added design constraints:** Medicaid rules remove some flexibility. For example, Medicaid does not pay for “advocacy” or “family counseling” services. So a partial version of those services is built into the staffing levels, both with the treatment centers and the TICM team. This approach may cost more in total program dollars, but it costs less in state dollars.

**Table 3: Average Cost Per Woman of the 3-Year Comprehensive Plan**

	Total Program Costs		Services Already Provided		Net New Costs	
	Total	State	Total	State	Total	State
<b>Intensive Case Management</b>						
<ul style="list-style-type: none"> <li>&gt; Avg serv lngth 36 mnth, 20% exit yrs 2 &amp; 3.</li> <li>&gt; State contracts with provider fund a staff-model rather than a fee-for-service model.</li> <li>&gt; Statewide TICM Medicaid-eligible w/ waiver</li> <li>&gt; Service already provided 5% of yr 1 &amp; 2 cst.</li> </ul>						
	\$ 15,000	\$ 7,233	\$ (500)	\$ (241)	\$ 14,500	\$ 6,992
<b>Residential Treatment</b>						
<ul style="list-style-type: none"> <li>&gt; Service already provided to 43% women @ 40% cost.</li> <li>&gt;38%TX women use 5 mnths residential TX.</li> <li>&gt;Less than 16 beds facility=Medicaid match. Comp: [\$119*(30.42 day*5 mnth)*38%]</li> <li>&gt;50% TX women use 18 mnth trans'l housing</li> <li>&gt;State only. Comp:\$22 * (30.42 days*18 mnth)* 50%</li> </ul>						
	\$ 6,878	\$ 3,317	\$ (1,183)	\$ (571)	\$ 5,695	\$ 2,746
	\$ 6,023	\$ 6,023	\$ (1,036)	\$ (1,036)	\$ 4,987	\$ 4,987
<b>Outpatient Treatment</b>						
<ul style="list-style-type: none"> <li>&gt;1 year for all women in TX (except res TX).</li> <li>&gt;Services are eligible for Medicaid match.</li> <li>&gt; Service already provided, 43% women @ 40% cost. Comp'n: [\$250 * (12 mnths - (1.9 for av'rge r</li> </ul>						
	\$ 2,500	\$ 1,206	\$ (430)	\$ (207)	\$ 2,070	\$ 999
<b>Child Development/Child Care</b>						
<ul style="list-style-type: none"> <li>&gt;Each woman has 1.5 children with her in TX</li> <li>&gt;Use therapeutic CC rate for res TX women per day for women not in transitional housing (called Regular here).</li> <li>&gt;Use statewide average cost \$325 or \$15 per day for women not in residential or transitional.</li> <li>&gt;Therapeutic child care gets Medicaid match. activities are part of TANF plan under Workfirst, funded 90%.</li> <li>&gt; Services already provided are 43% of women @ 40% of cost in residential treatment.</li> <li>&gt; Services already provided are full cost for regular and developmental child care.</li> <li>Computations:</li> <li>Ther (\$46*(30.42 day*5 mnth)*1.5 kids)*38%</li> <li>Reg (\$15*(21.67 day*18 mnth)*1.5 kids)*50%</li> <li>Dev (\$15*(21.67 day*25.1 mnth)*1.5 kids</li> </ul>						
	\$ 2,841	\$ 1,370	\$ (489)	\$ (236)	\$ 2,352	\$ 1,134
	\$ 4,388	\$ 439	\$ (4,388)	\$ (439)	\$ -	\$ -
	\$ 7,955	\$ 796	\$ (7,955)	\$ (796)	\$ -	\$ -
<b>Vocational Services</b>						
<ul style="list-style-type: none"> <li>&gt;65% women use 6 weeks, \$1,000/session.</li> <li>&gt;Services matched under Voc Rehab.</li> </ul>						
	\$ 650	\$ 163	\$ -	\$ -	\$ 650	\$ 163
<b>Transportation &amp; Safe &amp; Sober Housing</b>						
<ul style="list-style-type: none"> <li>&gt; \$200 per mnth per woman not in res TX or transit housing AND who comply with TX plan.</li> <li>&gt; 80% women in TICM comply with TX plan. Comp: [\$200*(25.1 mnt*80% participation)]</li> </ul>						
	\$ 4,016	\$ 4,016	\$ -	\$ -	\$ 4,016	\$ 4,016
<b>TOTAL AVERAGE COST PER WOMAN</b>	<b>\$ 50,251</b>	<b>\$ 24,563</b>	<b>\$ (15,981)</b>	<b>\$ (3,526)</b>	<b>\$ 34,270</b>	<b>\$ 21,037</b>

WORKSHEET TO ESTIMATE THE STATEWIDE COST FOR ALL WOMEN WHO NEED SERVICES  
 COSTS ASSUME STATEWIDE IMPLEMENTATION AT THE END OF YEAR 1

NOTE: This estimate does not factor program phase-in. All treatment costs assume 70% participation factor.

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	Unit of Cost		NEW COST PER UNIT		ANNUAL NEW COST	
	Unit	Measure	Total	GF-State	Total	GF-State
<u>Intensive Case Management</u>						
> 45 TICM teams statewide in more urban counties	45	Teams	\$ 500,000	\$ 241,100	\$ 22,500,000	\$ 10,849,500
> 260 Woman not in urban counties per year for 3 years with 70% participation	546	Women	\$ 5,000	\$ 2,411	\$ 2,730,000	\$ 1,316,406
<u>Residential Treatment</u>						
> 43% of women currently not in services with 38% of those using 5 months residential treatment	297	Women	\$ 18,100	\$ 8,728	\$ 5,375,700	\$ 2,592,216
> 57% of women currnently in services receiving only 40% of level needed	394	Women	\$ 10,860	\$ 5,237	\$ 4,278,840	\$ 2,063,378
<u>Transitional Housing</u>						
> 43% of women currently not in services with 50% of those using 18 months of transitional housing	391	Women	\$ 2,376	\$ 2,376	\$ 929,016	\$ 929,016
> 57% of women currnently in services receiving only 40% of level needed	519	Women	\$ 1,426	\$ 1,426	\$ 740,094	\$ 740,094
<u>Outpatient Treatment</u>						
> 43% of women currently not in services	783	Women	\$ 2,500	\$ 1,206	\$ 1,957,500	\$ 944,298
> 57% of women current in services receiving only 40% of level needed	1,037	Women	\$ 1,500	\$ 723	\$ 1,555,500	\$ 749,751
<u>Child Development/Child Care</u>						
> 43% of women needing residential treatment not getting therapeutic child care	446	Children	\$ 6,997	\$ 3,374	\$ 3,120,662	\$ 1,504,804
> 57% of women in residential treatment getting only 40% of therapeutic child care needed	591	Children	\$ 4,198	\$ 2,024	\$ 2,481,018	\$ 1,196,184
> 43% of women needing transitional housing not getting regular child care	587	Children	\$ 1,923	\$ 192	\$ 1,128,801	\$ 112,704
> 57% of women in transitional housing getting only 40% of child care needed	779	Children	\$ 1,154	\$ 115	\$ 898,966	\$ 89,585
> Women not in residential treatment or transitional housing need child development services	2,129	Children	\$ 2,308	\$ 231	\$ 4,913,732	\$ 491,799
<u>Vocational Services</u>						
> 65% of woman use 6 weeks @ \$1,000 per session	1,183	Women	\$ 1,000	\$ 1,000	\$ 1,183,000	\$ 1,183,000
<u>Transportation &amp; Safe &amp; Sober Housing</u>						
> 80% of women in case management	1,456	Women	\$ 1,120	\$ 1,120	\$ 1,630,720	\$ 1,630,720
<u>Program Administration &amp; Evaluation</u>						
> 1.5 FTEs for MAA and 1.5 FTEs for DASA for contract management, program development, waivers & technical assistance					\$ 184,000	\$ 92,000
> Research & Evaluation					\$ 240,000	\$ 120,000
ESTIMATED ANNUAL COST STATEWIDE FOR FULL IMPLEMENTATION					\$ 30,617,549	\$ 14,439,549

WORKSHEET TO ESTIMATE THE COSTS TO IMPLEMENT ONE PILOT SITE FOR RCW 13.34.803 PLAN  
 PILOT MODEL IS BASED ON 100 WOMEN & THEIR CHILDREN WITH AN AVERAGE LENGTH OF STAY AS 36 MONTHS  
 PILOT # 1 - ASSUMES NO NEW RESIDENTIAL TREATMENT OR FOR WOMEN COMING INTO THE PROGRAM  
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Monthly Cost	<i>Biennium 99-01</i>		<i>Biennium 01-03</i>				<i>Biennium 03-05</i>			
	Year 1 - FY01		Year 2 - FY02		Year 3 - FY03		Year 4 - FY04		Year 5 - FY05	
	Total \$s	Gf-State	Total \$s	Gf-State	Total \$s	Gf-State	Total \$s	Gf-State	Total \$s	Gf-State
<u>Intensive Case Management</u>										
Assumption: Site based costs for a staffing model	\$ 500,000	\$ 241,100	\$ 500,000	\$ 241,100	\$ 500,000	\$ 241,100	\$ 397,000	\$ 191,433	\$ 345,000	\$ 166,359
<u>Residential PPW Treatment</u>	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
<u>Transitional Housing</u>										
Assumption: 50% of Women with 18 months @ \$22/Day	\$ 669	\$ 156,546	\$ 156,546	\$ 403,407	\$ 403,407	\$ 433,512	\$ 433,512	\$ 433,512	\$ 433,512	\$ 433,512
<u>Outpatient Treatment</u>										
Assumption: 100% of Women with 1 year of service except when in residential PPW treatment @ \$250/mo	\$ 250	\$ 78,000	\$ 37,612	\$ 143,750	\$ 69,316	\$ 141,250	\$ 68,111	\$ 144,000	\$ 69,437	\$ 144,000
<u>Child Development</u>										
Assumption: 1.5 Children per Woman										
Therapeutic CC in Residential PPW @ \$46/Day	\$ 1,399	\$ 209,850	\$ 101,190	\$ 253,919	\$ 122,440	\$ 253,919	\$ 122,440	\$ 251,820	\$ 121,428	\$ 251,820
Regular CC in Transitional Housing @ \$25/Day w/5 Day/W	\$ 325	\$ 114,075	\$ 11,408	\$ 293,963	\$ 29,396	\$ 315,900	\$ 31,590	\$ 315,900	\$ 152,327	\$ 315,900
Child Development in all non-residential settings @ \$15/Day - 5 Day/Week	\$ 325	\$ 141,375	\$ 14,138	\$ 436,800	\$ 43,680	\$ 760,013	\$ 76,001	\$ 889,200	\$ 88,920	\$ 807,300
<u>Other Costs</u>										
Vocational Services										
\$1,000/Woman for 65% of Woman	\$ 33,800	\$ 10,140	\$ 87,750	\$ 26,325	\$ 126,100	\$ 37,830	\$ 140,400	\$ 42,120	\$ 131,300	\$ 39,390
Transportation & Safe and Sober Housing										
\$200/Month for Women in TICM & Treatment	\$ 46,400	\$ 46,400	\$ 143,360	\$ 143,360	\$ 249,440	\$ 249,440	\$ 291,840	\$ 291,840	\$ 278,560	\$ 278,560
Program Management - 1.5 FTEs/Year	\$ 92,000	\$ 46,000	\$ 92,000	\$ 46,000	\$ 92,000	\$ 46,000	\$ 92,000	\$ 46,000	\$ 92,000	\$ 46,000
Program Evaluation - Year 1 here includes start-up	\$ 360,000	\$ 180,000	\$ 240,000	\$ 120,000	\$ 240,000	\$ 120,000	\$ 240,000	\$ 120,000	\$ 240,000	\$ 120,000
Staff Related Costs	\$ 29,000	\$ 14,500	\$ 9,000	\$ 4,500	\$ 9,000	\$ 4,500	\$ 9,000	\$ 4,500	\$ 9,000	\$ 4,500
Provider Start-Up	\$ 50,000	\$ 50,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Estimated Cost of Pilot	\$ 1,811,046	\$ 909,034	\$ 2,603,949	\$ 1,249,524	\$ 3,121,134	\$ 1,430,524	\$ 3,204,672	\$ 1,561,517	\$ 3,048,392	\$ 1,512,243
<u>Cost Offsets</u>										
Case Management 5% - Yr 1 & 2	\$ 25,000	\$ 12,055	\$ 25,000	\$ 12,055	\$ 25,000	\$ 12,055	\$ 19,850	\$ 9,572	\$ 17,250	\$ 8,318
Residential Treatment - 43% Women @ 40%	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Transitional Housing - 43% Women @ 55%	\$ 37,023	\$ 37,023	\$ 95,406	\$ 95,406	\$ 102,526	\$ 102,526	\$ 102,526	\$ 102,526	\$ 102,526	\$ 102,526
Outpatient - 43% Women @ 40%	\$ 13,416	\$ 6,469	\$ 24,725	\$ 11,922	\$ 24,295	\$ 11,715	\$ 24,768	\$ 11,943	\$ 24,768	\$ 11,943
Transitional CC - all covered	\$ 114,075	\$ 11,408	\$ 293,963	\$ 29,396	\$ 315,900	\$ 31,590	\$ 315,900	\$ 152,327	\$ 315,900	\$ 152,327
Child Development - all covered	\$ 141,375	\$ 14,138	\$ 436,800	\$ 43,680	\$ 760,013	\$ 76,001	\$ 889,200	\$ 88,920	\$ 807,300	\$ 80,730
Estimated Net New Costs	\$ 1,480,157	\$ 827,941	\$ 1,728,055	\$ 1,057,065	\$ 1,893,400	\$ 1,196,637	\$ 1,852,428	\$ 1,196,229	\$ 1,780,648	\$ 1,156,399
Total 5-Year Cost									\$ 8,734,688	\$ 5,434,271

WORKSHEET TO ESTIMATE THE COSTS TO IMPLEMENT ONE PILOT SITE FOR RCW 13.34.803 PLAN  
 PILOT MODEL IS BASED ON 100 WOMEN & THEIR CHILDREN WITH AN AVERAGE LENGTH OF STAY AS 36 MONTHS  
 PILOT #2 - ASSUMES NEW RESIDENTIAL TREATMENT WITH AN AVERAGE 3 MONTHS STAY FOR 38% OF WOMEN COMING INTO THE PROGRAM  
 Date: 02/04/2000 16:18

Monthly Cost	<i>Biennium 99-01</i>		<i>Biennium 01-03</i>				<i>Biennium 03-05</i>			
	Year 1 - FY01		Year 2 - FY02		Year 3 - FY03		Year 4 - FY04		Year 5 - FY05	
	Total \$s	Gf-State	Total \$s	Gf-State	Total \$s	Gf-State	Total \$s	Gf-State	Total \$s	Gf-State
<b>Intensive Case Management</b>										
Assumption: Site based costs for a staffing model	\$ 500,000	\$ 241,100	\$ 500,000	\$ 241,100	\$ 500,000	\$ 241,100	\$ 397,000	\$ 191,433	\$ 345,000	\$ 166,359
<b>Residential PPW Treatment</b>										
Assumption: 38% of Women with 3 months @ \$119/Day	\$ 3,620	\$ 217,200	\$ 104,734	\$ 262,812	\$ 126,728	\$ 262,812	\$ 126,728	\$ 260,640	\$ 125,681	\$ 212,856
<b>Transitional Housing</b>										
Assumption: 50% of Women with 18 months @ \$22/Day	\$ 669	\$ 156,546	\$ 156,546	\$ 403,407	\$ 403,407	\$ 433,512	\$ 433,512	\$ 433,512	\$ 433,512	\$ 433,512
<b>Outpatient Treatment</b>										
Assumption: 100% of Women with 1 year of service except when in residential PPW treatment @ \$250/mo	\$ 250	\$ 78,000	\$ 37,612	\$ 143,750	\$ 69,316	\$ 141,250	\$ 68,111	\$ 144,000	\$ 69,437	\$ 144,000
<b>Child Development</b>										
Assumption: 1.5 Children per Woman										
Therapeutic CC in Residential PPW @ \$46/Day	\$ 1,399	\$ 209,850	\$ 101,190	\$ 253,919	\$ 122,440	\$ 253,919	\$ 122,440	\$ 251,820	\$ 121,428	\$ 251,820
Regular CC in Transitional Housing @ \$25/Day w/5 Day/wk	\$ 325	\$ 114,075	\$ 11,408	\$ 293,963	\$ 29,396	\$ 315,900	\$ 31,590	\$ 315,900	\$ 152,327	\$ 315,900
Child Development in all non-residential settings @ \$15/Day - 5 Day/Week	\$ 325	\$ 141,375	\$ 14,138	\$ 436,800	\$ 43,680	\$ 760,013	\$ 76,001	\$ 889,200	\$ 88,920	\$ 807,300
<b>Other Costs</b>										
Vocational Services										
\$1,000/Woman for 65% of Woman	\$ 33,800	\$ 10,140	\$ 87,750	\$ 26,325	\$ 126,100	\$ 37,830	\$ 140,400	\$ 42,120	\$ 131,300	\$ 39,390
Transportation & Safe and Sober Housing										
\$200/Month for Women in TICM & Treatment	\$ 46,400	\$ 46,400	\$ 143,360	\$ 143,360	\$ 249,440	\$ 249,440	\$ 291,840	\$ 291,840	\$ 278,560	\$ 278,560
Program Management - 1.5 FTEs/Year	\$ 92,000	\$ 46,000	\$ 92,000	\$ 46,000	\$ 92,000	\$ 46,000	\$ 92,000	\$ 46,000	\$ 92,000	\$ 46,000
Program Evaluation - Year 1 here includes start-up	\$ 360,000	\$ 180,000	\$ 240,000	\$ 120,000	\$ 240,000	\$ 120,000	\$ 240,000	\$ 120,000	\$ 240,000	\$ 120,000
Staff Related Costs	\$ 29,000	\$ 14,500	\$ 9,000	\$ 4,500	\$ 9,000	\$ 4,500	\$ 9,000	\$ 4,500	\$ 9,000	\$ 4,500
Provider Start-Up	\$ 50,000	\$ 50,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
<b>Estimated Cost of Pilot</b>	<b>\$ 2,028,246</b>	<b>\$ 1,013,768</b>	<b>\$ 2,866,761</b>	<b>\$ 1,376,252</b>	<b>\$ 3,383,946</b>	<b>\$ 1,557,252</b>	<b>\$ 3,465,312</b>	<b>\$ 1,687,198</b>	<b>\$ 3,261,248</b>	<b>\$ 1,614,882</b>
<b>Cost Offsets</b>										
Case Management 5% - Yr 1 & 2	\$ 25,000	\$ 12,055	\$ 25,000	\$ 12,055	\$ 25,000	\$ 12,055	\$ 19,850	\$ 9,572	\$ 17,250	\$ 8,318
Residential Treatment - 43% Women @ 40%	\$ 37,358	\$ 18,014	\$ 45,204	\$ 21,797	\$ 45,204	\$ 21,797	\$ 44,830	\$ 21,617	\$ 36,611	\$ 17,654
Transitional Housing - 43% Women @ 55%	\$ 37,023	\$ 37,023	\$ 95,406	\$ 95,406	\$ 102,526	\$ 102,526	\$ 102,526	\$ 102,526	\$ 102,526	\$ 102,526
Outpatient - 43% Women @ 40%	\$ 13,416	\$ 6,469	\$ 24,725	\$ 11,922	\$ 24,295	\$ 11,715	\$ 24,768	\$ 11,943	\$ 24,768	\$ 11,943
Transitional CC - all covered	\$ 114,075	\$ 11,408	\$ 293,963	\$ 29,396	\$ 315,900	\$ 31,590	\$ 315,900	\$ 152,327	\$ 315,900	\$ 152,327
Child Development - all covered	\$ 141,375	\$ 14,138	\$ 436,800	\$ 43,680	\$ 760,013	\$ 76,001	\$ 889,200	\$ 88,920	\$ 807,300	\$ 80,730
<b>Estimated Net New Costs</b>	<b>\$ 1,659,999</b>	<b>\$ 914,661</b>	<b>\$ 1,945,663</b>	<b>\$ 1,161,996</b>	<b>\$ 2,111,008</b>	<b>\$ 1,301,568</b>	<b>\$ 2,068,238</b>	<b>\$ 1,300,293</b>	<b>\$ 1,956,893</b>	<b>\$ 1,241,384</b>
<b>Total 5-Year Cost</b>									<b>\$ 9,741,801</b>	<b>\$ 5,919,902</b>

WORKSHEET TO ESTIMATE THE COSTS TO IMPLEMENT ONE PILOT SITE FOR RCW 13.34.803 PLAN  
 PILOT MODEL IS BASED ON 100 WOMEN & THEIR CHILDREN WITH AN AVERAGE LENGTH OF STAY AS 36 MONTHS  
 PILOT #3 – ASSUMES NEW RESIDENTIAL TREATMENT WITH AN AVERAGE 5 MONTHS STAY FOR 38% OF WOMEN COMING INTO THE PROGRAM  
 Date: 02/04/2000 16:18

Monthly Cost	<i>Biennium 99-01</i>		<i>Biennium 01-03</i>				<i>Biennium 03-05</i>				
	Year 1 – FY01		Year 2 – FY02		Year 3 – FY03		Year 4 – FY04		Year 5 – FY05		
	Total \$s	Gf-State	Total \$s	Gf-State	Total \$s	Gf-State	Total \$s	Gf-State	Total \$s	Gf-State	
<b>Intensive Case Management</b>											
Assumption: Site based costs for a staffing model	\$ 500,000	\$ 241,100	\$ 500,000	\$ 241,100	\$ 500,000	\$ 241,100	\$ 397,000	\$ 191,433	\$ 345,000	\$ 166,359	
<b>Residential PPW Treatment</b>											
Assumption: 38% of Women with 5 months @ \$119/Day	\$ 3,620	\$ 362,000	\$ 174,556	\$ 438,020	\$ 211,213	\$ 438,020	\$ 211,213	\$ 434,400	\$ 209,468	\$ 354,760	\$ 171,065
<b>Transitional Housing</b>											
Assumption: 50% of Women with 18 months @ \$22/Day	\$ 669	\$ 156,546	\$ 156,546	\$ 403,407	\$ 403,407	\$ 433,512	\$ 433,512	\$ 433,512	\$ 433,512	\$ 433,512	\$ 433,512
<b>Outpatient Treatment</b>											
Assumption: 100% of Women with 1 year of service except when in residential PPW treatment @ \$250/mo	\$ 250	\$ 78,000	\$ 37,612	\$ 143,750	\$ 69,316	\$ 141,250	\$ 68,111	\$ 144,000	\$ 69,437	\$ 123,000	\$ 59,311
<b>Child Development</b>											
Assumption: 1.5 Children per Woman											
Therapeutic CC in Residential PPW @ \$46/Day	\$ 1,399	\$ 209,850	\$ 101,190	\$ 253,919	\$ 122,440	\$ 253,919	\$ 122,440	\$ 251,820	\$ 121,428	\$ 251,820	\$ 121,428
Regular CC in Transitional Housing @ \$25/Day w/5 Day/1	\$ 325	\$ 114,075	\$ 11,408	\$ 293,963	\$ 29,396	\$ 315,900	\$ 31,590	\$ 315,900	\$ 152,327	\$ 315,900	\$ 152,327
Child Development in all non-residential settings @ \$15/Day – 5 Day/Week	\$ 325	\$ 141,375	\$ 14,138	\$ 436,800	\$ 43,680	\$ 760,013	\$ 76,001	\$ 889,200	\$ 88,920	\$ 807,300	\$ 80,730
<b>Other Costs</b>											
Vocational Services											
\$1,000/Woman for 65% of Woman	\$ 33,800	\$ 10,140	\$ 87,750	\$ 26,325	\$ 126,100	\$ 37,830	\$ 140,400	\$ 42,120	\$ 131,300	\$ 39,390	
Transportation & Safe and Sober Housing											
\$200/Month for Women in TICM & Treatment	\$ 46,400	\$ 46,400	\$ 143,360	\$ 143,360	\$ 249,440	\$ 249,440	\$ 291,840	\$ 291,840	\$ 278,560	\$ 278,560	
Program Management – 1.5 FTEs/Year	\$ 92,000	\$ 46,000	\$ 92,000	\$ 46,000	\$ 92,000	\$ 46,000	\$ 92,000	\$ 46,000	\$ 92,000	\$ 46,000	
Program Evaluation – Year 1 here includes start-up	\$ 360,000	\$ 180,000	\$ 240,000	\$ 120,000	\$ 240,000	\$ 120,000	\$ 240,000	\$ 120,000	\$ 240,000	\$ 120,000	
Staff Related Costs	\$ 29,000	\$ 14,500	\$ 9,000	\$ 4,500	\$ 9,000	\$ 4,500	\$ 9,000	\$ 4,500	\$ 9,000	\$ 4,500	
Provider Start-Up	\$ 50,000	\$ 50,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
Estimated Cost of Pilot	\$ 2,173,046	\$ 1,083,590	\$ 3,041,969	\$ 1,460,737	\$ 3,559,154	\$ 1,641,737	\$ 3,639,072	\$ 1,770,985	\$ 3,382,152	\$ 1,673,182	
<b>Cost Offsets</b>											
Case Management 5% – Yr 1 & 2	\$ 25,000	\$ 12,055	\$ 25,000	\$ 12,055	\$ 25,000	\$ 12,055	\$ 19,850	\$ 9,572	\$ 17,250	\$ 8,318	
Residential Treatment – 43% Women @ 40%	\$ 62,264	\$ 30,024	\$ 75,339	\$ 36,329	\$ 75,339	\$ 36,329	\$ 74,717	\$ 36,028	\$ 61,019	\$ 29,423	
Transitional Housing – 43% Women @ 55%	\$ 37,023	\$ 37,023	\$ 95,406	\$ 95,406	\$ 102,526	\$ 102,526	\$ 102,526	\$ 102,526	\$ 102,526	\$ 102,526	
Outpatient – 43% Women @ 40%	\$ 13,416	\$ 6,469	\$ 24,725	\$ 11,922	\$ 24,295	\$ 11,715	\$ 24,768	\$ 11,943	\$ 21,156	\$ 10,201	
Transitional CC – all covered	\$ 114,075	\$ 11,408	\$ 293,963	\$ 29,396	\$ 315,900	\$ 31,590	\$ 315,900	\$ 152,327	\$ 315,900	\$ 152,327	
Child Development – all covered	\$ 141,375	\$ 14,138	\$ 436,800	\$ 43,680	\$ 760,013	\$ 76,001	\$ 889,200	\$ 88,920	\$ 807,300	\$ 80,730	
Estimated Net New Costs	\$ 1,779,893	\$ 972,473	\$ 2,090,736	\$ 1,231,949	\$ 2,256,081	\$ 1,371,521	\$ 2,212,111	\$ 1,369,669	\$ 2,057,001	\$ 1,289,657	
									Total 5-Year Cost	\$ 10,395,822	\$ 6,235,269

**E. Pilot Program Implementation Timeline**

The implementation plan proposed here assumes that the Legislature and Governor choose to initiate at least one of the pilot projects discussed in this comprehensive plan. Each pilot project would enroll women for three years on a rolling basis, and then stop enrollment and wind down for the next three years, serving those women who were enrolled during the last enrollment year.

Year 1	<b>Planning.</b>	<p>State staff would: write the HCFA Medicaid waiver if needed, design the data collection instruments and evaluation plan and submit that to HCFA and to the Human Research Review Board, define the policies and RFPs around the new program services, write RFPs and hold the bidders' conferences, review the proposals, and award contracts.</p> <p>Local providers would select residential treatment sites, build and remodel facilities, hire and train staff.</p>
Years 2, 3 and first half of Year 4.	<b>Full Enrollment and Full Services</b>	<p>State staff would monitor contracts using data on services provided. They would reassess staffing and timing assumptions built into the model, based on actual experience.</p> <p>Local providers would keep adding women and children as people drop out, finish the program or leave. All enrolled women and children would get all needed services.</p>
Second half of Year 4 through the first half of Year 7.	<b>No New Enrollment, Full Services</b>	<p>State staff would continue to monitor contracts and assess staffing and timing assumptions as state funding for these new programs phases down.</p> <p>Local providers would stop enrolling new program participants, but would continue to serve those who were already enrolled.</p>
Last half of Year 7	<b>No Enrollment, No Services</b>	<p>No more local providers.</p> <p>Monitoring and evaluation would be ongoing, and the project timeline would continue for an extra six months after most services were completed, to allow for a final evaluation report.</p>

Response to RCW 13.34.803

Major Program Activities	fy2000				fy2001				fy2002				fy2003				fy2004				fy2005				fy2006							
	year 1				year 2				year 3				year 4				year 5				year 6				year 7							
quarters	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
<b>State Level Program Coordination</b>																																
First Steps Work Group Meeting	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
<b>TICM-State Level</b>																																
Develop & submit a HCFA demonstration waiver																																
Write work description, policies and an RFP																																
With evaluation staff, design data collection instruments for monitoring program outcomes.																																
Implement and Monitor contracts																																
Modify TICM model as needed																																
<b>TICM-Provider Level</b>																																
Respond to proposal																																
Hire & Train Staff																																
Develop working agreements with collaborating partners.																																
Enroll Clients in comprehensive plan																																
Serve clients; collect and send in data																																
<b>Residential Treatment-State Level</b>																																
Develop a site analysis																																
Write center staffing plan, policies and an RFP																																
Select contractors																																
Assist contractors to develop facilities																																
Implement and Monitor contracts																																
<b>Residential Treatment-Provider Level</b>																																
Respond to proposal																																
Build or remodel facility																																
Hire & Train Staff																																
Working agreements with collaborating partners.																																
Serve clients; collect and send in data																																
<b>Housing &amp; Transportation RFP-State</b>																																
Prepare and Distribute RFP																																
Select contractors																																
Implement and Monitor contracts																																
<b>Housing &amp; Transportation RFP-Community</b>																																
Respond to RFP																																
Hire Staff, Purchase or Lease equipment or space.																																
Serve Clients, collect and send in data.																																
<b>Rural Flexibility RFP-State</b>																																
Prepare and Distribute RFP																																
Select contractors																																
Implement and Monitor contracts																																
<b>Rural Flexibility RFP-Community</b>																																
Respond to RFP																																
Hire Staff, Purchase or Lease equipment or space.																																
Serve Clients, collect and send in data.																																
<b>Evaluation (3.5 person team)</b>																																
Hire Staff (Director Year 1, others Year 2)																																
Prepare Eval Section for Waiver & HRRB Proposal																																
With programs, design data collection instruments																																
Develop project database. Update each year.																																
Preliminary Program Monitoring Report																																
Program Outcome Reports																																



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APPENDIX A  
CHARACTERISTICS AND OUTCOMES FOR  
MOTHERS AND CHILDREN

**Table 1**  
**CHARACTERISTICS OF DRUG ABUSING MOTHERS**  
**1992 BIRTHS TO WASHINGTON MEDICAID WOMEN**

<i>Mother-Based Measures</i>	IDENTIFIED SUBSTANCE ABUSERS (N= 2,598)									COMPARISON GROUPS				
	Identified During Prenatal Period				Diagnosis or Treatment Received Following Delivery					(No Identified Substance Abuse)				
	Diagnosis Only (N=507)		In Treatment (N=987)		Within 3 mos. (N=419)		3 to 12 mos. (N=282)		13 to 24 mos. (N=403)		Other Medicaid (N=27,988)		Non-Medicaid (N=47,996)	
<b>Race</b>														
White	353	(69.6%)	685	(69.4%)	276	(65.9%)	194	(68.8%)	292	(72.5%)	18,026	(64.4%)	41,097	(85.6%)
Hispanic	22	(4.3%)	27	(2.7%)	22	(5.3%)	16	(5.7%)	17	(4.2%)	5,230	(18.7%)	1,186	(2.5%)
African American	68	(13.4%)	154	(15.6%)	59	(14.1%)	24	(8.5%)	25	(6.2%)	1,472	(5.3%)	1,215	(2.5%)
Native American	40	(7.9%)	85	(8.6%)	37	(8.8%)	39	(13.8%)	48	(11.9%)	994	(3.6%)	400	(0.8%)
Asian	7	(1.4%)	4	(0.4%)	3	(0.7%)	1	(0.4%)	6	(1.5%)	1,575	(5.6%)	2,643	(5.5%)
Other or Unknown	17	(3.4%)	32	(3.2%)	22	(5.3%)	8	(2.8%)	15	(3.7%)	691	(2.5%)	1,455	(3.0%)
<b>Age (years)</b>														
12 - 17	40	(7.9%)	111	(11.2%)	24	(5.7%)	40	(14.2%)	55	(13.6%)	2,443	(8.7%)	436	(0.9%)
18 - 19	64	(12.6%)	96	(9.7%)	56	(13.4%)	35	(12.4%)	57	(14.1%)	3,919	(14.0%)	1,028	(2.1%)
20 - 24	192	(37.9%)	278	(28.2%)	125	(29.8%)	92	(32.6%)	142	(35.2%)	10,878	(38.9%)	8,566	(17.8%)
25 - 29	109	(21.5%)	257	(26.0%)	119	(28.4%)	70	(24.8%)	78	(19.4%)	6,079	(21.7%)	16,286	(33.9%)
30 - 34	71	(14.0%)	174	(17.6%)	74	(17.7%)	33	(11.7%)	51	(12.7%)	3,179	(11.4%)	14,466	(30.1%)
> 35	27	(5.3%)	70	(7.1%)	21	(5.0%)	12	(4.3%)	20	(5.0%)	1,465	(5.2%)	7,166	(14.9%)
Unknowr	4	(0.8%)	1	(0.1%)	-	(0.0%)	-	(0.0%)	-	(0.0%)	25	(0.1%)	48	(0.1%)
<b>Average Age (mean)</b>	<b>24.3</b>		<b>25.1</b>		<b>25.0</b>		<b>23.7</b>		<b>23.6</b>		<b>23.9</b>		<b>28.9</b>	
<b>Marital Status</b>														
Married	136	(26.8%)	228	(23.1%)	104	(24.8%)	61	(21.6%)	125	(31.0%)	14,055	(50.2%)	44,091	(91.9%)
Not Married	370	(73.0%)	754	(76.4%)	314	(74.9%)	220	(78.0%)	276	(68.5%)	13,870	(49.6%)	3,837	(8.0%)
Unknowr	1	(0.2%)	5	(0.5%)	1	(0.2%)	1	(0.4%)	2	(0.5%)	63	(0.2%)	68	(0.1%)
<b>Educational Attainment</b>														
Some/No Elementary	24	(4.7%)	61	(6.2%)	30	(7.2%)	12	(4.3%)	25	(6.2%)	2,457	(8.8%)	339	(0.7%)
Some High School	143	(28.2%)	309	(31.3%)	132	(31.5%)	100	(35.5%)	147	(36.5%)	6,352	(22.7%)	1,886	(3.9%)
High School Graduate	165	(32.5%)	289	(29.3%)	130	(31.0%)	79	(28.0%)	122	(30.3%)	9,400	(33.6%)	14,961	(31.2%)
Some College	48	(9.5%)	120	(12.2%)	37	(8.8%)	35	(12.4%)	38	(9.4%)	3,876	(13.8%)	12,796	(26.7%)
College Graduate	8	(1.6%)	17	(1.7%)	3	(0.7%)	1	(0.4%)	2	(0.5%)	915	(3.3%)	12,806	(26.7%)
Unknowr	119	(23.5%)	191	(19.4%)	87	(20.8%)	55	(19.5%)	69	(17.1%)	4,988	(17.8%)	5,208	(10.9%)
<b>Less than 12 yrs. education</b>	<b>167</b>	<b>(32.9%)</b>	<b>370</b>	<b>(37.5%)</b>	<b>162</b>	<b>(38.7%)</b>	<b>112</b>	<b>(39.7%)</b>	<b>172</b>	<b>(42.7%)</b>	<b>8,809</b>	<b>(31.5%)</b>	<b>2,225</b>	<b>(4.6%)</b>
<b>Mean No. Years Education</b>	<b>11.3</b>		<b>11.2</b>		<b>11.0</b>		<b>11.2</b>		<b>11.1</b>		<b>11.2</b>		<b>13.8</b>	
<b>No. Prior Children (Liveborn)</b>														
None	187	(36.9%)	337	(34.1%)	125	(29.8%)	99	(35.1%)	135	(33.5%)	11,755	(42.0%)	19,222	(40.0%)
One	139	(27.4%)	242	(24.5%)	118	(28.2%)	74	(26.2%)	118	(29.3%)	7,801	(27.9%)	17,029	(35.5%)
Two	93	(18.3%)	177	(17.9%)	94	(22.4%)	50	(17.7%)	83	(20.6%)	4,473	(16.0%)	7,303	(15.2%)
Three	58	(11.4%)	131	(13.3%)	34	(8.1%)	31	(11.0%)	37	(9.2%)	2,045	(7.3%)	2,485	(5.2%)
Four	22	(4.3%)	54	(5.5%)	28	(6.7%)	13	(4.6%)	15	(3.7%)	827	(3.0%)	813	(1.7%)
Five or More	6	(1.2%)	36	(3.6%)	15	(3.6%)	14	(5.0%)	12	(3.0%)	836	(3.0%)	575	(1.2%)
Unknowr	2	(0.4%)	10	(1.0%)	5	(1.2%)	1	(0.4%)	3	(0.7%)	251	(0.9%)	569	(1.2%)
<b>Mean No. Prior Children</b>	<b>1.2</b>	<b>R(0,7)</b>	<b>1.4</b>	<b>R(0,8)</b>	<b>1.5</b>	<b>R(0,7)</b>	<b>1.4</b>	<b>R(0,7)</b>	<b>1.3</b>	<b>R(0,9)</b>	<b>1.1</b>	<b>R(0,17)</b>	<b>1.1</b>	<b>R(0,21)</b>
<b>Smoking Status</b>														
Yes	313	(61.7%)	645	(65.3%)	266	(63.5%)	171	(60.6%)	233	(57.8%)	7,636	(27.3%)	5,803	(12.1%)
No	167	(32.9%)	303	(30.7%)	125	(29.8%)	104	(36.9%)	155	(38.5%)	19,441	(69.5%)	40,659	(84.7%)
Unknowr	27	(5.3%)	39	(4.0%)	28	(6.7%)	7	(2.5%)	15	(3.7%)	911	(3.3%)	1,534	(3.2%)

Table 2

**USE OF PRENATAL CARE SERVICES BY DRUG ABUSING MOTHERS  
1992 BIRTHS TO WASHINGTON MEDICAID WOMEN**

<i>Mother Based Measures</i>	IDENTIFIED SUBSTANCE ABUSERS (N= 2,598)						COMPARISON GROUPS			
	Identified During Prenatal Period		Diagnosis or Treatment Received Following Delivery			(No Identified Substance Abuse)				
	Diagnosis Only (N=507)	In Treatment (N=987)	Within 3 mos. (N=419)	3 to 12 mos. (N=282)	13 to 24 mos. (N=403)	Other Medicaid (N=27,988)		Non-Medicaid (N=47,996)		
<b>No. Prenatal Visits</b>										
None	18 (3.6%)	15 (1.5%)	26 (6.2%)	1 (0.4%)	4 (1.0%)	257 (0.9%)	167 (0.3%)			
1 to 4	58 (11.4%)	92 (9.3%)	70 (16.7%)	24 (8.5%)	30 (7.4%)	1,535 (5.5%)	484 (1.0%)			
5 to 9	115 (22.7%)	248 (25.1%)	103 (24.6%)	90 (31.9%)	112 (27.8%)	7,564 (27.0%)	6,688 (13.9%)			
10 to 14	194 (38.3%)	415 (42.0%)	126 (30.1%)	116 (41.1%)	174 (43.2%)	13,430 (48.0%)	29,645 (61.8%)			
15 to 20	46 (9.1%)	81 (8.2%)	28 (6.7%)	31 (11.0%)	30 (7.4%)	2,484 (8.9%)	6,597 (13.7%)			
More than 20	14 (2.8%)	32 (3.2%)	12 (2.9%)	2 (0.7%)	13 (3.2%)	595 (2.1%)	1,310 (2.7%)			
Unknown	62 (12.2%)	104 (10.5%)	54 (12.9%)	18 (6.4%)	40 (9.9%)	2,123 (7.6%)	3,105 (6.5%)			
<b>Fewer than 10 visits</b>	<b>191 (37.7%)</b>	<b>355 (36.0%)</b>	<b>199 (47.5%)</b>	<b>115 (40.8%)</b>	<b>146 (36.2%)</b>	<b>9,356 (33.4%)</b>	<b>7,339 (15.3%)</b>			
<b>Mean No. of Visits</b>	<b>9.7</b>	<b>10.2</b>	<b>8.7</b>	<b>9.8</b>	<b>10.1</b>	<b>10.4</b>	<b>12.0</b>			
<b>Trimester Prenatal Care Began</b>										
First Trimester	256 (50.5%)	570 (57.8%)	202 (48.2%)	173 (61.3%)	245 (60.8%)	17,495 (62.5%)	40,781 (85.0%)			
Second Trimester	144 (28.4%)	250 (25.3%)	98 (23.4%)	69 (24.5%)	101 (25.1%)	7,056 (25.2%)	4,314 (9.0%)			
Third Trimester	43 (8.5%)	76 (7.7%)	46 (11.0%)	23 (8.2%)	23 (5.7%)	1,673 (6.0%)	629 (1.3%)			
No Prenatal Care	18 (3.6%)	14 (1.4%)	24 (5.7%)	1 (0.4%)	4 (1.0%)	250 (0.9%)	162 (0.3%)			
Unknown	46 (9.1%)	77 (7.8%)	49 (11.7%)	16 (5.7%)	30 (7.4%)	1,514 (5.4%)	2,110 (4.4%)			
<b>Later or No Prenatal Care</b>	<b>61 (12.0%)</b>	<b>90 (9.1%)</b>	<b>70 (16.7%)</b>	<b>24 (8.5%)</b>	<b>27 (6.7%)</b>	<b>1,923 (6.9%)</b>	<b>791 (1.6%)</b>			
<b>Mean Mo. when PNC began</b>	<b>3.5</b>	<b>3.3</b>	<b>3.5</b>	<b>3.3</b>	<b>3.2</b>	<b>3.2</b>	<b>2.3</b>			
<b>Enhanced Maternity Care Services</b>										
Received MSS	355 (70.0%)	720 (72.9%)	237 (56.6%)	157 (55.7%)	243 (60.3%)	15,713 (56.1%)	- (0.0%)			
Received MCM	205 (40.4%)	563 (57.0%)	125 (29.8%)	93 (33.0%)	114 (28.3%)	5,098 (18.2%)	- (0.0%)			
<b>Medicaid Eligibility Status</b>										
Grant Recipients	366 (72.2%)	741 (75.1%)	300 (71.6%)	213 (75.5%)	281 (69.7%)	12,325 (44.0%)	- (0.0%)			
Medicaid Only	69 (13.6%)	137 (13.9%)	74 (17.7%)	40 (14.2%)	66 (16.4%)	6,576 (23.5%)	- (0.0%)			
First Steps Expansion	66 (13.0%)	90 (9.1%)	41 (9.8%)	26 (9.2%)	54 (13.4%)	8,883 (31.7%)	- (0.0%)			
Eligibility Missing	6 (1.2%)	19 (1.9%)	4 (1.0%)	3 (1.1%)	2 (0.5%)	204 (0.7%)	- (0.0%)			

