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Prenatal and Early Childhood Nurse Home Visitation

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To prevent youth crime and delinquency, it is important to understand how antisocial behavior develops and design programs to interrupt that developmental pathway. The most serious and chronic offenders often show signs of antisocial behavior as early as the preschool years (American Psychiatric Association, 1994). Three important risk factors associated with early development of antisocial behavior can be modified: adverse maternal health-related behaviors during pregnancy associated with children's neuropsychological deficits, child abuse and neglect, and troubled maternal lifecourse.

The Prenatal and Early Childhood Nurse Home Visitation Program, developed by David Olds and his colleagues (Olds, Kitzman et al., 1997; Olds, 1988; Olds and Korfmacher, 1997), is designed to help low-income, first-time parents start their lives with their children on a sound course and prevent the health and parenting problems that can contribute to the early development of antisocial behavior. Several rigorous studies indicate that the nurse home visitation program reduces the risks for early antisocial behavior and prevents problems associated with youth crime and delinquency such as child abuse, maternal substance abuse, and maternal criminal involvement.

Recent evidence shows that nurse home visitation even reduces juvenile offending (Olds, Henderson et al., 1998). Beginning in the mid-1970's, a series of randomized clinical trials was designed to develop and test the program model (Olds, Kitzman et al., 1997; Olds, 1988;

The original research on this program was supported by the U.S. Department of Health and Human Services (HHS) and the Robert Wood Johnson, the W.T. Grant, the Ford, and the Commonwealth Foundations. The most recent research has been supported by HHS and the National Institutes of Health. The Office of Juvenile Justice and Delinquency Prevention (OJJDP) is currently funding a demonstration and evaluation of the project in six sites.

From the Administrator

A stitch in time saves nine. An ounce of prevention is worth a pound of cure. Folk wisdom is replete with such adages for a good reason—because they are true. Clearly, in the realm of delinquency and child abuse, prevention is always better than picking up the pieces. For 20 years, Dr. David Olds and his colleagues have been developing and testing a prevention program that helps low-income, first-time mothers deliver healthy babies, give them proper care, and avoid substance abuse and criminal behavior. More important, this program of prenatal and early childhood home visitation also reduces juvenile offending.

A major factor in the program's success that distinguishes this model from other, similar programs is its use of trained, experienced nurses, one of several key program components. In addition, the authors discuss the program's impact on risks for developing antisocial behavior in childhood. They also report estimates of impressive cost savings: four times the initial expenditure by the time high-risk children reach age 15.

This Bulletin offers exciting news that holds great promise for children who would otherwise come into a world of significant risks and bleak prospects. I hope that policymakers and other concerned citizens will support replication of this effective program in areas where it is sorely needed.

Shay Bilchik
Administrator

Olds and Korfmacher, 1997). In each of these studies conducted in Elmira, NY, and later in Memphis, TN, women were randomly assigned to either home visitation by nurses during pregnancy and the first 2 years of their children's lives or comparison services such as free transportation for prenatal care and developmental screening and referral for their infants. Results from the Elmira and Memphis studies indicate that this program of nurse home visitation can promote healthy maternal and child functioning early in life (Olds, Henderson, Tatelbaum et al., 1986, 1988; Olds, Henderson, Chamberlin et al., 1986) and reduce the likelihood that children eventually will develop serious antisocial behavior (Olds, Eckenrode et al., 1997; Olds, Pettitt et al., 1998) including criminal offending (Olds, Henderson et al., 1998). A third trial conducted in Denver, CO, which is nearing completion, compares the results achieved when employing trained paraprofessionals instead of nurses when following the same program model.

This Bulletin describes the model nurse home visitation program and explains how it successfully reduces the risks for early development of antisocial behavior and maternal and juvenile offending. Evidence is also presented detailing the program's effectiveness in reducing those risks. Most striking, this Bulletin shows how a program of prenatal and early childhood nurse home visitation has reduced both maternal and juvenile offending.

Program Overview

Nurses begin visiting low-income, first-time mothers during pregnancy and continue visits until a child is 2 years old. These visits help pregnant women improve their health, which makes it more likely that their children will be born free of neurological problems. Parents receiving home visits also learn to care for their children and to provide a positive home environment. This means making sure children are nurtured, live in a safe environment within and around the home, are disciplined safely and consistently, and receive proper health care. Nurses also teach young parents to keep their lives on track by practicing birth control and planning future pregnancies, reaching their educational goals, and finding adequate employment.

