

THE NURSE-FAMILY PARTNERSHIP

David Olds

The Nurse-Family Partnership (NFP) is a program of prenatal and infancy home visiting by nurses for low-income first-time mothers. NFP nurses help parents improve 1) the outcomes of pregnancy by helping women improve their prenatal health; 2) children's subsequent health and development by helping parents provide competent infant and toddler care; and 3) parents' economic self-sufficiency by helping them complete their educations, find work, and plan future pregnancies. In three scientifically controlled trials the program produced benefits in each of these targeted areas. Today the NFP is serving over 20,000 families, and is likely to grow substantially with the support of health care reform.

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For more than three decades, our team has developed, tested, and replicated in community settings a program of prenatal and infancy home visiting by nurses known as the Nurse-Family Partnership (NFP). This work is founded on four principles: develop the program well before testing it; test it thoroughly before offering it for public investment; replicate it carefully; and improve it continuously. This approach has contributed to the NFP's being identified as the only early childhood program reviewed to date that meets the Coalition for Evidence-Based Policy's "Top Tier" of evidence,¹ as the program with the strongest evidence that it prevents child abuse and neglect,² and as a program that produces significant economic return on investment.³

Given our nation's huge disparities in health and educational outcomes and soaring budget deficits, a strong case can be made for focusing scarce public resources where they are most likely to reduce disparities and costs, and for developing effective early childhood services following the approach outlined here, which aligns with recommendations of the National Academies.⁴ The goal of this approach is to develop a system of effective, complementary services grounded in scientific evidence that they work.

The Nurse-Family Partnership

Our team carefully developed the NFP before testing it and offering it for public investment. NFP nurses have three major goals to promote: better pregnancy outcomes by helping women improve their prenatal health (for example, cutting down on smoking and obtaining prompt treatment for obstetric complications); children's subsequent health and development by helping parents provide competent care of their infants and toddlers; and parents' economic self-sufficiency by helping them

develop a vision for their future and make decisions about staying in school, finding work, and planning future pregnancies that are consistent with their aspirations. The nurses follow detailed visit-by-visit guidelines that they adapt to parents' needs and interests. Using strategies that capitalize on parents' intrinsic motivation to protect themselves and their children, nurses join with parents to improve their prenatal health, care of their children, and economic self-sufficiency.

The goal is to develop a system of effective, complementary services grounded in scientific evidence that they work.

The NFP focuses on low-income women bearing first children for three reasons. First, maternal and child health problems and educational disparities are greater among poor families living in concentrated social disadvantage. Second, women bearing their first children (who account for about 40 percent of the births in the United States) have a natural sense of vulnerability that increases their willingness to engage in this program, in part because it is delivered by nurses who can address with authority their concerns about pregnancy, labor, delivery, and care of fragile newborns. And third, the program is designed to achieve many of its most long-lasting effects by helping parents clarify their aspirations for themselves and their children; this often results in parents choosing to delay future pregnancies until they are positioned to assume responsibility for another child, with benefits likely

carrying over to subsequent children. Today, the program is estimated to cost \$4,500 per year per participant over an approximately 2.4-year period.

Evidence of Impact on Health and Costs

The NFP has been tested in three separate scientifically controlled trials over more than three decades with different populations, living in different contexts, and at different points in U.S. social and economic history. The first randomized trial was begun in 1977 in Elmira, New York, with a sample of low-income whites (N=400); the second was begun in 1988 in Memphis, Tennessee, with a sample that was 90 percent African American (N=1,178 for the prenatal phase of the trial and 743 registered in the postnatal phase); and the third was begun in 1994 in Denver, Colorado, with a sample that was 46 percent Hispanic (N=735). The Denver trial systematically examined the relative impact of the program when delivered by paraprofessionals (who lacked college degrees, but were trained and supported well in delivering the program) and by nurses. Before offering the program for public investment, we wanted to make sure that it would work in different contexts and with different populations, and that we had reliable procedures for replicating the model tested in the trials. In at least two of the three trials the NFP produced significant impacts in eight areas, described below.