Table 3

**BIRTH OUTCOMES FOR DRUG EXPOSED INFANTS  
1992 BIRTHS TO WASHINGTON MEDICAID WOMEN**

<i>Child-Based Outcomes</i>	BIRTHS TO IDENTIFIED SUBSTANCE ABUSERS (N= 2,634)					COMPARISON GROUPS (No Identified Substance Abuse)			
	Identified During Prenatal Period		Diagnosis or Treatment Received Following Delivery			Other Medicaid Births		Non-Medicaid Births	
	Diagnosis Only (N=514)	In Treatment (N=1,000)	Within 3 mos. (N=423)	3 to 12 mos. (N=286)	13 to 24 mos. (N=411)	(N=28,293)		(N=48,553)	
<b>Number of Infants</b>									
Born Dead (Fetal Deaths)	6 (1.2%)	13 (1.3%)	- (0.0%)	1 (0.3%)	3 (0.7%)	203 (0.7%)	221 (0.5%)		
Born Alive (Liveborn)	508 (98.8%)	987 (98.7%)	423 (100.0%)	285 (99.7%)	408 (99.3%)	28,090 (99.3%)	48,332		
Neonatal Deaths	5	5	3	4	4	119	133		
Post-Neonatal Deaths	3	9	7	4	3	128	82		
Still Alive at 1 Year	500	973	413	277	401	27,843	48,117		
<b>Infant Mortality Rate (per 1000)</b>	<b>16.0</b>	<b>14.4</b>	<b>24.2</b>	<b>28.9</b>	<b>17.5</b>	<b>8.9</b>	<b>4.5</b>		
<b>No. Infants This Birth (liveborn)</b>									
One (singleton)	494 (97.2%)	961 (97.4%)	415 (98.1%)	277 (97.2%)	392 (96.1%)	27,502 (97.9%)	47,254 (97.8%)		
Multiple Births (twins, etc.)	14 (2.8%)	26 (2.6%)	8 (1.9%)	8 (2.8%)	16 (3.9%)	588 (2.1%)	1,078 (2.2%)		
<b>Birthweight* (grams)</b>									
Very Low (<1500 g.)	6 (1.2%)	10 (1.0%)	10 (2.4%)	4 (1.4%)	2 (0.5%)	232 (0.8%)	263 (0.6%)		
Medium Low (1500-2499 g.)	60 (12.1%)	99 (10.3%)	64 (15.4%)	26 (9.4%)	28 (7.1%)	1,160 (4.2%)	1,359 (2.9%)		
Normal (2500+ g.)	427 (86.4%)	848 (88.2%)	338 (81.4%)	247 (89.2%)	361 (92.1%)	26,047 (94.7%)	45,559 (96.4%)		
Unknown	1 (0.2%)	4 (0.4%)	3 (0.7%)	- (0.0%)	1 (0.3%)	63 (0.2%)	6 (0.0%)		
<b>Total Low Birthweight</b>	<b>66 (13.4%)</b>	<b>109 (11.3%)</b>	<b>74 (17.8%)</b>	<b>30 (10.8%)</b>	<b>30 (7.7%)</b>	<b>1,392 (5.1%)</b>	<b>1,622 (3.4%)</b>		
<b>Mean Birthweight</b>	<b>3168</b>	<b>3207</b>	<b>3055</b>	<b>3233</b>	<b>3318</b>	<b>3396</b>	<b>3502</b>		
<b>Gestational Age*</b>									
Preterm Birth, < 28 weeks	7 (1.4%)	5 (0.5%)	7 (1.7%)	4 (1.4%)	- (0.0%)	117 (0.4%)	133 (0.3%)		
Preterm Birth, 28 to 36 weeks	56 (11.3%)	103 (10.7%)	53 (12.8%)	30 (10.8%)	39 (9.9%)	1,846 (6.7%)	2,418 (5.1%)		
Term/ Post-Term, > 36 weeks	428 (86.6%)	839 (87.3%)	349 (84.1%)	242 (87.4%)	347 (88.5%)	25,182 (91.6%)	44,117 (93.4%)		
Unknown	3 (0.6%)	14 (1.5%)	6 (1.4%)	1 (0.4%)	6 (1.5%)	357 (1.3%)	586 (1.2%)		
<b>Total Preterm</b>	<b>63 (12.8%)</b>	<b>108 (11.2%)</b>	<b>60 (14.5%)</b>	<b>34 (12.3%)</b>	<b>39 (9.9%)</b>	<b>1,963 (7.1%)</b>	<b>2,551 (5.4%)</b>		
<b>Mean Gestational Age</b>	<b>39.2 R(21,47)</b>	<b>39.4 R(21,47)</b>	<b>39.0 R(22,47)</b>	<b>39.3 R(20,46)</b>	<b>39.6 R(28,46)</b>	<b>39.8 R(17,47)</b>	<b>39.8 R(18,47)</b>		
<b>Small for Gestational Age*</b>									
Yes	28 (5.7%)	47 (4.9%)	35 (8.4%)	6 (2.2%)	9 (2.3%)	634 (2.3%)	644 (1.4%)		
No	463 (93.7%)	898 (93.4%)	373 (89.9%)	270 (97.5%)	376 (95.9%)	26,478 (96.3%)	45,986 (97.3%)		
Unknown	3 (0.6%)	16 (1.7%)	7 (1.7%)	1 (0.4%)	7 (1.8%)	390 (1.4%)	624 (1.3%)		

\* Singleton Liveborn Births used in calculations

Table 4

**FIVE YEAR OUTCOMES FOR DRUG EXPOSED CHILDREN  
1992 BIRTHS TO WASHINGTON MEDICAID WOMEN**

	BIRTHS TO IDENTIFIED SUBSTANCE ABUSERS (N= 2,634)						COMPARISON GROUPS				
	Identified During Prenatal Period		Diagnosis or Treatment Received Following Delivery			(No Identified Substance Abuse)					
	Diagnosis Only (N=514)	In Treatment (N=1,000)	Within 3 mos. (N=423)	3 to 12 mos. (N=286)	13 to 24 mos. (N=411)	Other Medicaid Births (N=28,293)		Non-Medicaid Births (N=48,533)			
<b>Child Based Outcomes</b>											
<b>Child Protective Services</b>											
<b>Accepted CPS Referrals</b>											
Birth to 1 year	149 (29.0%)	365 (36.5%)	217 (51.3%)	128 (44.8%)	99 (24.1%)	1,468 (5.2%)	417 (0.9%)				
1 to 2 years	71 (13.8%)	186 (18.6%)	70 (16.5%)	50 (17.5%)	121 (29.4%)	1,352 (4.8%)	392 (0.8%)				
2 to 3 years	74 (14.4%)	170 (17.0%)	53 (12.5%)	53 (18.5%)	85 (20.7%)	1,507 (5.3%)	460 (0.9%)				
3 to 4 years	65 (12.6%)	154 (15.4%)	52 (12.3%)	37 (12.9%)	74 (18.0%)	1,425 (5.0%)	508 (1.0%)				
4 to 5 years	58 (11.3%)	128 (12.8%)	56 (13.2%)	35 (12.2%)	70 (17.0%)	1,310 (4.6%)	462 (1.0%)				
<b>Five-year Referral Rate</b>	<b>250 (48.6%)</b>	<b>570 (57.0%)</b>	<b>269 (63.6%)</b>	<b>182 (63.6%)</b>	<b>241 (58.6%)</b>	<b>4,822 (17.0%)</b>	<b>1754 (3.6%)</b>				
<b>Total Number of Referrals (mean)</b>	<b>417 (0.8)</b>	<b>1003 (1.0)</b>	<b>448 (1.1)</b>	<b>303 (1.1)</b>	<b>449 (1.1)</b>	<b>7,062 (0.2)</b>	<b>2239 (0.1)</b>				
<b>Out of Home Placement</b>											
Birth to 1 year	54 (10.5%)	106 (10.6%)	75 (17.7%)	44 (15.4%)	25 (6.1%)	165 (0.6%)	45 (0.1%)				
1 to 2 years	17 (3.3%)	55 (5.5%)	17 (4.0%)	19 (6.6%)	46 (11.2%)	132 (0.5%)	41 (0.1%)				
2 to 3 years	20 (3.9%)	62 (6.2%)	17 (4.0%)	16 (5.6%)	23 (5.6%)	174 (0.6%)	45 (0.1%)				
3 to 4 years	17 (3.3%)	38 (3.8%)	10 (2.4%)	8 (2.8%)	20 (4.9%)	163 (0.6%)	43 (0.1%)				
4 to 5 years	8 (1.6%)	34 (3.4%)	11 (2.6%)	7 (2.4%)	19 (4.6%)	139 (0.5%)	30 (0.1%)				
<b>Five-year Placement Rate</b>	<b>112 (21.8%)</b>	<b>285 (28.5%)</b>	<b>128 (30.3%)</b>	<b>92 (32.2%)</b>	<b>124 (30.2%)</b>	<b>754 (2.7%)</b>	<b>201 (0.4%)</b>				
<b>Total Months in Foster Care</b>	<b>3,169</b>	<b>6,946</b>	<b>3,589</b>	<b>1,881</b>	<b>2,541</b>	<b>10,243</b>	<b>2,917</b>				
<b>Mean No. Months in Foster Care</b>	<b>6.2</b>	<b>6.9</b>	<b>8.5</b>	<b>6.6</b>	<b>6.2</b>	<b>0.4</b>	<b>0.1</b>				
<b>Birth to Three (Early Intervention Enrollment)*</b>											
Dec-93	24 (4.7%)	76 (7.6%)	30 (7.1%)	21 (7.3%)	22 (5.4%)	587 (2.1%)	431 (0.9%)				
May and Dec 1995	25 (4.9%)	66 (6.6%)	36 (8.5%)	27 (9.4%)	22 (5.4%)	697 (2.5%)	584 (1.2%)				
<b>Total between 1993-95</b>	<b>35 (6.8%)</b>	<b>100 (10.0%)</b>	<b>47 (11.1%)</b>	<b>33 (11.5%)</b>	<b>30 (7.3%)</b>	<b>919 (3.2%)</b>	<b>734 (1.5%)</b>				
<b>Duration of Medicaid Eligibility After Birth</b>											
Eligibility Unknowr	83	128	46	26	44	3,827					
Less than 1 year	38 (8.8%)	87 (10.0%)	57 (15.1%)	20 (7.7%)	20 (5.4%)	3,778 (15.4%)	- (0.0%)				
1 to 2 years	37 (8.6%)	71 (8.1%)	27 (7.2%)	18 (6.9%)	27 (7.4%)	3,327 (13.6%)	- (0.0%)				
2 to 3 years	50 (11.6%)	86 (9.9%)	56 (14.9%)	25 (9.6%)	30 (8.2%)	3,040 (12.4%)	- (0.0%)				
3 to 4 years	71 (16.5%)	148 (17.0%)	60 (15.9%)	38 (14.6%)	56 (15.3%)	3,578 (14.6%)	- (0.0%)				
4 to 5 years	235 (54.5%)	480 (55.0%)	177 (46.9%)	159 (61.2%)	234 (63.8%)	10,743 (43.9%)	- (0.0%)				
<b>Mean No. years</b>	<b>3.7</b>	<b>3.6</b>	<b>3.4</b>	<b>3.8</b>	<b>3.9</b>	<b>3.2</b>	<b>-</b>				
<b>Child Mortality Rate (1992 to 1996)**</b>											
<b>Child Death Rate</b>	<b>-</b>	<b>5</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>37</b>	<b>36</b>	<b>1.3</b>	<b>0.7</b>		

\*for children less than 3 years old with disabilities or delays

\*\*mortality rates are expressed in deaths per 1000 persons

Table 5

**FIVE YEAR OUTCOMES FOR DRUG ABUSING MOTHERS  
1992 BIRTHS TO WASHINGTON MEDICAID WOMEN**

<i>Mother-Based Outcomes</i>	IDENTIFIED SUBSTANCE ABUSERS (N= 2,598)						COMPARISON GROUPS (No Identified Substance Abuse)			
	Identified During Prenatal Period		Diagnosis or Treatment Received Following Delivery			Other Medicaid		Non-Medicaid		
	Diagnosis Only (N=507)	In Treatment (N=987)	Within 3 mos. (N=419)	3 to 12 mos. (N=282)	13 to 24 mos. (N=403)	(N=27,988)		(N=47,996)		
<b>Subsequent Births</b>										
1993	34 (6.7%)	81 (8.2%)	38 (9.1%)	29 (10.3%)	43 (10.7%)	1,994 (7.1%)	2,316 (4.8%)			
1994	67 (13.2%)	111 (11.2%)	61 (14.6%)	38 (13.5%)	64 (15.9%)	3,286 (11.7%)	6,279 #####			
1995	60 (11.8%)	98 (9.9%)	38 (9.1%)	24 (8.5%)	53 (13.2%)	3,020 (10.8%)	5,197 #####			
<b>Three-year Rate</b>	149 (29.4%)	262 (26.5%)	123 (29.4%)	84 (29.8%)	139 (34.5%)	7,646 (27.3%)	13,174 #####			
<b>Duration of Medicaid Eligibility After Delivery</b>										
Under 1 year	91 (17.9%)	140 (14.2%)	75 (17.9%)	17 (6.0%)	20 (5.0%)	9,889 (35.3%)	- (0.0%)			
1 to 2 years	68 (13.4%)	113 (11.4%)	52 (12.4%)	35 (12.4%)	43 (10.7%)	4,307 (15.4%)	- (0.0%)			
2 to 3 years	70 (13.8%)	141 (14.3%)	76 (18.1%)	48 (17.0%)	56 (13.9%)	3,628 (13.0%)	- (0.0%)			
3 to 4 years	71 (14.0%)	185 (18.7%)	63 (15.0%)	54 (19.1%)	97 (24.1%)	3,335 (11.9%)	- (0.0%)			
4 to 5 years	207 (40.8%)	408 (41.3%)	153 (36.5%)	128 (45.4%)	187 (46.4%)	6,829 (24.4%)	- (0.0%)			
<b>Mean No. Years</b>	<b>3.1</b>	<b>3.2</b>	<b>3.0</b>	<b>3.5</b>	<b>3.5</b>	<b>2.2</b>	-			
<b>Duration of Grant Eligibility After Delivery</b>										
Under 1 year	160 (31.6%)	246 (24.9%)	132 (31.5%)	42 (14.9%)	67 (16.6%)	15,067 (53.8%)	- (0.0%)			
1 to 2 years	68 (13.4%)	144 (14.6%)	63 (15.0%)	41 (14.5%)	51 (12.7%)	2,942 (10.5%)	- (0.0%)			
2 to 3 years	73 (14.4%)	159 (16.1%)	64 (15.3%)	57 (20.2%)	89 (22.1%)	2,794 (10.0%)	- (0.0%)			
3 to 4 years	65 (12.8%)	154 (15.6%)	57 (13.6%)	48 (17.0%)	85 (21.1%)	2,603 (9.3%)	- (0.0%)			
4 to 5 years	141 (27.8%)	284 (28.8%)	103 (24.6%)	94 (33.3%)	111 (27.5%)	4,582 (16.4%)	- (0.0%)			
<b>Mean No. years</b>	<b>2.4</b>	<b>2.6</b>	<b>2.3</b>	<b>2.9</b>	<b>2.8</b>	<b>1.6</b>	-			
<b>Mortality Rates (1992 to 1995)**</b>										
<b>Maternal Death Rates</b>	<b>1 2.0</b>	<b>11 11.1</b>	<b>2 4.8</b>	<b>2 7.1</b>	<b>4 9.9</b>	<b>53 1.9</b>	<b>34 0.7</b>			

\*\*mortality rates are expressed in deaths per 1000 persons

## A SUMMARY OF STATISTICS FOR WASHINGTON BIRTHS IN 1992

The First Steps Database was used to compare women identified as substance abusers with other Medicaid women and non-Medicaid women.

Women who gave birth in 1992 were classified as Medicaid women if their prenatal care or delivery was paid by Medicaid. Indicators for substance abuse were available, in general, only for Medicaid women.

The following types of information were used to determine if a woman was a substance abuser:

- drug withdrawal in the newborn indicated on the birth certificate;
- medical diagnoses (ICD-9 codes) from Medicaid claims for the mother or for the child; and
- codes for treatment for chemical dependency (including DRGs, hospital procedure codes, and outpatient procedure codes from both Medicaid claims and TARGET).

Washington women who gave birth in 1992 were assigned to one of seven groups:

1. **Identified substance abusers: Identified during the Prenatal Period, Diagnosis Only.** Women identified as substance abusers prior to delivery who did not receive publicly-funded substance abuse treatment services in the prenatal period (N=607).
2. **Identified substance abusers: Identified during the Prenatal Period, Diagnosis and Treatment.** Women identified as substance abusers prior to delivery who received publicly-funded substance abuse treatment services in the prenatal period (N=987).
3. **Identified substance abusers: Diagnosis or Treatment After Delivery (within three months).** Women identified as substance abusers within three months after delivery (the immediate postpartum) who may or may not have received publicly-funded substance abuse treatment services during this two-month period (N=419). (Previously undetected substance abusers who experience adverse birth outcomes are likely to be screened for substance abuse; thus this group demonstrates the highest rate of low birth weight, 17.8%.)
4. **Identified substance abusers: Diagnosis or Treatment After Delivery (3 to 12 months).** Women identified as substance abusers between three and twelve months after their delivery who may or may not have received publicly-funded substance abuse treatment services during this period (N=282).
5. **Identified substance abusers: Diagnosis or Treatment After Delivery (13 to 24 months).** Women identified as substance abusers during the second year after delivery who may or may not have received publicly-funded substance abuse treatment services during this year (N=403).

6. **Other Medicaid Women.** Women with Medicaid payments for maternity services who were not identified as substance abusers during the prenatal period or within the first two years after delivery (N=27,988).
7. **Non-Medicaid Women.** Women did not receive Medicaid payments for maternity services. (N=47,996)

The tables contain information in the following areas:

### **Maternal Characteristics (Table 1)**

Maternal characteristics were obtained from birth certificates, Medicaid claims, and eligibility history files contained in the First Steps Database.

Race. Maternal race appears as recorded on the Washington birth certificate. The Washington birth certificate includes Hispanic in the choices for race, in addition to another question about Hispanic origin or descent. Women were identified as Hispanic if the race was listed as Hispanic, regardless of the response to the Hispanic origin/descent question.

Age. The mother's age at the time of delivery as reported on the infant's birth certificate.

Marital Status. The mother's marital status at the time of delivery, obtained from the birth certificate as either "Yes", "No," or "Unknown".

Education. The number of years of education (00 to 16) the mother had received as indicated on the birth certificate. Women with 12 or more years of education were considered high school graduates; values greater than 16 are considered unknown.

Number of Prior Children . This number is the total of liveborn births the mother reported she had prior to this delivery, whether or not the previous infant(s) later died. The number of prior children is recorded on the birth certificate in two locations as the number of live births still living and the number of live births now dead.

Smoking. Women who reported smoking during their pregnancies, taken directly from the birth certificate information.

### **Use of Prenatal Care Services (Table 2)**

Prenatal Visits. The number of prenatal care visits for the entire pregnancy as reported on the birth certificate.

Initiation of Prenatal Care (Trimester Prenatal Care Began). The trimester in which a woman first received prenatal care for her pregnancy is calculated from the birth certificate by the date a woman indicates first visiting a provider for prenatal care.

Enhanced Maternity Care Services. Enhanced prenatal care services available after the implementation of the First Steps Maternity Care Access program include Maternity Case Management (MCM) and Maternity Support Services (MSS). Information about the use of MSS and MCM was obtained from Medicaid claims.

Medicaid Eligibility Status. Women may be eligible for Medicaid based on their eligibility for certain types of programs:

***Grant Recipients***, women who qualified for Medicaid on the basis of their participation in either a federal or state cash (grant) assistance program, typically requiring a family income of less than 65 percent of the Federal Poverty Level (FPL).

***Medicaid Only***, women who would have qualified for Medicaid on the basis of their income determination regardless of the 1989 First Steps legislation, usually within 90% of the FPL; and

***First Steps Expansion***, women who qualified for Medicaid because of the passage of the Maternity Care Access Act which expanded Medicaid maternity care coverage to pregnant women with family incomes up to 185% of the FPL.

### **Birth Outcomes (Table 3)**

Born Dead (Fetal Deaths). Babies who were born dead, or stillborn. The total number of births is a sum of live births and fetal deaths.

Born Alive (Liveborn). All infants born alive. Liveborn infants include infants who may subsequently die within minutes or hours of their birth, as well as any subsequent deaths. The total number of births is a sum of all live births and fetal deaths.

Infant Deaths. Deaths occurring to infants who were born alive but died before their first birthday. Fetal deaths are not included in this number. Neonatal deaths refer to the number of infants who died within the first 27 days of birth. Postneonatal deaths refer to the number of infants who died between 28 and 365 days of their births.

Infant Mortality Rate. The number of infant deaths for every thousand births calculated by the number of infant deaths divided by the total number of liveborn infants multiplied by 1,000. Babies who were born dead (stillborn, or fetal deaths), were not included in the calculation. This information was recorded directly from the infant death certificates provided by the Department of Health, and linked to the FSDB.

Number of Children at Birth. The number of infants born to the mother during this delivery. The percentage indicates the number of infants born as singletons or multiple births (twins or more) as a percentage of all infant births.

Birthweight. The weight of the newborn child as recorded on the birth certificate. Newborn infants weighing less than 2500 grams (about 5.5 pounds) are considered low birthweight

(LBW). Very low birthweight infants are those weighing less than 1500 grams (about 3.3 pounds). Birthweight rates are calculated only for singleton liveborn infants.

Gestational Age. The estimated number of weeks that a fetus resided in the mother's uterus before the infant was born. The gestational age of a newborn infant is a measure of the maturity of the newborn at delivery. The expected duration of pregnancy is 40 weeks; infants who are born at 37 weeks are considered full-term. Infants who are born at less than 37 weeks are considered premature. Premature delivery is one of the main causes for low birthweight.

### **Five Year Outcomes for Mothers and Children (Tables 4 and 5)**

Selected outcomes for mothers and children (Tables 4 and 5) were based on analysis of other data sources that have been linked to the First Steps Database. These outcomes include follow-up for five years after the birth in 1992 whenever possible. For some variables, a shorter follow-up period was available. The source for information on referrals for child abuse and neglect and on out of home placement was the Children's Administration Case and Management Information System (CAMIS). The source for information on duration of eligibility for Medicaid and welfare was the OFM Eligibility History File. Subsequent births were determined by linkage of individual mothers reported on birth certificates as giving birth in different years.

**APPENDIX B**

**STUDIES SHOWING THE EFFECTS OF IN UTERO  
SUBSTANCE ABUSE EXPOSURE**

## SPECIFIC EFFECTS ATTRIBUTABLE TO IN UTERO EXPOSURE TO ILLICIT DRUGS

Over 125 articles were reviewed. Seventeen articles were chosen as having met the following criteria: publication dates between 1992 and 1998, in a peer-reviewed journal, focus on prenatal exposure to one or more illicit drugs, original research, quasi-experimental design (control or comparison group used), assessment of behavioral and/or developmental outcomes on children, and statistical analysis.

DOMAINS	SHORT-TERM EFFECTS	LONG-TERM EFFECTS	METHODOLOGICAL CONCERNS
<b>Physical</b>	<ul style="list-style-type: none"> <li>• Lower birth weights</li> <li>• Shorter gestational ages</li> <li>• Smaller head circumferences</li> </ul> <p><b>Caveat:</b></p> <ul style="list-style-type: none"> <li>• Some studies found no differences in drug-exposed infants who received prenatal care</li> </ul>	<ul style="list-style-type: none"> <li>• Differences in height and weight observable at age two</li> <li>• Height and weight effects disappear at age three, but smaller head circumference persists, when controlled for body size</li> </ul> <p><b>Caveat:</b></p> <ul style="list-style-type: none"> <li>• Head circumference may be affected by other environmental and exposure factors</li> </ul>	<p><b>Few controls for:</b></p> <ul style="list-style-type: none"> <li>• Polydrug use</li> <li>• Tobacco use</li> <li>• Alcohol use</li> <li>• Quantity of prenatal drug use</li> <li>• Trimester(s) of drug use</li> <li>• Abuse</li> <li>• Neglect</li> <li>• Environmental factors other than SES</li> </ul>
<b>Neuro-Behavioral (Newborns)</b>	<ul style="list-style-type: none"> <li>• Lower Brazelton Neonatal Assessment Scale ratings</li> <li>• Less likely to come to quiet, alert state</li> <li>• Problems regulating arousal and calming</li> </ul> <p><b>Mixed results for:</b></p> <ul style="list-style-type: none"> <li>• Reflexes</li> <li>• Autonomic stability</li> <li>• Habituation: information processing, attention, and memory</li> </ul>	<p><b>Multiple Possibilities:</b></p> <ul style="list-style-type: none"> <li>• Neurobehavioral problems precursors to later cognitive and behavioral problems in children</li> <li>• Neurobehavioral problems transient in nature</li> </ul>	<ul style="list-style-type: none"> <li>• Few longitudinal studies</li> <li>• Observed effects may be due to subtle, but lasting neurological damage, effects may become more pronounced over time</li> <li>• Some effects observed in neonates may be due to temporary drug withdrawal symptoms</li> </ul>
<b>Cognitive</b>	<p><b>Mixed results:</b></p> <ul style="list-style-type: none"> <li>• No differences in cognitive abilities</li> <li>• Slight differences in verbal and abstract/visual reasoning</li> <li>• Differences not significantly higher than standard deviation for tests</li> <li>• Differences subtle, but significant: estimated 3,750 – 37,612 children will need intervention or special education services</li> </ul>	<ul style="list-style-type: none"> <li>• No longitudinal studies found (children tested were all under the age of five)</li> <li>• Home environment had the same magnitude of effect on IQ as drug exposure</li> <li>• Perseverance on a task had twice the effect on IQ of both drug exposure and home environment</li> </ul>	<ul style="list-style-type: none"> <li>• Intelligence tests often contain unrecognized biases</li> <li>• Cultural biases</li> <li>• Cognitive orientation biases</li> <li>• No controls for other factors affecting cognitive development</li> <li>• Prenatally exposed infants had higher environmental risk scores, which may affect cognitive development</li> </ul>
<b>Language</b>	<p><b>Mixed results:</b></p> <ul style="list-style-type: none"> <li>• Clinically significant delays in preschool children</li> <li>• 2.7 to 4.3 fold increase in school-aged children, suggesting a possible 8,080 – 68,025 children nationwide who will need special education services</li> <li>• Children living with parents who continue to use drugs had lower verbal reasoning scores than those whose parents were drug and alcohol free</li> </ul>	<ul style="list-style-type: none"> <li>• No longitudinal or follow-up studies for language effects</li> <li>• Unknown, at this time, whether language effects will increase or decrease as children age</li> </ul>	<ul style="list-style-type: none"> <li>• Few studies have included older children, therefore very few studies have measured language skills</li> <li>• Inconsistent measures employed across studies</li> <li>• Few controls for postnatal environment</li> <li>• Absence of controls for cultural differences</li> </ul>
<b>Behavioral/Social</b>	<p>Elevated rates of behavioral disorders:</p> <ul style="list-style-type: none"> <li>• Aggressive and non-compliant behaviors</li> <li>• Insensitivity toward peers</li> <li>• Problems with attention</li> <li>• Less persistence on difficult tasks</li> <li>• Insecure attachments</li> </ul>	<ul style="list-style-type: none"> <li>• Relationship between drug exposure and behavioral problems</li> <li>• Drug exposed children similar to nonexposed children</li> <li>• Drug exposed children do less well in unstructured environments</li> </ul>	<ul style="list-style-type: none"> <li>• Absence of quality long-term studies</li> </ul> <p>Lack of controls for postnatal factors:</p> <ul style="list-style-type: none"> <li>• Environment</li> <li>• Substance abuse by parents</li> <li>• Physical abuse</li> <li>• Neglect</li> </ul>

## **LITERATURE REVIEW: THE EFFECTS OF PRENATAL SUBSTANCE ABUSE EXPOSURE**

### **Methods**

Studies that met the following criteria were included in this review:

- Published between 1992 and 1998 in a peer-reviewed or refereed journal (with the exception of an analysis of infants in Washington State).
- Investigated prenatal drug exposure to at least one illicit drug (cocaine, heroin, marijuana, methadone, phencyclidine, methamphetamine) or polydrug exposure including alcohol.
- Original research (with the exception of one quantitatively summarized review article and one analysis of infants in Washington State).
- Quasi-experimental design (i.e., a control or comparison group was used and at a minimum, there were controls for socioeconomic status).
- Behavioral and/or developmental outcomes were assessed on children.
- Statistical analysis of data was conducted.

### **Article Identification**

Several major computerized databases were searched for relevant research articles. Databases included PsychLit, ERIC, Psychological Abstracts, Medline, Social Sciences Abstracts, and HealthSTAR. Other articles were identified through bibliographies of pertinent articles or books. Over 125 articles were obtained. Each article was reviewed to determine whether it met the above-specified criteria.

### **Description of Studies**

The vast majority of the articles did not meet the established criteria for several reasons: they were review articles, they did not use a control or comparison group, or they did not control for socioeconomic status (SES). Others articles focused on interventions, contextual or political factors. Approximately 14 percent or 17 out of the 125 articles met the criteria and were included in this analysis. A detailed summary of each article is attached.

The articles were found in *Journal of Orthopsychiatry*, *Child Abuse and Neglect*, *Developmental Psychology*, *Topics in Early Childhood Special Education*, *Journal of American Academy of Child and Adolescent Psychiatry*, *Annals of New York Academy of Sciences*, *Pediatrics*, and *Neurobehavioral Toxicology and Teratology*. An article from one highly regarded book, *Mothers, Babies, and Cocaine: The Role of Toxins in Development*, was also included. And, because the target population for this report is women in Washington State, a non-experimental article discussing the epidemiology and outcomes for drug exposed and affected infants in Washington from the First Steps Database is also included.

The majority of the studies focused on cocaine as the primary drug of abuse: Hawley et al., 1995; Alessandri et al., 1998; Bendersky et al., 1998; Eyler et al., 1998a; Eyler et al., 1998b; Tronick et al., 1996; Richardson et al., 1998; Koren et al., 1998; Chasnoff et al., 1992; Azuma et al., 1993; Richardson et al., 1994 and Beckwith et al., 1995. The majority of women who used cocaine also used other drugs, including marijuana, alcohol, tobacco, opiates, and amphetamines (not all women used all of these drugs). Four studies explored the effects of polydrug use: Cohen et al., 1994; Griffith et al., 1994; Lester, B., 1998; and Cawthon, 1997. One study, Ornoy et al. (1996), investigated prenatal exposure to heroin. All studies were conducted in the United States, with two exceptions: Ornoy et al. (1996) was conducted in Jerusalem, and Koren et al. (1998) was conducted in Canada. Approximately 40 percent of the studies were published in 1998.

Several studies were longitudinal in nature, i.e., examinations which occurred at more than one point in time (Alessandri et al., 1998; Richardson et al., 1998; Beckwith et al., 1995). Others assessed outcomes at a single point in time or were part of a longitudinal study reporting only one point in time in the current study.

The age of the child at assessment ranged from newborn to age six. Six of the quasi-experimental studies assessed newborns (Alessandri et al., 1998; Bendersky et al., 1998; Eyler et al., 1998a; Eyler et al., 1998b; Tronick et al., 1996; Richardson et al., 1994), and six assessed children between the ages of two and five (Hawley et al., 1995; Chasnoff et al., 1992; Azuma et al., 1993; Griffith et al., 1994; Cohen et al., 1994; Koren et al., 1998). Two longitudinal studies spanned infancy to two years (Beckwith et al., 1995) and infancy to three years (Richardson et al., 1998). Ornoy et al. (1996) examined children between six months and six years of age.

The outcome measures included measurements in (1) the physical domain: weight, length, head circumference, gestational age; (2) the neurobehavioral domain: Brazelton Neonatal Behavioral Assessment Scale (BNBAS) for infants, habituation, self-regulation; (3) the cognitive domain: Bayley Developmental Scales for children up to age two, McCarthy Scales of Children's Abilities for children over age three, Stanford-Binet Intelligence Scale for three year olds and older; IQ testing included the language domain, measuring receptive language effects (comprehension) and expressive language (language production or spoken language); (4) the behavioral/social domain: Child Behavior Checklist, the Summative Perseverance Scale, the Summative Attention Scale, aggression, organization and level of play, movement and activity level, impulsivity; and (5) quality of mother and child attachment, using the Ainsworth Strange Situation test.

## **Reported Outcomes**

Only statistically significant positive findings ( $p < .05$ ) are reported in the summaries and are discussed below. For example, if a drug exposed group scored higher on the McCarthy Scales compared to the control group the finding would be reported only if the p value was equal to or fell below .05. The finding is also reported if there was no difference between groups on outcome measures.

### **Physical Domain**

Drug exposed infants appear to have lower birth weights (Alessandri et al., 1998; Ornoy et al., 1996; Tronick et al., 1996; Lester, B., 1998), shorter gestational ages (Alessandri et al., 1998; Ornoy et al., 1996; Eyler et al., 1998b; Lester, B., 1998), smaller head circumferences when controlled for body size (Ornoy et al., 1996; Tronick et al., 1996; Eyler et al., 1998b; Lester, B., 1998), and are shorter in length/height (Tronick et al., 1996; Ornoy et al., 1996; Eyler et al., 1998b; Lester, B., 1998). Two studies found no group differences in birth weight, length, and head circumference (Richardson et al., 1994; Richardson et al., 1998), however, the women for these studies were recruited from a prenatal clinic which might have mitigated the effects of drug exposure.

At age two, smaller head circumference and shorter height were reported for cocaine exposed toddlers compared to the drug-free control group (Chasnoff et al., 1992). At age three, prenatal drug exposure was not related to children's weight (Azuma et al., 1993; Griffith et al., 1994; Richardson et al., 1998) or height (Griffith et al., 1994; Richardson et al., 1998), but smaller head circumferences were found (Azuma et al., 1993; Griffith et al., 1994; Richardson et al., 1998).

### **Neurobehavioral Domain**

Newborns exposed prenatally to drugs failed to come to a quiet, alert state (Eyler et al., 1998a), and had problems regulating arousal and calming (Tronick et al., 1996; Eyler et al., 1998a; Richardson et al., 1998). In Lester's quantitative analysis of the literature meeting our criteria, 17 out of the 19 studies that measured neurobehavioral effects reported positive findings on the Brazelton Neonatal Behavioral Assessment Scale (1998). One study found that infants prenatally exposed to crack and cocaine had poorer autonomic stability, abnormal reflexes, motor immaturity and abnormal EEGs (Richardson et al., 1998). Mother's reports of these same infants at one year of age, using the Bates Infant Characteristic Scale, showed temperament differences, as did reports of independent examiners who were blind to substance exposure. However, other studies had quite different results: Tronick et al. (1996) found no differences in reflexes and autonomic stability and Alessandri et al. (1998) found no differences in habituation, a measure of information processing, attention, and memory in infants.

### **Cognitive Domain**

No group differences were found on the Bayley Scale of Infant Development, on either the Mental Development Index or the Psychomotor Development Index in two year olds (Chasnoff et al., 1992). At age three, there were no differences on global measures of the Stanford-Binet Intelligence Scale; however, verbal and abstract/visual reasoning were affected (Griffith, et al., 1994). In contrast, Richardson, G.A. (1998) found lower composite scores on the Stanford-Binet

Intelligence Scale at age three. Hawley et al. (1995) found no differences in McCarthy Scales scores for children at four years of age – however the participating mothers were recruited from a drug treatment center, therefore these children would be less likely to be exposed to a drug-using environment after birth than the general population of drug-exposed children. Beckwith et al. (1995), studying a small sample of children at four and a half years of age, found that drug exposed children scored lower on the General Cognitive Index and several subscores. Lester's 1998 review that quantified the findings across five studies of school-age children found that drug exposed children scored 3.26 IQ points lower than nondrug exposed children. Lester argued that this difference was small, but significant, as this would result in between 3,750 and 37,612 drug-affected children nationwide requiring early intervention and special education services.

Since drug exposed children tend to have smaller head circumferences, even when their body size is equal to nonexposed children, it is important to explore the relationship between head circumferences and IQ scores. The results are mixed. Chasnoff et al. (1992) found a positive correlation between head circumference and MDI scores in children at 2 years of age; however, Griffith, D. R. (1994) found that head size did not predict performance on the Stanford-Binet Intelligence Scale. A path analysis found that at three years-of-age head circumference did not independently predict IQ scores (Azuma et al., 1993). Azuma et al. (1993) additionally found that the home environment had the same magnitude of effect on IQ as did drug exposure, and perseverance on a task had twice the magnitude of effect on IQ compared to both drug exposure and the home environment. The authors concluded that cognitive outcomes in drug exposed 3-year-olds were mediated by perseverance, environmental factors, and head circumference (Azuma et al., 1993).

Prenatally exposed infants were found to have higher environmental risk scores (Bendersky et al., 1998; Alessandri et al., 1998; Lester, B., 1998), inadequate housing and resources, more frequent changes of residence, and fewer toys (Hawley et al., 1995). Higher environmental risk was the best predictor of MDI scores at both eight and eighteen months (Alessandri et al., 1998). The lowest scores on the Bayley and McCarthy Scales, and a higher percentage of children with DQ (Developmental Quotient) or IQ scores of 70-80 were found in the environmental deprivation group, and drug exposed children who were adopted had similar scores as controls (Ornoy et al., 1996). Children who lived with parents who continued to use drugs had lower verbal reasoning scores compared with parents who were drug and alcohol-free (Griffith et al., 1994). MDI scores decreased in both children who were drug exposed and those who were not between 8 to 18 months (Alessandri et al., 1998).

### **Language Domain**

At approximately three years of age, clinically significant language delays in preschool children were reported (Koren et al., 1998). Hawley et al. (1995), using the Test for Auditory Comprehension of Language (Carrow-Woolfolk, 1985), found no differences between children exposed to cocaine and controls at four years of age. There was a medium effect on language scores of school-aged children (twice the magnitude of effect compared to the effect on IQ) in the nine studies that were analyzed quantitatively by Lester (1998). Lester estimated between 8,080 and 68,025 children nationwide will need special education services to cope with language delays. Children who lived with parents who continued to use drugs had lower verbal reasoning

scores than those whose parents were drug and alcohol-free (Griffith et al., 1994). Most language effects reported here are from studies using global assessments, while effects on language development are subtle and may not be apparent in the absence of testing specifically designed to assess language usage. Unfortunately, few studies have specifically assessed language development using experimental or quasi-experimental methodology with large samples of children. Since assessment of language comprehension and production requires intensive testing, most sample sizes have been small, and many have not included controls. While it is early to say with any certainty, it appears that language delays, along with other subtle effects, may become more pronounced with age and as children are required to function in more complex situations, Richardson, G.A. (1998.)

### **Behavioral/Social Domain**

Children of substance abusing or addicted mothers exhibited higher rates of behavioral disorders (Ornoy et al., 1996; Hawley et al., 1995; Richardson, G.A., 1998; Griffith et al., 1994), including more aggressive and noncompliant behaviors (Cohen et al., 1994; Griffith et al., 1994; Beckwith et al., 1995), insensitivity towards peers (Beckwith et al., 1995), problems with attention (Lester, B., 1998), and less persistence on difficult tasks (Beckwith et al., 1995). Children who lived with their biological mothers had higher rates of behavioral disorders compared to those who were adopted (Ornoy et al., 1996). In one study, sixty-four percent of non-exposed children demonstrated secure attachments to mothers, while only eighteen percent of drug exposed children were found to have secure attachments (Beckwith et al., 1995). In the same study, for children still in the custody of their mothers, postnatal abstinence predicted the quality of mother and child bonding, insecure attachments were observed in all children whose mothers continued to use drugs, and secure attachments were observed in all children whose mothers abstained from drug use during the first 15 months of their children's lives.

### **Methodological Limitations of Literature**

Some of the experimental studies included in this review had small sample sizes. These studies were included because they typically focused on older children or on a particular underrepresented domain. Mothers and children were recruited from prenatal clinics, hospitals, drug treatment facilities, general obstetric clinics, preschool special education programs, and, in once case, a child development institute.

Several studies recruited women from prenatal care clinics. The findings from these studies may not be representative of the general drug-using population who might be less likely to receive prenatal care. Prenatal care appears to be related to positive health outcomes in the general population and so would be likely to also influence the reported outcomes in children born to women who used drugs during pregnancy.

A major limitation in the literature is the low number of studies that have controlled for polysubstance use. Women who use illicit drugs are highly likely to use other drugs, most commonly alcohol and tobacco; among this population, polydrug use is the norm. Both smoking and alcohol consumption are related to poor outcomes in children. Some of the studies did not control for tobacco and alcohol use, and without adequate controls, it is not clear whether the outcomes are attributable to illicit drugs, alcohol or cigarettes or to their combined synergistic

effects. For example, esterification of cocaine and ethanol results in the production of cocaethylene, which is more neurotoxic than either cocaine or alcohol individually (Koren et al., 1998).

Very few studies indicated if women received intervention services and whether or not they abstained from drugs and/or alcohol after the birth of their child. The level and quality of intervention services, particularly if the woman successfully quit using drugs and alcohol, would significantly influence outcomes.

All included studies controlled for socioeconomic status (SES) in varying degrees. However, the most problematic methodological limitation within this area of research is the lack of controls for other postnatal environmental factors: most notably continued parental substance abuse, as well as physical abuse and neglect of the child. Only one study reported whether the children were abused and/or neglected (Hawley et al., 1995). The authors found that sixty percent of the addicted women reported physical neglect of their children. This number seems likely to be a conservative estimate because of the negative stigma associated with child abuse or neglect. Several studies have found that a high percentage of drug exposed children had been placed in foster care. It might be reasonable to assume that these children had experienced child abuse and/or neglect to necessitate being removed from their homes. Child abuse and neglect are associated with a wide range of poor outcomes in children. Without adequate controls for the multitude of environmental and sociological factors associated with substance abuse, we cannot definitely say if unfavorable outcomes are primarily due to prenatal drug exposure or to factors within the child's postnatal environment.

## **Conclusions**

It appears that most of the physical effects of prenatal drug exposure dissipate over time with the exception of a smaller head circumference. Drug exposure is not the only factor predicting smaller head circumferences: both prenatal drug exposure and the quality of the home environment appear to have direct impacts on head circumference (Azuma et al., 1993). Physical effects may also be related to the level and quality of prenatal care, since few studies have controlled for the level and quality of prenatal care received by the participants.

It is unclear if the neurobehavioral problems observed in drug exposed infants are precursors to later cognitive and behavioral problems in children or if they are transient in nature. Central Nervous System effects are subtle and may become more apparent as children age (Richardson, G.A., 1998).

The effect of prenatal drug exposure on IQ scores appears to be mild and interacts with environmental factors and parental factors, among others. In fact, it appears to mirror the decline observed in low income/poverty stricken homes where declines in IQ scores begin after approximately 6 months of age. It is also plausible that cognitive effects are more pronounced on more challenging intellectual tests. Children who continue to live in low-income, drug-using environments fare worse, particularly in the realm of verbal reasoning, than do children whose parents are drug-free, or those who are adopted at early ages.

Few studies have measured language, as most studies have been focused on neonates and very young children. Studies that have included language development have been limited to children in the eighteen-month to six-year range. Ideally, language development should be followed through adolescence. The primary means of assessment, thus far, have been global standardized measures, and these fail to provide a detailed, in-depth analysis of language development and may, therefore, be insensitive to the potentially subtle effects of cocaine exposure. It is plausible that language follows a similar pattern to that of IQ scores and is influenced by the same environmental factors.

There appears to be a relationship between drug exposure and behavioral disorders. In structured environments and/or situations, drug exposed children appear similar to nonexposed children, however exposed children seem to perform less well in unstructured environments. Performance of drug exposed children show improvement when caregivers provide structure and limit distractions. Since perseverance on tasks was directly related to IQ scores in three-year-olds, a primary focus of early intervention programs should be on increasing children's abilities to persist on tasks.

There is also the suggestion that dose-response and timing of drug ingestion may explain some inconsistencies in the literature. Children who are exposed to higher quantities of drugs may exhibit more symptoms (Alessandri, S. M., 1998; Tronick et al., 1996). At 18 months, those infants who were exposed to the highest levels of cocaine had the lowest MDI scores on the Bayley Scales. At four months of age, higher medical risk scores were associated with higher ingested amounts of cocaine during pregnancy (Bendersky et al., 1998). Different outcomes may also be associated with the use of drugs during different trimesters of pregnancy (Richardson, G.A.; 1994; Richardson, G.A., 1998). For example, women who used cocaine frequently in the first trimester gave birth to infants who were born one week earlier than other infants (Richardson, G.A., 1998).

There is a striking absence of quality long-term follow-up studies. However, based on the existing evidence it appears that long-term outcomes in drug exposed children are the result of an interaction between potential vulnerabilities and strengths of the children and their postnatal home and rearing environment. The quality of the postnatal environment and parental factors, such as attachment, appears to play an important role in the development of behavioral problems. Many drug exposed children live in chaotic and deprived environments with parents who continue to abuse drugs; children are often abused or neglected, and/or are removed from their homes and placed in foster care. Drug exposed children who live in poverty, who experience abuse and neglect, and whose parents continue abusing substances will fare much worse than children who do not experience these postnatal onslaughts. Intervention programs need to devote adequate resources and attention to both the prenatal and postnatal environments and to the well-being of both at-risk children and their parents.