Key Program Components

The elements of the nurse home visitation program have been refined over the past 20 years, with visit-by-visit written protocols to guide nurse home visitors. Research and experience indicate that the following elements of the program are fundamental to its effectiveness:

- The program focuses on low-income, first-time mothers.
- Trained, experienced, mature nurses with strong interpersonal skills make home visits.
- Home visits begin during pregnancy and continue for 2 years after a child is born.
- Home visitors see families at home every 1 to 2 weeks.
- Home visitors focus simultaneously on the mother's personal health and development, environmental health, and quality of caregiving for the infant or toddler.
- Home visitors involve family members and friends in the program and help families use other community health and human services when needed.
- A full-time nurse home visitor carries a maximum caseload of 25 families.
- A nursing supervisor provides supportive guidance and oversees program implementation.
- Detailed records are kept on families and their needs, services provided, family progress, and outcomes.

Reducing Risks for the Development of Antisocial Behavior in Childhood

How does the nurse home visitation program reduce risks for antisocial behavior that begins in childhood? This section summarizes how the program reduces three major risk factors: adverse maternal health-related behaviors during pregnancy that are associated with neuropsychological impairment in children, child abuse and neglect, and a troubled maternal life course.

Neuropsychological Impairment

Children who exhibit antisocial behavior very early in life are more likely than other children to have impaired neurological functioning. Signs of neurological impairment include poor motor functioning, attention deficits, hyperactivity, impulsivity, and impaired language and cognitive functioning (Moffitt et al., 1996). In many cases, these problems can be traced to poor prenatal health conditions that interfere with the development of the fetal nervous system (Olds, 1997; Wakschlag et al., 1997; Fergusson, Horwood, and Lynskey, 1993; Milberger et al., 1996; Weitzman, Gortmaker, and Sobol, 1992).

The nurse home visitation program helps pregnant women improve their diet and cut down on cigarette smoking or the use of alcohol or illegal drugs that can hurt the developing fetus (Olds, Henderson, Tatelbaum et al., 1986). Cigarette smoking during pregnancy is especially dangerous because it is related to intellectual impairment in young children. In the Elmira trial, which served primarily Caucasian families, the 3- and 4-year-old children of women who did not receive a nurse home visitor and who smoked 10 or more cigarettes per day during pregnancy had impaired intellectual functioning compared with children of women who did not smoke (Olds, Henderson, and Tatelbaum, 1994a). Children of mothers who smoked 10 or more cigarettes when they signed up for the program and then received a nurse home visitor during pregnancy were not intellectually impaired. Data indicate that these women improved their diets and reduced their smoking by approximately three cigarettes a day (Olds, Henderson, and Tatelbaum, 1994b).

Cigarette smoking by a mother during pregnancy also has been linked to an infant's compromised neurological func-

tioning. Compromised neurological functioning makes it harder for infants to signal their needs and regulate their emotions and behavior (Olds, Pettitt et al., 1998). When asked to evaluate how fussy and irritable their children were at 6 months of age, mothers who did not receive nurse home visitors and who smoked 10 or more cigarettes per day during pregnancy reported more fussiness and irritability in their children than did nonsmoking mothers without a nurse home visitor. In contrast, mothers who smoked 10 or more cigarettes per day when they started the program and who received home visits by a nurse during pregnancy reported far less irritability and fussiness in their children than did their counterparts in the control group (Olds, Pettitt et al., 1998). These findings suggest that the guidance mothers received from their nurse home visitors not only helped them cut down or stop smoking, it also improved their infants' soothability, which made infant care much easier.

Child Abuse and Neglect

Abused and neglected children are at higher risk for developmental pathways marked by persistent behavior problems and academic failure, followed by chronic delinquency, adult criminal behavior, antisocial personality disorder, and violent crime (Widom, 1989; Maxfield and Widom, 1996; Kelley, Loeber et al., 1997; Kelley, Thornberry, and Smith, 1997). The program studied in the Elmira clinical trial has reduced the rates of child abuse and neglect and less serious forms of caregiving problems by helping young parents deal with depression, anger, impulsiveness, and substance abuse problems. It also helped them reflect on how they were parented themselves; learn about normal child development; and develop the skills needed to "read" their baby's signals, anticipate their baby's needs, and parent effectively (Olds, Henderson, Chamberlin et al., 1986; Olds, Eckenrode et al., 1997).

