The Mother and Infant Home Visiting Program Evaluation-Strong Start: First Annual Report

OPRE Report 2013-54

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Overview

Improving birth, infant, and maternal health outcomes, particularly among socio-economically disadvantaged families, is an important health goal of the nation. Home visiting services have been identified by the Strong Start for Mothers and Newborns (Strong Start) initiative of the Centers for Medicare and Medicaid Services (CMS) as one promising method for reaching pregnant women who are vulnerable to poor health outcomes.

This report introduces the Mother and Infant Home Visiting Program Evaluation-Strong Start (MIHOPE-Strong Start), which was designed by CMS and the Administration for Children and Families (ACF), is funded by CMS, and is being implemented in partnership with the Health Resources and Services Administration (HRSA). The study is designed to assess the impacts of evidence-based home visiting programs for disadvantaged expectant mothers. MIHOPE-Strong Start uses a rigorous random assignment design to examine the effects of home visiting programs on birth outcomes and maternal and infant health and health care. The study will also examine rich information on local implementation processes. The study is being conducted by MDRC in partnership with James Bell Associates, Johns Hopkins University, and Mathematica Policy Research.

Local programs included in the evaluation will use one of two national home visiting models that have shown previous evidence of improving birth outcomes: Healthy Families America (HFA) and Nurse-Family Partnership (NFP). Local program implementation is guided by the direction of the national model developers (HFA and NFP) through the articulation of their service models, including their focus on particular outcomes and families and their guidelines regarding dosage and delivery of services. A detailed description of the two models, including their similarities and differences, is included in this report and can be summarized as follows:

- Both national models serve low-income, pregnant women over a period of multiple years. However, a significant proportion of HFA participants enroll after they have given birth rather than before, whereas NFP enrolls only first-time pregnant women. These differences in targeting strategies are consistent with the particularly high priority that HFA places on preventing child abuse and neglect, whereas NFP places very high priority on improving birth and maternal and infant health outcomes (as well as other family outcomes).

- There are also important differences across the two national models in the flexibility and structure that they provide to local programs in areas of program implementation, such as staffing requirements, timing of enrollment, and services delivered. HFA asks implementing agencies to follow a set of program principles but then allows local agencies to tailor operational decisions. NFP has a more highly defined and structured approach and expects local programs to strive for fidelity to the service model as it has been defined at the national level.

Future reports will examine how home visiting services are provided and the effects that the programs have on birth outcomes and on maternal and infant health and health care use.

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The Authors

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Executive Summary

Despite major advancements in the past century, rates of adverse birth outcomes in the United States remain high. In 2009, about 12 percent of infants born in the United States were born prematurely (before 37 weeks of gestation), and roughly 8 percent were classified as low birth weight (less than 2,500 grams). Preterm and low-birth-weight infants are at greater risk for mortality and numerous health and developmental problems during the first year of life and beyond, and poor birth outcomes can result in financial and emotional tolls on families. Healthy births, in turn, begin with and reflect the health, well-being, and resources of mothers and families, including having adequate access to supportive services and, from the prenatal period on, education to promote positive parenting, health behaviors, and home environments.

In an effort to improve birth outcomes and adverse health outcomes for mothers and infants — particularly for women enrolled in Medicaid and the Children's Health Insurance Programs (CHIP) — the Centers for Medicare and Medicaid Services (CMS) developed the Strong Start for Mothers and Newborns (Strong Start) initiative. The four-year initiative will examine whether nonmedical prenatal interventions, when provided in addition to routine medical care, can improve the health outcomes and health care use of pregnant women and newborns and can decrease the costs of medical care during pregnancy and delivery and over the first year of a child's life.