## LITERATURE REVIEW OF THE EFFECTS OF PRENATAL EXPOSURE TO SUBSTANCE ABUSE

PUBLICATION	STUDY GROUP	DESCRIPTION/ METHODS	OUTCOME MEASURES	RESULTS/ FINDINGS
<p>Alessandri, S.M, Bendersky, M., &amp; Lewis, M. (1998). <i>Cognitive Functioning in 8 - to 18-Month-Old Drug-Exposed Infants</i>, Developmental Psychology, Vol. 34, No.3, 565-573.</p>	<p>67 children prenatally exposed to cocaine and 169 children nonexposed children born to 236 women recruited from inner city hospitals in New Jersey:</p> <p>At initial intake, 37 exposed to high cocaine use; 30 exposed to low cocaine use; 169 non exposed.</p> <p>Mean age of infants at first assessment was 33 weeks.</p> <p>Attrition rates of 14% at 8 months and 20% at 18 months. No differential attrition across exposure groups.</p> <p><i>Characteristics of mothers:</i></p> <p>Race of mothers: 87% African-American, 10% Caucasian, 3% Hispanic.</p> <p>Drug use: 37 women were characterized as high cocaine users (used cocaine two or more times per week); 30 were characterized as low cocaine users (used cocaine less than twice per week); 169 did not use cocaine</p> <p>Polydrug use: 98% of cocaine users also used other substances during pregnancy (cigarettes, alcohol, and marijuana)</p>	<p>Prospective 18 month study to determine effects of prenatal drug exposure by nonexposure and limited exposure to substance abuse (primarily cocaine) on children's cognitive functioning.</p> <p><b>Methods:</b> Semi-structured interviews were conducted to assess maternal drug use from group of women recruited from inner city hospitals. Maternal self-report was verified through meconium analysis.</p> <p>Children were assessed at 8 and 18 months of age. Findings for cocaine-exposed children were compared by high versus low levels of cocaine use their mothers reported, and to nonexposed children.</p> <p>Neonatal risk factors (respiratory complications, metabolic disorders, cardiac problems, hematologic problems, CNS problems, a 5-min Apgar score of less than 5, low birth weight, fetal anomalies) were reviewed from data collected from medical charts to determine whether complications of pregnancy pose additional risk to infants born to substance-abusing women</p> <p>A composite environmental risk score was developed that included the number of life stressors, social support network size, maternal educational level, use or nonuse of public assistance, minority status, number of supportive adults the mother lived with, number of children</p>	<p>Child Measures: Bayley Scale of Infant Development II (Bayley, 1993).</p> <p>Infants were assessed for Habituation: information processing, attention, memory</p>	<p>Exposed infants had significantly lower birth weights and gestational ages compared to nonexposed infants (<math>p &lt; .05</math>), but there was no difference between the high and low exposure groups.</p> <p>Infants exposed to high and low levels of cocaine had the same neonatal medical risk scores which were higher (<math>p &lt; .05</math>) compared to nonexposed infants.</p> <p>Infants exposed to high and low levels of cocaine had the same environmental risk factors which were higher (<math>p &lt; .001</math>) than nonexposed infants.</p> <p>No differences between groups in MDI and PDI scores at 8 months.</p> <p>Higher environmental risk was associated with lower MDI scores (<math>p &lt; .001</math>) and MDI scores decreased from 8 to 18 months (<math>p &lt; .001</math>).</p> <p>Nonexposed infants scored higher on the MDI at 18 mos. compared to the high exposure group (<math>p &gt; .05</math>), but the scores across all groups declined from 8 to 18 months.</p> <p>Environmental risk was the best predictor of MDI scores at 8 (<math>p &lt; .05</math>) and 18 months (<math>p &lt; .05</math>).</p> <p>No group differences on habituation</p> <p><b>Conclusions:</b> A dose effect of cocaine was demonstrated at 18 months, i.e., those most heavily exposed had the lowest MDI scores. The effects of exposure might manifest only on more challenging intellectual testing (the 18 months. MDI covers a wider range of more complex cognitive tasks). The level of</p>

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	Two mothers received no prenatal care.	<p>in the household, and family history of drug or alcohol use.</p> <p>Since cocaine users smoked more cigarettes (<math>p &lt; .05</math>) and drank more alcohol (<math>p &lt; .001</math>) than non-users, the subsequent analysis controlled for alcohol and marijuana use.</p>		exposure interacts with environmental risk, i.e., those infants suffering from the greatest biological damage are less influenced by environmental risk, whereas those with less damage are more impacted by environmental risk.
<p>Azuma, S.D. &amp; Chasnoff, I. (1993). <i>Outcome of Children Prenatally Exposed to Cocaine and Other Drugs: A Path Analysis of Three-Year Data</i>, Pediatrics, Vol. 92, 3, 396-402.</p>	<p>107 prenatally exposed infants born to drug-using women and 45 infants born to women with no history of drug abuse from the same geographic area.</p> <p>All participants were low income residents of central Chicago.</p> <p>92 children were born to women using cocaine (with marijuana, alcohol, and/or tobacco) but no opiates.</p> <p>25 children were born to women who used marijuana, tobacco, and/or alcohol but no cocaine.</p> <p>45 women with no history of substance use were recruited from the general population to serve as controls.</p>	<p>Longitudinal, prospective study to assess the cognitive and behavioral effects on three-year-olds who were prenatally exposed to cocaine and other drugs.</p> <p><b>Methods:</b> Women using drugs were referred to the project from a general obstetric clinic. Upon enrollment, these women received therapeutic interventions in an effort to help the woman abstain. Drug histories were taken at enrollment and at each subsequent assessment phase. Groups were matched on race and socioeconomic status.</p>	<p>Weight</p> <p>Length</p> <p>Head Circumference</p> <p>Stanford-Binet Intelligence Scale (intelligence and behavioral scales)</p> <p>Child Behavior Checklist</p> <p>Summative Perseverance Scale</p> <p>Home Screening Questionnaire (HSQ)</p>	<p>No group differences found for weight and child behavior. Home environment scores for each group were in the at-risk range.</p> <p>Children in both drug groups had smaller head circumferences (<math>p &lt; .05</math>)</p> <p>Head circumference independently did not predict IQ.</p> <p>Path analysis demonstrated that prenatal drug exposure (Groups 1 and 2 combined) and home environment had similar magnitudes of effect on IQ.</p> <p>Perseverance had twice the effect on IQ compared to the effects of drug exposure or home environment</p> <p><b>Conclusions:</b> Cognitive outcomes in 3-year-olds prenatally exposed to drugs were mediated by environmental factors, head circumference, and perseverance. Perseverance had the greatest effect on IQ.</p> <p><b>Limitations:</b> All women received prenatal care and intense interventions.</p>
<p>Beckwith, L., Crawford, S., Moore, J.A., Howard, J. (1995). <i>Attentional and Social Functioning of</i></p>	<p><b>Study 1:</b> 46 drug exposed newborns from a county hospital in an inner-city area of Los Angeles.</p> <p>39 comparison newborns</p>	<p>This article describes 3 interrelated studies that examined development of children prenatally exposed to cocaine and phencyclidine (PCP) from infancy to preschool-age.</p>	<p>Quality of attachment and spontaneous play</p> <p>Cognitive abilities</p> <p>Peer interactions</p>	<p><b>Study 1:</b> 18% of drug exposed children exhibited secure attachments, 68% demonstrated disorganized attachments. 64% of non-exposed children demonstrated secure attachments.</p>

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<p><i>Preschool-Age Children Exposed to PCP and Cocaine In Utero</i>, In M. Lewis &amp; M. Bendersky (Eds.), Mothers, Babies, and Cocaine: The Role of Toxins in Development, 287-303.</p>	<p>not prenatally exposed to illicit drugs recruited from same hospital and other hospitals in same geographic area.</p> <p>Average education of mothers was 10.8 years for study group 12.2 years for comparison group.</p> <p>Majority of women were African American, single parents on public assistance, living in impoverished, violent neighborhoods</p> <p><b>Study 2:</b> 18 non-exposed children and 16 drug exposed children participated.</p> <p>Average age 4.5 years.</p> <p>Both groups were comparable on SES, age, ethnic group, and neighborhood of residence.</p> <p><b>Study 3:</b> 14 drug exposed children from Study 2 and 14 newly recruited non-exposed infants were recruited.</p> <p>The average age was 46.2 months.</p>	<p><b>Methods:</b></p> <p><b>Study 1:</b> Ainsworth Strange Situation procedure measured the quality of attachment. Ainsworth (1976) system for rating maternal care behavior measured rearing environment and caregiver behaviors</p> <p>Spontaneous play was measured through a set of structured mother/child play scenarios.</p> <p><b>Study 2:</b> Assessed cognitive abilities using the McCarthy Scales of Children's Abilities, impulsivity, and play behavior.</p> <p>Attachment assessed at age 15 months. Rearing environment assessed at 3 and 9 months. Spontaneous play was assessed at 24 months.</p> <p><b>Study 3:</b> Peer interactions assessed through 40-minute play sessions with structured and unstructured tasks; sessions videotaped and coded using the Howes Peer Play Scale (1987).</p>		<p>Postnatal abstinence predicted quality of attachment for children still in custody of their mothers.</p> <p>Insecure attachments were observed in all children whose mothers continued to use drugs, and secure attachments were observed in all children whose mothers abstained during their infants' first 15 months of life.</p> <p>Quality of attachment was not influenced by number of changes in primary caregiver nor by who caregiver was (biological mother, foster parent or relatives).</p> <p>Mothers of prenatally exposed infants were less responsive to the infants at 3 months and by 9 months, infants experienced more rejection, neglect, interference, insensitivity, less response to their distress, and less physical contact (<math>p &lt; .01</math>).</p> <p>Generally, the play of drug exposed children reflected more immature strategies, less sustained attention, more deviant behaviors, and fewer positive social interactions with caregivers, than for non-exposed children; however, a subgroup of drug exposed children did not differ in regards to their play behavior from the comparison group</p> <p><b>Study 2:</b> Prenatally exposed children scored lower on verbal (<math>p &lt; .001</math>), perceptual (<math>p &lt; .01</math>), quantitative (<math>p &lt; .001</math>), memory (<math>p &lt; .001</math>) scales, and general Cognitive Index (<math>p &lt; .001</math>), relative to the comparison group.</p> <p>No group differences on impulsivity task.</p> <p>Parents of drug exposed children did not report that their children were more difficult to handle, however, observers of child behavior throughout the laboratory session described these children as being less compliant, less persistent, more irritable, and</p>

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				<p>requiring more verbal cues or coaxing to maintain involvement with an activity.</p> <p><b>Study 3:</b> Drug exposed children demonstrated more antagonistic initiations (<math>p &lt; .05</math>), forced interactions (<math>p &lt; .05</math>), more insensitivity towards their peers (<math>p &lt; .05</math>), and were less compliant (<math>p &lt; .05</math>) while playing with their peers. They were also more likely to be described as solitary, intrusive, or rejected than as complementary (<math>p &lt; .05</math>). Children classified as complementary were more likely to use conflict resolution as method of settling disputes</p> <p>No group differences were observed in terms of the competence on a structured task versus an unstructured task.</p> <p><b>Conclusions:</b> Variability in the drug exposed group. Some children were securely attached, cooperative and played sensitively with their peers. Others had disorganized attachments and problems with self-organization. Lower IQ scores may be due to inattentiveness and restlessness and not cognitive ability. Children also appear to be inappropriate with their peers.</p> <p><b>Limitations:</b> High attrition rates, small sample size, no control for other substances, differential rates in terms of changes in caregivers between groups, no controls for prenatal care. Participants were chronic, heavy drug users living in poverty.</p>
<p>Bendersky, M. &amp; Lewis, M. (1998). <i>Arousal Modulation in Cocaine-Exposed Infants</i>, Developmental Psychology, 34, No.</p>	<p>107 infants at 4 months of age and their biological mothers were recruited from inner-city clinics and three hospitals. All but 2 of the mothers received prenatal care.</p>	<p>The aim of this study was to assess the impact of parent-child interactions on infant outcomes in infants exposed to high and low levels of cocaine.</p> <p><b>Methods:</b> Trained interviewers conducted semi-structured interviews to collect substance use information</p>	<p>Arousal Modulation</p> <p>Quality of the parent-child interaction (facial expressions)</p> <p>Neonatal medical risk scale developed because complications of pregnancy</p>	<p>Infants exposed to cocaine had higher medical risk scores (<math>p &lt; .001</math>) near time of birth and higher environmental risk scores (<math>p &lt; .01</math>). Those in the high exposure group had the highest medical risk scores (<math>p &lt; .05</math>) and the highest environmental risk scores (<math>p &lt; .01</math>).</p>

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3, 555-564.	<p>17 infants low exposure (mother used cocaine less than twice per week);</p> <p>24 infants high exposure (mother used cocaine more than twice a week);</p> <p>66 nonexposed infants</p> <p>Drug Use Patterns: 56% of cocaine users used cocaine during all three trimesters</p> <p>98% of the women who used cocaine also reported using cigarettes, alcohol, or marijuana</p>	<p>including frequency, amount and trimester of use of prescription/ nonprescription drugs from mothers. Maternal self report of drug use was confirmed by prenatal and neonatal urine screens and by meconium samples.</p> <p>Premature infants were excluded, as were infants exposed to opiates or phencyclidine in utero, infants infected with AIDs, infants of mothers &lt;15 years old, infants with congenital anomalies, and infants who required special care or oxygen therapy for more than 24 hours.</p> <p>The cumulative environmental risk measure was computed (race, living situation, number of children under 18 years of age, social support network, life stressors, postnatal cocaine use, regularity of child's schedule, stability of child's surroundings, number of regular caregivers, maternal education level, source of income, neonatal medical risk).</p> <p>Arousal modulation, the infant's emerging ability to regulate affective state, was tested as a function of levels of prenatal cocaine exposure in 4-month old infants using a videotaped parent-child interaction scenario, still-face situation which presents rapid changes in emotional stimulation so that the infant's responses can be observed. Mother-child interaction was observed and videotaped for a short period of time</p>	<p>may pose additional risk to infants born to substance-abusing women. Collected medical data from charts, including respiratory complications, metabolic disorders, cardiac problems, hematologic problems, Central Nervous System problems, feeding problems, low birth weight, fetal anomalies.</p>	<p>There were no group differences in maternal responsivity during free play or maternal sensitivity and vocalization during face-to-face interactions.</p> <p>Infants exposed to cocaine showed more negative expressions during reengagement of interaction with their mothers (<math>p &lt; .02</math>) and immediately following a stressful interaction with her (<math>p &lt; .001</math>). Those infants heavily exposed to cocaine showed less joy when interacting with their mothers (<math>p &lt; .05</math>).</p> <p><b>Conclusions:</b> Infants heavily exposed to cocaine were less able to recover from a stressful interaction and less able to sustain a positive play interaction with their mothers. Cocaine exposure may adversely impact the infant's ability to self-regulate their emotional states.</p> <p><b>Limitations:</b> The artificial nature of the mother-child interaction scenarios may not be representative of more natural interactions.</p>

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<p>Cawthon, L. (1997). <i>Substance Use During Pregnancy: Prevalence, Effects, and Costs.</i></p>	<p>Washington State births and mothers with a subgroup of identified substance abusing women and drug-affected or exposed children</p>	<p>Data was summarized for three questions: (1) How many drug-affected babies are born in Washington each year?</p> <p>(2) How many drug-affected infants are born to mothers who had a prior birth of a drug-affected infant?</p> <p>(3) What are the costs for the care of drug-affected and drug-exposed children?</p> <p><b>Methods:</b> An analysis of data in the First Steps Database with linkages to birth certificates, Medicaid claims, child abuse and neglect referrals and out-of-home placements (CAMIS), and DASA's treatment encounter database (TARGET).</p>	<p>Costs of Medical care</p> <p>Number of out-of-home placements</p> <p>Number of accepted CPS referrals</p> <p>Low birth weight</p> <p>Infant death</p>	<p>8,000 to 10,000 or (10 to 12 % of the approximately 80,000 births each year to residents of Washington) is an estimate of the number of infants born to Washington women who used alcohol and/or drugs during pregnancy. The study identifies these infants as drug-exposed.</p> <p>800 to 1,000 infants (1 to 1.2% of Washington births) with measurable effects which can be attributed to substance use during pregnancy born per year.</p> <p>31% of low income women who gave birth to a drug-exposed infant in 1994-95 had a prior birth of a drug-exposed infant.</p> <p>19.7% of low income women who gave birth to a drug-affected infant in 1994-95 had a prior birth of a drug-affected infant.</p> <p>27.2% of the drug-affected group had low birthweights, with the majority in the medium low birthweight category.</p> <p>30% of low birthweight occurred in the affected non-drug-exposed group (e.g., demonstrating developmental delay or abruptio placentae) and had the highest costs for medical care.</p> <p>Drug-affected group had the highest rates of accepted CPS referrals and out-of-home placements.</p> <p>Rate of death during the first year of life for drug-affected and exposed children is more than twice that for non-exposed, non-affected Medicaid children.</p>
<p>Chasnoff, I. J., Griffith, D.R., Freier, C., Murray, J. (1992). <i>Cocaine/Polydrug Use in Pregnancy:</i></p>	<p><b>Group 1:</b> 106 infants born to women using cocaine with usually tobacco, marijuana and/or alcohol;</p>	<p>This study examines the effects of prenatal polydrug exposure on growth and developmental outcomes for 2-year-old infants.</p>	<p>Gestational Age</p> <p>Birth Weight</p> <p>Length</p>	<p>After adjusting for gestational age, group 1 infants were shorter than group 3 infants (<math>p &lt; .05</math>), and groups 1 &amp; 2 infants had smaller head circumferences (<math>p &lt; .05</math>) relative</p>

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<p><i>Two-Year Follow-up.</i> Pediatrics, 89, 2: 284-289.</p>	<p>no opiate exposure.</p> <p><b>Group 2:</b> 45 infants born to mothers using marijuana and/or alcohol, but no cocaine or opiates.</p> <p>All drug-using women in both groups were enrolled by 15 weeks, and received intensive obstetric and psychotherapeutic intervention through the remainder of pregnancy. The goal of the therapeutic intervention was to bring the women to abstinence.</p> <p><b>Group 3:</b> 81 infants born to women who were drug-free with no history or evidence of alcohol or illicit drug use.</p> <p>Control group matching was based on maternal age, race, and socioeconomic class.</p> <p>All women received prenatal care.</p>	<p><b>Methods/ Sources:</b> The National Association for Perinatal Addiction Research and Education provides a comprehensive program of health care and developmental follow-up for substance-using women and their infants.</p>	<p>Head Circumference</p> <p>Bayley Scales of Infant Development</p>	<p>to group 3.</p> <p>No differences between groups 1 &amp; 2 on growth measures.</p> <p>Correlation existed between head circumference and MDI scores in infants aged between 12 and 24 months, but not in infants below 12 months of age.</p> <p>No group differences on the MDI or PDI at age two, however, more infants in groups 1 &amp; 2 scored more than one standard deviation below the MDI mean (<math>p &lt; .05</math>) and more infants in group 1 scored more than one standard deviation below the PDI mean compared to group 3 infants.</p> <p><b>Conclusions:</b> The Bayley Scales may actually mask some child self-regulatory problems, due to the opportunity for a high level of examiner and caregiver intervention as the test focuses on one highly structured task at a time. Effects of prenatal drug exposure may not manifest until children are older and are required to engage in increasingly complex forms of thinking. Children lost to follow-up may live in more chaotic environments than those whose mothers continued to participate, such environmental factors might have had negative effects on the performance of those children., had they been included.</p> <p><b>Limitations:</b> The women who participated were in drug and alcohol treatment and other interventions so the findings may be related to an improved postnatal care environment and the findings may not generalize to the general population of drug abusing women. High attrition rates through follow-up period may have affected findings.</p>

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<p>Cohen, S. &amp; Erwin, E.J. (1994). <i>Characteristics of Children with Prenatal Drug Exposure Being Served in Preschool Special Education Programs in New York City</i>, Topics in Early Childhood Special Education, Vol. 14 2, 232-253.</p>	<p>Children were recruited from preschool special education programs which serve children with a wide range of physical, mental and emotional problems.</p> <p>29 children, prenatally exposed to drugs were recruited.</p> <p>20 non-exposed children were also recruited for comparison group</p> <p>Children in both groups were approximately 4 years of age</p> <p>Most of the drug exposed children were not living with their biological mothers, the majority of non-exposed children were</p> <p>Children did not differ in age, IQ, gender, language spoken in the home or disability level</p> <p>Children did differ in race/ethnicity and living arrangements</p>	<p>This study explored behavior of children who were prenatally exposed to drugs and who were attending preschool special education programs in New York City.</p> <p>Participant observation</p> <p>Time sampling</p> <p>Data was collected through interviews with teaching staff</p>	<p>Mood</p> <p>Attachment (relationships)</p> <p>Aggression</p> <p>Attention</p> <p>Movement/Activity Level</p> <p>Organization and Level of Play</p> <p>Language Usage</p>	<p>Drug exposed children displayed more stereotypic characteristics (e.g., high movement levels, negative mood, immature language, immature play, aggressiveness, and difficulty with transitions) (<math>p &lt; .05</math>) relative to the comparison group.</p> <p>Drug exposed children displayed more anger (<math>p &lt; .05</math>) and aggression (<math>p &lt; .05</math>) and they had more periods of unoccupied behavior (<math>p &lt; .05</math>).</p> <p>No group differences in interviews of teachers regarding child behavior, number of insecure attachments, or immaturity in play and language.</p> <p><b>Conclusions:</b> This study provides limited support that prenatally exposed children differ with regards to behavioral characteristics compared to non-exposed children in preschool special education. More striking is that fact that only 25% of the drug exposed group clearly demonstrated the stereotypic image, whereas, another 50% of this group barely resembled this image and were indistinguishable from children in the comparison group. Drug exposed children appear to have difficulty with self-regulation which manifests in the inability to control one's emotions. These findings cannot be attributed to drug exposure per se; any number of early child care experiences could have contributed to these outcomes.</p> <p><b>Limitations:</b> Inadequate controls for demographic characteristics and socioeconomic status. Small sample size. Retrospective gathering of drug exposure history.</p>
<p>Eyler, F.D., Behnke, M., Conlon, M., Woods, N.S., and</p>	<p>2,500 women interviewed from rural county public health prenatal clinics or</p>	<p>This study was designed to assess the effects of prenatal cocaine exposure on the neurodevelopment of infants in</p>	<p>Brazelton Neonatal Behavioral Assessment Scale (BNBAS) used to assess reflexes, motor</p>	<p>Twelve percent of the nonexposed infants compared to 25% of the exposed infants failed to come to a quiet, alert state</p>

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<p>Wobie, K. (1998a). <i>Birth Outcomes From a Prospective Matched Study of Prenatal Crack/Cocaine Use: II. Interactive and Dose Effects on Neurobehavioral Assessment</i> Pediatrics, 101, No. 2, 237-241.</p>	<p>hospital. Of these: 154 cocaine-using mothers were recruited An additional 154 mothers who did not use cocaine were included Women reporting chronic use of prescription and over-the-counter drugs and any illicit drug use except cocaine or marijuana were excluded Participants were matched on race, parity, socioeconomic status, and location of prenatal care Infants assessed within five days of birth</p>	<p>a rural public health population. At the end of each trimester and during a follow-up visit, demographic, psychosocial, and drug history interviews with the mothers were conducted. Quantity of drug use for each day in a trimester was collected during these interviews. Drug tests were conducted at enrollment and at delivery.</p>	<p>maturity, autonomic regulation, the range and regulation of wake-sleep states, habituation to repeated stimuli, and the infant's alertness and orientation to visual and auditory stimuli. Ponderal Index calculated Perinatal Risk (assessed post-delivery using the Hobel system, which yields a total risk score and sub-scores for prenatal, labor &amp; delivery, and neonatal components)</p>	<p>(p=.008). No group differences on any of the six BNBAS cluster scores, number of abnormal reflexes, or on the excitable or depressed scores. Cocaine exposed infants, however, did score lower on five out of nine individual scores: alert responsiveness (p&lt;.003), general irritability (p&lt;.046), regulatory capacity (p&lt;.008), state regulation (p&lt;.043), reinforcement value of infant's behavior (p&lt;.02). Higher use of cocaine in the third trimester was negatively related to regulation of state. <b>Conclusions:</b> These findings point to early problems in attention and response to novel stimuli in infants prenatally exposed to cocaine. A planned follow-up study will assess the longer-term effects.</p>
<p>Eyler, F.D., Behnke, M., Conlon, M., Woods, N.S., Wobie, K. (1998b). <i>Birth Outcome From a Prospective, Matched Study of Prenatal Crack/Cocaine Use: I. Interactive and Dose Effects on Health and Growth.</i> Pediatrics, 101, 2: 237-241.</p>	<p>2,500 women interviewed from rural county public health prenatal clinics or hospital. Of these: 154 cocaine-using women were recruited 154 additional mothers who did not use cocaine were recruited Less than 6% of the women did not utilize prenatal care Participants were matched on race, parity, socioeconomic status, and location of prenatal care. Women who reported chronic use of prescription</p>	<p>This study was designed to assess the effects of prenatal cocaine exposure on the neurodevelopment of infants in a rural public health population. At the end of each trimester and during a follow-up visit, interviews with mothers were conducted on demographic, psychosocial, drug history, and quantity of drug use for each day in a trimester was collected during these interviews. Drug tests were conducted at enrollment and at delivery.</p>	<p>Birth Weight Length Head Circumference Chest Circumference Ponderal Index calculated Gestational Age Perinatal Risk (assessed postdelivery using the Hobel system, which yields a total risk score and sub-scores for prenatal, labor &amp; delivery, and neonatal components)</p>	<p>More cocaine users used marijuana (p&lt;.001), alcohol (p&lt;.001), and tobacco (p&lt;.001) compared to women who did not use cocaine. Women who used cocaine entered prenatal care later (p=.01), their infants had higher perinatal risk scores (p=.03) and were more likely to be born prematurely (p=.03) compared to women who did not use cocaine. Higher cocaine use during the third trimester was negatively correlated with head circumference and length at birth. More preterm births among cocaine users (11.7%) than non-users (7.8%). After controlling for alcohol, cigarettes, and marijuana, no significant group differences in the number of deaths, gestational age,</p>

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	<p>and over-the-counter drugs and any illicit drug use except cocaine or marijuana were excluded.</p> <p>Infants were generally assessed within one day of birth</p>			<p>birth weight, or Ponderal Index.</p> <p>Smaller head (<math>p=.005</math>) and chest circumferences (<math>p=.01</math>) noted in children born to women using both tobacco and cocaine</p> <p><b>Conclusions:</b> These findings may be generalized to other rural public health populations. The amount and timing of drug ingestion needs further study.</p>
<p>Griffith, D.R., Azuma, S.D., Chasnoff, I.J. (1994). <i>Three-Year Outcome of Children Exposed to Drugs</i>. Journal of American Academy of Child and Adolescent Psychiatry, 33, 1: 20-27.</p>	<p><b>Group 1:</b> 93 children born to women whose primary drug of abuse during pregnancy was cocaine (mothers also reported using marijuana, alcohol, and tobacco, but no opiate use)</p> <p><b>Group 2:</b> 24 children whose mothers used marijuana, alcohol and opiates, but no cocaine</p> <p><b>Group 3:</b> 25 children not prenatally exposed to any drugs</p> <p>All women received prenatal care and were from the same urban and lower socioeconomic backgrounds. All children received early intervention including physical therapy, occupational therapy, and/or speech therapy when warranted.</p>	<p>This study is part of the larger National Association for Perinatal Addiction Research and Education study and examines the behavioral and developmental outcomes of three-year-old children prenatally exposed to drugs.</p> <p>Pediatricians collected the physical measures</p> <p>Psychologists administered the Stanford-Binet test</p> <p>Mothers reported on the Child Behavior Checklist (CBCL)</p>	<p>Weight</p> <p>Length</p> <p>Head Circumference</p> <p>Stanford-Binet Intelligence Scale (SBIS)</p> <p>Summative Attention Scale (combined score for distractibility, activity level, gives up easily, and prefers easy tasks)</p> <p>Child Behavior Checklist (CBCL)</p> <p>Caregiving Environment</p>	<p>No group differences in length and weight, after adjusting for gestational age.</p> <p>Infants in both drug exposed groups had smaller head circumferences (<math>p&lt;.05</math>) than infants in the non-exposed group; however, neither cocaine nor any other drug predicted small head size. Small head size did not predict performance on the SBIS.</p> <p>No group differences on global measures of intellectual development, short-term memory, quantitative reasoning or attention scale. However, cocaine/polydrug group scored lower on verbal reasoning scale compared to the control group (<math>p&lt;.05</math>). And group 2 scored lower on the abstract/visual reasoning than Group 3 (<math>p&lt;.05</math>).</p> <p>Children from Group 1 living with parents who continued to use drugs had lower verbal reasoning scores than those whose parents were drug and alcohol-free (<math>p&lt;.025</math>).</p> <p>Children from Groups 1 and 2 demonstrated a preference for easy tasks (<math>p&lt;.05</math>), displayed more destructive behavior (<math>p&lt;.05</math>), and expressed more externalizing behaviors (<math>p&lt;.05</math>) compared to controls.</p> <p><b>Conclusions:</b> Other studies found head size was predictive of intellectual performance. It is plausible that problems associated with small head size do not manifest until</p>

PUBLICATION	STUDY GROUP	DESCRIPTION/ METHODS	OUTCOME MEASURES	RESULTS/ FINDINGS
				<p>children are older. Overall, drugs accounted for a small amount of variance on measures of intellectual development. Therefore, results linking prenatal drug exposure with poor cognitive outcomes must be viewed with extreme caution. Rearing in a drug-using environment appears to exert a strong influence on the child's cognitive development. Environmental factors and maternal/parenting factors must be explored when examining this issue.</p> <p><b>Limitations:</b> These children received continuous medical and developmental diagnosis, assessment and intervention therefore, major prenatal risk factors were reduced.</p>
<p>Hawley, L.H., Halle, T.G., Drasin, R.E., and Thomas, N.G. (1995).</p> <p><i>Children of Addicted Mothers: Effects of the 'Crack Epidemic' on the Caregiving Environment and the Development of Preschoolers,</i></p> <p>American Journal of Orthopsychiatry, 65 (3): 364-379.</p>	<p><b>Study I:</b> Adequacy of the Caregiving Environment</p> <p>25 women in treatment for chemical dependency at a drug treatment facility in southeastern Michigan</p> <p>Comparison group of 25 non-addicted women recruited from three Head Start centers from the same locale</p> <p>All subjects reported low SES</p> <p>Addicted mothers had a lower average income</p> <p>Majority of women were African-American</p> <p>Subjects aged 20-43 years</p> <p>Study II: Children's Development</p>	<p>Participants were interviewed and asked to focus on a particular child under age six when responding to the interview questions. The interviews were audiotaped and transcribed for coding and analysis.</p> <p>Mothers and children were interviewed and tested at the drug treatment facility or Head Start sites.</p>	<p><u>Drug Use:</u> Participants were asked about their use of illicit drugs prenatally and since birth of target child</p> <p><u>Resources:</u> Family Resource Scale (Lee &amp; Dunst, 1987) - five-point Likert scale to determine degree to which mothers' and families' needs were met.</p> <p><u>Social Support:</u> A five-point social support scale</p> <p><u>Depression:</u> Beck Depression Inventory (Beck, 1987)</p> <p><u>Qualitative Data:</u></p> <p>Effects of drug use on child and mother's ability to parent</p> <p>Child Behavior Checklist (Achenbach, 1991)</p> <p>McCarthy Scales of Children's</p>	<p>Children of addicted mothers changed residences more frequently (p&lt;.001), had less contact with their fathers (p&lt;.05).</p> <p>44% had spent time in foster care.</p> <p>Prenatally exposed children displayed significantly greater emotional and behavioral problems (p&lt;.01).</p> <p>No significant difference in cognitive or language development was found.</p> <ul style="list-style-type: none"> <li>• Addicted mothers reported having: fewer adequate resources (p&lt;.05),</li> <li>• inadequate housing (p&lt;.05),</li> <li>• insufficient time to spend with their children (p&lt;.05),</li> <li>• more difficulty finding child care (p&lt;.05),</li> <li>• fewer toys (p&lt;.05).</li> </ul> <p>64% of addicted women reported physical neglect of their children; higher levels of</p>

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	<p>20 children aged 3-5 (mean age 52 months) whose mothers were in treatment for crack-cocaine</p> <p>23 comparison children aged 3-5 (mean age 49 months); same comparison group as Study 1.</p>		<p>Abilities (McCarthy, 1972)</p> <p>Arizona Articulation Proficiency Scale (Fadula &amp; Reynolds, 1991)</p> <p>Test for Auditory Comprehension of Language (Carrow-Woolfolk, 1985)</p>	<p>support from institutions and professionals (<math>p &lt; .05</math>).</p> <p>Comparison group reported having higher levels of social support from family and friends (<math>p &lt; .001</math>).</p> <p>Difference in depression scores marginally significant (<math>p = .06</math>).</p> <p><b>Conclusions:</b> Cognitive and language problems may manifest at older ages.</p> <p>Higher rates of behavioral problems in children of drug addicted women may be due to unrealistic expectations of children by mothers. Unclear if behavioral and emotional problems are direct effects of in utero drug exposure or the result of postnatal environment (parenting, chaotic lifestyles, mental illness). Drug treatment and parenting skills training are imperative</p> <p><b>Limitations:</b> Sample size small and may not have been representative of drug using women and their children – women recruited from treatment centers</p>
<p>Koren, G., Nulman, I., Rovet, J., Greenbaum, R., Loebstein, M., Einarson, T. (1998). <i>Long-term Neurodevelopmental Risks in Children Exposed In Utero to Cocaine: The Toronto Adoption Study</i>, Annals of the New York Academy of Sciences, 846, 306-313.</p>	<p>Families were recruited from a hospital in Toronto:</p> <p>23 cocaine-exposed children who were adopted into middle-to upper-class families; and</p> <p>23 non-exposed children.</p> <p>Biologic mothers of children who were adopted were matched with mothers who did not use drugs on the basis of SES, IQ, and the age of the child. The cocaine exposed children</p>	<p>This is an adoption study to determine if cocaine exposed infants who are adopted into middle-to-upper class families fare better relative to nonexposed infants who continued to reside with their families of origin. The aim of the study is to determine if cocaine exerts an effect independent of postnatal environment on child outcomes.</p>	<p>Birth weight</p> <p>Gestational Age</p> <p>Head Circumference</p> <p>McCarthy Scales</p> <p>Bayley Scales</p> <p>Reynell language test</p>	<p>Cocaine-exposed children had significantly lower mean birth weight (<math>p = 0.005</math>) and gestational age (<math>p = 0.002</math>) than controls.</p> <p>At time of testing, cocaine-exposed children were not different from controls in body weight or stature (both nominal and percentile for age). However, cocaine-exposed children had significantly smaller fronto-occipital head circumference than did controls in both nominal values (<math>p = 0.002</math>) and percentile for age (<math>p = 0.001</math>).</p> <p>McCarthy Scales recorded a trend toward lower IQ (<math>p = 0.1</math>), but no differences were found between study and control groups on</p>

PUBLICATION	STUDY GROUP	DESCRIPTION/ METHODS	OUTCOME MEASURES	RESULTS/ FINDINGS
	<p>averaged 34 months of age and the control group children averaged 33 months of age.</p> <p>18 of biologic mothers reported tobacco use during pregnancy, 1 control mother smoked. (p=0.0001)</p> <p>Control mothers were younger than cocaine-using mothers (p&lt;0.0001).</p>			<p>Bayley Scales.</p> <p>Clinically significant language delays: cocaine exposed children had lower scores on both the verbal comprehension scale (p=0.003) and the expressive language scale (p=0.001). These effects were not attributable to prematurity.</p> <p><b>Conclusions:</b> Moderate differences in global IQ with significant delays in language development were noted in cocaine-exposed children living with middle- to upper-class adoptive families.</p> <p>While neither smoking nor moderate alcohol consumption have been linked to cognitive or language delays, findings may reflect a synergistic effect of cocaine when used with other substances.</p> <p>Longitudinal studies would be helpful to follow whether or not language delays persist in older children.</p> <p><b>Limitations:</b> The study did not control for alcohol and tobacco consumption. The study tested children aged 33-34 months at one point in time.</p>
<p>Lester, B.M. (1998). <i>The Maternal Lifestyles Study</i>. Annals of the New York Academy of Sciences, 846, 296-305.</p>	<p>Database:</p> <p>118 studies published from 1985 through August 1997, including a search of Medline and PsycLit.</p> <p>Maternal Lifestyles Study</p> <p>11,811 initial acute outcome phase participants.</p> <p>Women were between the ages of 18-25 and the majority were on Medicaid. Term and preterm infants</p>	<p>Maternal Lifestyles Study</p> <p>Hospital interviews of mothers were conducted to collect demographic information and maternal drug use histories. Physical examinations were conducted on infants.</p> <p>Seven criteria were used to select articles: cocaine use during pregnancy, human subjects, neurobehavioral measures, original research, inclusion of control or comparison group, statistical analysis of data, publication in a peer-</p>	<p>Child-based:</p> <p>Physiology</p> <p>Attention</p> <p>Temperament</p> <p>Social Interaction Attachment</p> <p>Motivation</p> <p>Cognition</p> <p>Language</p> <p>Motor Development</p>	<p>Database</p> <p>Other drugs, medical factors, and sociodemographic factors are all confounding variables associated with outcomes ascribed to drug exposed infants. These factors and their interactions may explain the outcomes observed and must be controlled in order to isolate the independent effects of prenatal exposure to cocaine. Only 37% of the studies mentioned whether the women had received intervention services.</p> <p>17 out of 19 studies reported positive</p>

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	<p>were included in the study.</p> <p>The vast majority of women in these studies are polysubstance abusers. 120 (19%) reported using cocaine and one other drug, 272 (42%) reported using cocaine and two other drugs, 72% of which were alcohol and tobacco; 221 (35%) reported using cocaine and three other drugs, 86% of which were marijuana, alcohol, and tobacco.</p> <p>16 (2%) of the mothers who used cocaine reported using only cocaine.</p> <p>Environmental risk factors, including less education and public assistance were higher in the exposed group than in the comparison group.</p> <p>At the one-month follow-up, 636 mothers and infants with infants who screened positive for cocaine participated, with another 721 mothers and infants with infants who were not drug exposed as controls.</p>	<p>reviewed or refereed journal.</p> <p>Mothers (&lt;18 years of age) were excluded, as were mothers institutionalized for emotional disturbance or retardation. Infants were excluded if they were unlikely to survive, multiple gestation, or born at an outlying hospital.</p>	<p>Neurologic Status</p> <p>Medical Status</p> <p>Maternal-based: Psychological Distress</p> <p>Depression</p> <p>Self-Esteem</p> <p>Interaction with Child</p> <p>Attachment</p> <p>Parenting Stress</p> <p>Parenting Values</p> <p>IQ</p> <p>Drug History/Use</p> <p>Treatment</p> <p>Context:</p> <p>Social Class</p> <p>Neighborhood</p> <p>Social Support</p> <p>Household</p> <p>Home</p> <p>Social Services</p> <p>Acculturation</p> <p>Violence</p>	<p>findings on the Neonatal Behavioral Assessment Scale (NBAS) and/or the Neonatal Intensive Care Unit Network Neurobehavioral Scale (NNS).</p> <p>12 out of 21 studies reported withdrawal effects (possibly related to opiate use).</p> <p>6 out of 12 studies did not find effects on measures of developmental level such as the Bayley Scales of Infant Development.</p> <p>8 out of 13 studies found effects on temperament.</p> <p>7 out of 8 studies reported effects on attention.</p> <p>4 out of 9 studies reported a medium impact on language.</p> <p>3 out of 7 studies reported an effect on IQ.</p> <p>In 5 studies that measured IQ, drug exposed children scored 3.26 IQ points lower than nonexposed children, an effect size of 0.33. This difference is small, but significant, as it results in an estimate of between 3,750 and 37,612 children nationwide who would typically require early intervention/ special education services.</p> <p>There was a medium effect on language scores between groups, the effect size for receptive language is more than twice that for IQ, or 0.71; and for expressive language the effect size is 1.8 times greater than the effect size for IQ, or .60. These moderate effect sizes in language result in a 2.7-4.3 – fold increase in children who will be affected at clinically significant levels. Between 8,080 and 68,025 children nationwide needing special education services.</p> <p><i>Maternal Lifestyles Study</i></p>

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				<p>Postnatal Assessment</p> <p>Adverse medical conditions (gastrointestinal, genitourinary, and cardiac problems) were low. No differences in the number of newborn physical abnormalities. There was an increase in hypertonicity and tremors in the exposed group: 5% of which showed signs of jitteriness and hypertonia. Drug exposed infants, on average, were born 1 week earlier, weighed 449 grams less, were 2.3 cm shorter, had 1.3 cm smaller head circumferences than nonexposed infants.</p> <p><b>At One Month Follow-up</b></p> <p>Environmental risks, including less education and public assistance, were higher in the drug-exposed group.</p> <p>Children were more likely to be in foster care or alternative living arrangements.</p> <p>There were group differences in state regulation, self-regulation, handling, and cry analysis. There were no differential effects on auditory brainstem response.</p> <p><b>Conclusions:</b> The effects of prenatal drug exposure appear to be subtle in early infancy. Though small in magnitude, they can affect large numbers of school-age children who may require special education services. To date, there has been a striking scarcity of long-term follow-up studies.</p>
<p>Ornoy, A.V., Michailovskaya, V., Lukashov, I. (1996). <i>The Developmental Outcome of Children Born to Heroin-Dependent Mothers</i></p>	<p>339 children participated in study</p> <p>Ages of children were 6 months to 6 years. No children born prior to the 32<sup>nd</sup> week of pregnancy</p>	<p>Study conducted in Jerusalem. Children were from either Jerusalem or Tel-Aviv.</p> <p>All children assessed prospectively except those with environmental deprivation</p>	<p>Comprehensive medical and neurological examination</p> <p>Bayley Developmental Scales (1978) for children up to age 2</p> <p>McCarthy Scales (1978) for children aged 3 or older</p>	<p>The majority of addicted women did not receive regular prenatal care.</p> <p>Heroin-dependent parents and families with economic deprivation had significantly lower SES (<math>p &lt; .05</math>).</p> <ul style="list-style-type: none"> <li>• Children born to heroin-dependent</li> </ul>

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<p><i>Raised at Home or Adopted</i>, Child Abuse &amp; Neglect, Vol. 20, No. 5: 385-396.</p>	<p>were included.</p> <p>83 children of heroin addicted mothers participated</p> <p>44 adopted, 39 raised by biological mothers</p> <p>6 had fathers who were also addicted to heroin</p> <p>The heroin-dependent women were polydrug users</p> <p>Comparison groups:</p> <p>76 children born to heroin-dependent fathers (74 of these raised by biological parents, no mothers in this group were addicted)</p> <p>50 children living with environmental deprivation and neglect, low SES</p> <p>50 children from families with moderate or high SES</p> <p>80 healthy children from kindergartens and nurseries</p> <p>Neurological abnormalities:</p> <p>Children with neurological abnormalities were not included in study</p> <p>5 children born to heroin-dependent mothers had significant neurological disorders, 4 of these had cerebral palsy</p> <p>6 children of heroin-dependent fathers had neurological abnormalities</p>	<p>Examinations conducted by developmental psychologists and physicians</p>	<p>Questionnaire measuring drug use, the course of pregnancy and delivery, and relevant medical and social information</p> <p>Physician and psychologist both assessed</p> <p>Attention span</p> <p>Level of activity</p> <p>Behavior</p> <p>Children were regarded as suffering from hyperactivity, inattention, or behavioral problems only when both clinicians agreed upon diagnosis</p>	<p>mothers had: Lower birth weight (p&lt;.05) and height (p&lt;.05);</p> <ul style="list-style-type: none"> <li>• Shorter gestation (p&lt;.05); and</li> <li>• Smaller head circumference (p&lt;.04 -.05).</li> </ul> <p>74.1% of children born to heroin-dependent mothers exhibited withdrawal symptoms (p&lt;.05).</p> <p>No differences in weight among groups</p> <p>Children born to heroin-dependent mothers had lower scores on the Bayley or McCarthy Scales compared to normal controls (p&lt;.05 - .004) . Adopted children of addicted parents scores on the Bayley and McCarthy tests not different from controls. Children raised at home whose parent(s) were addicted had lower mental and motor scores on the McCarthy test (p=.04).</p> <p>Environmental deprivation/neglect group had lowest scores on the Bayley and McCarthy Scales (p&lt; .002 - .004) with a significantly higher percentage of children with DQ or IQ of 70-80 (p&lt;.05).</p> <p>Children of addicted mothers and fathers exhibited significantly higher rates of behavioral disorders (p&lt;.05).</p> <p>74% of children of addicted mothers had behavioral problems when raised at home. 20% of children of addicted mothers had behavioral problems when adopted. 37% of children with environmental deprivation and neglect had behavioral problems</p> <p><b>Conclusions:</b> Child outcomes, when there is no significant neurological damage, may be influenced more by the environment than prenatal drug exposure:</p> <ul style="list-style-type: none"> <li>• Adopted children of heroin-dependent mothers had normal development</li> </ul>