Improving Prenatal Health. Prenatal health improvements include reductions in prenatal tobacco use, hypertensive disorders of pregnancy, and kidney infections; and improvement in diet.⁵ In the Denver trial, for example, nurse-visited women identified as smokers at registration had a reduction (effect size = .50) in cotinine (a biochemical marker of tobacco use).⁶ Corresponding

effects were found in the Elmira trial.⁷ Prenatal tobacco use increases the risk of preterm delivery, low birth weight, and adolescent crime, and is substantially more prevalent in low-income than high-income women.⁸

Reducing Childhood Injuries. In the Elmira trial, there was a 56 percent relative reduction in emergency department encounters for injuries and ingestions during the children's first two years of life.⁹ In the Memphis trial there was a 28 percent relative reduction in all types of health care encounters for injuries and ingestions, and a 79 percent relative reduction in the number of days that children were hospitalized with injuries and ingestions during the children's first two years.¹⁰ In both of these trials the impact of the program on injuries was more pronounced among children born to mothers with fewer psychological resources to manage the care of their children while living in concentrated social disadvantage. Injuries are the leading cause of death in children and youth.¹¹

Increasing Inter-birth Intervals. Across all three trials, nurse-visited women had longer intervals between the births of first and second children, due to better pregnancy planning. In the Elmira trial, nurse-visited mothers who were unmarried and from low-income households at registration, compared to control-group counterparts, had a 12.5 month greater interval between birth of the first and second child by the time the first child was 4 years of age (effect size = .69);¹² in the Memphis and Denver trials the corresponding increases in interval were 3.7 and 4.1 months (effect sizes = .21 and .32, respectively).¹³ Short inter-birth intervals (less than two years) are associated with poor subsequent pregnancy outcomes, a host of child health and development problems,

and compromised parental economic self-sufficiency.¹⁴

Increasing the Stability of Partner Relationships. Women from the Elmira trial who had been unmarried and from low socio-economic households at registration were over two times more likely to be married fifteen years following the birth of the first child than their control-group counterparts.¹⁵ In the Memphis trial, nurse-visited women were 60 percent to 70 percent more likely to be cohabiting with someone or with the father of the child at child age 5.¹⁶ At child ages 6 and 9, nurse-visited women had more stable partner relationships than did women in the control group (effect size = .23).¹⁷ Marriage and stable partner relationships predict better child and family functioning.¹⁸

A dedicated source of federal dollars will be essential for the NFP to achieve greater scale and reduce societal costs.

Reducing Families' Use of Welfare (Cash Assistance, Supplemental Nutrition Assistance Program [SNAP], and Medicaid). In the Elmira and Memphis trials, nurse-visited women used government assistance (especially Aid to Families with Dependent Children/Temporary Assistance for Needy Families [AFDC/TANF] and SNAP) for fewer months than did women in the control group.¹⁹ At child age 12, the nurse-control difference in use of AFDC/TANF, SNAP, and Medicaid led to government savings in welfare expenditures that exceeded the cost of the program after discounting and

adjusting costs to the same year.²⁰ The program impact on use of welfare did not hold in the Denver trial, which began just before federal welfare reform was passed and just as the U.S. economy moved into a period of rapid growth in the late 1990s. Nurse-visited women did, however, improve their economic self-sufficiency to a greater extent than women in the control group, while paraprofessional-visited women did not. The return on investment in this area alone exceeded the cost of the program from a societal perspective.²¹

Increasing Maternal Employment and Earnings. Nurse-visited low-income, unmarried women in the Elmira trial worked 82 percent more than their control-group counterparts through child age 4;²² those in the Memphis trial were twice as likely to be employed at child age 2;²³ and in Denver, there were similar effects for nurse-visited women over time.²⁴

Improving Child Language, Cognitive and Academic Functioning among Children Born to Mothers with Fewer Psychological Resources. In the Memphis trial, nurse-visited children born to mothers with low psychological resources had higher levels of academic achievement in the first three years of elementary school compared to their counterparts in the control group (effect size = .33).²⁵ In the Denver trial, nurse-visited four-year-olds born to mothers with low psychological resources had better language development and executive functioning than control-group counterparts (effect sizes = .31 and .47, respectively).²⁶ There were no benefits of the program for these types of outcomes among children born to mothers with relatively high psychological resources, that is, those with greater wherewithal to manage caring for their children while living in poverty.