Home visiting for low-income, pregnant women — whereby individualized in-home services (including direct education, assessments, and referrals to community resources) are provided to families — has been identified by the Strong Start initiative as one promising method for reaching women who are vulnerable to poor health outcomes. To understand the effects of this service strategy, CMS has partnered with the Health Resources and Services Administration (HRSA) and the Administration for Children and Families (ACF) to implement the Mother and Infant Home Visiting Program Evaluation-Strong Start (MIHOPE-Strong Start). MIHOPE-Strong Start will evaluate the effectiveness of home visiting services at improving birth outcomes for women who are enrolled in Medicaid or CHIP, as well as the effectiveness of these services at improving infant and maternal health, health care use, and prenatal care. MIHOPE-Strong Start will examine local programs that use either of two national home visiting models that have shown previous evidence of improving birth outcomes: Healthy Families America (HFA) and Nurse-Family Partnership (NFP). The study is being conducted by MDRC in partnership with James Bell Associates, Johns Hopkins University, and Mathematica Policy Research.

The evaluation will issue four reports — one in each year of the study, culminating in a final report that will present program implementation and impact results for the full sample of

study enrollees. The current report introduces the MIHOPE-Strong Start design, including the components of program implementation that will be subjects of the study and the family outcomes for which impacts will be measured. The report also describes the approaches to service delivery of the two national models — HFA and NFP.

Design Elements of MIHOPE-Strong Start

The report provides a brief overview of the design of MIHOPE-Strong Start, including the study research questions, the conceptual framework of how home visiting programs may improve appropriate health care use and birth outcomes among at-risk families, and the data sources within the evaluation for measuring the framework elements. The study aims to enroll as many as 15,000 families from NFP and HFA sites around the country. Families will be randomly assigned either to a home visiting group (program group) that can receive home visiting services or to a non-home visiting group (control group) that can receive other services available in the community. MIHOPE-Strong Start will enroll pregnant Medicaid or CHIP recipients who are interested in and eligible for home visiting services, are at least 15 years old, and are at least eight weeks from their due date for delivery. The evaluation will adhere to all ethical standards for program evaluation and has undergone human subjects review by the MDRC Institutional Review Board. The study includes an impact analysis to address questions about the effectiveness of the programs and an implementation analysis to describe the programs and the services they provide. The study will also examine the intersection of impacts and implementation to better understand the features of home visiting programs that lead to larger effects. Finally, the design is intended to provide information that would allow actuaries at CMS to estimate the effects of the programs on Medicaid costs.

National Home Visiting Models

Key to understanding how local home visiting services improve outcomes related to prenatal, maternal, and infant health is to understand how local programs are implemented. Local program implementation, in turn, is guided by the direction of the national model developers (HFA and NFP) through the articulation of their service models, including their focus on particular outcomes and particular families, their targeting of other outcomes of importance, and their guidelines regarding the dosage and delivery of services. This report describes in detail how service models are defined at the national level. Sources of information in the current report about the national models include interviews with national model office representatives, information from the models' Web sites, and documents and materials.

Table ES.1 highlights key aspects of HFA's and NFP's service models and illustrates the ways in which the two national models both overlap and differ in their guidance and structure. For example, both models target multiple domains through home visiting services, and they encourage home visitors to use the same types of supportive strategies for working with families. At the same time, while NFP ranks all the MIHOPE-Strong Start outcomes as being its highest priority, HFA is more variable in its emphasis, rating outcomes associated with parenting and children to be the highest priority while other maternal and health outcomes are of moderately high priority. Key features of each respective national home visiting model are further summarized below.

Healthy Families America (HFA) Service Model

One distinctive feature of HFA's national home visiting model is that it provides a basic framework for the program, such as the primary program goals and principles for service delivery, while allowing considerable flexibility for local programs to decide on target population characteristics based on community need, specific curricula to be used, and the educational background of home visiting staff. Implementation of HFA is guided by HFA's 12 Critical Elements and a set of more than 100 accompanying standards that operationalize policy and practice expectations for each element. The Critical Elements, developed in the early 1990s, define HFA's service model and implementation system, focusing on timing of service initiation, service content, and administration. They were derived from literature on best practices and expert opinion about effective strategies for working with families and have been updated as new research becomes available. Drawing from these elements, HFA provides the following guidance on delivering home visiting services:

- **Intended recipients.** HFA intends to enroll families with a pregnant woman or a child up to 3 months of age, although MIHOPE-Strong Start will only enroll women up to eight weeks before their due date. Local programs have flexibility in selecting participant eligibility criteria that represent risk factors for child maltreatment or other negative childhood outcomes; these criteria are often driven by an agency's funder and must be proposed to HFA's national office in the affiliation implementation plan. The model's primary focus is the parent-child relationship, and it reports the child, mother, and biological father as the individuals for whom the model assumes responsibility for improving outcomes.