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				<ul style="list-style-type: none"> <li>Children from a low SES family had greater impairment to motor and cognitive function than children born to heroin-dependent mothers</li> </ul> <p><b>Limitations:</b> Not randomized</p>
<p>Richardson, G.A. &amp; Day, N.L. (1994). <i>Detrimental Effects of Prenatal Cocaine Exposure: Illusion or Reality?</i> Journal of the American Academy of Child and Adolescent Psychiatry, 33 ( 1): 28-34.</p>	<p>Women were recruited from a medical assistance prenatal clinic.</p> <p>44 women who reported use of cocaine or crack in the first trimester were enrolled</p> <p>165 controls: each subsequent woman entering clinic reporting no cocaine/crack use was recruited</p> <p>All participants of low (SES)</p>	<p>Prospective, longitudinal study of women who used cocaine or crack and the outcomes of their infants.</p> <p>Infants assessed 24 to 48 hours after delivery</p> <p>Detailed drug use information was obtained by interviewing women at the end of each trimester</p>	<p>Gestational Age</p> <p>Birth Weight</p> <p>Length</p> <p>Head Circumference</p> <p>Brazelton Neonatal Behavioral Assessment Scale (Brazelton, 1984)</p>	<p>Women who used cocaine were more likely to use other drugs. Frequent users had more medical problems and difficult pregnancies. Alcohol use in the first and third trimester predicted prematurity. Tobacco use in first trimester predicted Birth weight and length.</p> <p>No group differences for cocaine users and non-users in Birth weight, gestational age, Apgar scores, length, head circumference or minor physical anomalies after controlling for confounding variables.</p> <p>Birth weight, length, and head circumference were predicted by Gestational age, gender, race, maternal height.</p> <p><b>Conclusions:</b> Effects attributed to prenatal cocaine exposure appear to be reflective of the impact of polydrug use and a disadvantaged lifestyle rather than solely the effects of cocaine use.</p> <p><b>Limitations:</b> Women recruited from a prenatal clinic probably do not represent the heaviest drug users who would be less likely to seek prenatal care. The results might be more pronounced among these women.</p>
<p>Richardson, G.A. (1998). <i>Prenatal Cocaine Exposure: A Longitudinal Study of Development</i>, Annals of the New York Academy of</p>	<p>325 participants were recruited from a prenatal clinic. All mothers were at least 18-years-of-age. All women who used cocaine or crack during the first trimester were enrolled and</p>	<p>The Maternal Health Practices and Child Development Project is an investigation of prenatal cocaine exposure on the physical, cognitive, and behavioral development of children at 1, 3, and 7 years of age.</p>	<p><i>Newborns</i></p> <p>Brazelton Neonatal Behavioral Assessment Scale (BNBAS).</p> <p>EEG-sleep study</p> <p><i>One year olds</i></p>	<p><b>Newborns:</b></p> <p>No group differences in birth weight, length, head circumference, physical anomalies, or gestational age size.</p> <p>Women who used cocaine frequently in the first trimester gave birth to infants who were</p>

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<p>Sciences, 846, 144-152.</p>	<p>the next woman who did not use cocaine was also enrolled.</p> <p>There was a 93% follow-up rate at year 1 and a 95% rate at year three. Mothers averaged 25 years of age and all were of low SES. Women received varying levels of prenatal care: 47% had adequate prenatal care; 48% had intermediate levels; and 5% had inadequate levels of care.</p> <p>Those women who used cocaine also used other drugs. 23% of the women who used cocaine were frequent users (one or more lines of cocaine per day) during the prenatal period.</p> <p>6% of children were not in maternal custody.</p>	<p>Demographic factors, medical history, life events, social support, psychological characteristics and environmental variables were measured.</p> <p>Drug histories were obtained through interviews with the mothers and by review of the medical charts. Women were interviewed at 7 months and 24-48 hours postpartum and at each subsequent assessment period. The quantity, frequency, and pattern of cocaine, crack, alcohol, marijuana, tobacco, and other drug use were assessed at each assessment period.</p>	<p>Bayley Scales of Infant Development</p> <p>Mother's self report of child's temperament, behavior problems, and home environment.</p> <p>Independent examiner's reports of behavior using the BSID Infant Behavior Record</p> <p><i>Three year olds</i></p> <p>Stanford-Binet Intelligence Scale (4<sup>th</sup> Edition).</p> <p>Mother's self report of child's temperament, behavior problems, and home environment.</p> <p>Independent examiner's reports of temperament and behavior problems.</p> <p>Follow-up for Seven year olds has been planned, but has not yet been completed.</p>	<p>born about one week earlier than other infants. Increased number of abnormal reflexes were associated with first and second trimester exposure, decreased motor maturity scores were associated with second and third trimester exposure. Cocaine exposure was related to poorer autonomic stability, decreased ability to regulate state, and abnormal sleep EEGs.</p> <p><b>One year:</b></p> <p>No group differences in weight, length, head circumference, MDI scores, infant's temperament (measured by mother).</p> <p>Group differences were identified in motor development as assessed by PDI scores.</p> <p>Mothers reported on temperament, using the Bates Infant Characteristics Scale. The fussy/ difficult subscale was significantly predicted by cocaine use during first, second, and third trimesters.</p> <p>Unadaptability and excessive persistence were both predicted by first and second trimester use. Independent measure was sought through analysis of examiner ratings of the BSID Infant Behavior Record, when examiners were blind to substance exposure. Infants exposed to cocaine in the first trimester were reported to be less responsive, less reactive to test materials, and had shorter attention spans than infants not exposed to cocaine in the first trimester.</p> <p><b>Three years:</b> No group differences in weight and height.</p> <p>Group differences existed for head circumference, lower composite and short-term memory scores on Stanford-Binet, temperament (mother's report), behavior problems (mother's and examiner's reports).</p> <p><b>Conclusions:</b> Prenatal cocaine exposure</p>

PUBLICATION	STUDY GROUP	DESCRIPTION/ METHODS	OUTCOME MEASURES	RESULTS/ FINDINGS
				<p>predicts subtle Central Nervous System (CNS) deficits through age three and memory deficits at age three. CNS effects have become more pronounced as children have aged.</p> <p><b>Limitations:</b> Women recruited from prenatal care clinic may not be representative sample of drug-using population. Environment assessment by mother's report, may not accurately reflect postnatal environmental risks.</p>
<p>Tronick, E.Z., Frank, D.A., Cabral, H., Mirochnick, M., Zuckerman, B. (1996). <i>Late Dose-Response Effects of Prenatal Cocaine Exposure on Newborn Neurobehavioral Performance</i></p> <p>Pediatrics, vol. 98, 1, 76-83.</p>	<p>251 clinically healthy full-term infants were recruited from Boston City Hospital from Oct 1990 – Mar 1993:</p> <ul style="list-style-type: none"> <li>-101 nonexposed infants</li> <li>-79 lightly cocaine-exposed infants</li> <li>-44 heavily cocaine-exposed infants</li> </ul> <p>All mothers were 18 years of age or older.</p> <p>Infants with any major risk factors for developmental impairment were excluded.</p>	<p>The purpose of this study was to determine whether an immediate or late dose-response effect could be demonstrated between prenatal cocaine exposure and newborn neurobehavioral performance.</p> <p>Infants were assessed within 72 hours and again at three weeks. NBAS was conducted during both assessment periods.</p>	<p>Physical Assessment</p> <p>Gestational Age</p> <p>Birth Weight</p> <p>Length</p> <p>Head Circumference</p> <p>Hobel Index for neonatal complications</p> <p>Neurobehavioral Assessment</p> <p>Neonatal Brazelton Assessment Scale (NBAS)</p>	<p>Women who did not use cocaine were younger than the light or heavy users (p=.0001).</p> <p>No group differences were found on Apgar scores nor on the Hobel neonatal risk index.</p> <p>Nonexposed infants had higher birth weights and were longer (p&lt;.0001) compared to lightly and heavily exposed infants. Nonexposed infants had larger head circumferences (p&lt;.001) than heavily exposed infants.</p> <p>After controlling for confounding variables, at the 3-week examination, prenatal cocaine exposure was related to state regulation (p=.01) and excitability (p=.05), but not related to reflexes and autonomic stability.</p> <p><b>Conclusions:</b> The problems observed with state regulation and excitability suggest an inability of infants who are prenatally exposed to cocaine to regulate arousal. These are more likely to be indirect effects as opposed to direct effects of cocaine exposure. Further research is needed to determine if these effects persist.</p>

## LIMITATIONS TO ARTICLES ON SUBSTANCE ABUSING WOMEN AND THEIR CHILDREN: STUDIES WITHOUT CONTROLS

Many of the studies in this section represent the majority of the type of literature available on the short and long term physical and behavioral developmental effects on children with prenatal substance abuse exposure. Several of the studies reviewed sufficiently large populations to proscribe an effect but had many serious methodological limitations. The list below describes some of the concerns with these studies.

- **Lack of comparison or control groups.** The results listed in the studies were reported without adequate control or comparison groups. Results were often muddled in findings that compared the high-risk women in the study with the general population versus those with similar socioeconomic backgrounds.
- **Substance-abuse identification was often biased.** Substance-abusing women were primarily identified for inclusion in these studies at delivery based on the urine toxicology tests given to them or their infant at delivery. However, toxicology screenings were not routinely performed on all women in most hospital settings. Women and children were often screened based on staff's suspicion of drug abuse. Some women were also identified as substance abusers by screening women with little or no prenatal care history. This selection process may seriously bias results, as women who receive little or no prenatal care are already in a high-risk category for poor birth outcomes.
- **Limited delivery settings.** The majority of these studies were conducted at large urban hospitals that generally serve high-risk women. A comparison of these women's outcomes to that of other high-risk women served in the same delivery setting was not often provided. In behavioral studies, many of the women had been previously identified at high risk for other outcomes.
- **Limited generalizability to Washington.** Study participants did not frequently resemble Washington residents in race/ethnicity. The majority of studies were conducted in cities where African Americans comprise a large proportion of the population, compared to Washington's primarily Caucasian population. A limited number of studies of mostly Caucasian women were conducted in Amsterdam, the Netherlands, which has a different social acceptance system of both prostitution and drugs than the United States. Nearly all studies were conducted on women with very low incomes, who had multiple risk factors for poor birth outcomes, including a high rate of inner city violence in their lives. This may or may not be similar to substance-abusing women in Washington.

Limitations specific to each study are listed at the end of the discussion for that study and are located in the results column.

LITERATURE REVIEW OF STUDIES ON SUBSTANCE ABUSING WOMEN AND THEIR CHILDREN – NO CONTROLS

PUBLICATION	STUDY GROUP	DESCRIPTION/ METHODS	OUTCOME MEASURES	RESULTS/ FINDINGS
<p>Billing et al. (1994). <i>Influence of Environmental Factors</i></p> <p>Ref: 12</p>	<p>n=69 amphetamine addicted women and their surviving 65 children born between 1976-87 in Stockholm area.</p> <p>Thirty percent of mothers occasionally used heroin; 81% used alcohol (17% alcohol dependent); 80% smoked &gt; 10 cigarettes daily; 52% had positive attitude about pregnancy although over 80% of the pregnancies were unplanned.</p>	<p>Longitudinal study of children with prenatal amphetamine exposure to review the effects of psychosocial and physical development of children.</p> <p><i>Methods:</i> Participants were chosen from study of children born in Stockholm between 1976-1987. The extent of amphetamine use was determined by maternal report and health and social records. Tests were administered blindly by the same psychologist at birth, and again at years 1, 4 and 8.</p> <p>Predictors tested included maternal background such as drug use, education and criminality; drug activity during pregnancy and environmental impact variables such as number of custodians, drug abuse history and psychiatric treatment history.</p> <p>Statistical analysis was performed for correlation and significance.</p>	<p>Intelligence (Terman-Miller);</p> <p>Behavior measures such as BKG (Sum of psychometric tests), API (a sum of variables on aggressive behavior, peer problems, psychosomatic symptoms and eating/sleeping disorders);</p> <p>Aggressiveness;</p> <p>General assessment.</p>	<p>Children with prenatal amphetamine exposure during the mother's entire pregnancy experienced a greater problem with aggression and peer-related problems than those whose exposure was limited to early pregnancy.</p> <p>A dose-response effect was found for aggressive behavior and increased drug abuse exposure. (A significantly aggressive behavior was associated with a greater degree of drug abuse.)</p> <p>Test results were in general better for girls and children with higher IQs.</p> <p>Single factors such as current drug abuse and criminality did not predict scores.</p> <p>Children entered foster care at high rates: 26% by year 1; 68% of children had been adopted or were in foster care by year 8.</p> <p><b>Limitations:</b> Lacks a control group. Confounding effect of alcohol remains a risk factor.</p>
<p>Brinker et al. (1994). <i>An Ordinal Pattern Analysis of Four Hypotheses Describing the interactions between Drug-addicted, Chronically Disadvantaged and middle-class Mother-Infant Dyads</i></p> <p>Ref: 19</p>	<p>n=18 African-American women of low/middle socioeconomic class whose children from 2-26 months were enrolled in the Early Childhood Research and Intervention Program, at the University of Chicago, Illinois.</p> <p>Four mothers used drugs during their pregnancies.</p>	<p>An observational study of children designed to test effectiveness of the ordinal-pattern methodological analysis when applied to 4 hypotheses describing sensitivity interrelationships between mother-infant dyads. Tests hypotheses that mothers increase responsivity over time, are less responsive as a function or drug addiction, poverty or serious developmental delay or interactive sensitivity fluctuates in relation to infant involvement.</p>	<p>Combined scales for child interaction scores by the sum of averages.</p>	<p>Finds no support for the hypothesis that mothers become less responsive due to drug-addiction. No single hypothesis exactly fit for either drug exposure or socio-economic class.</p> <p><b>Limitations:</b> No control group, small sample size. All were involved in a more than 20 month long early intervention program.</p>

PUBLICATION	STUDY GROUP	DESCRIPTION/ METHODS	OUTCOME MEASURES	RESULTS/ FINDINGS
		<p><i>Methods:</i> An observational study assigning women a socioeconomic status value and dividing group by whether or not infants were prenatally drug-exposed.</p> <p>Used Hollingshead Two-Factor Index of Social Position to assign socioeconomic status. Assessed the infants' development with Bayley Scales of Infant Development (1969) every 10 months [1 assessed with Elliott Differential Abilities Scale (1900) due to age]. Infants were videotaped 8 minutes every 5 months in free-play interaction and assessed by Parent-Infant Interaction Scale (pHs 1985) and Teaching Skills Inventory (Rosenberg 1984). Two independent raters were used for each assessment.</p>		
<p>Brook et al. (). <i>Parent Drug Use, Parent Personality and Parenting</i> Ref: 20</p>	<p>n=71 young mothers or fathers who participated in another longitudinal study of 1000 children begun in 1975.</p> <p>Fifty-one women and 20 men, mostly Caucasian race.</p> <p>Parents' mean age at the birth of their oldest child was 19.3 years (53% had been adolescents) when they became parents. The mean age at this interview was 22 years.</p> <p>Approximately half of the group was married at evaluation.</p>	<p>Follow up study to exam the relationship between drug use and parental personality traits on parents who also had substance abuse exposure to indicators for the parent-child bond.</p> <p><i>Methods:</i> Participants were chosen from a random sample of children born in 2 NY counties to mothers who participated in a 1975 longitudinal study. (Participants were now parents.) Parents completed self-administered 2 1/2 hour questionnaires about personality, family, peer, demographic and drug abuse.</p> <p>Statistical analyses included correlation and regression analyses.</p>	<p>Indicators of the parent-child bond, including affection, child-centeredness, involvement, nonconflictual relationship, believed to predict drug use and delinquency during late adolescence and early adulthood.</p> <p>Illegal drug use, a cumulative measure based on the frequency of illicit drug use in past history.</p> <p>Parent personality measures included psychic distress, poor control of emotions, unconventionality and difficulty in interpersonal relatedness.</p>	<p>Reducing parental drug abuse can have a direct and positive effect on the parent-child bond by enhancing parental personality traits and thus strengthening the parent-child bond.</p> <p>Domains of parent drug abuse and parent personality had independent effects on most of the parent-child variables.</p> <p>Protective personality characteristics can mitigate the impact of drug use on the parent-child bond.</p> <p>Strengthening aspects of conventionality appears to offset risks stemming from drug use (esp. low sensation seeking and high educational expectations).</p> <p><b>Limitations:</b> Small sample size. Mostly white population that had children at an atypical very young age (53% teenagers).</p>
<p>Brooke et al. (1996). <i>Effects of Parent</i></p>	<p>n=56 parents and their 75 children (35 girls, 40 boys).</p>	<p>Follow up study of the interrelation of parental drug use and parental</p>	<p>Dependent variable used was a combination of 2 toddler</p>	<p>Alcohol use by parents in adolescence and young adulthood was associated with a</p>

PUBLICATION	STUDY GROUP	DESCRIPTION/ METHODS	OUTCOME MEASURES	RESULTS/ FINDINGS
<p><i>Drug Use and Personality on Toddler Adjustment</i> Ref: 11</p>	<p>Median age of parents was 21 years old at delivery, 1/3 had been teens; half were married.</p> <p>User group used alcohol and other illicit drugs heavily.</p>	<p>personality attributes on children's adjustment at 18 months old which attempts to answer, "Can parents' alcoholic drug use or problem be modified by parental protective personality traits?"</p> <p><i>Methods:</i> Two hour questionnaire was given to parents selected from a random sample of parents and children involved in a 10 year longitudinal study in 2 upstate New York counties.</p> <p>Three alternative models were used to determine if parents drug/alcohol involvement predicted child's adjustment:</p> <ol style="list-style-type: none"> <li>(1) Independent – parental drug use directly affects child's behavior;</li> <li>(2) Mediation – drug use or personality mediates the other (i.e. drug use brings out personality problem which causes child's behavior);</li> <li>(3) Interdependent - joint function of use and behavior.</li> </ol> <p>Statistical correlation and significance analysis used for parental drug involvement with attributes and child adjustment difficulties.</p>	<p>measures for toddler "non-compliant" or "difficult".</p> <p>Personality measures used were intrapsychic distress, poor control of emotions, unconventionality, difficulty in interpersonal relatedness.</p> <p>Alcohol-involvement was measured.</p>	<p>more difficult adjustment of the 18 mo. old child.</p> <p>Findings support a mediational model where substance abuse or alcohol involvement affects parental personality then child's behavior. Parents with protective personality traits and did not use illegal drugs had children with better adjustment. Parents' control of impulses was significantly associated with toddler adjustment.</p> <p>Late adolescent and young adult personality attributes more directly impact their offspring than at other ages.</p> <p>User group tended to be anti-social, estranged and exhibited greater control over their family.</p> <p><b>Limitations:</b> No control group. Small study.</p>
<p>Burns et al. (1997). <i>The Early Relationship of Drug Abusing Mothers and Their Infants at Eight to Twelve Months of Age</i> Ref: 4</p>	<p>n=20 mother-infant dyads of low income families where the mother was the primary caregiver (10 dyads with prenatal drug abuse v 10 drug-free dyads).</p> <p>Infants were born term and without complications. At evaluation, infants' ages were between 8-12 months.</p>	<p>A comparative study to measure what effects of social skill dysfunction drug-abusing moms bring to their early social relationship with their infants compared to their non-drug abusing peers.</p> <p><i>Methods:</i> Study group women were recruited from a hospital-based follow up clinic for chemical abusing women. Control dyads were recruited from a public health clinic where</p>	<p>Parent-Child Early Relational Assessment for structured and unstructured play.</p> <p>Enthusiasm, responsivity to infant cues, infant happiness, maternal affect, parental style and mood, behavioral involvement with child.</p>	<p>Drug-abusing dyads had consistently significantly more ratings in unstructured play and in all play (<math>r = .71</math>), maternal and infant had significantly less pleasure and enthusiasm.</p> <p>No significant differences were found for other mother-infant interactions.</p> <p><b>Limitations:</b> Small number in study.</p>

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	<p>Annual family income was below \$15,000 for all study group women.</p> <p>Both groups were primarily black (70%, 80%) or Hispanic (20%, 10%). Mothers did not significantly differ in IQ, reading scores, depression, or psychiatric symptomology.</p> <p>Drug-using women were moderate to heavy users of cocaine during pregnancy. Among drug-users, 6 reported alcohol use, 7 used marijuana, and 5 smoked cigarettes. None used opiates.</p>	<p>children were brought for pediatric care.</p> <p>Dyads with and without prenatal abuse were observed during 2 videotaped 5 minute play sessions of mother-infant dyads in a clinic setting.</p> <p>Statistical significance tests were applied to the ratings using Fisher's Exact Probability.</p>		
<p>Cernerud et al. (1996). <i>Amphetamine addiction during pregnancy: 14-year follow-up of growth and school performance</i> Ref: 13</p>	<p>N=65 children born to 69 amphetamine-abusing women in metro Stockholm.</p> <p>One-half had psychiatric problems;</p> <p>5/24 had criminal records;</p> <p>10 mothers were employed; all had used social support system.</p> <p>Polydrug use in 10/24 mothers;</p> <p>30% mothers also abused heroin;</p> <p>81% used alcohol (17% alcohol dependent); 80% smoked &gt; 10 cigarettes/day.</p>	<p>Fourteen-year longitudinal, prospective study to examine the effects of prenatal amphetamine exposure on school performance and general health on school-aged children.</p> <p><i>Methods:</i> Women were recruited after hospital delivery by their background, abuse and extent of amphetamine abuse during pregnancy. Controlled information for number of injections and regular versus non-regular use. Children were followed prospectively by the same psychologist over time. Collected school and child health records, interviewed officials for official scores and development.</p> <p>Statistical tests included absolute means, t-tests and bivariate correlation analysis. Results were compared to standard Danish studies for children their age.</p>	<p>School performance (school grade marks, sports achievement);</p> <p>General Physical Health (school health records);</p> <p>Physical development (Height, weight for age)</p>	<p>School performance for these children was worse than in the general population. By age 14, 15% were one grade level lower than their peers compared to 5% for the general population. Their mean points in math, language and sports were significantly below those of their classmates.</p> <p>Only alcohol abuse correlated with school grades.</p> <p>Health of children with prenatal amphetamine exposure was generally good but boys at 14 years were taller/heavier than peers while girls at 10 years old were smaller than expected for their age.</p> <p>Better achievements in sports was related with extensive maternal amphetamine abuse before and during pregnancy.</p> <p><b>Limitations:</b> No control group; small study group; comparison group not selected based on socioeconomic status.</p>

PUBLICATION	STUDY GROUP	DESCRIPTION/ METHODS	OUTCOME MEASURES	RESULTS/ FINDINGS
<p>Conte et al. (1994). <i>"Separation" of the Mother-Child Couple: Pregnancy and Maternity of Drug-Dependent Women</i></p> <p>Ref: 10</p>	<p>n=26 women (13 opiate-dependent; 13 non-drug users) and their children.</p> <p>Among the 13 drug-dependent women, 8 were Methadone Maintained, 5 discontinued methadone irregularly, 8 were employed, 11 had prior children, 2 were single.</p>	<p>Two-year prospective psychometric study of mother-child relationship to determine if substance abuse is a risk indicator for future maternal abandonment; comparison of children entrusted to alternate care or stayed within family nucleus.</p> <p><i>Methods:</i> Studied 13 subsequent opiate- dependent women who applied to Drug Dependency Unit in Rome during pregnancy in 1989; control included 13 non dependent women, homogeneous in age, social condition and cultural distribution. Psychometric evaluation of women following the 7th month of pregnancy until the child was 2 years old. Compared results between children entrusted to alternate care or stayed within family nucleus.</p> <p>Statistics used: Mann-Whitney non parametric test for continuous variables, Chi-square test with continuous correction for qualitative variables.</p>	<p>Osgood's sematial differential for perceptions of individual characteristics of unborn infant, mom herself and infant father.</p>	<p>Drug dependent subgroup had similar profiles to non dependent group suggesting dependency is not directly responsible for neglect in child. Subgroups of high risk women may exist within those with dependencies.</p> <p><b>Limitations:</b> Small study size does not allow for definitive conclusions.</p>
<p>Dixon et al. (1997). <i>Early Language Development in Children with Prenatal Exposure to Stimulant Drugs</i></p> <p>Ref: 14</p>	<p>n=60 children now ages 25 to 30 months with prenatal substance abuse exposure (cocaine, amphetamines).</p> <p>Children were born term without pre or postnatal complications at San Diego Medical Center, University of California.</p> <p>Forty-three percent of sample had prenatal amphetamine exposure while the rest had prenatal cocaine exposure.</p> <p>Racial distribution was primarily African American</p>	<p>Longitudinal three-year study of toddlers to measure delays in language development among children with prenatal exposure to substance abuse (cocaine, amphetamines).</p> <p><i>Methods:</i> A longitudinal 3 year study of 60 children was used as the base study with a 12 child subset to replicate and extend the results of the primary study. Primary care givers completed language assessment questionnaires.</p> <p>Selection criteria for the study included: English spoken as primary language in home, not previously</p>	<p>Language development (MacArthur Communicative Development Study): word production, comprehension, gestures, mean length of 3 longest utterances, sentence complexity.</p>	<p>Significant delays were found in all aspects of language in the drug-exposed children, especially older toddlers. The type or drug or general development status does not act as a predictor.</p> <p>Thirteen percent of the children were living with mother at last evaluation; the rest were in alternative care arrangements.</p> <p>Children in their birth homes fared better in all measures than did those in foster care.</p> <p>Data suggest that a stage of development of grammar and complex sentence structure, stimulant drug-exposed children have an especially difficult time.</p> <p><b>Limitations:</b> No control group. Maternal</p>

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	<p>(48%) and non Hispanic White (34%); 18% had mixed ethnicities.</p> <p>Eight-four percent of the children were in in foster or adoptive care at evaluation.</p>	<p>identified at risk or or with a developmentally disability, no ongoing substance abuse in home, and no medical complications at birth (including fetal alcohol syndrome).</p> <p>Developmental assessment was completed on 32 children using revised Developmental Screening Inventory and 28 children using Bayley Scales of Infant Development. Results were presented for the group as a whole then 3 age cohorts, 8-16, 17-24 and 25-30 months.</p>		<p>self report versus primary care giver report may be biased in either direction.</p>
<p>Eriksson and Zetterstrom (1994). <i>Amphetamine addiction during pregnancy: 10 year follow-up</i></p> <p>Ref: 18</p>	<p>n=69 amphetamine-abusing women who delivered at Amsterdam Medical Center, Stockholm, and their 71 children</p> <p>The median age of mother's first initiation of substance abuse was 17 years old (range 12-30).</p> <p>80% of mothers smoked 10+ cigarettes daily.</p> <p>All but one attended prenatal care.</p> <p>Drug abuse, alcohol and psychiatric illness common among mothers' parents and siblings.</p> <p>Sixty-five percent of women had a very low educational level (less than 9<sup>th</sup> grade).</p> <p>Seventeen percent had criminal records.</p>	<p>Longitudinal prospective study of mothers and children to test if amphetamine use during pregnancy influences long term development of exposed children.</p> <p><i>Methods:</i></p> <p>Over a period of years, the same psychologist assessed children of amphetamine-abusing women who delivered at Amsterdam Medical Center, Stockholm. Child developmental screenings and child adjustment assessments occurred at ages 1, 4-5, 8-9 by the same psychologist. Child's medical and school records were reviewed. Collected information on psychosocial environment from maternal interviews and social welfare records (any economic aid received, persons contacted). Reviewed receipt of psychiatric hospital treatment, drug treatment programs and criminal register records.</p> <p>Compared results with known Swedish standards in official statistics. Used outcome results in</p>	<p>Presence of infectious disease in mother, mother no longer with child custody, drug-free habit, mental history, receipt of social welfare assistance and drug treatment programs.</p> <p>Infants' Morbidity, cognitive development, educational level, adjustment, growth, overall health and hospitalization lengths of stay, social environment.</p>	<p>Mother's medical care needed were greater than the average population due to hepatitis, STD and infections. Mothers used a high degree of social support (75% received economic support, 65% had contacts within the welfare system).</p> <p>Thirty percent of mothers had received drug treatment programs at assessment.</p> <p>Sixty-five percent of mothers had an unsatisfactory home environment. Forty percent of mothers had been foster children.</p> <p>About ¼ quit drug use during 2nd or 3rd trimester pregnancy. Ten moms were drug free after 5 years, 9 after 10 years.</p> <p>For children:</p> <p>Eight percent of infants were born small for gestational age.</p> <p>Thirteen children were placed in foster homes upon discharge from hospital. At 4 years old, 50% of children were in foster homes, at 10 years 70% in foster care with the cost common reason due to continued abuse or failed other support systems.</p> <p>Cognitive development in children were normal at 8 years and 10 years. A statistically significant correlation between</p>

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		age as dependent variable and predictors (independent variables) were dichotomized.		low IQ and class. A significant correlation existed between educational level and birthweight and length.  Psychometric tests showed negative correlation with increased amphetamine exposure. No correlation was evident between cognitive and social-economic factors.  <b>Limitations:</b> No control, small study.
Karmel et al. (1996). <i>Prenatal Cocaine Exposure Effects on Arousal-Modulated Attention during the Neonatal Period</i>  Ref: 8	n=180 term infants (89 males, 91 females) with prenatal cocaine exposure in a normal nursery (not NICU) whose mothers had inadequate or no prenatal care. Infants similar in Apgar scores, gender, postconceptional age.  Mothers of cocaine-exposed infants had all used cocaine prior and throughout all phases of pregnancy, heavy users (35% initially denied use).  All mothers had little or no prenatal care as self-reported or from hospital records.  Cocaine mothers used other drugs significantly more than control group (86% smoked tobacco regularly vs. 42%; 58% drank alcohol regularly vs. 27%). 7% opiate use in study, distributed evenly.  Moderate alcohol use among all study groups.	Study to measure effects of prenatal cocaine exposure on infant's arousal attention in the neonatal period, focusing on visual stimuli.  <i>Methods:</i> Chose study and comparison group from normal nursery. Cocaine exposure was determined by maternal report, urine toxicology and/or meconium toxicology and confirmed by urine screening.  Tested arousal conditions by 3 visual preference tests to term infants at birth and again at 1 month. Visual preferences and stimuli tested in 3 arousal conditions based on feeding time.  Used statistical tests to control for cocaine exposure, prenatal care, gender, minority status and 1 fixed interaction effect. Statistical Generalized Linear Model employed at each age to test hypotheses.	Birthweight, head circumference, average amount of time looking at object, light frequencies, arousal, visual preference	Cocaine-exposed infants showed lack of arousal modulated attention by preferring higher amounts of stimulation. Infants not exposed to cocaine demonstrated strong arousal-modulated attention at birth and a 1 month old, independent of prenatal care, alcohol use, minority status or gender.  Differences in head circumference and birthweight were attributed to adequacy of prenatal care (found association).  <b>Limitations:</b> Not controlled for level or dose or form of administration of drug. Restriction to normal term delivery.
Kienberger Jaudes (1995). <i>Association of</i>	n=513 drug-exposed infants/ children in south side	Five-year longitudinal retrospective-prospective study tests the hypothesis	Child abuse during the study period as obtained from State	Risk was not significantly related to infant gender, race or birthweight. The risk of

PUBLICATION	STUDY GROUP	DESCRIPTION/ METHODS	OUTCOME MEASURES	RESULTS/ FINDINGS
<p><i>Drug Abuse and Child Abuse</i> Ref: 16</p>	<p>Chicago, born at Chicago Lying-in Hospital between 1985 and 1990.</p> <p>Children were predominantly African American (90.2% in study children, 81.8% in comparison group).</p>	<p>that children prenatally exposed to drugs during the index pregnancy are at higher risk of subsequent abuse or neglect than infants in the general population.</p> <p><i>Methods:</i> Women were assumed drug users if their or the infants' urine tested positive for illicit drugs or the mother admitted to chronic use of illicit drugs. Selection criteria for testing included high risk indicators for substance abuse: abruptio placenta, premature labor, premature rupture of membranes, self report drug abuse, abnormal behavior or systems of drug abuse and little/no prenatal care. Data were obtained from medical records, birth certificates, child abuse/neglect included socioeconomic factors, public assistance enrollment, drug exposure type and history, and birth outcomes.</p> <p>Life Table Analysis used to estimate abuse rates. Used only first reported abuse episode to calculate abuse rate.</p> <p>Logistic regression analysis performed for odds ratio of abused children to non-abused children.</p> <p>Univariate analysis compared characteristics of abused and non-abused groups.</p> <p>Used historical data from census tract to estimate rates of child abuse and neglect in same area where the majority of patients live.</p>	<p>Central Registry of Abuse and Neglect.</p> <p>Life Table Analysis used to estimate abuse rates.</p>	<p>abuse increased 1.50-fold (CI=1.25, 2.01) among mothers who completed high school or had some college education. Abuse increased 1.80-fold (CI 1.34-2.27) for women who had previous planned abortions, after controlling for other confounders.</p> <p>Thirty percent (155) of 513 children prenatally exposed to drugs were abused or neglected.</p> <p>About 1/5 (19.9%, 102) had substantiated reports. Most (72.6%) were due to neglect.</p> <p>The reported and substantiated abuse rates of 127 and 82 cases per 1000 years of exposure are 2 to 3 times than of children within the same geographic area.</p> <p>Toddlers were the most vulnerable to substantiated abuse. Natural parents were responsible for maltreatment 88% of time.</p> <p>Neglect was the most common form of maltreatment (72.6%) of 102 children, followed by physical injury (15.7%) and continued exposure to illicit drugs (5.9%).</p> <p>More than half (51%) of all cases reported to have been abused once, 37.3% two times and 11.7% more than 3 times.</p> <p>Authors suggest early intervention programs for at-risk children, non-punitive drug rehab centers for high-risk pregnant women and home visitation programs could be effective.</p> <p><b>Limitations:</b> Lack of control group. Limited generalizability to a very low SES within an urban center.</p>

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<p>Kienberger Jaudes, P. and Ekwo, E. (1994). <i>Outcomes for infants Exposed in Utero to Illicit Drugs</i></p> <p>Ref: 24</p>	<p>n=480 infants born in a Chicago medical center from 1985 to 1990 (93% of all identified.)</p> <p>Drug use indicated by presence of heroin, opiates, marijuana, PCP, or cocaine.</p>	<p>Study to determine whether substance-exposed infants who are maltreated have (1) higher out-of-home placements and (2) higher risks of death than substance-exposed children who are not abused/neglected.</p> <p><i>Methods:</i> University of Chicago's Lying-in Hospital records were obtained for evidence of prenatal exposure to drugs, defined as positive screening for illicit drugs in urine of either infant or mother admitted chronic use of drugs during pregnancy). Maternal information was linked to Illinois death registry, National Death Index and central registry of child abuse report. Collected maternal and paternal socioeconomic information and history of drug exposure, public assistance enrollment.</p>	<p>Maltreatment defined as child who received maltreatment/abuse intervention from Illinois state;</p> <p>Infant Deaths;</p> <p>Out-of-home placement</p>	<p>Both out-of-home placement and death were distinctly more likely if children were exposed to drugs and maltreated.</p> <p>Infants exposed in-utero to drugs and subsequently maltreated by a parent were 5.94 times more likely (CI 2.78, 7.11) to be placed in out-of-home care.</p> <p>Mothers age, marital status, educational level, number of previous pregnancies, miscarriages and number of prenatal care visits did not differentiate children between out of home placement and no placement.</p> <p>Thirty percent (146, 30.4%) were placed in out-of home care; 69.6% were not. Among placed infants, 65 (44.5%) were placed before infant reached 3 months of age.</p> <p>Among 146 in family foster care, 85.6% were African American, 4.1% Caucasian and 10.3% were other ethnic groups.</p> <p>Twenty percent of 480 children had substantiated report of maltreatment. Among those 38/95 were abused/neglected at home then placed in out-of home care; 42.1% were abused but not placed elsewhere and 17.9% were abused while in out-of-home care.</p> <p>Infants exposed in-utero to drugs and subsequently maltreated by a parent were 5.94 x more likely (CI 2.78, 7.11) to be placed in out of home care.</p> <p>Most common (85%) maltreatment was neglect.</p> <p>Risk of death at one year of age was 23 per 1000 person-years of exposure compared to US and county postnatal death rates of 6.5 per 1000 live births.</p> <p><b>Limitations:</b> No control group.</p>
<p>King et al. ().</p>	<p>n=39 term and near-term</p>	<p>Evaluative study to determine</p>	<p>Neurological examinations and</p>	<p>Cocaine-exposed infants exhibit altered</p>

PUBLICATION	STUDY GROUP	DESCRIPTION/ METHODS	OUTCOME MEASURES	RESULTS/ FINDINGS
<p><i>Neurologic Manifestations of In Utero Cocaine Exposure in Near-Term and Term Infants</i></p> <p>Ref: 6</p>	<p>cocaine-only exposed infants (positive urine screen) and 39 matched control infants admitted to regular term newborn nursery, born to Medicaid eligible mothers.</p> <p>Racial distribution of groups were similar: 63% of the study group was black, 20% White, 8% Hispanic, 9% other (control 77%, 16%, 5%, 2%).</p> <p>Hypertension, delivery mode, anesthesia, presence of meconium stained amniotic fluid, fetal heart rate decelerations and umbilical arterial pH were similar for both groups. Abruptio placenta was not present in any of the infants.</p>	<p>whether neurosonographic/neurologic abnormalities are higher in cocaine-exposed infants at birth than non-exposed infants.</p> <p><i>Methods:</i> Excluded from study any infant admitted to ICU units or with congenital abnormalities.</p> <p>Newborns were given serial evaluations at days 1 and 2, cranial sonograms, neurologic and behavioral assessment for withdrawal, and Doppler interrogation of anterior and cerebral arteries.</p>	<p>physical development at birth: Intraventricular hemorrhage, cystic periventricular leukomalacia, neonatal stroke, tone, reflexes, cranial nerves; cerebral blood flow velocity measurements, head circumference;</p> <p>Behavioral scores</p>	<p>behavior consistent with drug withdrawal and changes in flow velocity in anterior cerebral artery consistent with effects of the drug but these effects are not accompanied by changes in further neurological examinations or in altered care.</p> <p>No differences were found in neurosonographic abnormalities or neurologic findings.</p> <p>Better behavioral scores for cocaine-exposed infants was attributed to jitteriness, hyperactive Moro response and excessive sucking.</p> <p>Head circumferences of cocaine-exposed infants were significantly smaller at any given birthweight, unexplained by birthweight or gestational age.</p> <p><b>Limitations:</b> Results are not generalizable on preterm brain. Infants with potential cardiovascular instability that might predispose to brain injury were excluded. Small study.</p>
<p>Lester et al. (1998). <i>Cocaine Exposure and Children: The Meaning of Subtle +Effects</i></p> <p>Ref: 3</p>	<p>Meta-analysis of children ages 4-11 with prenatal cocaine exposure.</p> <p>Children show small difference of 3.28 in IQ but 4.3 and 3.5x the number of people in receptive language.</p>	<p>A meta-analysis of 8 studies of children ages 4-11 used to place a dollar value on the "subtle effects" of lower IQ and language delays attributed to prenatal cocaine-exposure.</p> <p><i>Methods:</i> Meta-analysis of 8 studies that studied school-age children (4-11 years) with prenatal cocaine exposure. The authors assigned an effect size for the lower IQ, and delays in receptive and expressive language by comparing standardized means of exposed versus control children.)</p> <p>Authors determined a ratio of the additional affected children per year per year (an increase in the normal range) that would need special education services, citing estimates from national surveys. The National</p>	<p>Intelligence Quotient (5 studies)</p> <p>Receptive Language (4 studies),</p> <p>Expressive Language (5 studies).</p>	<p>The magnitude of cocaine effects is subtle in contrast to sensationalistic reports but the additional dollar costs used in special education as a result of lower IQ means and delays in receptive and expressive language are substantial.</p> <p>An conservative estimate is that 1.6x additional children receive special education due to the small IQ difference of 3.26 points in the mean IQ score. Between 1,688-14,062 to additional children are affected annually, resulting in additional special education costs of \$4-35 million. Authors attribute a two fold (2.0) IQ effect size for 2,138 to 17,812 additionally affected children at a cost between \$7-59 million.</p> <p>Prenatal exposure to cocaine results in an even greater effect on receptive language (4.3x effect size). Estimates of the number</p>

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		<p>Pregnancy and Healthy Study (based on maternal report) estimate of 45,000 cocaine-exposed births annually and US General Accounting Office (via review of hospital records) estimate of 375,000 cocaine-exposed was used to attribute a national estimate of additionally affected children. The average cost for special education services (from the National Center for Education Statistics) was applied to the ratio to determine the extra dollars spent as a result of the cocaine-exposure. The lower estimate of cocaine-exposed infants was to provide the most conservative estimate.</p>		<p>of children needing special education as a result of receptive language delays range from 4,432 to 36,938 additional children, for a cost between \$22-180 million.</p> <p>The effect size attributed to delays in expressive language was estimated at 3.5x, to account for an estimated 3,636 to 30,300 children needing special education services at a cost between \$17-138 million.</p> <p><b>Limitations:</b> Control for poverty. Did not control for magnitude of confounders or known confounders for IQ differences.</p>

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<p>Martin et al. (1996). <i>Neonatal Neurobehavioral Outcome following Prenatal Exposure to Cocaine</i></p> <p>Ref: 7</p>	<p>n=191 newborn infants over a 2 year time period in Seattle area hospital to 532 women who answered questionnaire while in hospital.</p> <p>Test group was subdivided by type of substance abuse exposure and use of marijuana, alcohol and tobacco (MAT):</p> <ol style="list-style-type: none"> <li>(1) 71 infants with cocaine plus other drugs and MAT;</li> <li>(2) 88 infants of MAT but not cocaine; and</li> <li>(3) 32 infants of non-users or light users of MAT but not cocaine.</li> </ol> <p>Women were at least 17 years old, lived within 20 miles of the Seattle study hospital, were primarily of White or Hispanic race/ethnicity.</p> <p>The use of marijuana, alcohol and tobacco use was distributed similarly between the control and test group.</p> <p>Over 58% of 120 non-cocaine users used more than one of 3 marijuana, alcohol, tobacco.</p>	<p>Sub study of a longitudinal prospective study to assess neurodevelopmental and neurobehavioral performance in newborn infants cocaine- and other drug exposed to infants exposed only to other drugs.</p> <p><i>Methods:</i> Infants born to substance-abusing women in a Seattle hospital were assessed. Women were selected based on maternal self-report on a questionnaire answered after delivery. Women who reported use of heroin and barbiturates were excluded. Hair samples and infant urine tests were used to check the validity of maternal self-reported cocaine use on questionnaire delivered shortly after infant delivery.</p> <p>Sample selection procedures were used with a statistical control for marijuana, alcohol and tobacco use.</p> <p>Neurobehavioral measures were assessed in a blind study by 7 nurses and 2 technicians over 35 to 40 minutes in controlled environment.</p> <p>Statistical tests for correlation and significance were applied.</p>	<p>Perinatal Measures (birthweight, head circumference, gestational age, reflexes),</p> <p>Neurobehavioral Measures (sucking, reflexes, state scores).</p>	<p>Cocaine-exposed newborns had a significantly smaller head circumference after controlling for MAT and gender. A dose-response effect was found: higher amounts of cocaine were associated with higher neurobehavioral risk scores.</p> <p><b>Limitations:</b> No controls to compare measures.</p>
<p>Moore et al. (1998). <i>A 12 Year Follow Up Study of Maltreated and At Risk Children Who Received Early Therapeutic Child</i></p>	<p>A representative sample (n=35) of Seattle, Washington teenagers (12-14 yrs. Old) from 61 infants identified 10 years previously as maltreated or at risk for</p>	<p>A 12 year follow up comparative study of the effectiveness of an early intervention therapeutic childcare program for substance-exposed children identified by state programs maltreated or at risk for maltreatment</p>	<p>Emotional health;</p> <p>School performance (cumulative grade point average, number of classes, terms of special education);</p>	<p>Treatment group had a more positive home environment and better relationship with caregivers at 2 years into study and at 10-year assessment. At 2-year assessment, treatment group's home environment was more structured and organized. Children</p>