For children from birth through age 15, the Elmira program reduced State-verified cases of child abuse and neglect by 79 percent among mothers who were poor and unmarried (Olds, Eckenrode et al., 1997). In the second year of life (age 13 to 24 months), nurse-visited children had 56 percent fewer visits to an emergency room for injuries and ingestions than children not receiving home visits by nurses (Olds, Henderson, Chamberlin et al., 1986). During the 2-year period after the program ended (from the second through the fourth year of life), children from nurse-visited families were 40 percent less likely to be seen in a physician's office for injuries, ingestions, or social problems, and they had 35 percent fewer visits to the emergency room.

In the Memphis test of the program, which served African-American families, corresponding positive effects on parental caregiving and reductions in childhood injuries were seen during the first 2 years of the children's lives. Because Memphis has a very low rate (approximately 3 percent) of officially verified cases of child abuse and neglect, it was not possible to make valid and reliable comparisons between program participants and control group families. The data obtained from the nurse-visited families, however, strongly suggest a reduction in poor caregiving practices or behavior, including a reduction in child abuse and neglect (Kitzman et al., 1997).

Troubled Maternal Life Course

A mother's personal development and lifestyle choices influence whether her child will develop antisocial behavior. Young women who become parents as adolescents and have recent welfare experience are more likely to have children who engage in a variety of antisocial and delinquent behaviors and who are expelled from school than are their low-income, nonwelfare, adolescent–mother counterparts (Furstenberg, Brooks-Gunn, and Morgan, 1987). Mothers who are unmarried, do not graduate from high school, and have three or more children are more likely to have children who exhibit behavioral problems.

The nurse home visitation program reduces these risk factors by helping young parents develop the confidence and skills necessary to set and achieve goals such as completing their education, finding work, and avoiding unplanned subsequent pregnancies (Olds, Eckenrode et al., 1997). The nurses help young parents consider multiple options, make good choices about the environment in which they will raise their children, and take steps to create the kind of lives they want for themselves and their children.

During the first 15 years after delivery of their first child, low-income, unmarried women in the Elmira trial who received nurse home visits had fewer subsequent children (1.1 versus 1.6), longer intervals between the births of the first and second children (65 versus 37 months), 30 fewer months on welfare (60 versus 90 months), 44 percent fewer behavioral problems because of their use of drugs and alcohol, 82 percent fewer arrests, and 81 percent fewer convictions than those in the control group, as shown by State records. Results of the first phase of the ongoing Memphis replication study indicate that the program's effects on maternal life course (especially reductions in the rates of subsequent pregnancies and births) are being reproduced (Kitzman et al., 1997).

Cumulative Risk

The kinds of problems described above often combine to increase the total risk for the development of antisocial behavior in childhood. The figure on the next page presents an overview of the factors that can increase risk early in a child's life and shows how a program of

home visitation by nurses may prevent such a negative developmental process from unfolding.

For example, subtle damage to the developing fetal nervous system can interfere with children's capacity to respond effectively to their parents' efforts to care for them. This establishes patterns of frustration and anger that interfere with the development of secure attachment (Rodning, Beckwith, and Howard, 1989; Sanson et al., 1993; Moffitt, 1993a, 1993b). To compound the problem, the parents of children with neuropsychological impairment are more likely to provide inconsistent discipline and may themselves be impatient and irritable. There are many possible causes for such dysfunctional caregiving, including genetic links, overwhelming stress, or substance abuse (Moffitt, 1993b). Poor parenting practices can lead to vicious cycles of interaction in which the child's problems with emotional and behavioral regulation contribute to parental child abuse or neglect that further intensifies the child's emotional and behavioral imbalances.