Other Outcomes. In addition, in the Elmira NFP trial, where families have been followed the longest, the program produced long-term reductions on state-verified rates of child abuse and neglect (a 48 percent reduction), and mothers' and children's arrests through the first child's fifteenth birthday (60 percent to 70 percent reductions),²⁷ and on children's arrests (40 percent) and convictions (60 percent) by age 19 (effects due entirely to reductions among girls at age 19).²⁸ In the Memphis trial of the NFP, children in the control group were 4.5 times more likely to die in the first nine years of life as were children who had been visited by nurses, a difference in mortality accounted for by deaths due to prematurity, Sudden Infant Death Syndrome, and injuries.²⁹ Finally, in the Denver trial families opened their doors more to nurses than to paraprofessionals,³⁰ and nurses produced larger and more consistent effects on maternal and child health and development than did paraprofessionals.³¹

This set of findings has led to acknowledgment of the program's significant impacts by several reviewers.³² What distinguishes these reviews is their adherence to a similar set of high evidentiary standards: well-conducted randomized trials, replicated effects with different populations, enduring impacts on outcomes of clear public health importance, and programmatic procedures for rigorous replication. Moreover, the Washington State Institute for Public Policy and the Rand Corporation estimate returns on investment in the NFP of about \$17,000 per family served, or between \$2.80 and \$5.70 per dollar invested, with greater returns when the program is targeted on those in greater need.³³

National and International Replication

As evidence-based programs are moved into policy and practice, there are pressures to water them down as they are scaled up,³⁴ and it is likely that some attenuation of impact will occur.³⁵ The economic evaluations produced by the Washington State Institute for Public Policy have built such attenuation into their estimates of return on investment.³⁶ We have structured the replication of the NFP to resist these pressures and to improve its performance over time.³⁷ The NFP national replication effort is built upon three principles: that in order to achieve its promise, the NFP must be replicated with fidelity to the model tested in the randomized trials, focusing particularly on high-quality nurse education and support; that programs must monitor implementation and outcomes with NFP's web-based clinical information system; and that resources must be focused on improving implementation and conducting rigorous research to improve the underlying program model. We think of the NFP as a work in progress, and have organized the NFP national replication effort to monitor performance, to understand implementation and program vulnerabilities, and to work constantly on building the next generation of the NFP.

We also are working with the British, Dutch, and Australian governments to develop the NFP in those countries in order to help close gaps in health and education for their most disadvantaged populations.³⁸ Our model for international replication calls for careful program adaptation to local contexts, formative evaluation of the adapted program, rigorous testing in randomized controlled trials, and faithful replication of the NFP if it improves maternal and child health and is cost effective.

Integration with Existing Public Policies

The NFP draws upon a number of public funding sources to support its current operations, including TANF, Medicaid, tobacco taxes and settlement dollars, child abuse and neglect prevention, juvenile justice, the Social Services Block Grant, and the Maternal and Child Health Block Grant, among others. The NFP provides one mechanism through which public dollars in these funding streams can be spent on evidence-based services consistent with their missions. Current NFP expansion efforts have relied on these funding streams as the program has gone from enrollment of zero families in 1996 to 20,000 at the end of 2009. Having a dedicated source of federal dollars, such as the maternal and child health home-visiting provisions included in the health care reform legislation passed by Congress in early 2010, will be essential for the NFP to achieve greater scale and reduce societal costs at a more accelerated pace. As the national home-visiting program is being implemented, it is useful to examine some of the ways in which the NFP overlaps with current policies aimed at improving the health, education, and economic self-sufficiency of the disadvantaged. What the NFP brings to the domestic policy agenda is a program with unusually rigorous evidence that it can help parents become more competent in caring for themselves and for their children. It complements public policies aimed at improving maternal and child health, promoting school readiness, and reducing poverty.

A fundamental question has to do with who qualifies for the NFP and how they might be registered. A natural point of contact with low-income pregnant women is through their enrollment in prenatal care and the Special Supplemental Nutrition Program for Women, Infants and Children (WIC). Since 90 percent to 95 percent of teen

mothers register for prenatal care before the third trimester of pregnancy,³⁹ enrolling Medicaid-eligible women in the NFP as they register for prenatal care is sensible. In some states, Medicaid is used to fund part of the cost of the NFP because many NFP services are covered by Medicaid. One provision included in the House-passed health care reform legislation would have simplified Medicaid coverage of prenatal and infancy nurse home visits by giving states the option of covering all eligible nurse home-visitation services under one category rather than the multiple categories currently used,⁴⁰ but this was not included in the final bill passed by Congress. If Medicaid funding can be used without compromising the essential elements of the NFP model, Medicaid will be an effective way for states to make this service available to a larger number of families.