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<p><i>Care</i> Ref: 1</p>	<p>maltreatment. Number in treatment group and comparison groups were not identified.</p> <p>More African American children were in the sample than in the original study.</p> <p>Treatment group had 2x as many females as comparison group (57%, 29%). A greater majority of the the treatment group's fathers had arrest records compared to comparison group.</p>	<p>against those with a more typical state intervention.</p> <p><i>Methods:</i> Study group included all participants of a previous controlled clinical trial of children randomly assigned to (1) Childhaven Treatment Program or (2) typical visits by Child Protective Services in the Seattle area. Initial participants were originally identified at ages 1 to 24 months by child welfare services or Child Protective Services as maltreated or at risk for maltreatment and with maternal history of substance abuse. Childhaven's Program was designed to mitigate effects of maltreatment by improving child's development and behavioral status.</p> <p>Children were assessed at 2 years of program involvement and 10 years following initial assessment. Primary tool to measure outcomes were questionnaires to youth, parents/caregivers, and teachers.</p>	<p>Propensity for violence; Delinquency; School disciplinary problems; Substance abuse; Use of special services.</p> <p>Outcomes were measured through Youth Self-Report (YSR), Child Behavior Checklist for Caregivers (CBCL), and Teacher's Report Form (TRF), criminal / juvenile system records and public assistance record checks.</p>	<p>and caregivers experienced greater pleasure in playing.</p> <p>Control group displayed significantly more behavior problems according to caregivers, more incidences of violent delinquency and increasing school disciplinary problems. A greater percentage of control youths scored in the clinical range on the surveys on aggressive behavior: 38.5% of the control group exhibited aggressive behavior versus 4.8% of the treatment group on CBCL.</p> <p>Teachers in general, however, consistently rated treatment group with greater behavior and delinquent problems, although not statistically significant.</p> <p>Nearly ½ (48%) of the control group was classified as violent according to court records or caregiver reports compared with only 4% of the treatment youth.</p> <p>Disciplinary data from elementary and middle school records indicated a statistically significant difference in total disciplinary actions against the control group (3.6<sup>^</sup>) versus treatment group (.9%) in middle school, fewer suspensions in elementary school (9.1% vs. 23.5%) but a suspension rate nearly 2x that of treatment youths in middle school (45.5%, 23.5%).</p> <p>A greater percent (38.1%) of control group had delinquency records compared to 25.9% of the treatment youth, although did not reach statistical significance. Serious/ violent crime rates, however, were statistically significant with 23.8% having serious/ violent crime arrests vs. 3.7%.</p> <p>Of those who did not complete follow up, 20% of the nonparticipating control youths were involved with the juvenile justice systems compared with none of the nonparticipating treatment youths.</p>

PUBLICATION	STUDY GROUP	DESCRIPTION/ METHODS	OUTCOME MEASURES	RESULTS/ FINDINGS
				<p>Drug/alcohol index indicated a significantly higher percentage of control youths showed some drug /alcohol use versus treatment groups (62% vs. 25%).</p> <p>At 10-year assessment, control group had received more public financial support than those in the intervention program.</p> <p>Both groups were similar in terms of grade point average, number of classes or terms of special education. Middle-school grades of both groups were generally low, ranging from high Ds to low Cs. One fourth of persons from both groups were classified as clinically depressed.</p> <p>No significant changes were observed in school performance or self-perception.</p> <p><b>Limitations:</b> Possible systematic selection occurred since only 69% of original correspondents were available for follow up. Those with the greatest risk (substantiated neglect cases; parental history of abuse, receipt of public assistance) dropped out of the 12 year follow up.</p>
<p>Nair et al. (1997). <i>Risk Factors for Disruption in Primary Caregiving Among Infants of Substance Abusing Women</i> Ref: 15</p>	<p>n=152 mother/infant dyads from a Baltimore hospital. Infants had prenatal substance abuse exposure (cocaine, heroin).</p> <p>Women in the study were primarily single, African American, low income, lived in an inner city, were polydrug users with a long history of heroin or cocaine use, smoked cigarettes and used alcohol.</p> <p>One fifth tested HIV positive; 1/6 had serious violence in</p>	<p>Two year comparison study to determine whether prenatal substance abuse predicts disruption of care among women with and without an early intervention (home visits and parental support over 2 years).</p> <p><i>Methods:</i> Two year study of mothers to determine predictors for disruption of care. Mothers evaluated at 2 weeks, then at 6, 12, 18 and 24 months. Mothers were recruited for the study over a 3-year period from University of Maryland OB/nursery if they self-reported cocaine, opiate or heroin use or if the mother's urine/toxicology screens indicated</p>	<p>Maternal Depression Life Experience Survey Social support Drug Use</p>	<p>The greatest predictor of a disruption of care was age: children born to women greater than 30 years were more likely to experience a disruption in their care.</p> <p>Mothers of children with a disruption of care (foster home, alternative care) were younger at their first pregnancy, had a lower educational level, had other children in substitute care, used cocaine at an earlier age, used more heroin in both amount and frequency, smoked cigarettes more frequently, drunk alcohol less, had greater depression than those whose children remained with them.</p> <p>Infants who eventually did not live with their mother had overall poorer outcomes</p>

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	their life.	<p>use.</p> <p>Infants were randomly assigned to receive standard care (1 monthly home visit) or intervention. Intervention involved weekly home intervention visits for year 1 and involvement in a parental support center in year 2. Continued drug use was measured by a focused interview and the Addiction Severity Index.</p>		<p>for low birthweight, prematurity.</p> <p><b>Limitations:</b> Disruption of care rate includes voluntary placement with a relative.</p>
<p>Schmidt et al. (1998). <i>Substance Abuse and the Course of Welfare Dependency</i></p> <p>Ref: 2</p>	<p>Welfare recipients (n=606) on general assistance and AFDC identified as substance abusers in a large California county compared to general county population.</p> <p>A greater proportion of welfare recipients belonged to a racial/ethnic minority compared to the general population (50%, 24%).</p> <p>Forty percent of welfare recipients were unemployed in the year before receiving welfare benefits.</p> <p>Thirty percent were high school dropouts.</p> <p>Within the AFDC sample, 94% were female, 65% were more than 35 years old, 61% were single parents. Fewer than 1% of AFDC recipients were neither pregnant nor caring for children. More than 2x other minority groups (primary Latinas) versus African American.</p> <p>Within the general assistance group, 39% were female, 51% were older than 35</p>	<p>A review of the patterns of welfare dependence among AFDC and general assistance welfare recipients identified by self-report as having substance abuse problems.</p> <p><i>Methods:</i> Initial and six 6 year follow up 1.5 hour English/Spanish interview of clients applying for AFDC and general assistance in a large California county. Recipients' answers to questionnaire were cross-checked with public welfare records.</p> <p>Attrition analysis was performed on substance use, abuse and dependencies, and selected demographics. The 2 welfare samples were directly standardized to the gender, age and ethnic distributions of general population prior to analyses. Outcomes were measured using longitudinal analyses with post-stratification weights to adjust for non-response at follow up and variations in sampling to predict welfare use. Standard statistical significance tests were applied.</p>	<p>Alcohol and drug problem indicators and psychoactive substance dependence (based on Apia's Diagnostic and Statistic Manual of Mental Disorders).</p> <p>Welfare patterns were measured as continuous stay, single stay or multiple stay patterns.</p> <p>Welfare use was measured in months as total time on general assistance and average length of any stay (in months).</p> <p>Reasons to exit welfare system were noted.</p>	<p>Substance abuse was not a significant determinant of long welfare stays or repeat welfare use for AFDC women, but it was for general assistance recipients.</p> <p>There was not a statistical relationship between a recipient's status as a problem drinker or heavy drug user and subsequent patters of welfare use for AFDC but a strong relationship did exist for those on general assistance: problem drinkers and heavy drug users were much more likely to report a patter for multiple welfare stays than a continuous or single stay pattern.</p> <p>The prevalence of problem drinking was similar for AFDC as in the general population although rates of heavy drug use and substance dependencies were higher in the county.</p> <p>The strongest determinants of subsequent welfare use among AFDC recipients were member of any ethnic minority, having a young child at the time of application for services and lack of employment during the previous year. Among GA, background characteristics such as age, gender and ethnicity were also strong determinants, but having a problems with alcohol or drug abuse contributed to a 4 fold increase (2.23, 8.77) in the odds that they would experience one or more returns to welfare.</p> <p>General assistance recipients were 3 times</p>

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	<p>years, 8% were single parents, 86% were without children. General assistance recipients were 3 times more linkely to be problem drinkers, heavier drug users and exhibit higher incidences of dependencies than the general population.</p> <p>AFDC recipients were less likely to be looking for work compared to general assistance recipients (41% were not looking vs. 16%).</p>			<p>more likely to be problem drinkers, heavier drug users and exhibit higher incidences of substance dependencies than the general population.</p> <p>The average length of welfare-stay was also twice as long as AFDC recipients (mean 33 mos., 16 mos.) but GA had more multiple stays (52% vs. 37%).</p> <p>AFDC recipients' total welfare use was longer than GA (mean 43 mos., 26 mos.)</p> <p>Reasons for exiting the welfare system among substance abusers differed according to subgroup. According to general assistance clients, top reasons were: 1) lack of administrative compliance (43%); 2) getting a job (36%); 3) changing residence (21%); and 4) going to jail (16%). The AFDC clients exited primarily due to new employment.</p> <p><b>Limitations:</b> Attrition bias. Significant differences existed in gender and marital status of AFDC and general assistance population.</p>
<p>Smit et al. (1994). <i>Cocaine Use in Pregnancy in Amsterdam</i>  Ref: 17</p>	<p>n=23 cocaine-exposed infants and their 21 mothers, women who visited Academic Medical Center in Amsterdam for prenatal care</p> <p>The median age 28 years (range 20-37); 8 women were nulliparous;</p> <p>14 had prior pregnancy</p>	<p>Small study of cocaine-exposed mother/infants dyads to assess physical, psychosocial and physical development of child's first 12 months of age.</p> <p><i>Methods:</i> Mothers were questioned and submitted to toxicological, serological cord blood tests for congenital infections during prenatal care visits. Reviewed obstetrical</p>	<p>Birth outcomes including birthweight, neonatal death, prematurity, gestational age.</p> <p>Physical and nuero development at birth including head circumference, congenital malformations, intracerebral abnormalities..</p> <p>Infections, toxicology</p>	<p>Birth outcomes were generally poor although not evident in birthweight. The median gestational age was 29 weeks; the median birthweight was 3090 g.</p> <p>Six of 23 infants were born preterm, 2 were considered small for gestational age. Ten had 5 min. Apgar score less than or equal to 7 (8 with meconium staining; 2 with asphyxia). One neonatal death (the second of twins) was recorded.</p>

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	<p>terminations (4 spontaneous). Eight were of Dutch origin, the rest from Surinam (3), Dominican Republic (3) and other nations. Ten smoked cigarettes, 4 used marijuana, 1 had alcohol abuse. The frequency and method of drug use varied widely, although most used inhalation and none reported intravenous use. Hepatitis and HIV tested negative in the 75% who agreed to test. One patient had gonorrhea. None of the birth outcomes included abruptio placenta. Among infants, 11 were male, 12 female.</p>	<p>history. Infants were observed for 48 hours, physically examined, received toxicological test of urine, neurologic systems. Ten infants with poor birth outcomes were followed through age 1 using neurological exams and screening tests for neuropsychomotor development by a pediatrician.</p>	<p>Follow up outcome measures for infants with poor birth outcomes included: psychomotor development, growth, family problems, speech delays, behavioral disturbance, supervision of child protection (foster/ alternative care)</p>	<p>Five infants had occipitofrontal head circumference. Four of 20 infants had intracerebral abnormalities. Three infants were born with congenital malformation, one with congenital syphilis. Eleven of 15 tested positive in toxicological analysis. Four of 11 with a positive test required phenobarbital for 6-11 days. In follow up of 10 infants, 2 infants continued to have marginal growth (less than 10th percentile); 4 did not live with parents; 4 had abnormal psychomotor development, 2 with speech delays. <b>Limitations:</b> Confounders due to socioeconomic status. Intracerebral abnormalities may be due to prematurity.</p>
<p>Soepatmi et al. (1994). <i>Developmental outcomes of children of mothers dependent on heroin or heroin/methadone during pregnancy</i> Ref: 9</p>	<p>n=137 infants prenatally exposed to heroin and methadone (110) and heroin (27), with a subgroup of 31 also exposed to non-opiates. At depth follow up, n=91 children aged 4-5 and 6-11 years old. Infants were primarily Caucasian (76%, most Dutch), or Negroid (24% from Surinam). Drug habits among mothers were similar throughout their pregnancies in subgroups. The mean birthweight and gestational age were similar among all subgroups.</p>	<p>Longitudinal, prospective study of children with prenatal substance-abuse exposure to assess development outcomes after birth at 4-5 years and 6-11 years of age. <i>Methods:</i> Participants were the first-year survivors of an in-depth mother/infant dyad study at Amsterdam Medical Center who had been transferred to Department of Neonatology. Development was assessed in the hospital after birth and again at 4-5 years and 6-11 years of age. Groups were separated based on original maternal report on the type of substance used during pregnancy. Physical, prenatal care and neurological assessments were performed on neonates. In follow up,</p>	<p>Pediatric Physical Exam (body length, weight, head circumference); Obstetrical Optimality Score; Prenatal Care. Developmental neurological exam based on Toewen, IQ tests (son for &lt; 6 years; WISC-R to children 7+); Behavior Checklist; School Problems (current school performance, special class attendance, grade repetition, referral to mental health professional).</p>	<p>Infants with serious Neonatal Abstinence Syndrome required longer hospitalization than infants without NAS (mean 33 versus 18). Infants of mothers who used heroin during pregnancy had unfavorable outcomes compared to general population. Infants of mothers with prenatal care had better outcomes than those without. Prenatal care was better in the subgroup using heroin/methadone than just heroin. The mean IQ for children less than 6 years old was greater for those with prenatal care but there were little differences in older children. Children in foster care performed less optimally than those with their biological</p>

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	<p>In depth follow up, n=91 children aged 4-5 and 6-11 years old.</p>	<p>general health, behavior, education and IQ were assessed primarily by parental report on child health and last outpatient clinic, and the Child Behavior Checklist.</p> <p>Statistical analysis for significance were performed.</p>		<p>parents.</p> <p>Although 85% infants were discharged to mother's care after delivery (15% went to an alternate care after recovery from physical problems), 38% were in alternate care at last follow up.</p> <p>Physical growth and IQ differences decreased as children grew older.</p> <p>No handicap in neurological non-optimality although exposed children had slight neurological dysfunction, retardation of development of central nervous system and non-optimal function of coordinating and balance regulating.</p> <p>Social Behavior was in general less optimal for exposed children compared to general Dutch standards.</p> <p><b>Limitations:</b> Control group not available but used large-scale Dutch studies as comparison. Did not control for poverty or other socioeconomic factors.</p>
<p>Tyler (1997). <i>Placement with Substance-Abusing Mothers vs. Placement with Other Relatives</i> Ref: 22</p>	<p>n=67 substance-abusing mothers from a larger demonstration study of 169 pregnant substance-abusing women.</p> <p>Mothers had low income with an average of 11.25 years of education (range 7 to 14), had minimal or no employment history, and had received public assistance.</p> <p>Ethnic makeup was 62% African American, 20% Latina, 18% Caucasian.</p> <p>For this study: Nearly 1/2 of both groups had positive drug screens at delivery: 15/23 of lost</p>	<p>A 6 month follow up study of subset of larger research project to evaluate infant outcomes for children whose biological mothers maintained custody versus placement with other relatives.</p> <p><i>Methods:</i> Subjects were randomly assigned to intervention and comparison groups and participated until children reached 18 months of age. Intervention subjects received comprehensive program that included prenatal and pediatric care, monthly home visits and a 3 day-a-week day treatment program on parent education, health and family planning education, leisure activities, group drug counseling and parent-child interaction classes. Transportation</p>	<p>Birth outcomes including birthweight, gestational age, length, head circumference. Caregiving at 6 months, Child development at 6 months with unrevised Bayles Scales of Development (1969).</p>	<p>Infants who stayed with their biological mothers demonstrated better cognitive development at 6 months than with other relatives, but placed children appear to be more safe. (3 deaths and 2 reported cases of suspected child abuse with mothers, none with other relatives).</p> <p>No statistically differences appeared between mothers who maintained custody of children and those who did not except for few years of alcohol among those who lost custody.</p> <p>Fifty percent of infants in the larger study suffered prenatal difficulty (spontaneous abortion, fetal demise, stillbirth, preterm birth full term birth). From the larger study, 36/164 infants were born preterm, their mean gestational age was 38.2 weeks (29,43), mean birthweight 2,890 grams</p>

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	<p>custody; 20/44 maintained custody. The intervention subgroup had</p> <p>24 mothers who retained custody</p> <p>23 mothers who lost custody. The comparison group had 20 mothers who retained custody and 7 who lost custody.</p> <p>Sixty-four percent were single, 13% married, 23% separated, divorced or widowed.</p> <p>Fifty-seven percent had been beaten/abused as adults, 26% sexually assaulted; 41% sexually abused as children; 29% physically abused as children.</p> <p>All mothers were active substance abusers at pregnancy, most polydrug abusers (most frequently abused cocaine (96%), marijuana (65%), and alcohol (50%). Average years of use were 5.6 years for cocaine, 8.1 for alcohol, 8.7 for marijuana.</p> <p>7 of 23 mothers without custody were homeless, 6 had unknown whereabouts, 2 were in jail. The children went into care of relative caregivers (family members). Relative caregivers were primarily grandparents (13), and from maternal family (22) with mean age of 49.51 years (70, 77). On average</p>	<p>and childcare were provided for children up to 5 years old. Comparison group participants were assigned community liaison worker who provided a service directory and community referrals, and transportation to/from research appointments. Relative caregivers could not participate in intervention study.</p> <p>Structured oral interviews with relative caregivers and mothers provided information on socio-demographics and interventions. Mothers self-reported on Addiction Severity Index. The Adult Attachment Interview provided information on mothers' relationship with parents.</p> <p>Maternal mental health was measured by Million Clinical Multiaxial Inventory (1983) to measure personality and psychiatric disorders.</p> <p>Gestational age was obtained from providers using Ballard Scale (1979).</p> <p>Caregiving sensitivity assessed from 30 minute videotape of normal activities using Ainsworth System for rating Maternal-Care Behavior (1976), scales from England et al (*1975) and Emotional Availability Scales (by Biringen et al. (1990).</p> <p>Prenatal visits assessment included clinical interview data on demographics, self-report of alcohol and other drugs, adult attachment interview data, and clinical personality inventory. Assessments at 6 months included infant development evaluation, clinic interview on caregivers' emotional information,</p>		<p>(1430 to 4229). 3 preterm infants with mothers died neonatal (all SIDS).</p> <p>Infants in the study did not suffer serious postnatal medical problems.</p> <p>Average Caregiving behavior scores indicated inadequate or optimal Caregiving behavior except for negative regard and maternal intrusiveness.</p> <p><b>Limitations:</b> No control group, small sample size.</p>

PUBLICATION	STUDY GROUP	DESCRIPTION/ METHODS	OUTCOME MEASURES	RESULTS/ FINDINGS
	<p>caring for 3 young relative children by court (1-10). 11 caregivers married, 2 widowed, 8 separated/divorced, 2 never married. Almost all were low-income without self-report of drug abuse but mother report indicated 5/23 the relative caregiver had a history of drug or alcohol abuse.</p>	<p>general inquiry about substance abuse history on part of caregivers. Home visits at 6 months used to evaluate caregiving behavior. Lab and in-home evaluations administered blindly by graduate research assistants.</p> <p>Utilized multivariate analysis for Caregiving and child development findings.</p>		
<p>van Baar et al. (1994). <i>Development after Prenatal Exposure to Cocaine, Heroin and Methadone</i></p> <p>Ref: 5</p>	<p>n=70 Dutch/Caucasian or Surinam/Negroid infants born at the same hospital in Amsterdam (35 born dependent women and 35 control)</p> <p>Mothers' educational level were similar for both groups.</p> <p>All mothers with prenatal drug-use smoked, with 1/2 smoking more than 1 pack per day. Polydrug use was common for 94% of mothers.</p> <p>Nine of the 35 drug-exposed infants were born preterm. The average length of hospital stay ranged from 7 to 58 days (mean 26 days).</p> <p>Control children were born term without complications.</p>	<p>Longitudinal prospective study of 35 infants born to drug dependent women in Netherlands over 5.5 years to determine the long-term effects of substance abuse on child development.</p> <p><i>Methods:</i> All infants were chosen from the same Amsterdam hospital. Substance exposure was determined through urine toxicology screenings. Results were compared to those of infants born term and without complications of a similar demographic makeup.</p> <p>Children were assessed 7 times over the first year and 8 times from ages 1 to 5.5 years. Five years later (age 5.5 years), children were given physical development exams, neurological exams and assessments of motor skills development.</p>	<p>Physical development, neurological outcomes, motor skills development.</p>	<p>As neonates, drug-exposed children had withdrawal symptoms but were not medically worse than their peers. No significant differences were observed in physical development.</p> <p>At preschool ages (4.5 years, 5.5 years), drug-exposed children had significantly lower scores than the comparison group in all cognitive exams; non verbal and language scores were 1 SD less than norm.</p> <p>Drug-dependent mothers' verbal activities were less related to their children than non-drug dependent mothers, and had less reciprocal and responsive reactions to their children.</p> <p>By age 4, drug-exposed children were more active, aggressive and difficult with peers and social interaction.</p> <p>No behavioral problems were observed at 5.5 years.</p> <p>Children were in alternative care in 50% of the cases by age 5.</p> <p><b>Limitations:</b> Small study. Analysis did not control for the addict's habits, method or frequency of substance abuse during pregnancy or follow up. Some results may be related to changes in child's environment (change in caregiver).</p>



**APPENDIX C**

**STUDIES SHOWING PROGRAMS FOR SUBSTANCE-  
ABUSING WOMEN AND THEIR CHILDREN**

## IDENTIFIED OUTCOMES FROM PROGRAMS FOR SUBSTANCE ABUSING MOTHERS AND THEIR CHILDREN

Population	Program Or Component	Outcome: Mother	Outcome: Child
<p>Polydrug-using young mothers (age16-21), <i>compared to drug-using control group and nondrug group</i></p> <p>Field et al., 1998.</p>	<p>Drug and social rehabilitation, parenting and vocational classes, and relaxation therapy</p> <p><i>(12 month study from time of birth, including 4 month treatment)</i></p>	<p>Drug exposed mothers (both groups) exhibited depression, background stress, significantly higher levels of dopamine and serotonin, and inferior interactions compared to the nondrug group. Treatment outcomes compared to drug control group include:</p> <ul style="list-style-type: none"> <li>• Decreased levels of depression and stress</li> <li>• Lower incidence of repeat pregnancy and drug use</li> <li>• Higher % continuing school, getting diploma or GED</li> <li>• Higher job placement success</li> </ul>	<p>Drug exposed children (both groups), while similar to non-drug group on traditional birth measures, had inferior scores on the Neonatal Behavioral Assessment Scale, especially habituation, orientation, abnormal reflexes, general irritability, and regulatory capacity. They also exhibited inferior interactions. Treatment outcomes compared to drug control group include:</p> <ul style="list-style-type: none"> <li>• Improved scores on social communication scales and Bayley Mental scale, compared to controls</li> <li>• Significantly greater head circumference and significantly fewer pediatric complications</li> </ul>
<p>Substance-abusing pregnant and parenting women</p> <p>Camp and Finkelstein, 1997.</p>	<p>Parenting training (as a component of a year-long substance abuse treatment program, a demonstration project funded by the Center for Substance Abuse Prevention in 1989).</p>	<ul style="list-style-type: none"> <li>• Significant improvement in parenting attitudes and knowledge</li> <li>• Dramatic improvements in self-esteem</li> </ul>	
<p>Pregnant and post-partum women addicted to crack cocaine; <i>comparison: before treatment to during/after</i></p> <p>Lanehart et al., 1996.</p>	<p>Intensive case management and support services during and after residential drug abuse treatment</p> <p><i>(Study women had been receiving services for 6-57 months, with an average length of 20 months)</i></p>	<ul style="list-style-type: none"> <li>• Improvements in employment status, likelihood of incarceration, likelihood of drug use, and social support (outside of program)</li> </ul>	<ul style="list-style-type: none"> <li>• Improved birthweights for babies born after intervention</li> </ul>
<p>Women reporting prenatal cocaine or heroin use, <i>compared to a drug-using control group</i></p> <p>Black et al., 1994.</p>	<p>Home visits by a community health nurse (as an added component of a comprehensive treatment program)</p> <p><i>(30 month study from time of birth, including 18 month treatment; however, child-centered quality of home environment was the only measure assessed after 18 months)</i></p>	<ul style="list-style-type: none"> <li>• Marginally more responsible behavior in reducing drug abuse, complying with primary care, and providing a responsive and stimulating environment</li> </ul>	<ul style="list-style-type: none"> <li>• Marginally better cognitive development during infancy (differences did not persist)</li> </ul>
<p>Infants testing positive for cocaine or PCP, <i>compared to a non drug-exposed control group at birth only</i></p>	<p>Home visits by a public health nurse</p> <p><i>(12 month study and treatment)</i></p>	<ul style="list-style-type: none"> <li>• Gained knowledge and strategies for dealing with high-need infants</li> </ul>	<ul style="list-style-type: none"> <li>• Mediation of symptoms of drug-exposed infants (i.e. feeding and behavior difficulties, understanding cues, etc.), due to increased caregiver knowledge and support</li> </ul>

Population	Program Or Component	Outcome: Mother	Outcome: Child
Saylor et al., 1991			<ul style="list-style-type: none"> <li>• While birth weight and length were significantly smaller for drug-exposed infants than for controls, growth was generally age-appropriate using age-adjusted criteria (however, gestational age was often unclear)</li> </ul>
Cocaine-exposed (polydrug) newborns, <i>compared to a drug-exposed control group</i>  Wheeden, 1993	Massage therapy  <i>(10 day study and treatment period)</i>		<ul style="list-style-type: none"> <li>• Fewer postnatal complications</li> <li>• More weight gain (28%) from similar amounts of formula/calories</li> <li>• Improved motor scores</li> <li>• Improved orientation behaviors</li> <li>• Fewer stress behaviors</li> </ul>
Extremely high risk drug and alcohol abusing women and their babies, <i>compared to a drug-using control group</i>  Ernst et al., 1998	Home visits by a paraprofessional advocate for a three year period  <i>(Three year study with treatment involvement ranging from 8 to 36 months)</i>	<ul style="list-style-type: none"> <li>• Greater success in completing drug/alcohol treatment, for those with greater advocate involvement</li> <li>• Greater likelihood of abstaining from drugs/alcohol for one year or more</li> <li>• Higher use of birth control</li> <li>• More satisfactorily connected with needed service providers</li> </ul>	<ul style="list-style-type: none"> <li>• More appropriate custody situations relative to current maternal use of drugs/alcohol</li> <li>• There was little difference between groups regarding health care/immunizations</li> <li>• Both treatment and control children scored significantly below the norms on mental and motor scores, and were not significantly different from each other</li> </ul>

## **LIMITATIONS TO ARTICLES ON EARLY INTERVENTION PROGRAMS FOR SUBSTANCE ABUSING WOMEN AND/OR THEIR CHILDREN**

Studies that explore early intervention programs for drug-affected women and/or their children have a number of limitations, which are present to varying degrees. These limitations affect the extent to which studies can inform discussions about the population of drug-abusing women in Washington State.

- Many of the studies had a small sample size, limiting the ability to generalize findings to a larger population.
- Some studies faced high levels of attrition, increasing concerns about representation and selection bias.
- Several studies relied strongly on self-report and observation, with the accompanying potential for reporting bias.
- Studies were limited to specific segments of the population of drug-affected women and/or children, a selection bias that does not necessarily reflect the same demographic profile as the population of Washington State drug-affected women and children under consideration.
- A number of studies were descriptive only, and had no comparison or control group.

Limitations specific to each study are listed at the end of the discussion for that study and are located in the results column.

## LITERATURE REVIEW OF PROGRAM OUTCOMES FOR SUBSTANCE ABUSING WOMEN AND THEIR CHILDREN

Publication	Study Group	Description/ Methods	Outcome Measures	Results/ Findings
Center for Substance Abuse Demonstration Grants on Postpartum Women and Their Infants (1989-92), unpublished reports.	Between 1989 and 1992, the federal Center for Substance Abuse initiated five-year grants for 147 Pregnant & Postpartum Women and Their Infants.	Projects provide comprehensive prevention, intervention, and treatment services to women, and health and related services to their children.		According to <i>The Future of Children</i> , 7 (2), Summer/Fall 1997, p. 158, an unpublished federal report notes that these programs have been highly successful in improving the coordination, availability, and accessibility of health care and alcohol and drug treatment for pregnant and postpartum women. At least one-third of the women served reduced their drug use.
Black, M.M., Nair, P., Knight, C., Wachtel, T., Toby, P., and Schuler, M. (1994). <i>Parenting and Early Development Among Children of Drug-Abusing Women: Effects of Home Intervention</i> . Pediatrics, 94(4), 440-448.	<p>Sixty mothers and babies recruited from the prenatal clinics of a large metropolitan teaching hospital. Mothers must have reported prenatal cocaine or heroin use.</p> <p>Women were randomly assigned to an intervention and control group. Women in the groups did not differ on background variables. However, the children in the intervention group weighed marginally more at birth than the children in the comparison group, and had marginally lower 5-minute Apgar scores.</p> <p>Participants were primarily single, African-American, low income, inner-city, multiparous, polydrug abusers who had not completed high school. 40% of the women were positive for HIV infection, 62% had a history of incarceration, 18%</p>	<p>This study consisted of a randomized, clinical trial of home intervention with blinded assessments. All infants received primary health care in a multidisciplinary clinic dedicated to the treatment of infants born to substance-abusing women and/or women infected with HIV. Families were observed by a primary health care provider and a social worker, with specialty staff if needed.</p> <p>Intervention families received an additional component of hour-long biweekly home visits from a community health nurse for the first 18 months of the child's life. The program was based on an ecological model with the following objectives: 1) forming a therapeutic alliance with the mother; 2) supporting the mother with attention to her personal, family, and environmental needs; 3) providing opportunities to model and promote healthy parent-child interaction and development; and 4) providing information about child care, child development, safety, community resources, and advocacy. Curriculum guides for the parent-</p>	<p>Maternal behavior was measured by home observation, compliance with primary care, and self-reported drug use.</p> <p>Additional instruments included:</p> <p>Child Abuse Potential Inventory (CAPI) at intake and at 18 months</p> <p>Parenting Stress Index (PSI) at 3 months and at 18 months</p> <p>Bayley Scales of Infant Development (at 6, 12, and 18 months)</p> <p>HOME (for child-centered quality of home environment, at 30 months)</p>	<p>The women in the intervention group reported marginally more responsible behavior in reducing drug abuse, complying with primary care appointments (although levels were still low, at 62%), and providing a responsive and stimulating environment for their children.</p> <p>Women who received <i>more</i> home visits were more likely to comply with their children's primary care and to be drug-free.</p> <p>Children in the intervention group achieved marginally better cognitive development during infancy; however, differences did not persist.</p> <p><b>Limitations:</b></p> <ul style="list-style-type: none"> <li>The study group did not include women who had not received prenatal care, and who might be most at risk. Therefore the study might not be representative of all drug-abusing women and their children.</li> <li>While there were no identified differences between those who continued in the study and those who did not, unmeasured motivational factors or differences in drug behavior</li> </ul>

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	<p>had been victims of violence, and 16% had been raised in foster homes.</p> <p><i>Attrition:</i> 28%. There were no differences between those who completed the study and those who did not on intervention status, demographic variables, or initial CAPI.</p>	<p>child interaction and information phases include the Carolina Preschool Curriculum and the Hawaii Early Learning Program.</p> <p>Continuing evaluations occurred at 3, 6, 12, and 18 months. The child-centered quality of the home environment was assessed at 30 months.</p> <p>The number of home visits provided ranged from 0 to 32, with a mean of 12.</p> <p>The estimated cost for the additional component is \$1655 per year per child.</p>		<p>might influence parenting and child development.</p> <ul style="list-style-type: none"> <li>• Since all women received comprehensive services through a multidisciplinary clinic, results may have been attenuated.</li> <li>• Differences in home visits may reflect maternal acceptance rather than program efficacy.</li> <li>• Continued drug-use status was based solely on self-report.</li> <li>• Small sample size and the possibility of Type II errors.</li> <li>• Bayley Scales rely heavily on sensorimotor skills and are not as predictable for infants and toddlers as for older children; nor do they assess attention or self-regulation.</li> <li>• As this sample was of limited size and composed primarily of intravenous drug abusers, the study could not explore whether effects of the intervention varied according to type and pattern of drug abuse.</li> </ul> <p>The authors note that the intervention may have been more effective if involvement in family support centers, center-based early intervention programs, high school equivalency programs, or job training had been included.</p>
<p>Butz, A.M., Lears, M.K., O'Neil, S., and Lukk, P. (1998). <i>Home Intervention for In Utero Drug-Exposed Infants</i>. Public Health Nursing, 15(5), 307-318.</p>	<p>The study group consisted of 20 infants and their mothers, randomly assigned to the intervention. Background variables analyzed for mothers and infants suggest that the group is representative of the 204 mother-infant dyads participating in a larger randomized clinical trial</p>	<p>This study examined the first 20 families to complete the home visit program in order to describe the process and content involved with monitoring study infants' health status and providing the mother/caregiver with informational and emotional support.</p> <p>Each infant received 16 home visits by a pediatric nurse specialist, at 1, 2,</p>	<p>Child monitoring included:</p> <ul style="list-style-type: none"> <li>• Physical assessment (measurement of weight, length, and head circumference; assessment of common infant conditions)</li> <li>• Developmental screening (using the Denver Developmental Screening Test, DDST-II)</li> </ul>	<p>Public nurses conducting home visits to IUDE infants during their first year of life found frequent health and social problems. Mothers lacked basic parenting information (then provided by the public nurse) such as signs of illness, basic nutrition, and developmental information.</p> <ul style="list-style-type: none"> <li>• Health problems were detected during 30% of all home visits, primarily during the beginning visits. The most</li> </ul>

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	<p>examining the effectiveness of a home nurse intervention for IUDE infants.</p> <p>Eligibility was based on maternal cocaine or opiate use as identified by medical record documentation of self-report, positive toxicology screen prenatal or during labor, and/or positive infant toxicology screen within 24 hours of birth.</p> <p>In the study sample, most mothers were between 26 and 30 years of age (70%), had never been married (80%), and were African American (95%). Over half (55%) reported a high school education or some college/technical school. 15% reported no prenatal care, and 45% reported 5 or fewer prenatal visits. 85% reported smoking cigarettes and 35% reported alcohol use during pregnancy. Mean birthweight for infants was 2816 g, and 80% had a gestational age of 38 weeks or greater. 95% of Apgar scores were 8 or higher.</p>	<p>3, 4, 6, 8, and 10 weeks, and at 3, 4, 5, 6, 8, 10, 12, 15, and 18 months.</p> <p>The program was developed based on three assumptions: 1) frequent health monitoring of infants with IUDE will enhance growth and development by early detection of health problems and by providing the mother with basic parenting education, including nutritional and developmental information about her infant; 2) if parents are provided with knowledge, skills, and support they can respond more effectively and positively to their children; and 3) if the mother's own emotional and physical needs are met, she will more respond effectively and positively to her children.</p> <p>The intervention includes: 1) infant monitoring by the home nurse, 2) providing the mother/caregiver with informational, practical, affirmative, and emotional support, and 3) providing the mother/caregiver with a Snuggly™ to increase close contact between the mother and infant.</p> <p>The parent educational component was based on The Hawaii Early Learning program (HELP) and The Carolina Preschool Curriculum.</p>	<p>At each visit the Home Visit Assessment and Checklist Forms were used to document health problems detected in the infant, developmental assessment, health care utilization data, and social and home environmental assessment. It also measures amount of time spent with caregiver and infant, the content of the informational material covered, client reception of the information, quality of nurse/caregiver relationship during the visit, attendance of an identified support person, and date of subsequent home visits.</p>	<p>common health problem was upper respiratory infections (5.7% of visits), with an additional 2.6% of visits detecting more serious respiratory problems. Dermatological problems (including diaper rash, 4.8%) were found in 8.7% of home visits. Other frequent health problems included weight loss or poor growth and feeding (2.6%) and jitteriness and increased muscle tone or tenseness of muscles (2.6%).</p> <ul style="list-style-type: none"> <li>• Social and environmental problems were encountered during 80% of visits (i.e., evidence of vermin (40%); dirt, garbage, and clutter (16%); homelessness, illness, hospitalization...)</li> <li>• Educational information provided to the caregiver, in order of frequency, included: nutritional information, infant development and stimulation, the importance of well child care, and signs and symptoms of illness and infant safety.</li> <li>• The health nurse felt very comfortable working with the mother during home visits, but slightly less engaged with the mother during these visits. The mother/caregiver accepted information well. Attendance by support persons was poor; the support person chosen by caregivers to also be present at meetings was only present for 12% of the visits.</li> </ul> <p>Follow-up data at 6 months: 55% of infants had up-to-date immunizations. 15% of infants required referral to developmental programs for additional testing and treatment. Maternal drug use was continued for 35% and alcohol use by 33% of mothers still in custody of</p>

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				<p>their infants; an additional 4 infants were placed in foster care, with unknown postnatal maternal drug use. Only 1 mother reported receiving drug treatment. Snuggli™ use of at least 1-2 hours per day was high (70%) for the first month but lower (25%) thereafter.</p> <p><b>Limitations:</b></p> <ul style="list-style-type: none"> <li>• Small sample size</li> <li>• Descriptive (comparison group limited to background variable information)</li> </ul>
<p>Camp, J.M., Finkelstein, N. (1997). Parenting Training for Women in Residential Substance Abuse Treatment: Results of a Demonstration Project. <i>Journal of Substance Abuse Treatment, 11(5)</i>, 411-422.</p>	<p>170 women admitted to parenting training as part of a larger residential substance abuse treatment program.</p> <p><i>Attrition:</i></p> <p>For one program: Intake: originally N=79 Final follow-up AAPI: 26 Final follow-up Self Esteem: 24</p> <p>The other program: Intake: originally N=91 Final follow-up AAPI: 40 Final follow-up Self Esteem: 39</p> <p>Mean age was 27.3 years. 79% were women of color. 74% were single, 60% had no high school education, 76% had income well below poverty level, 27% were homeless, 69% had prior arrests, 9% had been employed just prior to admission, 96% were poly-substance abusers, 96% had been in treatment before,</p>	<p>This project evaluated the impact of a parenting component for pregnant and parenting women in a long-term (one year) residential substance abuse treatment program, a 5-year demonstration project (the Coalition on Addiction, Pregnancy and Parenting (CAPP)) funded by the Center for Substance Abuse Prevention in 1989.</p> <p>The parenting component included individual counseling (focused on particular parenting concerns, an individual child, or the parent-child dyad), a parenting skills group, a child development group, and a mother's support group.</p> <p>The study used repeated measures in a quasi-experimental design: Parenting and self-esteem measures were taken at admission to the Nurturing Program, at 3 months after admission (or at discharge if earlier), and at completion of parenting skills training (or at discharge if earlier). Quality of mother-child interaction measurements were taken when infant was 6 weeks, 6 months, and 12 months.</p>	<p><i>Instruments:</i></p> <p>Intake interview (to collect basic sociodemographic data, information, data on sexual abuse, physical abuse, substance abuse, prior treatment, and parental substance abuse).</p> <p>Adult-Adolescent Parenting Inventory (AAPI)(given pre-post).</p> <p>Hudson Self-Esteem Inventory (ISE).</p> <p>Nursing Child Assessment</p> <p>Satellite Training Feeding Scale (NCAST), administered at 6 wks, 6 months, and 12 months</p> <p>Participant Evaluation of the Parenting Training (developed by CAPP, to determine helpfulness of training and changes in parenting as a result of participating)</p>	<p>Participants demonstrated significant improvement in parenting attitudes and knowledge, and dramatic improvements in self-esteem. These changes suggest that the training helped give women the skills to raise children in a more nurturing environment.</p> <p><b>Limitations:</b></p> <ul style="list-style-type: none"> <li>• Attrition and small sample size. As with many treatment programs, there was a high drop-out rate. However, after various analyses the authors consider it unlikely that the positive findings are due to drop-out by women with more severe substance abuse problems and lower self-esteem.</li> <li>• No comparison group</li> </ul>

Publication	Study Group	Description/ Methods	Outcome Measures	Results/ Findings
	72% grew up in a household with a substance-abusing adult, 40% reported childhood sexual abuse, and 37% reported childhood physical abuse.			
Carten, A. (1996). <i>Mothers in Recovery: Rebuilding Families in the Aftermath of Addiction</i> . Social Work, 41(2), 214-223.	<p>20 mothers who had successfully completed a family rehabilitation program, had been discharged for at least 6 months, and had no new CPS reports.</p> <p>Women were from families reported to CPS in substance abuse-related allegations, especially where referrals were of newborns with a positive toxicology for drugs.</p>	<p>This was a qualitative, exploratory study to examine characteristics associated with mothers' successful drug rehabilitation.</p> <p>The Family Rehabilitation Program provides a comprehensive array of services including drug treatment; individual, group, and family counseling; parenting and home management skills training; health care; and help with obtaining services and entitlements.</p> <p>Data collection for the study included client interviews, staff focus groups, and case records.</p>		<p>Findings suggest that the following characteristics are associated with mothers' successful drug rehabilitation: low severity and chronicity of drug use, identification with the parenting role, availability of environmental supports, and positive future orientation supported by educational or vocational achievements.</p> <p>The strategies that clients reported as most helpful are consistent with the literature regarding successful interventions with high-risk families (such as: a focus on early identification and prevention, location in communities with the highest need, easily accessible and comprehensive services, parent involvement and empowerment, a focus on family strengths, staff functioning in multiple roles using culturally competent interventions, and nonintrusive and nonstigmatizing interventions).</p> <p><b>Limitations:</b></p> <ul style="list-style-type: none"> <li>• Self-report (and therefore possibly biased due to sensitivity of issue and possible negative consequences)</li> <li>• Selection was purposeful and limited to successful program participants (therefore not representative of the general public)</li> <li>• No comparative data</li> </ul>
Ernst, C.C., Grant, T.M., Streissguth, A.P., and Sampson, P.D. (1998). Intervention with	Highest risk alcohol and drug-abusing women delivering in the Seattle area. Eligibility criteria: singleton birth; little or no effective involvement with social or	Women in the treatment group received three years of home visits from a paraprofessional advocate. See summary of companion article by Grant et al. for more detailed description of program.	Substance abuse, changes in life circumstances, maternal and child health, and use of community resources.  Composite variables were	At 36 months, hospital-recruited client scores were significantly higher on the Endpoint Score measuring overall improvement along the five domains. 60% of the clients scored in the positive range on 4 out of 5 domains compared to only 32%