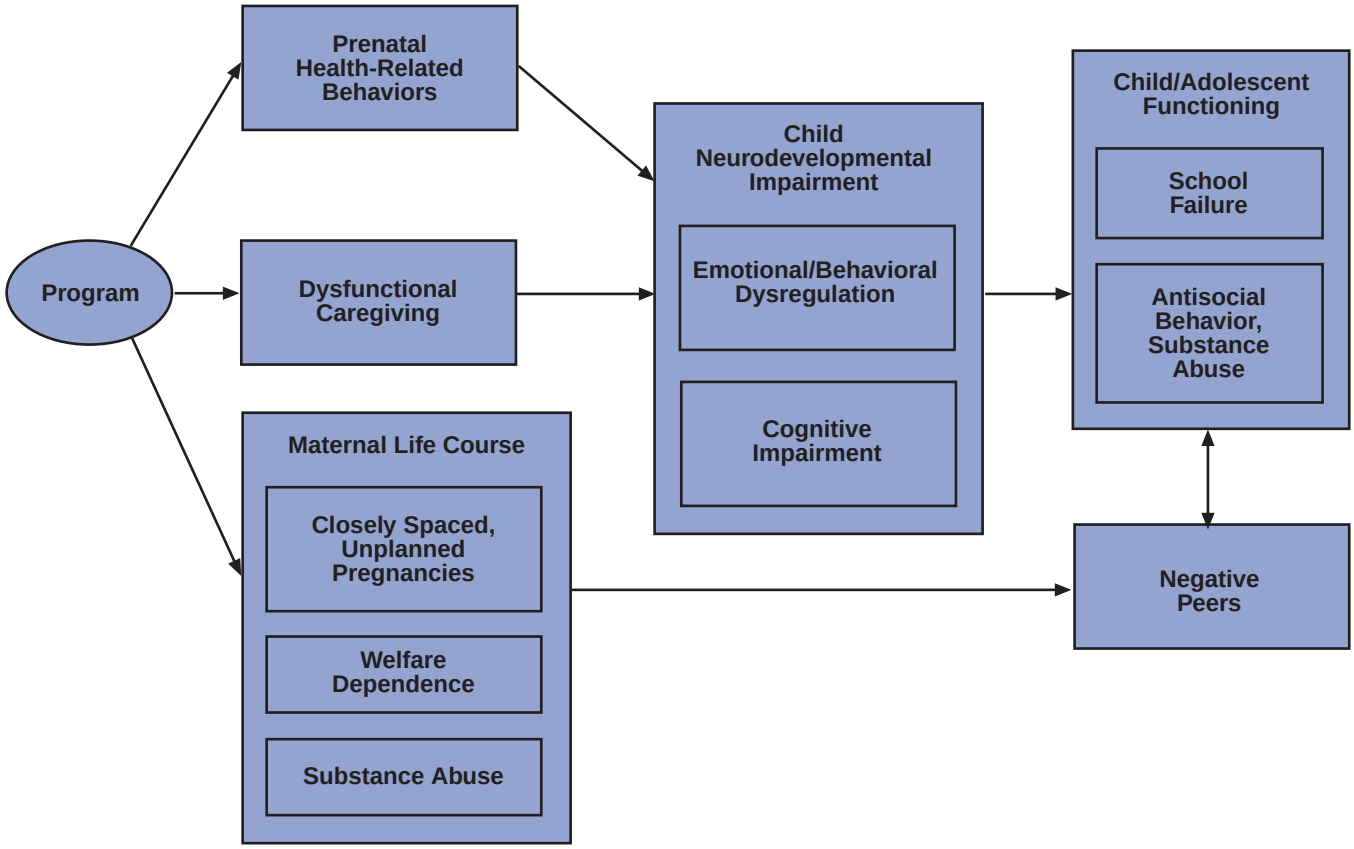
Poor caregiving occurs more frequently when parents experience financial difficulties (Conger et al., 1993) and have larger families (Hirschi, 1994). In such cases, children's risks for antisocial behavior are further increased by their exposure to environments that are often associated with poverty and that may surround them with criminal influences (Felner et al., 1995; Hirschi, 1994; Moffitt, 1993a, 1993b).