One also might make the NFP a home-based option under Early Head Start (EHS). While there is some overlap in the missions of the NFP and EHS, there are differences in program design and delivery standards so some modifications of EHS standards would be required in order for the NFP to be delivered with fidelity to the model tested in the trials. Given strong NFP outcomes in early school readiness and educational achievement, the NFP also may be funded as part of broader efforts to improve education policy and practice.⁴¹ This might include covering the NFP as an evidence-based element in the Promise Neighborhoods initiative,⁴² or under the Early Learning Challenge Fund being considered by Congress.⁴³

TANF has been used to support the NFP in some states because NFP nurses help low-income families become more economically self-sufficient. The NFP also can be linked with other local, state, and federal sources of support aimed at

increasing low-income parents' completion of community college and improving career development. Nurses help families choose child care options that are safe, developmentally enriching, and available during the hours parents must be away from their child, so the nurses' work aligns with efforts to secure quality preschool and family-based child care for low-income families. Policies aimed at reducing family poverty and promoting healthy marriages and father involvement have missions that overlap with the NFP, and are sensible sources of support given that the NFP helps achieve these goals.

The nurses' work aligns with efforts to secure quality preschool and family-based child care for low-income families.

Finally, the NFP has been identified as having the strongest evidence of any intervention tested to date that it prevents child abuse and neglect,⁴⁴ and thus is a natural candidate for funding under the Child Abuse Prevention and Treatment Act. The complexities of channeling many funding streams into the NFP can be so challenging, however, that any further expansion of the program will require a single, dedicated funding stream that recognizes the potential of this program to help improve the life chances of the disadvantaged.

While the nursing shortage may impose some constraints on NFP expansion, especially in rural areas, this issue should be put in perspective. If NFP enrollment were 100,000 families, the program would consume 0.4 percent of the existing nursing workforce.⁴⁵ National strategies to address the shortage of registered nurses have called specifically for creating a larger pool of nurses prepared for the NFP, and the Division of Nursing in the Bureau of Health Professions within the U.S. Department of Health and Human Services is focusing its resources on increasing the number and diversity of well-prepared nurses. Our experience is that over the past decade, increasing numbers of individuals have entered the nursing profession specifically to work in the NFP program. While working in the NFP is not for every nurse, for those committed to serving the disadvantaged it provides a career option with deep personal meaning. These factors make us optimistic that the nursing workforce can be expanded over time to meet the needs of the program as it provides a secure source of employment and opportunity for career development.

Conclusion

Poor children and families in the United States deserve programs that work and taxpayers need to know that their dollars are being spent wisely. The NFP provides a model for serving a segment of the population of vulnerable children and families at a critical stage in human development that can have long-lasting and far-reaching effects in reducing health and educational disparities. The approach outlined here holds promise for developing other effective services for vulnerable populations.

Notes

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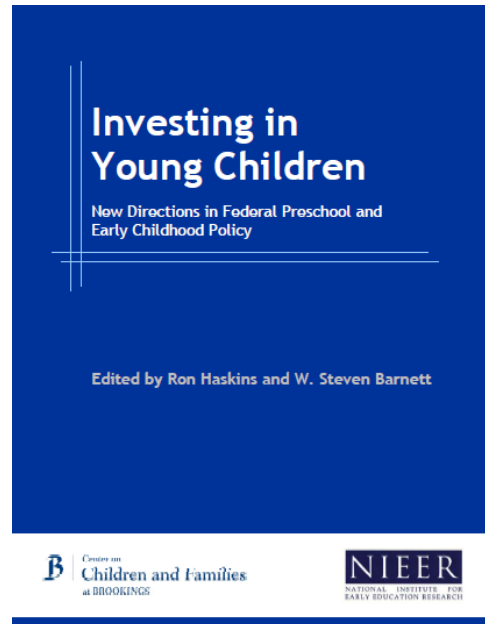
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