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<p>High-Risk Alcohol and Drug-Abusing Mothers: 3-Year Findings from the Seattle Model of Paraprofessional Advocacy (In publication).</p>	<p>health services during pregnancy, including inadequate prenatal care; and heavy use of alcohol or illicit drugs during the target pregnancy.</p> <p>131 out of 2,244 postpartum women who completed the screening questionnaire fit the eligibility criteria and were randomly assigned to either a control or treatment group. 65 were assigned to the treatment group (30 through hospital recruitment and 35 through community referral), 31 were assigned to the control group, and 7 refused to participate (children in the treatment and control groups experienced polysubstance exposure)</p> <p>Community referrals were not assigned to the control group. The women in the control group received no treatment services from this program, although they were not restricted from receiving other services in the community. They were assessed three years later at the conclusion of the study.</p> <p>Participants were stratified according to race, age, educational level and type of drug use.</p> <p>1 14 women participated under contract conditions with CPS.</p>	<p>All women were assessed at intake. Clients and target children were evaluated during follow-up visits at 4, 12, 24, and 36 months. Structured interviews with the mothers were conducted at the University of Washington. A Client Contact Log was kept to assess the level of participation by each client in the study. Progress Towards Goals form was completed at 4-month intervals.</p>	<p>created by combining baseline and endpoint scores for women and children. Five domains based on a five point scale, developed a priori were employed:</p> <ol style="list-style-type: none"> <li>1. Utilization of alcohol/drug treatment</li> <li>2. Abstinence from alcohol and drugs</li> <li>3. Family Planning (use of birth control, subsequent pregnancies)</li> <li>4. Health and well-being of target child (health care, custody), and</li> <li>5. Appropriate connection with community services at 36 months.</li> </ol> <p>The Shipley-Hartford Intelligence Scale was administered to clients at 4 months, but not to controls.</p> <p>Child Measures</p> <p>The Bayley Scales of Infant Development were administered to treatment children each year and to control children at 36 months.</p>	<p>of those in the control group. Overall, outcomes were better among clients who spent more time with their advocates.</p> <p><b>Alcohol &amp; Drug Treatment</b></p> <p>Clients who had the highest level of involvement with their advocates were more than twice as likely to have completed inpatient treatment compared to those less involved (67% vs. 33%).</p> <p><b>Abstinence from Alcohol/Drugs</b></p> <p>Sixty-seven percent of the most involved clients, compared to only 40% of the least involved clients and 32% of the control group had a period of abstinence of one year or longer during the 3-year intervention.</p> <p><b>Family Planning</b></p> <p>73% of the clients were using birth control regularly versus 52% of those in the control group.</p> <p><b>Health and Well-Being of the Target Child</b></p> <p>There was little difference between groups with regard to children having a regular doctor, being seen for well-child visits, and receiving appropriate immunizations by 36 months. Only 29% of the control children compared to 69% of treatment children were in appropriate custody situations relative to their mother's current use of alcohol/drugs.</p> <p><i>Bayley Scales</i></p> <p>The treatment and control children scored significantly below the norms on the Mental and Motor Scales and were not significantly different from each other.</p>

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				<p><i>Connection to Services</i> Both client groups were more satisfactorily connected with needed service providers than the control group.</p> <p>The authors note that almost 1/3 of the control mothers became involved with other community interventions during the 3 years of the program.</p> <p>Program costs were \$3800 per client per year (1997 dollars). The authors cite potential cost savings as including the following: reduced future births of alcohol- and drug-affected children as a result either of the mother's abstinence or use of effective birth control; decreased welfare costs as women stay in recovery and become able to work; decreased foster care costs as more women become able to care for their children; decreased child abuse and death as a result of increased monitoring by an advocate closely involved with the family; decreased costs of crime as alcohol and drug use decreases.</p> <p>For example: 1) 17 clients chose tubal ligation or Norplant birth control methods. Health care costs for pregnancy and the first 2 years of life for an additional child apiece would be approximately \$195,500. 2) 21% reduction in mothers on public assistance (\$7760 per year for one woman and one child). 3) Children no longer in foster care (\$4800 per child per year) (10 children avoided foster care for the entire 3 years due to program enrollment).</p> <p><b>Limitations:</b> Self-report; however, advocate observation closely matched client report.</p>

Publication	Study Group	Description/ Methods	Outcome Measures	Results/ Findings
<p>Field, T.M., Scafidi, F., Pickens, J., Prodromidis, M., Pelaez-Nogueras, M., Torquati, J., Wilcox, H., Malphurs, J., Schanberg, S., and Kuhn, C. (1998). <i>Polydrug-Using Adolescent Mothers and Their Infants Receiving Early Intervention</i>. <i>Adolescence</i>, 33(129), 117-143.</p>	<p>126 young mothers (ages 16-21) who had not completed high school and their infants, assigned to three study groups based on urine screens of mothers (near the time of delivery) and infants. The study groups included a nondrug, drug control, and drug intervention group.</p> <p>Mothers in the drug and nondrug groups did not differ on demographic variables such as age, education, socioeconomic status, and ethnic distribution.</p>	<p>This study evaluated the effects of an intervention program for adolescent polydrug-using mothers and their children. Outcomes were compared with a drug-using control group and a group that did not test as drug-using.</p> <p>The intervention group participated in a program which lasted four months and consisted of drug and social rehabilitation, parenting and vocational classes, and relaxation therapy. The program took place afternoons in a vocational high school attended by the mothers; mornings were spent in high school or GED prep classes. Infants received day care.</p> <p>Mothers and infants were assessed at the neonatal period and again at three, six, and 12 months.</p>	<p><b>Maternal Demographic And Interview Measures:</b> Beck Depression Inventory (BDI), Depression Inventory Schedule (DISC; helps make psychiatric diagnoses and classify other drug dependencies), Background Stress Interview, Problem Oriented Screening Instrument for Teenagers (POSIT; subscales include substance use/abuse, physical health status, mental health status, family relations, peer relations, educational status, vocational status, social skills, leisure and recreation, and aggressive behavior /delinquency)</p> <p>Measures of drug rehab progress, including random urine checks, were administered at 1-month intervals and at all assessment periods.</p> <p>Life tasks behavior was also assessed (drug rehab program attendance, progress toward GED/diploma, vocational training pursued, employment status, work missed or job loss due to alcohol/drug use, arrests, and residential stability).</p> <p><b>Neonatal Assessment:</b> Parmelee Obstetric and Postnatal Complications Scales, Pediatric Complications Scale, Growth was measured at each assessment. Neurological exams were performed at each assessment.</p>	<p>Although demographically similar, drug-exposed mothers and infants differed from the nondrug group behaviorally, physiologically, and biochemically at the time of birth.</p> <p>Drug-exposed mothers exhibited depression and background stress.</p> <p>Infants in drug and nondrug groups were similar on traditional birth measures—an unexpected finding given studies which have reported otherwise. The authors note the possibility that the adolescent mothers in this study were less drug involved than were those in other research.</p> <p>However, the drug-exposed infants did have inferior scores on the Neonatal Behavioral Assessment Scale, particularly habituation, orientation, abnormal reflexes, general irritability, and regulatory capacity. They also spent less time in quiet sleep and more time crying and showing stress behaviors.</p> <p>Both infants and mothers in the drug groups demonstrated inferior interactions, and the drug-exposed mothers showed significantly higher dopamine and serotonin levels.</p> <p>At 3 months, the drug rehab mothers still showed more negative Beck Depression Inventory and background stress scores, but mothers and infants were more similar to the nondrug group regarding interactions. Infants' physical measures did not differ across groups.</p> <p>At 6 months, intervention mothers and infants looked more similar to the nondrug group on virtually every measure.</p> <p>At 12 months, the drug rehab mothers'</p>

Publication	Study Group	Description/ Methods	Outcome Measures	Results/ Findings
			<p>Brazelton Neonatal Behavioral Assessment Scale (BNBAS), Neonatal Withdrawal Syndrome (NWS) Checklist, Urine analysis over a 24 hour period (at each assessment) for norepinephrine, epinephrine, dopamine, serotonin, cortisol, and creatinine. Vagal tone, Sleep/wake behavior, coded and defined with an adaptation of Thoman's Sleep State Criteria.</p> <p><i>Assessments At 3 &amp; 6 Months:</i> Mother-infant interactions, rated on the Interaction Rating Scales; also, heart rate and vagal tone were monitored Biochemical assays as mentioned above. Neurological Development (INFANIB, Infant Neurological International Battery).</p> <p><i>Assessment at 12 months:</i> Early Social Communication Scales, Bayley Scales of Infant Development, physical measurements.</p> <p>Statistical tests included multivariate analyses of variance, univariate ANOVAs and post hoc Bonferroni <i>t</i> tests.</p>	<p>mean Beck Depression Inventory score was significantly lower than that of the drug control group, although still higher than that of the nondrug group. The intervention group also showed less background stress than the drug control group. Intervention infants showed significant advantages over the control group on the Early Social Communication Scales and the Bayley Mental scale, although the scores were still lower than for the nondrug group. Intervention infants had significantly greater head circumference and significantly fewer pediatric complications than did the drug control group, having similar scores to those of the nondrug group.</p> <p>Mothers in the intervention group showed lower incidence of repeat pregnancy and drug use, as well as higher percentages continuing school, obtaining a GED or high school diploma, and being placed in jobs.</p> <p><b>Limitations:</b></p> <ul style="list-style-type: none"> <li>Limited (adolescent) population</li> </ul>
<p>Grant, T.M., Ernst, C.C., and Streissguth, A.P. (In publication) <i>Intervention with High-Risk Alcohol and Drug-Abusing Mothers: I.</i></p>	<p>The study population was comprised of 65 extremely high risk substance-abusing mothers who received the intervention, and a control group of 31 mothers who received the community</p>	<p>The Parent-Child Assistance Program (P-CAP) (originally known as the Seattle Birth to 3 Program) provides paraprofessional home visitors to substance-abusing mothers for three years, beginning at the birth of the target child.</p>	<p>Composite summary scores were based on five outcome domains:</p> <ul style="list-style-type: none"> <li>Alcohol/Drug treatment</li> <li>Abstinence from alcohol and drugs</li> </ul>	<p>Women who received the intervention had significantly higher composite summary scores across the five domains.</p> <p>Clients who spent more time with their advocates over the three years had more positive outcomes.</p>

Publication	Study Group	Description/ Methods	Outcome Measures	Results/ Findings
<p>Administrative Strategies of the Seattle Model of Paraprofessional Advocacy. <i>Journal of Community Psychology</i>.</p>	<p>standard of care.</p> <p>Criteria for inclusion include chronic alcohol and/or drug use during pregnancy, little connection with community service providers, and little or no prenatal care. Most study mothers were unmarried, unemployed, with no high school degree. All are polydrug users and almost all smoke cigarettes. Most are multiparous, but are not caring for many of their children because they have been removed from custody. The women have little social support; typically a series of partners in and out of jail, few if any close friends, and rare connections to any kind of structured social group.</p>	<p>Paraprofessional advocates share a similar history with clients, and have subsequent personal achievements. They work with a caseload of 12-15 clients. Visits are at least once each week for the first six weeks, and at least twice each month thereafter. Cost of the intervention is \$3800 per client per year.</p> <p>Program goals are: 1) to assist clients in obtaining alcohol and drug treatment, staying in recovery, and resolving complex problems that have arisen within the context of their substance abuse; 2) to assure that the children of these mothers are in a safe home environment and receiving appropriate health care; 3) to link mothers to community resources for the professional services and education that will help them build and maintain healthy, independent family lives; and 4) to demonstrate to community service providers strategies for working successfully with women who are often considered hopeless, in order to prevent the births of future alcohol and drug affected children.</p>	<ul style="list-style-type: none"> <li>• Family planning</li> <li>• Child well-being</li> <li>• Involvement with health and social services</li> </ul>	<p>(See summary of companion article by Ernst et al.)</p>
<p>Lanehart, R.E., Clark, H.B., Rollings, J.P., Haradon, D.K., and Scrivner, L. (1996).</p> <p>The Impact of Intensive Case-Managed Intervention on Substance-Using Pregnant and Postpartum Women. <i>Journal of Substance</i></p>	<p>152 women with at least 6 months of exposure to services through the Women's Intervention Services and Education (WISE) Project, available in a four-county rural district in Florida.</p> <p>Women in the sample had an average of 20 months in WISE, with a range of 6 to</p>	<p>A descriptive, uncontrolled longitudinal evaluation study to examine indicators of successful outcome for participating women. The project provided intensive case management and support services (including various support groups) during and after residential substance abuse treatment, for pregnant and postpartum women who were primarily addicted to crack cocaine. After care services and groups were</p>	<p>Substance abuse Employment Arrests Incarceration Birthweight Social Support</p>	<p>The study group showed significant improvements across multiple outcome measures:</p> <p>Women were 43% more likely to be employed and/or enrolled in educational/vocational training after the intervention compared to intake (<math>p &lt; .004</math>).</p> <p>Women were approximately 6 times more likely to have been arrested before the intervention than during the</p>

Publication	Study Group	Description/ Methods	Outcome Measures	Results/ Findings
<p><i>Abuse, 8(4), 487-495.</i></p>	<p>57 months. 66% of the women were African American, over 50% had at least a high school education, 62% fell between the ages of 25 and 34 (with a range of 18-43) and 66% had never been married.</p>	<p>not time limited, and women who relapsed could return.</p> <p>Analysis of outcome measures was based on the comparison of data collected at intake with data collected at the last point of contact with the participant (i.e., the last contact before she dropped out, or at termination of data collection).</p>		<p>intervention/aftercare (<math>p &lt; .001</math>) and 10 times more likely to have been incarcerated pre-intervention than during/after the intervention (<math>p &lt; .001</math>).</p> <p>Women who had been in WISE for a longer period of time were more likely to have been substance-free for the last six months. Similarly, as intervention time increased, the average number of months from the time of last relapse increased significantly (<math>p &lt; .007</math>).</p> <p>Women were 1.6 times more likely to use an agency as a source of social support at intake than at discharge (<math>p &lt; .001</math>); women relying on personal sources of support (as opposed to agency sources/intervention providers) increased from 38% at intake to 49% at discharge.</p> <p>Women were approximately 1.5 times more likely to deliver a low-birthweight infant before entering intervention than during/after intervention.</p> <p><b>Limitations:</b></p> <ul style="list-style-type: none"> <li>• Observational and self-report bias; while indicators included multiple criteria, with objective criteria being weighted more heavily, there was a dependence upon subjective reporting (such as employer's report, therapist's report, or self-report).</li> <li>• In general, confidence intervals in the chi-square analysis were not wide. However, the interval around the incarceration estimate was somewhat wide, which might indicate an unstable estimate.</li> <li>• Generalization is limited to substance-abusing pregnant and postpartum women of similar SES status in rural</li> </ul>

Publication	Study Group	Description/ Methods	Outcome Measures	Results/ Findings
<p>National Institute on Drug Abuse, Division of Clinical Research. Rahdert, Elizabeth, Program Officer. "Perinatal 20" Treatment Research Demonstration Grant Project</p> <p>Funded in 1989 and 1990; no longer funded.</p>	<p>Approximately 6,000 women and 3,000 children were served through 20 comprehensive therapeutic programs designed for drug abusing women of childbearing age and their children. Many of these programs focus on pregnant and/or post-partum women.</p>	<p>Project intent was to scientifically evaluate the effectiveness of each of twenty comprehensive therapeutic programs for drug abusing women of childbearing age and their children.</p> <p>Most programs have combined detoxification and long term drug treatment with a full range of medical care. Additional coordinated supportive services in the programs may include meals for children and maternal nutritional counseling, high school education or literacy training, employment counseling, family health improvement, parent skills training, and family and coupled-focused counseling.</p> <p>Operationally defined descriptors which characterize each program cover the following program features: the facility or physical environment in which treatment takes place; the therapeutic approaches and supportive services; the staffing characteristics; the optimal time-in-treatment; and the program management characteristics.</p> <p>Program effectiveness will be measured by actual service utilization and participant changes in use of alcohol and illicit drugs, employability status, criminal activity, family relationships and parenting skill. Information will also be collected regarding women's physical and mental health status, cognitive functioning, level of self-esteem, and perceived degree of stress. Child measures include intellectual,</p>	<p>Mothers Were Checked For Drug Abuse, Affect, Cognitive Functioning And IQ, Locus Of Control, Personality, Psychiatric Disorders, Self-Esteem, Social Support, and Physical Health Status.</p> <p>Behavior, physical growth, physical health status and cognitive development was measured for the developing child. Measurements on the mother-child dyad included attachment, home environment, mothering skills/attitudes. Mother and other family member relationships were examined among other children in the home.</p> <p><b>Maternal Measures:</b>  <u>Drug Use/Abuse:</u>  (adult) Addiction Severity Index (ASI),(teen) Personal Experience Inventory (PEI) family history (yet to be chosen), Cocaine Craving Scale Alcohol Dependence Scale (mother) urine toxicology breathalyzer/passive sensor</p> <p><u>Affect:</u>  <b>Mood/Emotional Status:</b>  Multiple Affect Adjective Check List (MAACL), Profile of Moods States (POMS), Positive &amp; Negative Affect Schedule (PANAS).</p> <p><b>Depression/Anxiety:</b> Beck</p>	<p>areas.</p> <ul style="list-style-type: none"> <li>No comparison group.</li> </ul> <p>(According to <i>The Future of Children</i>, 7 (2), Summer/Fall 1997, p. 158, compilations of findings primarily address methodological research issues)</p>

Publication	Study Group	Description/ Methods	Outcome Measures	Results/ Findings
		<p>psychomotor, and social development, and indices of physical health and growth. Where appropriate, infant outcome will be related to type of fetal drug exposure and time of exposure during pregnancy.</p> <p>Several programs will also examine barriers to treatment and the costs of providing a continuum of care in different settings.</p>	<p>Depression Inventory (BDI), Hamilton Psychiatric Rating Scale for Depression, Hamilton Anxiety Scale</p> <p><u>Cognitive Functioning/IQ:</u> Peabody Picture Vocabulary Test (PPVT), Wechsler Adult Intelligence Scale-Rev. (WAIS-R), Stanford-Binet Intelligence Test (4<sup>th</sup> edition), Shipley Institute of Living Scale</p> <p><u>Life Events:</u> (NCAST-1) Difficult Life Circumstances Scale, Holmes &amp; Rahe Life Events Scale</p> <p><u>Locus of Control:</u> Rotter Internal/External Locus of Control Scale</p> <p><u>Personality (general index):</u> Minnesota Multiphasic, Personality Inventory (MMPI), Myers-Briggs Personality Test, Millon Clinical Multiaxial Inventory (MCMI-II).</p> <p><u>Psychiatric Disorders (general index):</u> Brief Psychiatric Rating Scale (BPR), Symptom Distress Check List-90 Revised (SCL-90), Structured Clinical Interview for DSM-III-R (SCID I &amp; II), Brief Symptom Inventory (BSI).</p> <p><u>Self-Esteem:</u> Rosenburg Self-Esteem Scale</p> <p><u>Social Support:</u> Sarason Social Support</p>	

Publication	Study Group	Description/ Methods	Outcome Measures	Results/ Findings
			<p>Network Assessment</p> <p><u>Physical Health Status (general):</u> maternal record (yet to be chosen), for Obstetrical History, ultrasound, for Obstetrical Complications, Parmelee Scales of Obstetrical Complications medical record (yet to be chosen), for General Medical History physical exam (yet to be chosen), for General Physical Health.</p> <p><u>Neonate/Infant: Behavior:</u> Brazelton Neonatal Behavioral Assessment Scale (NBAS), Carey Infant Temperament Questionnaire, Bates Infant Characteristics Questionnaire Bayley Scales of Infant Development (BSID)</p> <p><u>Neonatal Complications:</u> physical examination (yet to be chosen), Parmelee Scale of Postnatal Complications</p> <p><u>Neonatal/Infant Growth:</u> physical examination (yet to be chosen)</p> <p><u>Neonatal Abstinence Syndrome:</u> Finnegan's Neonatal, Abstinence Score (NAS).</p> <p><u>Infant Physical Status:</u> physical examination (yet to be chosen)</p> <p><u>Psychomotor Movement;</u></p>	

Publication	Study Group	Description/ Methods	Outcome Measures	Results/ Findings
			<p>Movement Assessment of Infants</p> <p><b><i>Developing Child:</i></b></p> <p><u>Behavior:</u> Child Behavior Checklist for Ages 2-3 years</p> <p><u>Physical Growth:</u> physical examination (yet to be chosen)</p> <p><u>Physical Health Status:</u> physical examination/medical history (yet to be chosen)</p> <p><u>Cognitive Development</u> Bayley Scales of Infant Development (BSID), McCarthy Scales of Children's Ability, Vineland Scale of Social Maturity, Stanford-Binet</p> <p><b><i>Mother-Child Dyad:</i></b></p> <p><u>Attachment:</u> Ainsworth Scales of Interactive Behavior, Ainsworth Strange Situation, (NCAST-2) Nursing Child Assessment Feeding Scale (NCAST-2) Nursing Child Assessment Teaching Scale, Massie-Campbell Scale of Mother-Infant Attachment.</p> <p><u>Home Environment:</u> Caldwell's Home Observation Measure of the Environment</p> <p><u>Mothering Skills/Attitudes:</u> Adult/Adolescent Parenting Inventory, Maternal Adjustment and Attitude Questionnaire, Parenting Stress Index (PSI)</p>	

Publication	Study Group	Description/ Methods	Outcome Measures	Results/ Findings
			<p><i>Mother-Other Dyad:</i>  <u>Mother-Family Member Relationships:</u>            Family of Origin Scale (revised form)</p>	
<p>Peterson, L., Gable, S., and Saldana, L. (1996). <i>Treatment of Maternal Addiction to Prevent Child Abuse and Neglect</i>. Addictive Behaviors, 21(6), 1996, 789-801</p>		<p>Parental substance abuse has been strongly linked to child maltreatment. The authors present a conceptual model of parenting drawn initially from child maltreatment literature, and state that empirical validation for the model is evident in substance abuse literature as well. In the conceptual model, at the highest order of complexity, basic childrearing skills (such as knowledge of appropriate behavior reinforcement methods) are necessary. Next in the model, effective parenting skills are dependent upon sound knowledge of child development (for example, to avoid inappropriate expectations). Underlying these are specific constellations of beliefs and emotions which influence developmental awareness and parenting skills. Underlying these beliefs and emotions is an acceptance of two roles of childrearing: the acceptance of one's role as the responsible party (feeding, clothing, protecting...); and the role of the one who loves, enjoys, and physically nurtures the child. Underlying acceptance of both these necessary roles is the woman's own acknowledgment of her own worth (self-esteem), effectiveness (self-efficacy), and needs.</p>		<p>The authors discuss a child maltreatment program based on this conceptual model for women at high risk for child abuse, and the high proportion of such women whose histories include substance abuse. They recommend integration of the fields of maltreatment and substance abuse. Cited barriers to this integration include the observation that substance abuse treatment is not traditionally oriented towards women or may exclude their children. Additionally, concern with stigmatizing the substance abusing mother may discourage treatment agents from utilizing child abuse and neglect literature.</p>
<p>Saylor, C., Lipka, B.,</p>	<p>Study population: 15</p>	<p>This was a descriptive, longitudinal</p>	<p><i>Part I:</i></p>	<p>The authors conclude that early, intensive,</p>

Publication	Study Group	Description/ Methods	Outcome Measures	Results/ Findings
<p>and Lee,G. (1991). <i>Drug-Exposed Infants at Home: Strategies and Supports</i>. Public Health Nursing, 8(1), March 1991, 33-38.</p>	<p>newborn infants with positive urine toxicology screens for PCP (1), cocaine (14), or both from a county medical center newborn nursery.</p> <p>A control group was used to compare birth characteristics (no longitudinal follow-up): 15 infants without a positive toxicology screen admitted consecutively to the same nursery.</p> <p><i>Attrition: 2</i></p>	<p>study intended to gather data about the drug-exposed infants' growth and feeding and sleeping patterns, and to identify problems and effective strategies for caretakers.</p> <p><i>Part 1:</i> The first part of the study compared specific infant characteristics at birth for the study group with data from the control group.</p> <p><i>Part 2:</i> This continuation provided the study group with home visits by a county health department public health nurse practitioner at approximately 3 days, 7 to 10 days, 1 month of age, and monthly thereafter until one year of age.</p> <p>The purpose of these visits was to gather data regarding growth statistics and feeding and sleeping patterns, and to identify problems and effective strategies for caregivers.</p>	<p>Birthweight, Length, Head circumference, Apgar scores</p> <p><i>Part 2:</i> Neuromuscular behaviors, Weight, Length, Head circumference, Reflexes</p> <p>Development and sleep-wake cycles were measured by: Denver developmental screening test (DDST), Nursing child assessment sleep activity record (NCASA).</p> <p>Data related to specific problems of the infants, the home, and the support system were gathered via interviews with the caregivers.</p>	<p>basic care strategies are effective in mediating the symptoms of drug-exposed infants. Support for the caregiver and public health nurse was essential.</p> <p><i>At birth:</i> Birth weight and length were significantly smaller for drug-exposed infants than for the controls. Differences in Apgar scores were not significant.</p> <p><i>Initial problems:</i> 77% needed nonnutritive sucking. 62% exhibited hypertonicity and infections. At least 1/3 exhibited irritability, a need for more frequent feedings, tremors, spitting up, and easy startly. Most were cranky and difficult to console. Most did not smile until 4 months (as opposed to 4-8 weeks) or coo until 3 or 4 months.</p> <p><i>Growth and Development:</i> As conception/gestational age was often unclear, it was difficult to know whether infants were small for gestational age or premature by date. However, growth was generally age-appropriate using age-adjusted criteria.</p> <p><i>Support Systems vs. Disorganized Homes</i> While not initially a study variable, caregivers' organization and support predicted the ability to care for the infant over time.</p> <p><i>Recommendations:</i></p> <ol style="list-style-type: none"> <li>1. Assess physical and social status early, no later than day 3.</li> <li>2. Ensure adequate feeding; teach caregivers to wake the infant if necessary.</li> <li>3. Teach caregivers simple strategies to deal with symptoms (recognizing</li> </ol>

Publication	Study Group	Description/ Methods	Outcome Measures	Results/ Findings
				<p>states, cues; swaddling; pacifier; wake to eat; smaller feedings; early referral for infections; formula without iron or soy for flatulence).</p> <ol style="list-style-type: none"> <li>4. Care for the caregivers. Doses of affirmation, permission for respite, verbal encouragement, and facilitation of a support system are critical.</li> <li>5. Clarify the roles and expectations of caregiver, public health nurse, and any other agencies. Arrange a nonpunitive, supportive, but nonenabling role.</li> <li>6. Adjust public health nurse caseloads to acknowledge the intensive needs of these families. An overwhelmed nurse is not much help to an overwhelmed mother with substance problems.</li> </ol> <p><b>Limitations:</b></p> <ul style="list-style-type: none"> <li>• Descriptive; comparison data for birth characteristics only.</li> </ul>
<p>Wheeden, A., Scafidi, F.A., Field, T., Ironson, G., Valdeon, C., and Bandstra, E. (1993). <i>Massage Effects on Cocaine-Exposed Preterm Neonates</i>. <i>Developmental and Behavioral Pediatrics</i>, 14(5), 1993, 318-322.</p> <p>Field, T. (1995). <i>Cocaine Exposure and Intervention in Early Development</i>. In Lewis, M., and Bendersky, M., eds., <i>Mothers, Babies and Cocaine: The Role of</i></p>	<p>The sample consisted of 30 preterm cocaine-exposed (85% polydrug) neonates of approximately 30 weeks gestational age, 1200 grams birth weight, with a moderate number of obstetric and postnatal complications. Exposure was based on toxicology screen or maternal self-report.</p> <p>Infants were randomly assigned to the treatment or control group.</p> <p>Groups were equivalent on background variables such as gestational age, birth weight, duration of time in NICU, and weight at the beginning of study.</p>	<p>The treatment consisted of massage therapy provided for three 15-minute periods during three consecutive hours for ten days.</p>	<p>Outcomes measured/instruments used included:</p> <ul style="list-style-type: none"> <li>• Clinical data from daily nursing notes including: weight; volumetric and caloric intake; number of feedings; frequency of urination and stooling; average respiration rate, heart rate, and body temperature; number of apneic episodes; and parental visits including touching, holding, and feeding by the parents or caregiver.</li> <li>• <i>Obstetric Complications Scale (OCS)</i></li> <li>• <i>Postnatal Complications Scale (PCS)</i></li> </ul>	<p>The study found positive results from the intervention.</p> <ul style="list-style-type: none"> <li>• By the 10<sup>th</sup> day the massaged infants showed fewer postnatal complications.</li> <li>• Massaged infants gained 28% more weight over the treatment period, although they consumed similar amounts of formula and calories.</li> <li>• By the end of the 10-day period, massaged infants' motor scores had improved, while scores for control infants remained the same.</li> <li>• Massaged infants tended to show improved orientation behaviors by the end of the study.</li> <li>• Massaged infants exhibited fewer stress behaviors by day 10, while the control infants remained the same.</li> </ul> <p>Field (1995) notes that these results are</p>

Publication	Study Group	Description/ Methods	Outcome Measures	Results/ Findings
<p>Toxins in Development. Hillsdale, N.J. : Lawrence Erlbaum Associates, 1995, 355-368.</p>			<ul style="list-style-type: none"> <li>• <i>Newfoundland Scale</i> (complications)</li> <li>• <i>Brazelton Neonatal Behavior Assessment Scale</i> (habituation, orientation, motor behavior, range of state, regulation of state, autonomic stability, and abnormal reflexes.</li> <li>• <i>Neonatal Stress Behavior Scale</i></li> </ul>	<p>consistent with studies on the use of massage therapy with preterm infants, and that preterm infants still showed growth and development advantage at 8 months.</p> <p><b>Limitations:</b></p> <ul style="list-style-type: none"> <li>• Small sample size</li> </ul>



APPENDIX D  
STUDIES SHOWING OUTCOMES FOR  
HIGH-RISK MOTHERS AND THEIR CHILDREN

## LONG-TERM EARLY INTERVENTION OUTCOMES FOR AT-RISK FAMILIES IN GENERAL

The table summarizes results of ten targeted early intervention programs. Studies of these programs were included in the review if they met the following criteria: focus on at risk families (socioeconomically disadvantaged); experimental design (or, in three cases, quasi-experimental design incorporating a matched comparison group); a sample size of 50 or more participants (except one study with a sample of 18 participants); a follow-up period beyond the intervention program; and an attrition of less than 50 percent at follow-up. All outcomes listed are statistically significant at the 0.05 level or better and are long-term outcomes for the full sample (unless otherwise noted).

OUTCOME DOMAINS	SIGNIFICANT POSITIVE OUTCOMES FOR CHILDREN	SIGNIFICANT POSITIVE OUTCOMES FOR MOTHERS
<b>Cognitive and Emotional Development (Child Only)</b>	<ul style="list-style-type: none"> <li>• Higher IQ scores (short-term)</li> <li>• Fewer reports of behavioral problems</li> </ul>	
<b>Emotional/Parenting Development (Mother Only)</b>		<ul style="list-style-type: none"> <li>• Better mother-child interactions (short-term)</li> <li>• Better home environment (short-term)</li> <li>• Higher rates of parental involvement in school</li> <li>• Fewer reports of child abuse and neglect</li> </ul>
<b>Education</b>	<ul style="list-style-type: none"> <li>• Improved academic achievement test scores</li> <li>• Lower rates of grade retention</li> <li>• Less time in special education</li> <li>• Higher rate of high school graduation</li> <li>• Higher high school GPA</li> <li>• Fewer years in educable mentally impaired programs</li> <li>• More likely to complete high school after giving birth</li> </ul>	<ul style="list-style-type: none"> <li>• Higher rate of high school completion</li> <li>• More years of education</li> </ul>
<b>Economic Well-being</b>	<ul style="list-style-type: none"> <li>• Lower incidence and severity of criminal activity</li> <li>• Higher rates of employment and earnings</li> <li>• Lower rates of welfare utilization</li> </ul>	<ul style="list-style-type: none"> <li>• Lower levels of criminal activity</li> <li>• Higher rates of employment</li> <li>• Lower rates of welfare utilization</li> </ul>
<b>Health</b>	<ul style="list-style-type: none"> <li>• Fewer sexual partners</li> <li>• Less consumption of alcohol</li> </ul>	<ul style="list-style-type: none"> <li>• Fewer subsequent pregnancies and births</li> <li>• Longer interval between first and second child</li> <li>• Fewer instances of substance use impairments</li> </ul>

## **LIMITATIONS OF GENERAL EARLY INTERVENTION STUDIES REVIEWED**

Studies designed to evaluate the effects of early intervention programs have a number of limitations that restrict the ability to generalize the findings to populations outside of the study group. While all of the general early intervention studies reviewed in the following pages focused on at-risk, socioeconomically disadvantaged families, these limitations affect the extent to which the studies can inform discussions about the population of drug-abusing women in Washington state.

- Time and financial constraints required researchers to select a sample for their studies, which limits the ability to generalize the findings to a larger population.
- Nonrandom attrition can affect statistical representation and interpretation of results.
- Nonrandom selection of participants in a quasi-experimental design can result in a non-representative sample.
- Some of the findings for the various studies relied on self-report which can introduce the potential for reporting bias.
- Studies involving preschool intervention might have provided lower teacher-student ratios than are used today, and preschool teachers might have been more qualified and better trained than today.

Limitations specific to each study are listed at the end of the discussion for that study and are located in the results column.

## LITERATURE REVIEW OF LONG-TERM EARLY INTERVENTION OUTCOMES FOR AT-RISK FAMILIES

Note: Results and findings are statistically significant to the .05 level for full sample unless otherwise indicated.

PUBLICATION	STUDY GROUP	DESCRIPTION	OUTCOME MEASURES	RESULTS/FINDINGS
<p>Karoly, L.A., Greenwood, P.W., Everingham, S.S., Hoube, J., Kilburn, M.R., Rydell, C.P., Sanders, M., and Chiesa, J. (1998).</p> <p><i>Investing in Our Children: What We Know and Don't Know About the Costs and Benefits of Early Childhood Interventions.</i> Santa Monica: Rand Corporation, 34-61.</p> <p><b>Referenced articles:</b></p> <p>Weikart et al. (1978); Schweinhart et al. (1980); Berrueta-Clement et al. (1984); Schweinhart et al. (1993).</p>	<p><b>Study 1: High/Scope Perry Preschool Project</b></p> <p><b>Objective:</b> To examine the cognitive and social outcomes of one or two years of preschool on economically disadvantaged children in the short- and long-term.</p> <p><b>Setting:</b> Ypsilanti, Michigan</p> <p><b>Participants:</b> 123 African American children and their parents were recruited over five years between 1962 and 1967. Families of low SES and children with an IQ (Stanford-Binet) of less than 85 were selected.</p> <p><b>Design:</b> Longitudinal study with random assignment to 1.) preschool, or 2.) control group. Children were aged 3 and 4 when they attended the two-year program, except for a small group who attended for one year at age 4. Evaluation through interviews, school records and public records.</p>	<p>From October to May, the study group received 2-1/2 hour center-based classes 5 days per week and a 1-1/2 hour weekly home visit by the teacher. The teacher-student ratio was 1 to 6. All teachers were trained in child development and certified to teach in public schools.</p>	<p><b>CHILDREN'S OUTCOMES</b></p> <p>IQ at age 5 IQ at age 7 IQ at age 8 IQ at age 14</p> <p>Achievement tests at age 9 Achievement tests at age 14 High school GPA at age 19 Time in special education through age 19 (% of years) Years in educable mentally impaired programs through age 27 Years retained in grade through age 27 High school graduation rate by age 27 Post-secondary education credits by age 27</p> <p>Ever arrested by age 19 Lifetime arrests through age 19 Number of petition requests submitted to juvenile court through age 19 Ever arrested by age 27 Lifetime arrests through age 27 Employment rate at age 19 Employment rate at age 27 Monthly earnings at age 27 (1993 \$) Received public assistance at age 27 Received public assistance in last 10 years at age 27</p> <p>Teen pregnancies per 100 females through age 19</p>	<p>E&gt;C (E=94.9, C=83.5) E&gt;C (E=91.7, C=87.1) E=C (E=88.1, C=86.9) E=C (E=81.0, C=80.7)</p> <p>E&gt;C E&gt;C E&gt;C (E=2.08, C=1.71)</p> <p>E&lt;C (E=16%, C=28%)</p> <p>E&lt;C (E=1.1, C=2.8) E=C (E=0.5, C=0.7) E&gt;C (E=66%, C=45%) E=C (E=33%, C=28%)</p> <p>E&lt;C (E=31%, C=51%) E&lt;C (E=1.3, C=2.3)</p> <p>E&lt;C (E=0.2, C=0.4) E&lt;C (E=57%, C=69%) E&lt;C (E=2.3, C=4.6) E&gt;C (E=50%, C=32%) E=C (E=71%, C=59%) E&gt;C (E=\$1219, C=\$766) E&lt;C (E=15%, C=32%)</p> <p>E&lt;C (E=59%, C=80%)</p> <p>E=C (E=68, C=117)</p> <p><b>Conclusions:</b> This program of preschool and home visitation by teachers can produce lasting favorable IQ effects, improved academic achievement, less time in special education, fewer arrests, higher rates of high school graduation, higher rates of employment, higher monthly</p>

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				<p>earnings, and less dependence on public assistance.</p> <p><b>Limitations:</b> Small sample size. Teacher-student ratios lower than today. Preschool teachers more qualified and better trained than today.</p>
<p><b>Referenced articles:</b></p> <p>Infant Health and Development Project (1990); McCormick et al. (1991); McCormick et al. (1993); Ramey et al. (1992); Brooks-Gunn et al. (1994a); Brooks-Gunn et al. (1994b); McCarton et al. (1997).</p>	<p><b>Study 2: Infant Health and Development Project</b></p> <p><b>Objective:</b> To examine the cognitive outcomes of more and less intensive educational and family support services on children born prematurely and with low birth weight.</p> <p><b>Setting:</b> Multi-site</p> <p><b>Participants:</b> Beginning in 1985, 985 infants were recruited over 9 months. 50 percent of the children were African American, 10 percent were Hispanic.</p> <p><b>Design:</b> Longitudinal study with intervention provided over a three-year period and random assignment to 1.) intervention group, or 2.) control group. Evaluation through standardized tests, interviews, and school records.</p>	<p>Included 1.) weekly home visits for the first year, then biweekly to age 3, 2.) full-day, year-round, center-based educational day-care beginning at age 1, and 3.) bimonthly parent group meetings during second and third years. Both the intervention and control groups received medical, developmental, and social assessments with referral if indicated.</p>	<p><b>CHILDREN'S OUTCOMES</b></p> <p>IQ at age 3  IQ at age 5  IQ at age 8  Behavior problems at age 3  Behavior problems at age 5  Behavior problems at age 8</p> <p>Achievement tests at age 8 (math only)  Grade repetition by age 8  Special education by age 8</p> <p>General health at age 8</p> <p><b>MOTHER'S OUTCOMES</b></p> <p>Mother-child interactions at age 2.5  HOME Inventory at age 3</p> <p>Months in school through age 3  Months employed through age 3</p> <p>Subsequent pregnancy through age 3</p>	<p>HLBW=Heavier Low Birth Weight</p> <p>E&gt;C (E=93.6, C=84.2)  E&gt;C (HLBW only)(E=95.4,C=91.7)  E&gt;C (HLBW only)(E=96.5,C=92.1)  E&lt;C  E&lt;C  E=C</p> <p>E&gt;C (HLBW only)  E=C (E=14%, C=15%)  E=C (E=17%, C=20%)</p> <p>E=C</p> <p>E&gt;C  E&gt;C</p> <p>E=C (E=4.9, C=4.2)  E&gt;C (E=16.7, C=15.6)</p> <p>E=C</p> <p><b>Conclusions:</b> This program of preschool and home visitation can produce favorable IQ effects, higher receptive vocabulary test scores, fewer behavioral problems, and better mother-child interactions. Mothers receiving intervention returned to work earlier and were employed more months than mothers who did not receive intervention. Children aged 2 and 3 who were from families with the</p>

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				best rates of participation in intervention services scored better on cognitive and developmental tests than those with lower rates of participation.
<p><b>Referenced articles:</b></p> <p>Ramey et al. (1985); Wasik et al. (1990).</p>	<p><b>Study 3: Project CARE</b></p> <p><b>Objective:</b> To compare child outcomes between more and less intensive early educational treatment programs.</p> <p><b>Setting:</b> Chapel Hill, North Carolina</p> <p><b>Participants:</b> Beginning in 1978, 65 families were recruited over 18 months from local hospital records of births. Families were of low SES, 90 percent of children were African American, and 75 percent were from single-parent households. Average age of mothers was 22, and 60 percent were first-time mothers.</p> <p><b>Design:</b> Longitudinal study with intervention over a five-year period and random assignment to 1.) home visit and center-based intervention group (E1), 2.) home visit only (E2), or 3.) control group. Evaluation at 6- to 12-month intervals for five years through standardized tests.</p>	<p>Beginning one month after the child's birth, intervention groups began receiving one-hour home visits an average of once a month by a trained family educator who focused on child development and training in family problem-solving and parental skills. Monthly workshops for parents provided additional child-rearing support and information about community services. The educational preschool component was center-based, full day, year-round with a low staff-to-child ratio.</p>	<p><b>CHILDREN'S OUTCOMES</b></p> <p>IQ at age 1</p> <p>IQ at age 3</p> <p>IQ at age 4.5</p> <p><b>MOTHER'S OUTCOMES</b></p> <p>Childrearing attitudes at age 3</p> <p>HOME Inventory at age 4.5</p>	<p>E1&gt;E2, C (E1=119.3, E2=107.8, C=108.5)</p> <p>E1&gt;E2, C (E1=104.5, E2=88.4, C=92.9)</p> <p>E1&gt;E2, C (E1=103.1, E2=89.9, C=96.0)</p> <p>E1=E2=C</p> <p>E1=E2=C</p> <p><b>Conclusions:</b> Children who received both the day-care and home visits scored significantly higher on tests of cognitive development than either the home visit only or control group. Significant differences were not found between the home visit only group and the control group. Additionally, differences were not found among any of the three groups regarding the home environment being conducive to child development or child-rearing attitudes.</p>
<p><b>Referenced articles:</b></p> <p>Ramey et al. (1983); Ramey et al. (1994); Ramey et al. (1981); Campbell et al. (1994); Campbell et al. (1995).</p>	<p><b>Study 4: Carolina Abecedarian</b></p> <p><b>Objective:</b> To examine the effects of early high-quality educational day-care and other methods of EI on the cognitive and emotional development, and</p>	<p>Full-day, year-round, center-based day-care/preschool program. The teacher-to-infant/toddler ratio was 1 to 3, and the teacher-to-child ratio of 1 to 6. Each age group received specially designed curricula. Medical services were provided at the preschool center. Post-school</p>	<p><b>CHILDREN'S OUTCOMES</b></p> <p>IQ at age 5</p> <p>IQ at age 8</p> <p>IQ at age 12</p> <p>IQ at age 15</p>	<p>(The first letter indicates preschool treatment and the second school-age treatment.)</p> <p>E&gt;C (E=101.4, C=93.7)</p> <p>E&gt;C (EE+EC=97.8, CE+CC=93.3)</p> <p>E&gt;C (EE+EC=93.7, CE+CC=88.4)</p> <p>E=C (EE+EC=95.0, CE+CC=90.3)</p>

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	<p>early academic achievement of children from low SES families.</p> <p><b>Setting:</b> Chapel Hill, North Carolina</p> <p><b>Participants:</b> 111 children were recruited from families rated as “high risk” for school failure between 1972 and 1977. The sample consisted of 98 percent African American first-born children, with mothers of an average age of 20 and mostly single.</p> <p><b>Design:</b> Longitudinal study with random assignment to 1.) preschool intervention (E), 2.) postschool intervention, 3.) both preschool and postschool intervention, or 4.) control group. Intervention services were provided over an eight-year period. Evaluation through standardized tests, school records, and interviews.</p>	<p>intervention during the primary grades involved parents providing children with specific supplemental educational activities at home. A home/school resource teacher provided customized materials to parents every two weeks based upon alternate week visits to the child’s classroom to review school curriculum and individual progress.</p>	<p>Achievement tests at age 8  Achievement tests at age 15  Special education by age 15  Grade retention by age 15</p> <p><b>MOTHER’S OUTCOMES</b></p> <p>HOME Inventory at age 4.5</p> <p>Years of education at age 4.5</p> <p>Employment/occupational status at age 4.5</p>	<p>E&gt;C  E&gt;C  E&lt;C (EE+EC=25%, CE+CC=48%)  E&lt;C (EE+EC=31%, CE+CC=55%)</p> <p>E=C</p> <p>E&gt;C (E=11.9, C=10.3)</p> <p>E&gt;C</p> <p><b>Conclusions:</b> Results suggest that high quality, educational day-care combined with school-age intervention can produce favorable outcomes in early cognitive development and academic achievement. Positive significant short- and long-term IQ effects occurred for children receiving pre/post-school intervention. This group required less special education, and had lower rates of grade retention. Mothers attained more years of education, were less likely to be unemployed, and more likely to work in skilled or semi-skilled employment.</p> <p><b>Limitations:</b> Small sample size. Teacher-student ratios lower than today. Preschool teachers more qualified and better trained than today.</p>
<p><b>Referenced articles:</b></p> <p>Gray et al. (1970); Gray et al. (1982); Gray et al. (1982); Lazar et al. (1982).</p>	<p><b>Study 5: Early Training Project</b></p> <p><b>Objective:</b> To examine the cognitive and achievement outcomes of preschool and home visits on economically disadvantaged children in the short and long-term.</p> <p><b>Setting:</b> Murfreesboro,</p>	<p>Weekly home visits during the school year and 10-week part-day preschool program during the summer.</p>	<p><b>CHILDREN’S OUTCOMES</b></p> <p>IQ at age 6  IQ at age 7  IQ at age 17</p> <p>Achievement tests at age 7  Achievement tests at age 10  Achievement tests at age 17  Special education by age 18  Grade retention by age 18</p>	<p>E&gt;C (E=95.0, C=82.8)  E=C (E=97.7, C=91.3)  E=C (E=78.7, C=76.4)</p> <p>E&gt;C  E=C  E=C  E&lt;C (E=3%, C=29%)  E=C (E=58%, C=61%)</p>