Children from low-income households that are characterized by aggression and include family members with a history of school failure are more likely to be placed in low-level reading groups. This placement tends to worsen their aggressive behavior and academic problems, because these groups are likely to be made up of other children with similar problems and include classroom disruptions that interfere with education (Eder, 1983). Vulnerable children then become even more susceptible to rejection by prosocial peers and to negative peer influences (Dishion et al., 1995; Coie et al., 1995). When parents with limited social skills are confronted by school officials about their children's disruptive school behavior, they are more likely to harshly reject their children, which pushes the children further toward delinquency and crime (Coie, 1996).

Preventing the accumulation of risk factors from such a wide variety of sources is possible through comprehensive programs like the model of nurse home visitation described in this Bulletin. By attending to health, social, and environmental issues all at once, nurse visitors can help families get off to a strong start that enables their children to develop and mature into healthy, productive individuals. In some cases, the positive skills families develop seem to neutralize the negative influence of other risk factors that are harder to reduce or eliminate.

Moreover, for the first time there exists solid, scientifically validated evidence that prenatal and early childhood nurse home visitation services prevent crime

Model of Program Influences on Conduct Disorders, Antisocial Behavior, and Crimes



and delinquency (Olds, Henderson et al., 1998). As described in a 15-year followup of the Elmira nurse home visitation program, the long-term effects of the program on children's criminal and antisocial behavior are substantial and have groundbreaking implications for juvenile justice and delinquency prevention. Adolescents whose mothers received nurse home visitation services over a decade earlier were 60 percent less likely than adolescents whose mothers had not received a nurse home visitor to have run away, 55 percent less likely to have been arrested, and 80 percent less likely to have been convicted of a crime, including a violation of probation (Olds, Henderson et al., 1998). They also had smoked fewer cigarettes per day, had consumed less alcohol in the past 6 months, and had exhibited fewer behavioral problems related to alcohol and drug use.

Program Costs and Cost Savings

The nurse home visitation program costs an estimated $3,200 per family per year during the startup phase (first 3 years) and $2,800 per family per year once nurses are completely trained and working at full capacity. Costs vary from site to site, depending primarily on nursing salaries in the community where the program is run. When the program focuses on low-income women, the government's costs to fund the program are recovered by the time the first child reaches age 4, primarily because of the reduced number of subsequent pregnancies and related reductions in use of government welfare programs (Olds et al., 1993). A report from The RAND Corporation estimates that by the time children from high-risk families reach age 15 the cost savings are four times the original investment because of reductions in crime, welfare expenditures, and health care costs and as a result of taxes paid by working parents (Karoly et al., 1998).

Growing National Interest

Many States and cities have expressed an interest in adopting the nurse home visitation program because it has proven so successful in preventing crime and violence and other serious health and social problems. Three components of the U.S. Department of Justice's Office of Justice Programs—the Office of Juvenile Justice and Delinquency Prevention (OJJDP), the Bureau of Justice Assistance, and the Executive Office for Weed and Seed—are supporting implementation of the program in six high-crime, urban areas as part of its national Weed and Seed and Safe Futures initiatives. By summer 1998, agencies serving low-income neighborhoods in Fresno, Los Angeles, and Oakland, CA; Clearwater, FL; St. Louis, MO; and Oklahoma City, OK, were implementing the nurse home visitation program.

OJJDP also funds an initiative at the Center for the Study and Prevention of Violence at the University of Colorado, which recently named the nurse home visitation program 1 of 10 "blueprint" programs after a rigorous evaluation demonstrated its effectiveness in preventing violence and success in replication across sites. The center is developing instructions to help communities plan and implement blueprint programs. OJJDP will provide the center with approximately $5 million over 3 years to assist selected communities in implementing blueprint programs.

Summary

This cost-effective program of home visitation by nurses, tested over the past 20 years, has the proven ability to reduce the development of antisocial behavior in childhood and later crime and delinquency. It has been effective in reducing three major categories of risk related to antisocial behavior: adverse maternal prenatal health-related behaviors; child abuse and neglect; and troubled maternal life course (unintended successive pregancies, reduced work-force participation, welfare dependence, substance abuse, and criminal behavior).

For Further Information

For further information about the nurse home visitation program and the research demonstrating its effectiveness, contact:

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For further information about OJJDP's Blueprints Violence Prevention Project publications or training and technical assistance program, contact:

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303–443–3297 (Fax)
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