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	<p>Tennessee</p> <p><b>Participants:</b> 65 African American children of low SES were recruited to receive intervention between 1962 and 1965.</p> <p><b>Design:</b> Longitudinal study with intervention services provided over 3 years and random assignment to 1.) intervention group, or 2.) control group. At final follow-up in 1978, 80 percent of the participants were available for assessment, most were 19 years old. Evaluation through standardized tests, school records, and interviews.</p>		<p>High school graduation rate by age 18 Complete high school after pregnancy by age 18</p> <p>Teen pregnancy through age 18</p>	<p>E=C (E=68%, C=52%)</p> <p>E&gt;C (E=88%, C=17%)</p> <p>E=C</p> <p><b>Conclusions:</b> Children receiving part-day preschool and home visits had significantly higher scores on IQ and achievement tests in the short-term, however these effects were not long lasting. Children receiving treatment were less likely to be placed in a special education class, and female participants who bore children were more likely to return to and complete high school.</p> <p><b>Limitations:</b> High attrition rate could invalidate initial random assignment. Small sample size.</p>
<p><b>Referenced articles:</b></p> <p>Reynolds, A.J. (1994); Reynolds, A.J. (1997); Reynolds et al. (1995); Reynolds et al. (1997).</p>	<p><b>Study 6: Chicago Child-Parent Center and Expansion Program</b></p> <p><b>Objective:</b> To evaluate the outcomes of the Chicago Child-Parent Center Program promoting reading and language skills for participating low-income minority children.</p> <p><b>Setting:</b> Greater Chicago, Illinois</p> <p><b>Participants:</b> 1,539 low-income minority children (95 percent African American, 5 percent Hispanic) from 26 Chicago-area kindergarten programs, who graduated from kindergarten in the spring of 1986.</p> <p><b>Design:</b> Longitudinal, quasi-</p>	<p>At ages 3 and 4, children attended a half-day preschool program with emphasis on reading and language skills, and parental involvement during the nine-month school year. Kindergarten programs met full day for 6 hours during the school year. The program for primary grades provided low teacher-to-student ratios, coordination of instruction, and parental involvement.</p>	<p><b>CHILDREN'S OUTCOMES</b></p> <p>Teacher rating of school adjustment at age 9</p> <p>Achievement tests at age 9 Achievement tests at age 14 Special education by age 9 Special education (years) through age 14</p> <p>Grade retention by age 9 Grade retention by age 14</p> <p>Delinquency rate through ages 13-14 Delinquency rate through ages 15-16</p> <p><b>MOTHER'S OUTCOMES</b></p> <p>Parental involvement in school at age 9</p>	<p>E=C</p> <p>E&gt;C E&gt;C E=C (E=8%, C=9%) E&lt;C (E=0.6, C=0.9)</p> <p>E&lt;C (E=19%, C=26%) E&lt;C (E=25%, C=37%)</p> <p>E&lt;C E=C</p> <p>E&gt;C</p> <p><b>Conclusions:</b> This program that integrates intervention services in preschool, kindergarten and primary grades can produce favorable</p>

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	<p>experimental study comparing outcomes of 1,150 participants in child-parent centers with 389 children forming the control group selected from six randomly selected schools providing a full-day kindergarten program for low-income children. Intervention services were provided for up to six years. At most recent follow-up in 1994, 75 percent of participants were available at age 14. Evaluation through school records, and interviews with teachers, parents and children.</p>			<p>outcomes in the long-term. Participants scored significantly higher on achievement tests, had lower rates of grade retention, fewer years in special education, and a lower rate of delinquency by age 14.</p> <p><b>Limitations:</b> Quasi-experimental design without random assignment to control group. Teacher-student ratios lower than today.</p>
<p><b>Referenced articles:</b></p> <p>Johnson et al. (1974); Andrews et al. (1982); Johnson et al. (1982); Johnson et al. (1991).</p>	<p><b>Study 7: Houston Parent-Child Development Center</b></p> <p><b>Objective:</b> To evaluate child and parental outcomes of home visitation and center-based educational activities designed to effect parental change in low SES families.</p> <p><b>Setting:</b> Houston, Texas</p> <p><b>Participants:</b> 291 Mexican American families with a child 1 year old were recruited between 1970 and 1980 from neighborhoods with the lowest levels of family income and adult education, and high concentrations of Mexican Americans.</p> <p><b>Design:</b> Longitudinal study with intervention services provided over two years and random assignment to 1.) treatment group, or 2.) control group.</p>	<p>During the first year of intervention, paraprofessionals visited participant's homes an average of 25 times to provide mothers instruction in teaching their infants, especially language development. During the second year, mothers received center-based, half-day instruction four times a week emphasizing cognitive and</p> <p>language development, child rearing, health and safety while their children attended a Piagetian-based nursery school.</p>	<p><b>CHILDREN'S OUTCOMES</b></p> <p>IQ at age 2 IQ at age 3 Behavior problems at ages 4-7</p> <p>Achievement tests at ages 8-11 Grades at ages 8-11 Special education by ages 8-11</p> <p>Grade retention by ages 8-11 Bilingual education by ages 8-11</p> <p><b>MOTHER'S OUTCOMES</b></p> <p>Mother-child interactions at age 3 HOME Inventory at age 3</p>	<p>E&gt;C (E=98.8, C=90.8) E=C (E=108.1, C=104.0) E&lt;C</p> <p>E&gt;C E=C E=C (E=14%, C=17%)</p> <p>E=C (E=16%, C=23%) E&lt;C (E=14%, C=36%)</p> <p>E&gt;C E&gt;C</p> <p><b>Conclusions:</b> This program designed to promote change in child and family outcomes through parental education can produce favorable short-term IQ and behavioral effects, and longer-term benefits including higher scores on achievement tests, and a decreased need for bilingual services.</p>

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	About 50 percent of participating families were available for follow-up when their children were between 8 and 11 years old.			<b>Limitations:</b> High attrition rate could invalidate initial random assignment.
<p><b>Referenced articles:</b> Honig et al. (1982); Lally et al. (1988).</p>	<p><b>Study 8: Syracuse Family Development Research Program</b></p> <p><b>Objective:</b> To examine the outcomes of prenatal home visits and educational day-care on children and their families.</p> <p><b>Setting:</b> Syracuse, New York</p> <p><b>Participants:</b> From 1969 to 1975 108 families, mostly African American, of low SES, with less than a high school education, received intervention services. 85 percent of mothers were single parents. The mean age was 18 years.</p> <p><b>Design:</b> Quasi-experimental, non-randomized study lasting 5 years. A control group of children, matched for age and sex with the treatment group, was recruited 3 years into the intervention. 82 families completed the program. 60 percent of the treatment group and 50 percent of the control group were available for follow-up 14 years later. Evaluation through criminal justice and school records, and interviews with children, parents and teachers.</p>	Beginning in the third trimester of pregnancy and until the children reached age 5, parents received weekly home visits by paraprofessionals who provided parenting and child development education, and ongoing assessments of service needs and referrals for social services. Infants attended half-day center-based educational day-care from 6 to 15 months, followed by full-day center-based family-style day-care emphasizing social and cognitive skills development.	<p><b>CHILDREN'S OUTCOMES</b></p> <p><b>Cognitive and Emotional Development:</b></p> <p>IQ at age 3 IQ at age 6 Socioemotional behavior at age 3 Socioemotional behavior at age 6</p> <p>Grades at age 15 Special education by age 15 Grade retention by age 15 Attendance at age 15 Teacher ratings at age 15</p> <p>Referred to probation by age 15</p> <p><b>MOTHER'S OUTCOMES</b></p> <p>Completed high school by age 5</p>	<p>E&gt;C (E=110.3, C=90.6) E=C (E=109.1, C=105.0) E&gt;C E&lt;C</p> <p>E&gt;C (girls only) E=C E=C E&gt;C (girls only) E&gt;C (girls only)</p> <p>E&lt;C (E=6%, C=22%)</p> <p>E&gt;C</p> <p><b>Conclusions:</b> This program of prenatal home visitation and family-style day-care can produce significant short-term improvements in IQ, language skills, and socioemotional behavior. Long-term outcomes included lower rates and severity of juvenile delinquency and, among girls, better school attendance and grades.</p> <p><b>Limitations:</b> Nonrandom and delayed matched-control group. Nonrandom attrition.</p>
<p><b>Referenced articles:</b> Olds et al. (1986a); Olds</p>	<p><b>Study 9: Prenatal/Early Infancy Project</b></p>	Group assigned home visits by nurses received an average of 9 home visits during pregnancy, and 23 home visits	<p><b>CHILDREN'S OUTCOMES</b></p> <p>IQ at age 3</p>	<p>E=C (E=103.6, C=102.0)</p>

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<p>et al. (1986b); Olds et al. (1988); Olds et al. (1997); Olds et al. (1994); Olds, D.L. (1996).</p>	<p><b>Objective:</b> To examine the effects of prenatal and early childhood home visitation by nurses on economically disadvantaged first-time mothers and their children.</p> <p><b>Setting:</b> Semirural community of Elmira, New York</p> <p><b>Participants:</b> 400 pregnant women, younger than 19, unmarried <i>or</i> of low SES, with no previous live births, were enrolled between 1978 and 1980. 89% of the sample was white, 11% were African American.</p> <p><b>Design:</b> Longitudinal study with random assignment to one of two treatment groups or one of two control groups. Outcome measures focus on the differences between two groups: 1.) treatment group receiving home visiting during pregnancy and until the child reached age 2, and 2.) combined results of the two control groups. Control groups were assigned standard clinical prenatal and well-child care. 79 percent of participants were available for follow-up when they were 15 years old. Results for a sub-sample of unmarried, low SES mothers deemed “high risk (HR)” were also reported. Evaluation was conducted through interviews and state records.</p>	<p>between the child’s birth and age 2.</p>	<p>IQ at age 4</p> <p>Emergency room visits, ages 25-50 months</p> <p>Hospital days, ages 25-50 months</p> <p><b>MOTHER’S OUTCOMES</b></p> <p>HOME Inventory at 46 months</p> <p>Substantiated reports of child abuse and neglect through age 15</p> <p>Years of education at age 4</p> <p>Months employed through age 15</p> <p>Months on AFDC through age 15</p> <p>Months on Food Stamps through age 15</p> <p>Months on Medicaid through age 15</p> <p>Arrests through age 15 (self report)</p> <p>Convictions through age 15</p> <p>Jail days through age 15</p> <p>Subsequent pregnancies through age 15</p> <p>Subsequent births through age 15</p> <p>Months between first and second birth through age 15</p> <p>Substance use impairments through age 15</p>	<p>E=C (E=111.5, C=108.9)</p> <p>E&lt;C (E=1.0, C=1.5)</p> <p>E&gt;C (E=0.54, C=0.30, outlier unrelated to program appears responsible)</p> <p>E=C</p> <p>E&lt;C (E=0.29, C=0.54)</p> <p>E=C (E=11.4, C=11.1)</p> <p>E=C (E=96.4, C=89.7)</p> <p>E&lt;C (HR only)(E=60.4, C=90.3)</p> <p>E&lt;C (HR only)(E=46.7, C=83.5)</p> <p>E=C (E=61.8, C=70.0)</p> <p>E&lt;C (HR only)(E=0.18, C=0.58)</p> <p>E&lt;C (HR only)(E=0.06, C=0.28)</p> <p>E&lt;C (HR only)(E=0.04, C=1.11)</p> <p>E&lt;C (HR only)(E=1.5, C=2.2)</p> <p>E&lt;C (HR only)(E=1.1, C=1.6)</p> <p>E&gt;C (HR only)(E=64.8, C=37.3)</p> <p>E&lt;C (HR only)(E=0.41, C=0.73)</p> <p><b>Conclusions:</b> Short term favorable outcomes were found in treatment mother’s pregnancy behaviors including less use of cigarettes, better nutrition, and improved attendance at childbirth classes. Fifteen years after intervention, fewer reports of child abuse and neglect were found among nurse-visited mothers. For the high-risk sample, nurse-visited mothers had fewer months receiving AFDC and Food Stamps, lower levels of criminal activity, fewer behavioral problems due to alcohol and drugs, fewer subsequent pregnancies and births, and longer intervals between births of the first and second child.</p>

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				<p><b>Limitations:</b></p> <p>Positive results were concentrated among mothers who were unmarried and from low-SES households. Several outcomes based on self-report.</p>
<p>Kitzman et al. (1997). Effect of Prenatal and Infancy Home Visitation by Nurses on Pregnancy Outcomes, Childhood Injuries, and Repeated Childbearing. <i>Journal of the American Medical Association</i>, 278(8), 644-652.</p>	<p><b>Prenatal/Early Infancy Project Follow-up Study</b></p> <p><b>Objective:</b> To test the effect of prenatal and infancy home visits by nurses on pregnancy-induced hypertension, preterm delivery, and low birth weight: on children's injuries, immunizations, mental development, and behavioral problems, and on maternal life course.</p> <p><b>See Study 9 above for setting, participants, design, and intervention descriptions.</b></p>		<p><b>CHILDREN'S OUTCOMES</b></p> <p>Health care encounters for injuries or ingestions by age 2 Number of hospital days for injuries or ingestions by age 2</p> <p><b>MOTHER'S OUTCOMES</b></p> <p>Number of months on AFDC by age 2</p> <p>Subsequent pregnancy by age 2 Subsequent birth by age 2</p>	<p>E&lt;C (E=0.43, C=0.55)</p> <p>E&lt;C (E=0.03, C=0.16)</p> <p>E&lt;C (E=7.8, C=8.4, but not significant at .05 level (p&lt;.01))</p> <p>E&lt;C (E=36%, C=47%) E&lt;C (E=22%, C=31%)</p>
<p>Olds et al. (1997). Long-term Effects of Home Visitation on Maternal Life Course and Child Abuse and Neglect. <i>Journal of the American Medical Association</i>, 278(8), 637-643.</p>	<p><b>Prenatal/Early Infancy Project Follow-up Study</b></p> <p><b>Objective:</b> To examine the long-term effects of a program of prenatal and early childhood home visitation by nurses on women's life course and child abuse and neglect.</p> <p><b>See Study 9 above for setting, participants, design, and intervention descriptions.</b></p>		<p><b>MOTHER'S OUTCOMES</b></p> <p>Arrests through age 15 (NY State records)</p>	<p>E&lt;C (HR only)(E=0.16, C=0.90)</p>
<p>Olds et al. (1997). Long-term Effects of Nurse Home Visitation on Children's Criminal and Antisocial Behavior. <i>Journal of the</i></p>	<p><b>Prenatal/Early Infancy Project Follow-up Study</b></p> <p><b>Objective:</b> To examine the long-term effects of prenatal and early childhood home visitation by nurses on children's criminal</p>		<p><b>CHILDREN'S OUTCOMES</b></p> <p>Incidence of times ran away through age 15 Incidence of arrests through age 15 Incidence of convictions and probation violations through age 15</p>	<p>E&lt;C (HR only)(E=0.24, C=0.60) E&lt;C (HR only)(E=0.20, C=0.45) E&lt;C (HR only)(E=0.09, C=0.47)</p>

PUBLICATION	STUDY GROUP	DESCRIPTION	OUTCOME MEASURES	RESULTS/FINDINGS
<p><i>American Medical Association, 280(14), 1238-1244.</i></p>	<p>and antisocial behavior.</p> <p><b>See Study 9 above for setting, participants, design, and intervention descriptions.</b></p>		<p>Incidence of sex partners through age 15 Incidence of days drank alcohol through age 15</p>	<p>E&lt;C (HR only)(E=0.92, C=2.48) E&lt;C (HR only)(E=1.09, C=2.49)</p> <p><b>Conclusions:</b> Fifteen years after intervention, children of nurse-visited had fewer incidences of running away from home, arrests, convictions and probation violations, fewer sexual partners, and consumed alcohol less frequently.</p> <p><b>Limitations:</b> Positive results were concentrated among unmarried mothers of low-SES. Several outcomes were based on self-report.</p>
<p>Seitz et al. (1985). Effects of Family Support Intervention: A Ten Year Follow-up. <i>Child Development, 56, 376-391.</i></p>		<p>Family support intervention involving a home visitor, pediatrician, primary day-care worker and a developmental examiner provided a coordinated set of medical and social services.</p>	<p><b>CHILDREN'S OUTCOMES</b></p> <p>IQ at age 12 – boys IQ at age 12 - girls</p> <p>Serious absenteeism at age 12 Number of negative school services at age 12 Negative teacher ratings at age 12</p> <p><b>MOTHER'S OUTCOMES</b></p> <p>Years of education at age 12 Receiving public assistance at age 12 Number of children at 10 year follow-up</p>	<p>E=C (E=91.7, C=93.3) E=C (E=98.0, C=103.8)</p> <p>E&gt;C (E=0%, C=27%)</p> <p>E&lt;C (boys only)(E=0.4, C=1.9) E&lt;C (boys only)(E=1.4, C=6.6)</p> <p>E&gt;C (E=13.0, C=11.70)</p> <p>E&lt;C (E=13%, C=47%)</p> <p>E&lt;C (E=1.67, C=2.20, but not significant at .05 level (p=.06))</p> <p><b>Conclusions:</b> This program of family support which includes quality day-care can produce favorable outcomes related to child and parent education, and dependence on public assistance. The author projects governmental savings of \$40,000 in welfare and school service costs in the single year that this 10 year follow-up data was</p>

PUBLICATION	STUDY GROUP	DESCRIPTION	OUTCOME MEASURES	RESULTS/FINDINGS
				gathered. <b>Limitations:</b> Small sample size. Quasi-experimental design without random assignment to control group.

APPENDIX E  
CHARACTERISTICS OF MOTHERS IN THE STUDIES

## CHARACTERISTICS OF SUBSTANCE ABUSING MOTHERS IN STUDIES

Characteristics from the 32 studies were summarized: five from program outcomes specifically for substance abusing women and their children (Ernst, Field, Lanehart, Camp, Black – see Appendix B); three from early intervention outcomes for at-risk families (Sagatun-Edwards, Behnke, Svikis – see Appendix C); and 19 studies of prenatal exposure to substance abuse. See Appendix C for descriptions of studies by the following first-named authors and their colleagues: Billing, Brooke, Burns, Beck, Billings, Cernerud, Conte, Dixon, Eriksson, Karmel, Keinberger Jaudes, King, Martin, Moore, Nair, Smit, Soeptami, Tyler, and van Baar.

Characteristic/Issue	Measures (Frequencies)	Comparison To Non Substance Abusing Mothers
<b>Ages in Study</b>	<p>Ages in Study generally in twenties/thirties; unless otherwise stated, age is at time of study not delivery</p> <ul style="list-style-type: none"> <li>➤ Median age 27.3 years (n=20 Burns)</li> <li>➤ Mean age at this pregnancy 27, at first pregnancy 18 (n=152, Nair)</li> <li>➤ 63% over 25 years old (n=513, Keinberger Jaudes)</li> <li>➤ Median age 28 (20-37) (n=23, Smit)</li> <li>➤ Mean age, 27 years (n=60, Ernst)</li> <li>➤ Under 21 years old; Mean age 18 years old (n=126, Field)</li> <li>➤ Average age 26 years, range 16-38 (n=284, Sagatun-Edwards)</li> <li>➤ Mean age 26.7 years (n=146, Svikis)</li> <li>➤ Mean age 28 years, range 25-34 (n=152, Lanehart)</li> <li>➤ Mean age 27.3 years (n=170, Camp)</li> <li>➤ Mean age 27 years (n=60, Black)</li> <li>➤ All study participants at least 17 years old (n=191, Martin)</li> <li>➤ Median age was 21 years at delivery; 1/3 were teens at delivery (n=56, Brooke)</li> </ul>	<ul style="list-style-type: none"> <li>➤ Burns found similar ages for comparison</li> <li>➤ No comparison for Nair study (Baltimore)</li> <li>➤ No comparison for Keinberger Jaudes (Chicago)</li> <li>➤ No comparison for Smit study (Amsterdam)</li> <li>➤ No comparison for Ernst study (Seattle)</li> <li>➤ Mean age same for Field study (Miami)</li> <li>➤ No comparison for Sagatun-Edwards (San Jose)</li> <li>➤ No comparison for Svikis (Baltimore)</li> <li>➤ No comparison for Lanehart study (Florida)</li> <li>➤ No comparison group for Black study (Baltimore)</li> <li>➤ No comparison group for Martin study (Seattle)</li> <li>➤ No comparison group for Brooke study</li> </ul>
<b>Race - primarily African American</b>	<p>Very few studies studied Caucasian women; most studies on African American women</p> <ul style="list-style-type: none"> <li>➤ 70% African American, 20% Hispanic (n=61, Moore)</li> <li>➤ 48% African American, 34% White, rest mixed ethnicity (n=60, Dixon)</li> <li>➤ 95% African American (n=152, Nair)</li> <li>➤ 83% African American (n=513, Keinberger Jaudes)</li> <li>➤ 35% Caucasian Dutch, 13% Surinami (Negroid), 13% Hispanic (n=23, Smit)</li> <li>➤ 45% African American, 30% White, 17% Native American, 8% Other (n=60, Ernst)</li> <li>➤ 54% African American, 27% Hispanic, 10% White (n=126,</li> </ul>	<ul style="list-style-type: none"> <li>➤ No comparison for Moore study (Seattle)</li> <li>➤ No comparison for Dixon study (San Diego)</li> <li>➤ No comparison for Nair study (Baltimore)</li> <li>➤ No comparison for Keinberger Jaudes study (Chicago)</li> <li>➤ No comparison for Smit study (Amsterdam)</li> <li>➤ No comparison for Ernst study (Seattle)</li> <li>➤ Field study showed similar racial makeup in comparison group (62% African American, 28% Hispanic, 10% White)</li> <li>➤ Sagatun-Edwards showed Caucasians and Asians</li> </ul>

Characteristic/Issue	Measures (Frequencies)	Comparison To Non Substance Abusing Mothers
	<p>Field)</p> <ul style="list-style-type: none"> <li>➤ 43% Caucasian, 32% Hispanic, 21% African American (n=284, Sagatun-Edwards)</li> <li>➤ 66% African American (n=152, Lanehart)</li> <li>➤ 79% African American, other Hispanics and Native Americans (n=170, Camp)</li> <li>➤ 89% African American (n=60, Black)</li> <li>➤ Primarily Dutch/Caucasian or Surinam infants born in Amsterdam (n=70, van Baar)</li> <li>➤ 63% African American, 20% White, 8% Hispanic, 9% other (n=39, King)</li> <li>➤ Mothers were primarily White or Hispanic (n=191, Martin)</li> <li>➤ 76% Dutch Caucasian, 24% Surinami Negroid (n=137, Soepatmi)</li> <li>➤ Most Caucasian (n=51, Brook)</li> <li>➤ 62% African American, 20% Latina, 18% Caucasian (n=67, Tyler)</li> </ul>	<p>underrepresented in Sagatun study (San Jose County – Caucasian 58.1%, 21% Hispanic, 3.5% African American, 16.8% Asian, .6% other, 1990 (San Jose)</p> <ul style="list-style-type: none"> <li>➤ No comparison for Lanehart study (Florida)</li> <li>➤ No comparison for Camp (Boston)</li> <li>➤ No comparison group for Black study (Baltimore)</li> <li>➤ No comparison for van Baar (Amsterdam)</li> <li>➤ King compared women with similar makeup - 77% African American, 16% White, 5% Hispanic, 2% Other).</li> <li>➤ No comparison group for Martin (Seattle)</li> <li>➤ No comparison group for Soeptami (Amsterdam)</li> <li>➤ No comparison group for Brook (NY)</li> <li>➤ No comparison group for Tyler</li> </ul>
<b>Educational Attainment</b>	<p>Between 44% to 65% of women studied did not complete high school; mean educational years generally around 10<sup>th</sup> or 11<sup>th</sup> grade.</p> <ul style="list-style-type: none"> <li>➤ 60% or more did not complete high school (n=152, Nair)</li> <li>➤ 44% did not complete high school (n=513, Keinberger Jaudes)</li> <li>➤ 48% did not complete high school or a GED; 77% had quit high school (n=60, Ernst)</li> <li>➤ Mean educational level 10.2 years (n=126, Field)</li> <li>➤ 65% did not complete high school (n=284, Sagatun-Edwards)</li> <li>➤ Mean educational level 10.8 years (n=146, Svikis)</li> <li>➤ At least 50% had high school education (n=152, Lanehart)</li> <li>➤ 60% did not have a high school education (n=170, Camp)</li> <li>➤ Mean educational level 11 yrs (n=60, Black)</li> <li>➤ 65% had low educational level, below 9<sup>th</sup> grade (n=69, Eriksson)</li> <li>➤ Mean educational level 11.25 years, range 7 to 14 years (n=67, Tyler)</li> </ul>	<ul style="list-style-type: none"> <li>➤ No comparison for Nair study (Baltimore)</li> <li>➤ No comparison for Keinberger Jaudes study (Chicago)</li> <li>➤ No comparison for Ernst study (Seattle)</li> <li>➤ No comparison for Field study</li> <li>➤ No comparison for Sagatun-Edwards (San Jose)</li> <li>➤ No comparison for Svikis (Baltimore)</li> <li>➤ No comparison for Lanehart study (Florida)</li> <li>➤ No comparison for Camp study (Boston)</li> <li>➤ No comparison group for Black study (Baltimore)</li> <li>➤ Eriksson noted Dutch standard of only 5.5% with educational level less than 9<sup>th</sup> grade</li> </ul>
<b>Marital Status</b>	<p>In nearly all studies, over 2/3 of women were not married (68% to 97%)</p> <ul style="list-style-type: none"> <li>➤ Between 68 to 80% mothers single/separated in study of at risk children (Moore)</li> <li>➤ 90% or more single at birth within study groups (n=152, Nair)</li> </ul>	<ul style="list-style-type: none"> <li>➤ No comparison for Moore study (Seattle)</li> <li>➤ No comparison for Nair study (Baltimore)</li> <li>➤ No comparison for Keinberger Jaudes (Chicago)</li> <li>➤ No comparison for Ernst study (Seattle)</li> </ul>

Characteristic/Issue	Measures (Frequencies)	Comparison To Non Substance Abusing Mothers
	<ul style="list-style-type: none"> <li>➤ 87% single (n=513, Keinberger Jaudes)</li> <li>➤ 77% single, separated or divorced (n=60, Ernst)</li> <li>➤ 58% not married (42% single, 16% living as married), 22% married (n=284, Sagatun-Edwards)</li> <li>➤ 88% single/ never married (n=146, Svikis)</li> <li>➤ 66% never married (n=152, Lanehart)</li> <li>➤ 74% single (n=170, Camp)</li> <li>➤ 97% single (n=60, Black)</li> <li>➤ 2/13 single (n=13, Conte)</li> <li>➤ ½ were not married (n=56, Brooke)</li> <li>➤ 64% were single, 23% separated, divorced or widowed, 13% married (n=67, Tyler)</li> </ul>	<ul style="list-style-type: none"> <li>➤ No comparison for Sagatun-Edwards study (San Jose)</li> <li>➤ No comparison for Svikis (Baltimore)</li> <li>➤ No comparison for Lanehart study (Florida)</li> <li>➤ No comparison for Camp study (Boston)</li> <li>➤ No comparison for Black study (Baltimore)</li> <li>➤ No comparison for Conte study</li> <li>➤ No comparison for Brooke study</li> <li>➤ No comparison for Tyler study (Amsterdam)</li> </ul>
<p><b>Homeless/ Transient housing</b></p>	<p>Reports on homelessness varied, but remained generally high.</p> <ul style="list-style-type: none"> <li>➤ 53% reported homelessness or transient housing at enrollment (n=60, Ernst)</li> <li>➤ 27% homeless (n=170, Camp)</li> <li>➤ 13 of 23 mothers who lost custody of children were homeless (7) or transient (6). (n=23, Tyler subgroup)</li> </ul>	<ul style="list-style-type: none"> <li>➤ No comparison for Ernst study (Seattle)</li> <li>➤ No comparison for Camp study (Boston)</li> <li>➤ No comparison for Tyler study (Amsterdam)</li> </ul>
<p><b>Number of Prior Children</b></p>	<p>Most studies only reported the mean number of other children, not a percentage of those with children.</p> <ul style="list-style-type: none"> <li>➤ 82% had 2 or fewer living children (n=513, Keinberger Jaudes)</li> <li>➤ Median number children 2.2 (n=20, Burns)</li> <li>➤ Mean number of children 3.2 (n=152 Nair)</li> <li>➤ 65% had previous children (n=23, Smit)</li> <li>➤ Mean number prior children 3.1 (n=60, Ernst)</li> <li>➤ Mean number of living children 1.5 (n=146, Svikis)</li> <li>➤ Mean number of prior children 2.2 (n=60, Black)</li> <li>➤ 11/13 had prior children (n=13, Conte)</li> </ul>	<ul style="list-style-type: none"> <li>➤ No comparison group for Keinberger Jaudes study (Chicago)</li> <li>➤ Burns found similar number (2.0) of prior children</li> <li>➤ No comparison for Nair study (Baltimore)</li> <li>➤ No comparison for Smit study (Amsterdam)</li> <li>➤ No comparison for Ernst study (Seattle)</li> <li>➤ No comparison for Svikis study (Baltimore)</li> <li>➤ No comparison for Black study (Baltimore)</li> <li>➤ No comparison for Brooke study</li> </ul>
<p><b>Low Income/ history of welfare dependency</b></p>	<p>More than ¾ of women studied had history of welfare use or were low income</p> <ul style="list-style-type: none"> <li>➤ 100% had history of welfare use (n=24, Cernerud)</li> <li>➤ 75% to 89% at risk population on public assistance only, n=60 (Moore)</li> <li>➤ 83.8% on public assistance at enrollment but 100% little/no effective involvement with social or health services during pregnancy (n=60, Ernst)</li> </ul>	<ul style="list-style-type: none"> <li>➤ No comparison for Cernerud study</li> <li>➤ No comparison for Moore study (Seattle)</li> <li>➤ No comparison for Ernst study (Seattle)</li> <li>➤ No comparison for Sagatun-Edwards study (San Jose)</li> <li>➤ No comparison for Svikis study (Baltimore)</li> <li>➤ No comparison for Camp study (Boston)</li> </ul>

Characteristic/Issue	Measures (Frequencies)	Comparison To Non Substance Abusing Mothers
	<ul style="list-style-type: none"> <li>➤ 80% unemployed (n=284, Sagatun-Edwards)</li> <li>➤ 100% received federal medical assistance (n=146, Svikis)</li> <li>➤ 76% had incomes under FPL (n=170, Camp)</li> <li>➤ All study group was Medicaid-eligible (n=78, King)</li> <li>➤ 8/13 employed (n=13, Conte)</li> <li>➤ 75% received economic support from public assistance systems and 65% had direct contacts within welfare system (n=69, Eriksson)</li> <li>➤ Mothers had minimal or no employment history and had received public assistance in the past (n=67, Tyler)</li> </ul>	<ul style="list-style-type: none"> <li>➤ King comparison group also 100% Medicaid-eligible</li> <li>➤ No comparison group for Conte study</li> <li>➤ No comparison group for Eriksson study (Amsterdam)</li> <li>➤ No comparison group for Tyler study (Amsterdam)</li> </ul>
<p><b>Psychiatric Disorders prevalent in mother and/or siblings/parents</b></p>	<p>Many studies did not report on the psychiatric disorders or mental health other than to say it was “prevalent”.</p> <ul style="list-style-type: none"> <li>➤ 50% had psychiatric problems (n=24, Cernerud)</li> <li>➤ Many mothers were clinically depressed; mean scores on depression scales were 2 to 3 times that of non-drug group (Beck 14, 6; DISC 24, 6) (n=126, Field)</li> <li>➤ Psychiatric illness “common” among mothers’ parents and siblings (n=69, Eriksson)</li> </ul>	<ul style="list-style-type: none"> <li>➤ No comparison for Cernerud study</li> <li>➤ Field found mean scores on depression scales indicate no depression for comparison group</li> </ul>
<p><b>History of Family Alcohol/Drug Abuse</b></p>	<p>Some studies noted past family history of alcohol/ drug abuse but few reported quantitatively</p> <ul style="list-style-type: none"> <li>➤ 75% had one/both parents who abused drug (n=60, Ernst)</li> <li>➤ 53% of partners also used alcohol/drugs (n=60, Ernst)</li> <li>➤ Mothers reported their children’s relative caregivers had a history of drug or alcohol abuse (n=67, Tyler)</li> </ul>	<ul style="list-style-type: none"> <li>➤ No comparison for Ernst study (Seattle)</li> <li>➤ No comparison for Tyler study (Amsterdam)</li> </ul>
<p><b>History of Partner and Family Physical Abuse</b></p>	<p>Reports of physical abuse ranged from 16% to 65%</p> <ul style="list-style-type: none"> <li>➤ 1/6 had serious violence in life (n=152, Nair)</li> <li>➤ 65% reported sexual/physical abuse as child (n=60, Ernst)</li> <li>➤ 25% of children’s fathers in jail or hearing pending in criminal court (n=284, Sagatun-Edwards)</li> <li>➤ 18% had been victims of violence (n=60, Black)</li> <li>➤ 57% had been beaten abused as adults; 29% physical abused as children (n=67, Tyler)</li> </ul>	<ul style="list-style-type: none"> <li>➤ No comparison for Nair study (Baltimore)</li> <li>➤ No comparison for Ernst study (Seattle)</li> <li>➤ No comparison for Sagatun-Edwards study (San Jose)</li> <li>➤ No comparison for Black study (Baltimore)</li> <li>➤ No comparison group for Tyler study (Amsterdam)</li> </ul>
<p><b>History of Foster Care Placement as a Child or other Placement</b></p>	<p>A surprisingly high number of women also came from foster homes; many noted a high prevalence but estimates ranged from 16% to 58%</p> <ul style="list-style-type: none"> <li>➤ 58% reported living in foster home at some time; 60% had run</li> </ul>	<ul style="list-style-type: none"> <li>➤ No comparison for Ernst study (Seattle)</li> <li>➤ No comparison for Black study (Baltimore)</li> </ul>

Characteristic/Issue	Measures (Frequencies)	Comparison To Non Substance Abusing Mothers
	away from home (n=60, Ernst) ➤ 16% had been raised in foster homes (n=60, Black) ➤ 40% had been foster children (n=69, Eriksson)	➤ 16% placement rate in Baltimore City (Sawyer et al, 1991) ➤ No comparison for Eriksson study (Amsterdam)
<b>History of Partner/ Family Sexual Abuse</b>	Abuse was noted but not reported quantitatively. ➤ 65% reported sexual/physical abuse as child (n=60, Ernst) ➤ 41% had been sexually abused as children; 26% had been sexually assaulted as adult (n=67, Tyler)	➤ No comparison for Ernst study (Seattle) ➤ No comparison for Tyler study (Amsterdam)
<b>Extremely high prevalence of smoking (tobacco)</b>	Most estimates of smoking were above 80%; the majority began smoking as teenagers. ➤ 80% smoked at least 10 cigarettes daily (n=69, Billings) ➤ 50% reported smoking (n=20, Burns) ➤ 80% reported smoking; mean age at first occurrence was 15 years old (n=152, Nair) ➤ 43% reported smoking (n=23, Smit) ➤ 93% reported smoking during pregnancy (n=60, Ernst) ➤ 99% treatment group reported current tobacco use (n=100, Svikis) ➤ 96% reported smoking (n=60, Black) ➤ 100% smoked; over ½ smoked more than 1 pack/day (n=35, van Baar) ➤ 85% smoked tobacco regularly (n=180, Karmel) ➤ 80% smoked at least 10 cigarettes daily (n=69, Eriksson)	➤ No comparison for Billings article ➤ Burns noted 10% smoked in comparison group ➤ No comparison for Nair study (Seattle) ➤ No comparison for Smit study (Amsterdam) ➤ No comparison for Ernst study (Seattle) ➤ No comparison; Info not available on control group for Svikis study (Baltimore) ➤ No comparison group for Black study (Baltimore) ➤ No comparison for Ernst study (Seattle) ➤ No comparison for van Baar (Amsterdam) ➤ Karmel noted 27% smoked in comparison group ➤ No comparison for Eriksson (Amsterdam)
<b>Reports attempt to stop drug use during pregnancy or previous attempts at rehab program</b>	Some studies reported between 25% and 37% stopped abuse after pregnancy ➤ 25% stopped abuse during 1st trimester pregnancy, n=69 (n=69, Billing) ➤ 37% had greater than 1 year abstinence after pregnancy at 36 months; 28% were abstinent at least 6 months at end of 36 months. (n=60, Ernst) ➤ 79% in treatment used drugs until late in pregnancy - 39% well into 2 <sup>nd</sup> trimester; 40% in 3 <sup>rd</sup> trimester. (n=170, Camp) ➤ 35% of drug users initially denied use but tested positive (n=180, Karmel) ➤ Most Participants were mostly heroin/methadone maintained (110/137), (n=137, Soepatmi) ➤ 8/13 methadone maintained; 5/13 discontinued methadone	➤ Burns (n=20) reported 30% occasional use in comparison. ➤ Billings; Cernerud had no comparison ➤ No comparison for Camp study (Boston) ➤ No comparison for Karmel study ➤ No comparison for Soeptami study ➤ No comparison for Conte study ➤ No comparison for Eriksson study

Characteristic/Issue	Measures (Frequencies)	Comparison To Non Substance Abusing Mothers
	<p>(n=13, Conte)</p> <ul style="list-style-type: none"> <li>➤ 96% had undergone detox at least one previous; mostly at short term rehabs (31%), residential facilities (21%) and outpatient clinics (11%) (n=170, Camp)</li> <li>➤ 25% quit drug use during 2<sup>nd</sup> or 3<sup>rd</sup> trimester of pregnancy; 10 were drug free at 5-year follow up, 9 drug-free after 10 year follow up. (n=69, Eriksson)</li> <li>➤ 30% had received at least one drug treatment program previously (n=69, Eriksson)</li> </ul>	
<p><b>Drug Additions; Polydrug Use, including Alcohol Use</b></p>	<p>For studies that did not control for one substance abuse, polydrug use ranged from 60 to 100 percent of women. In general, cocaine and alcohol were the most common drugs used – with approximately 80 to 90% of women using cocaine and 22 to 58 percent reporting alcohol use/abuse. Heroin was the third commonly used drug. Age at onset for cocaine and heroin generally occurred in late teens; alcohol and marijuana in early teens.</p> <ul style="list-style-type: none"> <li>➤ Most commonly used other drugs among cocaine using women were alcohol (81%) and heroin (30%) (n=69 Billing; Cernerud)</li> <li>➤ Most frequently observed drug use was cocaine (n=284, Sagatun-Edwards)</li> <li>➤ Six percent of cocaine users reported use of other illicit drugs, mostly marijuana (n=172, Behnke)</li> <li>➤ Most commonly used drugs were cocaine (72%), heroin (43%), and alcohol (16%) (n=146, Svikis)</li> <li>➤ Most commonly used drugs were cocaine (63%), alcohol (63%), and heroin (59%), (n=152, Nair)</li> <li>➤ Most commonly used drugs were cocaine (88%), alcohol (78%; 38% binge); marijuana (47%); 13% used other illicit drugs. (n=60, Ernst)</li> <li>➤ Most commonly used drugs included heroin (86%), cocaine (84%), alcohol (47%). (n=60, Black)</li> <li>➤ Most commonly used drugs were alcohol (92%), cocaine (91%), marijuana (84%), crack (80%). Over 1/3 had used other drugs such as PCP (41%), heroin (415), amphetamines and other stimulants (24%), tranquilizers (24%), barbiturates/sedatives (16%). (n=170, Camp)</li> <li>➤ 96% were polydrug abusers. 65% had used between 3-6 substances in lifetime</li> </ul>	<ul style="list-style-type: none"> <li>➤ Burns (n=20) reported 30% occasional use in comparison.</li> <li>➤ No comparison for Billings; Cernerud (Amsterdam)</li> <li>➤ No comparison for Nair</li> <li>➤ No comparison for Smit study (Amsterdam)</li> <li>➤ No comparison for Ernst study (Seattle)</li> <li>➤ No comparison for Sagatun-Edwards study (San Jose, CA)</li> <li>➤ No comparison for Behnke study (UF – Shands Hospital, FL)</li> <li>➤ No comparison for Camp study (Boston)</li> <li>➤ No comparison for Black study (Baltimore)</li> <li>➤ No comparison for van Baar study (Amsterdam)</li> <li>➤ 58% of none cocaine using women used at least two - marijuana, alcohol and tobacco (Seattle)</li> <li>➤ 42% of comparison study used alcohol regularly (Karmel)</li> <li>➤ No comparison for Soeptami study</li> <li>➤ No comparison for Conte study</li> <li>➤ No comparison for Brooke study</li> <li>➤ No comparison for Billing study (Amsterdam)</li> <li>➤ No comparison for Eriksson study (Amsterdam)</li> </ul>

Characteristic/Issue	Measures (Frequencies)	Comparison To Non Substance Abusing Mothers
	<ul style="list-style-type: none"> <li>➤ 94% reported polydrug use (n=35, van Baar)</li> <li>➤ 71 of 191 mothers used cocaine with marijuana, tobacco and alcohol; 88 used only marijuana, alcohol and tobacco but not cocaine; 32 were light to moderate users of alcohol, tobacco and marijuana but not other illicit drugs (n=191, Martin)</li> <li>➤ Most commonly used drug was cocaine (96%), marijuana (65%) and alcohol (50%). Average years of use were 8.1 for alcohol, 8.7 for marijuana and 5.6 years for cocaine. (n=67, Tyler)</li> <li>➤ All mothers used cocaine prior and throughout all phases of pregnancy; 7% also used opiates (n=180, Karmel)</li> <li>➤ Participants were mostly heroin/methadone maintained (110/137), heroin (27/110). A subgroup of 31 did not use opiates (n=137, Soepatmi)</li> <li>➤ Many used alcohol and other illicit drugs heavily (n=56, Brooke)</li> <li>➤ Nearly all were polydrug users with cocaine the most frequently abused, marijuana and alcohol next. (n=67, Tyler)</li> <li>➤ 60% reported alcohol use (n=20, Burns)</li> <li>➤ 58% drank alcohol regularly (n=180, Karmel)</li> <li>➤ 81% reported alcohol use; 17% were alcohol-dependent (n=69 Billing; Cernerud)</li> <li>➤ 63% used alcohol; 58% frequently, between 4-6x/week (n=152, Nair)</li> <li>➤ 22% reported alcohol or marijuana use (n=23, Smit)</li> <li>➤ 100% group had heavy use of drugs/alcohol defined as least 5+ alcohol drinks per occasion or use average at least 1x/week during pregnancy;</li> <li>➤ 5.9% of 224 suspected abusing women (community referrals/self-report) met criteria of heavy drug use/alcohol, little/no contact with DSHS. (Ernst methods).</li> <li>➤ Mean age (in years) at first occurrence was 15 for alcohol, 16 for marijuana, 20 for heroin, 21 for cocaine, 25 for methadone (n=152, Nair)</li> <li>➤ Age of onset for cocaine, heroin were early 20s; age of onset for alcohol and marijuana use was 15-17 years old (n=81, Svikis)</li> <li>➤ Median age when mothers first began amphetamine use was 17, range 12-30 years old (n=69, Eriksson)</li> <li>➤ 70% indicated current drug use or criminal activity (n=284,</li> </ul>	

Characteristic/Issue	Measures (Frequencies)	Comparison To Non Substance Abusing Mothers
	Sagatun-Edwards ➤ 33% had also used drugs intravenously (n=146, Svikis)	
<b>Prevalence of Sexually Transmitted Disease</b>	Some studies excluded women who tested positive for HIV. Outcomes for children sometimes indicated mother's STD. ➤ 40.5% positive for HIV (n=60, Black) ➤ Medical needs higher due to greater than average rates of hepatitis, STD and infections (n=69, Eriksson)	➤ No comparison for Black study (Baltimore) ➤ No comparison for Eriksson study (Amsterdam)
<b>Criminal Activity/ Juvenile Delinquency</b>	Reports on prior arrests ranged from 22 to 69% of women in studies. Few reported the type of crime committed. ➤ 5/24 had criminal records (Cernerud) ➤ Between 22 and 34% history of incarceration (n=152, Nair) ➤ 69% reported at least 1 prior arrest (n=170, Camp) ➤ 62% reported a history of incarceration (n=60, Black) ➤ 17% had criminal records (n=69, Eriksson) ➤ 2 of 23 mothers with lost custody of children were in jail (n=67, Tyler)	➤ No comparison for Cernerud,(Amsterdam) ➤ No comparison for Nair ➤ No comparison for Camp study (Boston) ➤ No comparison for Black study (Baltimore) ➤ No comparison for Eriksson study (Amsterdam) ➤ No comparison for Tyler study (Amsterdam)
<b>Unplanned pregnancy/ planned abortions</b>	Approximately 4 in every 10 women had prior abortions. ➤ 89% stated unplanned pregnancy (n=69, Billing) ➤ 39% had history of one or more planned abortions (n=513 Keinberger Jaudes) ➤ 43% had prior abortions (n=23, Smit) ➤ Mean number of abortions 1.3 (n=146, Svikis)	➤ No comparison for Billing article ➤ No comparison for Keinberger Jaudes (Chicago) ➤ No comparison for Smit study (Amsterdam) ➤ No comparison for Svikis study
<b>Late or no prenatal care</b>	Often studies identified substance-abusing women through tests administered to women who did not have adequate prenatal care. ➤ 79% had 4 or less prenatal care visits (n=513, Keinberger Jaudes) ➤ All with little/no involvement DSHS including 80% with inadequate prenatal care (n=60, Ernst) ➤ 20% had no or inadequate prenatal care (n=284, Sagatun-Edwards) ➤ Most had little or no prenatal care as per hospital records (n=190, Karmel) ➤ Only 1 did not attend prenatal care (n=69, Eriksson)	➤ No comparison for Keinberger Jaudes (Chicago) ➤ No comparison for Ernst study (Seattle) ➤ No comparison for Sagatun-Edwards study (San Jose) ➤ No comparison for Karmel study ➤ No comparison for Eriksson study (Amsterdam)
<b>High incidence of poor pregnancy outcomes,</b>	Several studies excluded mothers who had fetal deaths or whose children died before age 3. Many studies excluded women with	

Characteristic/Issue	Measures (Frequencies)	Comparison To Non Substance Abusing Mothers
<p><b>including fetal deaths and preterm births</b></p>	<p>preterm births or whose infants were born with other complications, including congenital defects. Some included only singleton live births. The preterm rate ranged from 20 to 25% among those studied not excluded. Low birthweight was not considered a significant problem for most infants, although some studies found between 17 to 23% low birthweights.</p> <ul style="list-style-type: none"> <li>➤ 7/72 infants died perinatally or in first 2 months (n=69, Billing)</li> <li>➤ 4/296 infants died (Nair)</li> <li>➤ 20% infants born preterm, 16% low birthweight, (n=152, Nair);</li> <li>➤ 60% women had prior miscarriages; 94% had previous death of a child (n=513, Keinberger Jaudes)</li> <li>➤ 17% participants had prior miscarriages (n=23, Smit)</li> <li>➤ 65% infants had abnormal clinical findings. 26% preterm; 17% low birthweight; 5 had smaller head circumference, 4/20 also had intracerebral abnormalities (n=23, Smit)</li> <li>➤ Fewer preterm births among cocaine-exposed infants 3/168 (n=168, Behnke)</li> <li>➤ 22% had low birthweight (n=146, Svikis)</li> <li>➤ 24.8% had preterm infants, 23% had low birthweight infants (n=60, Black)</li> <li>➤ 9/35 drug-exposed infants were born preterm with mean hospital stay of 26 days (range 7 to 58) (n=35, van Baar)</li> <li>➤ 8% of infants were small for gestational age (n=69, Eriksson).</li> <li>➤ 50% in the larger study had prenatal difficulties (spontaneous abortion, fetal demise, stillbirth, preterm birth – 36/164) and 3/67 preterm births died neonatally diagnosed with SIDS. (n=67, Tyler)</li> </ul>	<ul style="list-style-type: none"> <li>➤ No comparison for Billing article</li> <li>➤ No comparison for Nair study</li> <li>➤ No comparison for Keinberger Jaudes (Chicago)</li> <li>➤ No comparison for Smit study (Amsterdam)</li> <li>➤ Behnke comparison had a greater number of preterm births (6/168)</li> <li>➤ No comparison group for Black study (Baltimore)</li> <li>➤ Van Baar comparison group women did not have pregnancy complications; no preterm infants (n=35)</li> <li>➤ No comparison group for Eriksson study (Amsterdam)</li> </ul>
<p><b>Child Abuse/Neglect</b></p>	<p>The rate of reported child abuse/neglect was very high and substantiated in about 20% of cases, with over 70% dealing with neglect.</p> <ul style="list-style-type: none"> <li>➤ 30.2% reported abused or neglected; 54% occurred before infant age 1; 19.9% with substantiated reports. (n=513, Keinberger Jaudes)</li> <li>➤ Neglect cited in 72.6 % of substantiated cases; Physical abuse in 15.7%, death 2.9% (n=102, Keinberger Jaudes)</li> <li>➤ 95% of cocaine-exposed infants had involvement with CPS/ DSHS in hospital (n=168 exposed, Behnkhe)</li> <li>➤ 46% reported or suspected cases substantiated (n=264); 80.9% resulted in reunification program.</li> </ul>	<ul style="list-style-type: none"> <li>➤ Keinberger Jaudes reports Chicago area substantiated abuse rate of of 35.2 cases per 1000 children.</li> <li>➤ Behnkhe notes 6% of 162 non-exposed infants had involvement with CPS/ DSHS in hospital</li> </ul>

Characteristic/Issue	Measures (Frequencies)	Comparison To Non Substance Abusing Mothers
<p><b>Lost custody of child; high incidence of out-of-home placements</b></p>	<p>The percent of children released into their mothers' care after delivery ranged from 20 to 84 percent. About half of reported cases were substantiated. Most studies noted disruption of care in at least 80% of children by age 8.</p> <ul style="list-style-type: none"> <li>➤ 68% children adopted or placed in foster care by year 8; 26% in foster care by year 1 (n=69, Billing)</li> <li>➤ 84% children placed in foster/adoptive care at birth (Dixon, n=60)</li> <li>➤ 43% disruption of care/ out-of-home placement by 18 months (Nair, n=152)</li> <li>➤ Almost 16% had other children in foster care (n=152, Nair)</li> <li>➤ 48% not with mother at end of 36 months (n=60, Ernst)</li> <li>➤ 24.3% of original 264 children ended in out-of-home placement by 18 months. [76% had child removed from home initially (186/263); 47.5% (135) petitioned to make child custody of court; 76% of petitions filed resulted in removal of home; 98 cases ordered reunification; 52/135 cases petitioned ended in permanent placement outside home.] (n=264, Sagutun-Edwards)</li> <li>➤ 80.9% of substantiated abuse cases (46% of all reported) had child removed and placed in reunification program (n=121, Sagutun-Edwards)</li> <li>➤ 21% cocaine-exposed infants not discharged to mother's care (n=168 exposed, Behnkhe)</li> <li>➤ 50% of their children were in alternate care placement by age 5.</li> <li>➤ 38% were in alternative care at 11 years of age although 85% infants had been originally discharged to mother's care (n=137, Soepatmi)</li> <li>➤ 18.8% (13/69) of their newborns were placed in foster care prior to hospital discharge</li> <li>➤ 70% of their children were in foster care by age 10, 50% had been placed by age 4 years (n=69, Eriksson)</li> <li>➤ One fifth (15/67) women lost custody; 20/25 had maintained custody 6 months after child's birth (n=67, Tyler). 23 of 25 children were given to mother's relative as caregiver.</li> </ul>	<ul style="list-style-type: none"> <li>➤ No comparison for Billing article</li> <li>➤ No comparison for Dixon study (San Diego, CA)</li> <li>➤ No comparison for Nair study (Baltimore). BUT: Note: article by Sawyer et al (1991) notes overall special education placement rate in Baltimore City is 16%; US Department of Education notes national placement rate 10%</li> <li>➤ No comparison for Keinberger Jaudes (Chicago)</li> <li>➤ No comparison for Sagutun-Edwards (San Jose)</li> <li>➤ 3% comparison infants not discharged to mother's care (n=168 exposed, Behnkhe)</li> <li>➤ No comparison for Soepatmi study (Amsterdam)</li> <li>➤ No comparison for Eriksson study (Amsterdam)</li> <li>➤ No comparison for Tyler study (Amsterdam)</li> </ul>



**APPENDIX F**  
**INVENTORY OF CURRENT SERVICES, VISION AND**  
**GAPS IN SERVICES**

## Appendix F: Inventory of current services, vision, and gaps in services.

The inventory represents services available in the state for women with chemical dependency and their children, but may not reflect all services provided in individual communities. *Most of these services are also utilized by families without chemical dependency issues, but are especially critical for this vulnerable population.*

Chemical Dependency Treatment			
Description Of Services	What's needed	What Currently Exists	Gaps in Service
<p>Publicly funded chemical dependency treatment administered by the Division of Alcohol and Substance Abuse (DASA)</p> <p><i>Pregnant and Parenting Women (PPW) are a priority population for publicly funded chemical dependency treatment in Washington State.</i></p>	<p>The most appropriate mix of services and settings for each woman and her children based on an assessment of her/their needs and cultural relevance.</p> <p>Chemical dependency treatment on demand for all women with chemical dependency issues, to promote sustained recovery and self-sufficiency.</p>	<ol style="list-style-type: none"> <li><u>Residential Programs:</u> DASA has 84.5 long-term residential slots and 7 recovery slots for pregnant and parenting women state-wide, located in Snohomish, King, Pierce, Yakima, and Spokane counties.</li> <li><u>Outpatient Programs:</u> There are approximately 63 specific outpatient programs located across the state that provide PPW programs and corresponding child placement slots.</li> <li><u>Hospital-based Chemical Dependency treatment:</u> These are in-hospital detoxification and substance abuse treatment programs for pregnant women, (referred to as Chemical Using Pregnant (CUP) programs.) The primary focus is to stabilize the fetus. Women may remain in hospital treatment for up to 28 days. DSHS has 11 contracted CUP hospital programs located in Cowlitz, Franklin, Grays Harbor, King, Pierce, Snohomish, Spokane, Thurston, and Whatcom Counties.</li> </ol>	<p><u>Residential Program Gaps:</u></p> <ul style="list-style-type: none"> <li>◆ The long-term specialized residential programs, that accommodate women and children, are only in five counties. There is a need to expand such services to other geographic areas in the state. There are continuous waiting lists for these beds.</li> </ul> <p><u>General Gaps:</u></p> <ul style="list-style-type: none"> <li>◆ Alcohol and drug dependent women often lack economic and social resources, therefore comprehensive care incorporated into the treatment model is extremely important, and can help ameliorate the effect of few resources by providing multiple services in an integrated manner.</li> <li>◆ Due to lack of funding there are no services for ensuring women transition between residential and outpatient and between outpatient and treatment completion. This would require a case management approach to ensure continuity of care.</li> <li>◆ Smoking cessation services.</li> <li>◆ Intensive Day Treatment.</li> <li>◆ Programs for dually disordered and mentally impaired.</li> <li>◆ Specific treatment for relapse.</li> <li>◆ Treatment for adolescent females who are pregnant or parenting.</li> <li>◆ Programs for women with children over the age of six.</li> <li>◆ Need more involvement of family in the women's recovery.</li> </ul>

**Mental Health Services**

Description Of Services	What's needed	What Currently Exists	Gaps in Service
Mental health services for women with chemical dependency		1. <u>Mental Health Services:</u> Mental health services are delivered through 14 regional support networks (RSNs) throughout the state. RSNs are single county or multiple counties based entities. RSNs have responsibility for developing locally-based services. Currently, mental health services are provided to the most seriously disturbed population. Medical necessity and appropriate delivery of service is determined. etc. Some women might only "qualify" for a small amount of service, others for more.	

**Transportation**

Description Of Services	What's needed	What Currently Exists	Gaps in Service
<p>1. The Medicaid Access Program assures that clients have transportation to Medicaid covered services.</p> <p>2. DASA county contractors transportation services.</p> <p>3. Residential Programs Transportation.</p>	A transportation program that covers all transportation needs (i.e. work search, jobs, etc.).	<p>1. <u>Medicaid Transportation Brokerage System:</u> Transportation services are provided for clients going to Medicaid covered treatment services: <i>This includes outpatient and hospital-based treatment for pregnant women and some residential programs which are Title XIX designated.</i></p> <p>There are nine contracted brokers who are responsible for the needs of approximately 730,000 Medical Assistance clients. Statewide the brokers arrange approximately 35,000 trips each week. They are accessible by phone at no cost to the caller.</p> <p>2. <u>DASA county contractors transportation services:</u> For non-Medicaid services (i.e. transportation to non-Title XIX residential, detoxification [not in the hospital], involuntary treatment facilities) DASA contractors are required to ensure transportation to the treatment facility.</p> <p>3. <u>Residential Programs Transportation:</u> Residential programs generally provide transportation to the client to the next phase of treatment or back to the community where they live when completing treatment.</p>	<p><u>Gaps in the Medicaid Brokerage Systems:</u></p> <ul style="list-style-type: none"> <li>◆ Children can't accompany parent unless medically necessary. <i>(This is a common complaint heard because there are not good child care resources available).</i></li> <li>◆ Client must call the broker and request transportation in advance of a prearranged appointment.</li> </ul> <p><u>Gaps in DASA county contractors transportation services:</u></p> <ul style="list-style-type: none"> <li>◆ Transportation provided via county contract is not consistent across counties.</li> </ul> <p><u>General Gaps:</u></p> <ul style="list-style-type: none"> <li>◆ Lack of availability of transportation to non-Medicaid related services.</li> </ul>

<b>Housing</b>			
Description Of Services	What's needed	What Currently Exists	Gaps in Service
Safe and sober housing and corresponding support services for pregnant, postpartum, parenting women and their children.	All women, especially women with children leaving residential treatment, return to a safe and sober environment in the community.	<ol style="list-style-type: none"> <li><u>Transitional Housing</u> : Housing and support services are provided for women and their children for up to 18 months in a drug/alcohol free residence. Seven counties have transitional housing programs with a total of 134 adult beds. Transitional housing is operated by chemical dependency treatment providers and funded by client copay and DASA subsidy. Transitional Housing programs vary by design. At four homes women live together and share common areas. Two programs assist women in finding an apartment in Section 8 or low income housing. One program is an apartment building that is used solely for transitional housing with a residential house manager. Women receive limited case management services to address recovery issues.</li> <li><u>Oxford Housing</u>: Oxford housing is a democratically run, financially self-supporting, alcohol and drug free family household. House members are responsible for all household expenses, and any member who uses alcohol or other drugs is expelled.</li> <li><u>General population safe and sober housing</u>: (Housing authority, Section 8, etc.)</li> <li><u>Other housing</u>: There are numerous transitional/homeless facilities throughout the state with varying limits of stay, costs, and services. Unfortunately, there is no current inventory as to the number statewide and the services they provide. Most of these facilities are supported with private and public funds.</li> </ol>	<p><u>Gaps in Transitional Housing</u>:</p> <ul style="list-style-type: none"> <li>◆ Attractive, well maintained residences that enhance recovery. Space is limited in comparison to demand.</li> <li>◆ Transitional housing limits the age of the children to six. Moms with children older often have difficulty placing them with family or friends, leaving foster care the only option.</li> </ul> <p><u>Gaps in Oxford Housing</u>:</p> <ul style="list-style-type: none"> <li>◆ Insufficient number of Oxford Houses.</li> </ul> <p><u>General Gaps</u>:</p> <ul style="list-style-type: none"> <li>◆ Lack of structured vocational services and job training attached to safe and sober houses to assist towards goals of self-sufficiency.</li> <li>◆ Lack of affordable housing. Current eligibility excludes most of these families from housing due to credit history, criminal history, and the high cost of housing.</li> </ul>
<b>Family Planning</b>			
Description Of Services	What's needed	What Currently Exists	Gaps in Service
Family planning information integrated into chemical dependency treatment services (DASA).	<p>Family planning information is provided that delays or prevents an unintended pregnancy.</p> <p>Standard procedure to provide family planning information in chemical dependency treatment centers, reflecting the needs of the client.</p>	<ol style="list-style-type: none"> <li><u>Chemical Dependency Assessments</u>: Assessment conducted by a state approved treatment provider include a question for women regarding the likelihood of a current pregnancy and identify resources and referral options for First Steps, prenatal care, pregnancy risk reduction, and family planning.</li> <li><u>Opiate Substitution Treatment</u>: These programs offer counseling and education to pregnant women, or any other patient who requests information on: matters relating to pregnancy and street drugs; pregnancy spacing and planning; and, the effects of opiate dependency treatment on the woman and fetus when opiate dependency treatment occurs during pregnancy. Patients are provided with a variety of education and counseling for family planning, prenatal health, and parenting skills.</li> </ol>	<p><u>General Gaps</u>:</p> <ul style="list-style-type: none"> <li>◆ Outreach efforts across the state to support women in successfully utilizing family planning methods to avoid an unintended pregnancy.</li> </ul>
Description Of Services	What's needed	What Currently Exists	Gaps in Service
Comprehensive family planning and reproductive health services (DOH and DSHS).	FP services (prevention, education, counseling, and contraceptives) and outreach available for all men and women prior to	<ol style="list-style-type: none"> <li><u>Comprehensive family planning services available at local family planning agencies</u>: Services include, but are not limited to: a broad range of medically-approved family planning methods; pregnancy testing, diagnosis, and referral; sterilization and abortions (state funds), Sexually Transmitted Disease and HIV testing; annual physical exams including pap smears; client education and</li> </ol>	<p><u>Funding Gaps</u>:</p> <ul style="list-style-type: none"> <li>◆ Neither DOH or DSHS provides family planning services for all low income men and women.</li> </ul> <p><u>Training Gaps</u>:</p>

	<p>becoming pregnant.</p> <p>Training in effective and medically appropriate family planning technology for staff in non- traditional settings: shelters, treatment centers, jails, WorkFirst centers, and within traditional medical provider practices.</p>	<p>counseling; contraceptive method education; adolescent services; infertility services.(In part paid for by DOH Family Planning Program Title X and state dollars)</p> <ul style="list-style-type: none"> <li>• Available to uninsured low income women and men on a sliding fee scale.</li> <li>• Available to Medicaid eligible men and women.</li> </ul> <p>First Steps clients can access family planning services up to one-year post partum. Upon termination of First Steps’ “family planning only”, non-Medicaid eligible women may access state/Title X funded services depending upon availability of limited funds. DOH agencies currently receive, on average, 20% of the estimated cost incurred for client service.</p> <p>2. <u>Family Planning centers funded by United States Public Health Service:</u> These centers assist Title X providers with training. Training is provided to non Title X providers on a contract basis.</p> <p>3. <u>Medical Assistance Coverage:</u>  Family Planning Extension: Women whose family incomes are up to 185% of the Federal Poverty Level, and have had maternity care paid by MAA, are eligible for an additional 10 months of family planning services following the 60 day post pregnancy eligibility period.</p> <p>Medicaid clients have access to a full range of family planning services and all FDA approved contraceptives. Clients may access over-the-counter contraceptives without a prescription. Clients in a managed care plan may access family planning outside their plan.</p> <p>4. <u>Community Service Office (CSO) activities:</u>  Full exam family planning clinics are located in 8 CSOs (Spokane North, Smokey Point, Sky Valley, Friday Harbor, Yakima, Grandview, Wapato, Mt. Vernon) to provide better access to Medicaid eligible clients.</p> <p>Contracted family planning nurses are placed at a majority of the CSOs to provide limited birth control methods, and family planning information, education, and referral services.</p> <p>Many CSOs have trained family planning staff to link clients with the contracted nurse, provide family planning outreach, information and referral services.</p> <p>5. <u>Marketing Activities:</u>  A statewide toll-free family planning hotline provides family planning information and links individuals with providers.</p> <p>Marketing/media materials expressing the statement "Birth Control Works" have been made available in a variety of public venues.</p>	<ul style="list-style-type: none"> <li>◆ Family planning training resources targeted to primary care providers, Medicaid providers, case workers, shelter staff and paraprofessional staff are scarce.</li> </ul> <p><u>Gaps in CSO Activities:</u></p> <ul style="list-style-type: none"> <li>◆ Not all CSOs have dedicated family planning staff or contracted nurses. High staff turnover, with a lengthy learning curve for new staff, interrupts the established continuum of service which affects the repeat pregnancy rate, unintended pregnancy rate, and interbirth span.</li> </ul>
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<b>Outreach</b>			
Description Of Services	What's needed	What Currently Exists	Gaps in Service
Outreach services that link indigent, low income substance abusing chemically dependent pregnant, and parenting women with chemical dependency assessment and treatment services, including service for incarcerated women and domestic violence (DV) victims.	Outreach services available in all counties. Expansion of target population to include all parenting women regardless of pregnancy status.	<ol style="list-style-type: none"> <li>1. <u>DASA Outreach</u>: Currently there are eight DASA funded programs that provide outreach services in seven counties statewide. Six of the programs specifically target pregnant substance abusing women and two of the programs focus on special sub populations of women within correctional facilities, homeless shelters, hospitals, health clinics and domestic violence shelters. Contracts with counties provide for the following:               <ol style="list-style-type: none"> <li>a) Outreach workers who are qualified chemical dependency counselors;</li> <li>b) Assessment services provided within 48 hours.</li> </ol> </li> </ol>	<u>Gaps in DASA Outreach:</u> <ul style="list-style-type: none"> <li>◆ Funds need to be identified to continue outreach to specific populations.</li> <li>◆ Outreach efforts need to extend to “hard to reach” individuals due to their ethnicity and lifestyle.</li> </ul>
<b>First Steps Case Management and Maternity Support Services</b>			
Description Of Services	What's needed	What Currently Exists	Gaps in Service
<ol style="list-style-type: none"> <li>1. Maternity Case Management (MCM) services assist eligible pregnant/parenting women and their families in gaining access to needed medical, social, educational, and other services.</li> <li>2. Maternity Support Services (MSS).</li> </ol>	Intensive targeted case management available for high-risk substance abusing women and their children up to three years.	<ol style="list-style-type: none"> <li>1. <u>First Steps Case Management (MCM)</u>: High-risk women on Medicaid are eligible to receive MCM during pregnancy and through the month of the infant's first birthday. Services are provided by approximately 160 agencies (some MCM providers have more than one site). Nearly 29% of Medicaid pregnant/parenting women receive MCM.  MCM includes the use of community linkages; a comprehensive ongoing identification of client/family needs; the development and implementation of a detailed services plan; and authorization of First Steps Child Care.</li> <li>2. <u>Maternity Support Services (MSS)</u>: Maternity support services are preventive health services designed to supplement medical visits and includes assessment, education, intervention, and counseling provided by an interdisciplinary team of community health nurses, community health workers, nutritionists, and psychosocial workers; childbirth education; and authorization of child care for pregnant/postpartum women. The intent of the program is to provide MSS interventions as early in pregnancy as possible in an effort to promote positive birth and parenting outcomes. Pregnant women whose income is below 185% of the federal poverty level are eligible.</li> </ol>	<u>Gaps in First Steps Case Management:</u> <ul style="list-style-type: none"> <li>◆ Current program is short-term. Clients are only eligible for services up to one year postpartum. Services need to be available at least until the child's third birthday.</li> <li>◆ Not all home visitation providers are skilled at working with high-risk alcohol and drug abusing pregnant and/or parenting women.</li> <li>◆ Current reimbursement levels cover approximately one visit per month. This is augmented by MSS visits during pregnancy and two months post partum, but is inadequate for high risk clients for the remaining ten months.</li> </ul> <u>Gaps in First Steps Maternity Support Services:</u> <ul style="list-style-type: none"> <li>◆ The current program is short term. Clients are only eligible for services through two months post partum.</li> <li>◆ Not all home visitation provides are skilled at working with high risk alcohol and drug dependent pregnant and parenting women.</li> </ul>

Parenting Education /Parent Support			
Description Of Services	What's needed	What Currently Exists	Gaps in Service
Parenting Education and Support.	<p>Every community has a continuum of parent education, services, and support groups available for all families with children of all ages. Classes and groups provide child-care and transportation when needed. Services provided in the home when necessary and appropriate. Services available at low or no fee with extensive outreach, especially to new parents, or families new to the community. A wide variety of parenting topics covered with specific attention to issues pressing or important to parents. Services culturally competent and available to all cultures and ethnic groups in a variety of languages. Services would be linked electronically to quickly refer families and find the most appropriate services available.</p> <p>Parenting information and resources Provided to the public through the media and other communication routes.</p>	<ol style="list-style-type: none"> <li>1. <u>Parenting education</u>: Parenting education is inconsistent across communities and not very well coordinated. Depending on resources, different communities offer different services. Funding for these programs comes from many different sources, including the Washington Council for the Prevention of Child Abuse and Neglect (WCPCAN), DASA, and DOH (through funds to Local Health Jurisdictions).</li> <li>2. <u>WCPCAN Directory/Parent Trust</u>: WCPCAN maintains a statewide list of family support centers and Parents Trust has some information on existing groups on-line and can refer callers.</li> <li>3. <u>Home visiting services</u>: Home visiting services (by a variety of providers) provide parenting and other support services in the home, but are not available in every community to families who need or want it.</li> <li>4. <u>CHILD Profile health education materials</u>: Materials containing age appropriate parenting information are sent to new parents in Washington State, until their child's sixth birthday.</li> <li>5. <u>Technical Assistance</u>: DASA and WCPCAN provide technical assistance to parent educators, family support agencies recovery center staff, county and tribal organizations and others in incorporating parenting, child abuse prevention and substance abuse prevention information into their programs and work with the media to publicize positive parent programs and strategies to the general public via print and broadcast media.</li> </ol>	<p><u>General Gaps:</u></p> <ul style="list-style-type: none"> <li>◆ The system of parent education services is very fragmented and inconsistent across the state. An infrastructure is needed to link existing services and clearly identify where the service gaps exist.</li> <li>◆ Availability of parenting services for substance abusing/affected families is extremely limited. There is very little coordination between parenting and substance abuse treatment.</li> <li>◆ Parenting education programs need to be available to all parents (male or female) who are receiving treatment. It is currently more available to women who are in treatment.</li> <li>◆ There is a need for a coordinated system of registration for classes and support groups.</li> <li>◆ A system for quality assurance is needed. There is a lack of standardization of content, intensity and duration. There is significant variability in training and expertise of educators, group facilitators and home visitors.</li> <li>◆ There is a lack of outcome evaluation.</li> <li>◆ There is inconsistent availability of child care and transportation for classes and groups.</li> <li>◆ There is a need for specific content and services targeting parents with specific needs, e.g. parenting to address the life cycle and family development, parent education and support for parents of teens, parent education in a variety of languages and support for differing cultures and norms.</li> </ul>

**Special Supplemental Nutrition Program for Women, Infants and Children (WIC)**

Description of Services	What's needed	What Currently Exists	General Gaps
<p>Special Supplemental Nutrition Program for Women, Infants and Children (WIC).</p>	<p>All pregnant, breastfeeding, and postpartum women, and children up to age five in Washington have access to enough food, balanced nutritional intake, and dietary habits that promote their well-being.</p> <p>Full participation in WIC--- this means all eligible women (including postpartum women), infants and children in Washington who want WIC services get them.</p> <p>Services are provided through a stable network of community-based providers in all communities across the state.</p>	<p>1. <u>WIC services</u>: WIC is a cost-effective preventive health program that provides short-term assistance to young families to promote optimal growth and development during pregnancy and the first five years of life. WIC provides nutrition and health assessment, nutrition education, health referrals and food prescription/vouchers for specific nutritious foods.</p> <p>Eligible pregnant and breastfeeding women are in the highest priority category and receive services upon request. WIC services include screening and referral for drug/alcohol use for all WIC participants and caregivers. WIC also provides health education regarding healthy lifestyle choices.</p>	<p><u>General Gaps</u></p> <ul style="list-style-type: none"> <li>◆ Statewide participation is now at approximately 80% of eligible individuals in any given month.</li> <li>◆ Postpartum women are not being fully served due to the priority category system.</li> <li>◆ Not all communities have access to WIC services. Contributing to this is the fact that transportation to WIC is not covered in the same manner as certain other health/medical services.</li> <li>◆ Referral to culturally appropriate, accessible drug and alcohol treatment is difficult due to lack of services in many communities. This is also true for mental health services.</li> </ul>

**Vocational Programs/Employment**

Description Of Services	What's needed	What Currently Exists	Gaps in Service
<p>Employment/ Vocational Services</p>	<p>Family Support Centers would provide employment and vocational services support for all families. This would include services like on-site child care, interviewing, resume development, and job search classes as well as professional clothing banks. Family support centers should also be equipped to provide internships and professional mentoring programs for employment seekers. Additional services would include job seeking networking and support groups. This may be a service that is provided by other service providers who collaborate with family support centers.</p> <ul style="list-style-type: none"> <li>• Employment assessment/ readiness services would be integrated into treatment programs.</li> <li>• Vocational Opportunities for Training and Education (VOTE) or VOTE-like program would be in every community in the state.</li> <li>• Family Support Centers would provide employment and vocational services for all families.</li> </ul>	<ol style="list-style-type: none"> <li>1. <u>Vocational Opportunities for Training and Education (VOTE)</u>: Located in King, Yakima and Pierce Counties, VOTE offers individuals who are unemployed and in recovery employment support services.</li> <li>2. <u>Services provided through the Early Headstart</u>: Vocational support services provided in some Early Headstart programs.</li> <li>3. <u>Family support programs in WA</u>: There are a variety of family support programs that have an employment support component, but these vary by community.</li> <li>4. <u>Employment Services available to TANF and SFA recipients</u>: Services include work search guidance and job preparation activities through Employment Security. It also includes a variety of work activities that prepare participants to enter the work force. Substance abuse treatment may be included in these work activities.</li> <li>5. <u>Other services to TANF and SFA participants</u>: Other services are addressed in Post Employment Services which encompass employment retention services, wage progression, labor exchange and training &amp; skill progression. Post Employment Services are available to: (1) TANF recipients who are working 20 hours or more per week; and (2) Former TANF recipients who are working 20 or more hours per week with income at or below 175% of Federal Poverty Level (FPL). This is beneficial to participants who have been successful in completing their treatment program.</li> </ol>	<p><u>General Gaps:</u></p> <ul style="list-style-type: none"> <li>◆ Childcare and transportation during services is needed.</li> <li>◆ Programs providing vocational support need stronger linkages with Employment Security to understand participation under WorkFirst for TANF recipients.</li> <li>◆ Availability of these services is very limited. WorkFirst support services could provide some of these services.</li> <li>◆ These services are limited to those women who meet eligibility requirements for TANF and SFA. This is not available to illegal aliens. Services not available to women who refuse to participate in work requirements.</li> </ul>

**Financial Support**

Description Of Services	What's needed	What Currently Exists	Gaps in Service
Financial Support		<p>1. <u>Financial Support for mothers with drug exposed or affected infants</u> : Services are available through the Economic Services Administration of DSHS. Financial support services exist for women who are eligible. Eligibility is determined on an individual basis. These services include:</p> <p>a) <u>Temporary Assistance for Needy Families (TANF)</u>: This is available to women who already have dependent children or are in their last trimester of pregnancy. This is federally funded.</p> <p>Participants in WorkFirst who have chemical dependency treatment in their Individual Responsible Plan are eligible for support services to help them to complete treatment.</p> <p>b) <u>State Family Assistance (SFA)</u>: This program is identical to TANF. It was created to address the needs of legal immigrants who were excluded from the Welfare Reform Act of 1996. This is state funded.</p> <p><i>With regard to TANF and SFA, participants must take part in work activities to be eligible for ongoing financial assistance. For pregnant women this may include participating in activities that will make the client work ready and otherwise progress toward self-sufficiency. For substance abusing pregnant/parenting women, the activity may be to complete treatment and participate in parenting classes, follow through with prenatal care, etc. The work activity and participation requirements will be determined according to individual need.</i></p> <p>c) <u>General Assistance for pregnancy (GA-S)</u>: This program is available to individuals who meet eligibility criteria similar to the TANF and SFA programs. Financial support is available to a woman until she is eligible to receive cash assistance from TANF. GA-S is state funded. TANF, SFA and GA-S applications are obtained at any DSHS Community Services Office (CSO) either by going to a CSO in person, or calling the CSO and having one mailed. With few exceptions, the client must report to the CSO for a face-to-face eligibility interview for these programs.</p> <p>d) <u>Food Stamps</u>: Food stamps are also available to individuals and families who meet eligibility criteria.</p> <p>e) <u>Other financial resources</u>: Other resources available were found from charitable organizations such as the Salvation Army, local churches, etc. Any moneys that are given to individuals in need are determined on a case-by-case basis. The maximum amount available in most cases was around \$50.00. It would be the responsibility of the client and their advocate to determine which charities and organizations in their local areas are able to give this type of support.</p>	<p><u>General Gaps:</u></p> <ul style="list-style-type: none"> <li>◆ Gaps in services would include grant recipients who refuse to participate in the work requirements and illegal aliens who are not entitled to financial assistance.</li> </ul>

<b>Medical Coverage</b>			
Description Of Services	What's needed	What Currently Exists	Gaps in Service
Medical coverage for pregnant/postpartum women.	Affordable medical coverage which includes maternity care for all low-income Washington residents, including the lower income working families.	<ol style="list-style-type: none"> <li>1. <u>Temporary Assistance for Needy Families (TANF)</u>: Women receiving cash benefits are eligible for full scope medical coverage. Medical coverage would continue beyond two months postpartum until the family was found ineligible for TANF.</li> <li>2. <u>Medicaid coverage for pregnant women with family incomes up to 185% of Federal Poverty level (FPL)</u>: Pregnant women with family incomes up to 185% of Federal Poverty level (FPL) are eligible through two months postpartum for all medical services, including dental care. Most women receive their prenatal care through a Healthy Options [managed care] plan. Women remain eligible for family planning services through one year postpartum. Most teens are eligible for medical benefits regardless of family income, as pregnant minors may apply with only their countable income being used for the income test. Woman on the Basic Health Plan (BHP) subsidized program who become pregnant will receive Medicaid benefits.</li> </ol>	
<b>Medical Coverage for Women In County Jails</b>			
Description Of Services	What's needed	What Currently Exists	Gaps in Service
Family planning and maternity coverage for incarcerated women.	Family planning services available statewide for incarcerated women. Prenatal care, labor and delivery, and contraceptive needs would be covered.	<ol style="list-style-type: none"> <li>1. <u>Emergency Medical Only Services</u>: Pregnant women incarcerated in county jails are eligible for limited medical coverage under Medicaid meeting the definition of "Emergency Medical Only," which includes labor and delivery. Counties are responsible for other medical care.</li> <li>2. <u>Family Planning Services</u>: Some family planning funded sites Seattle King County Department of Public Health (SKCDPH) utilize funds to provide family planning services to incarcerated women who are not-Medicaid eligible.</li> </ol>	<u>General Gaps:</u> <ul style="list-style-type: none"> <li>◆ Women in county jails may not receive any medical services other than emergent care. Pregnant women in jail would not be eligible for prenatal care, family planning services, or chemical dependency treatment through Medicaid.</li> <li>◆ Funding for family planning, including sterilization, for non-Medicaid eligible women in county jails and prisons is not available.</li> </ul>

**Child care**

Description Of Services	What's needed	What Currently Exists	Gaps in Service
<p>Child care during and after substance abuse treatment.</p>	<p>Affordable, accessible Child care would be available at all hours needed to support parental recovery and self-sufficiency.</p> <p>Child care would be able to accommodate a high-risk child or a child with developmental delay, behavior issues, etc.</p>	<ol style="list-style-type: none"> <li>1. <u>Resource and Referral Agencies</u>: Helps parents find quality, affordable, licensed child care, links parents with available subsidy program information, facilitates the licensing process for child care providers, and generated public awareness of child care issues. No eligibility criteria: anyone who calls will be served. Some counties may charge a modest fee. (Families at or below 175% of the poverty level are not charged).</li> <li>2. <u>Residential Childcare (DASA)</u>: Residential child care is provided to women and their children in specialized inpatient facilities and transitional housing. Services include developmental and medical screening, play therapy, and parenting education. There are 76 spaces available in inpatient facilities and 6 spaces in transitional housing. The care prevents parent/child separation and encourages family stability. The environment facilitates improved parenting skill and the child's development.</li> <li>3. <u>Outpatient Treatment Childcare (DASA)</u>: Childcare is provided to parents while participating in outpatient treatment and aftercare. The care is provided at the treatment site or in the community through licensed Childcare facilities or family homes. There are 215 slots available statewide.</li> <li>4. <u>Respite Care/Crisis Nurseries</u>: The availability of short-term respite care varies by community, however, there is a great need in many areas for this type of child care. For DASA funded Crisis Nurseries, care varies from 1 to 2 hours to 30 days.</li> <li>5. <u>Therapeutic Child care, Foster Care, Child care for CPS recipients</u> (see Child Welfare Services).</li> <li>6. <u>Child care for TANF recipients</u>: Child care services are available through Working Connections Child Care to TANF and SFA recipients who are participating in approved employment or WorkFirst activities that would include treatment for chemical dependency or substance abuse. These activities must be in the participants Individual Responsibility Plan (IRP) in order to receive child care subsidies.</li> <li>7. <u>Head Start and ECEAP</u>: Comprehensive child development program offering health, education, and family support. Parents also participate and benefit from the program. Families with children 0 to 5 with income up to 100% of the FPL are eligible. ECEAP is the same as above, except for the 3-5 age range.</li> <li>8. <u>Homeless Child Care</u>: Child care is available while parents seek permanent housing or take care of personal business such as legal, medical, or financial appointments.</li> <li>9. <u>Teen Parent Child Care</u>: Teen parents may receive child care subsidies to support their progress towards high school completion or a GED certificate. Teen parents under 22 years old who are not receiving a WorkFirst grant and enrolled in a high school completion or GED program are eligible.</li> </ol>	<p><u>Outpatient Treatment Childcare Gaps</u>:</p> <ul style="list-style-type: none"> <li>◆ There are inadequate child care services to accommodate varying treatment schedules of parents.</li> <li>◆ There is not enough therapeutic child care in outpatient treatment.</li> </ul> <p><u>Gaps in Respite Care/Crisis Nurseries</u>:</p> <ul style="list-style-type: none"> <li>◆ There is insufficient respite care programs throughout the state.</li> </ul> <p><u>Gaps in Headstart and ECEAP</u></p> <ul style="list-style-type: none"> <li>◆ Headstart and ECEAP cannot serve all eligible children.</li> </ul> <p><u>General Gaps</u>:</p> <ul style="list-style-type: none"> <li>◆ Providers may lack knowledge and skills needed for working with infants and children with developmental delay, chronic health issues, behavioral concerns, etc.</li> </ul>

**Services For Children at High Risk For Health, Behavioral, Developmental Problems**

Description Of Services	What's needed	What Currently Exists	Gaps in Service
<p>Interventions for children at risk* or with identified/established health or developmental problems.</p> <p>(*Drug exposure is considered a risk factor.)</p>	<p>Children who have been exposed to substances will receive regular health and developmental monitoring, problems will be identified as early as possible, and necessary services will be provided.</p> <p>Parents/caregivers of drug exposed children will receive information on how the drug exposure has affected their child's functioning and learn how to best care for their child to assure optimum growth and development.</p>	<ol style="list-style-type: none"> <li><u>DOH/ Maternal and Child Health:</u> Funding is provided to all Local Health Jurisdictions to work with children with or at risk of health problems, developmental delay, and/or behavioral problems. LHJ staff identify the child's problem, link families to appropriate health and other needed services (i.e. parent support, physical, occupational, speech therapy, specialty medical care), and provide on going care coordination as appropriate</li> <li><u>DSHS/DDD- Infant Toddler Early Intervention Program (ITEIP):</u></li> </ol> <p>This program focuses on services for infants/toddlers with a 25% delay in functioning or standard deviation of 1.5 below age in one or more of the following five developmental areas: cognitive, physical, communication, social or emotional, or adaptive. Drug exposed/affected children who meet the above criteria would be eligible.</p> <p>The actual early intervention services are provided by and/or funded in part by multiple agencies or sources including Medicaid, private insurance, Division of Developmental Disabilities, Office of the Superintendent of Public Instruction, Department of Health, charitable organizations, and ITEIP.</p> <p>Early Intervention Services may include:</p> <ul style="list-style-type: none"> <li>Assistive technology devices and assistive technology</li> <li>Audiology</li> <li>Early identification, screening, and assessment services</li> <li>Family training, counseling and home visits</li> <li>Health services</li> <li>Medical services only for diagnosis or evaluation</li> <li>Nursing services</li> <li>Occupational therapy</li> <li>Physical therapy</li> <li>Psychological services</li> <li>Service coordination (Family Resources Coordinator)</li> <li>Social work services</li> <li>Special instruction</li> <li>Speech language pathology</li> <li>Transportation and related cost necessary to enable a child and family to receive early intervention services</li> <li>Vision services</li> </ul>	<p><u>DOH/Maternal and Child Health:</u></p> <ul style="list-style-type: none"> <li>◆ Can only serve a small percentage of children who could benefit from services.</li> </ul> <p><u>General Gaps:</u></p> <ul style="list-style-type: none"> <li>◆ Early intervention therapy services are not available or very limited in some communities.</li> <li>◆ Complete well child checks or Early Periodic Screening, Diagnosis and Treatment (EPSDT)'s are not always done. Identification of health/ development problems may not happen as early as desired.</li> <li>◆ There is uncertainty about what is the best type of intervention for this drug exposed population; there is no uniformity in terms of what children qualify for services and the type and intensity of services provided.</li> <li>◆ Shortage of qualified personnel.</li> </ul>

Child Protective / Child Welfare Services			
Description Of Services	What's needed	What Currently Exists	Gaps in Service
Child Protective Services (CPS) / Child Welfare Services (CWS) (Children's Admin).	Services need to be available to high, moderate, and low risk families.	<ol style="list-style-type: none"> <li><u>Services for high or moderate risk CPS cases:</u> For high or moderate risk cases, CPS may provide one or more of the following: Investigation of child abuse and neglect Family assessment Home based services Family Preservation services Intensive Family Preservation services Home support specialists Referrals to public health nurse, DASA, and other services funded and provided by agencies other than Children's Admin.</li> <li><u>Services for low-risk CPS cases:</u> Low-risk cases may be referred to a public health nurse or a contracted social service provider in the community.</li> <li><u>Child care for CPS recipients:</u> Time limited child care available as part of a case plan for clients involved with CPS/CWS.</li> <li><u>Therapeutic Child Care (TCC):</u> There are approximately 820 slots available statewide. The majority of these slots are for CPS/CWS clients who have open cases with the Division of Children and Family Services. 20 slots are available for children with family in treatment programs. <i>An informal survey of TCC providers shows about 30% of children in TCC are drug/alcohol affected.</i></li> <li><u>Foster Care</u> (Children's Administration): Limited number of specially trained foster parents and special facilities to care for drug/alcohol affected children.</li> <li><u>Pediatric Interim Care (PIC):</u> DSHS funds four PIC programs in the state, located in Kent, Everett, and Tacoma (2). All four of these programs work with children under the age of three who are drug affected. Service provision varies by contractor. The facility in Kent is a facility-based program. Drug affected children come to this facility from the hospital for longer-term care. They are then released to their family or foster care. Training is offered on taking care of the child. In Tacoma, one of the programs is a home based program that trains foster parents to work with drug affected infants and provides other case management and other support services. The other program in Tacoma offers diagnostic, testing, and assessment for drug affected infants. The program in Everett works with children prior to discharge in the hospital and after discharge, works with caregivers to provide support and education.</li> </ol>	<p><u>Gaps in Therapeutic Child Care (TCC):</u></p> <ul style="list-style-type: none"> <li>◆ Availability of TCC slots varies greatly throughout the state. TCC needs to be involved with a child for at least six months and preferably at least one year in order to be affective. The CPS/CWS case must remain open for TCC to be authorized. TCC should remain available to identified children even if CPS/CWS case is no longer open, but not at the expense of new children not able to enter a TCC program.</li> </ul> <p><u>Gaps in child care for CPS recipients:</u></p> <ul style="list-style-type: none"> <li>◆ Limited slots for infants. Clients must provide their own transportation.</li> </ul>