- **Intended goals and outcomes.** The mission of HFA is to promote child well-being and prevent the abuse and neglect of children through the provision of home visiting services. The goals of HFA are to (1) build and sustain community partners to systematically engage overburdened families in home

The Mother and Infant Home Visiting Program Evaluation-Strong Start (MIHOPE-Strong Start)

Table ES.1

Summary of Healthy Families America's and Nurse-Family Partnership's Home Visiting Service Models

HFA	NFP
Intended recipients (or target population)	
Families with risk factors for child maltreatment or other negative childhood outcomes. Families enroll prenatally or within the first 3 months after a child's birth.	First-time, low-income pregnant women. Families receive their first home visit no later than the end of week 28 of pregnancy.
Focus on MIHOPE-Strong Start outcomes	
Variable, but moderately high ratings on prenatal, health, and birth outcomes.	Uniformly high ratings on prenatal, health, and birth outcomes.
Duration and intensity of services	
Visits ranging from weekly to monthly through child's third birthday (though can extend to child's fifth birthday). Weekly visits during pregnancy.	Visits ranging from weekly to monthly through child's second birthday. Weekly or biweekly visits during pregnancy.
Content focus on MIHOPE-Strong Start outcomes	
Screenings and assessments required at intake, but sites select tools.	Screenings and assessments required on an ongoing basis; timing and instruments prescribed by national model.
Education and supportive strategies	
Topic focus on parent-child interaction, parenting skills, child development, child health and safety, and family functioning. Local programs determine how to address these content areas. Strategies include caregiver goal setting, caregiver problem solving, crisis intervention, working to strengthen a family's support network, and providing emotional support, pamphlets, or other materials.	Topic-apportioned time across 5 NFP model domains: personal health, environmental health, life course development, maternal role development, and family and friends. Strategies include caregiver goal setting, caregiver problem solving, crisis intervention, working to strengthen a family's support network, and the provision of emotional support, pamphlets, or other materials.
Intended staffing	
Recommends selecting home visiting staff based on a combination of personal characteristics (for example, nonjudgmental, compassionate, experience working with families, child development knowledge, and educational qualifications).	Home visitors must be registered professional nurses with a minimum of a baccalaureate degree in nursing. NFP programs must submit a formal variance to get approval to employ staff who do not meet the staff qualification standards.
Flexibility toward intended recipients, services, and implementation	
Implementing agencies follow a set of program principles, but operational decisions (such as targeted risk factors or populations, and the structure and content of home visits) are left up to the discretion of local agency.	Highly defined and structured approach and expects local programs to strive for fidelity to the service model as it has been defined at the national level.

visiting services prenatally or at birth; (2) cultivate and strengthen nurturing parent-child relationships; (3) promote healthy childhood growth and development; and (4) enhance family functioning by reducing risk and building protective factors. Among the outcome areas often targeted by home visiting programs, HFA rates outcomes associated with parenting and children to be of highest priority. For programs that enroll participants prenatally, outcomes associated with pregnancy are ranked moderately high. Other maternal outcomes — such as physical health, use of family planning, and tobacco use — are rated lower but are still of moderately high priority.

- **Intended service delivery: Dosage.** HFA states that services should be offered at least weekly during pregnancy and in the initial postpartum period. After the first six months, the frequency of visits is determined by family well-being, stability, and self-sufficiency. Visits continue through the child's third birthday (but can continue through the child's fifth birthday).

- **Intended services: Content.** While HFA outlines some parameters for the content of home visits, state intermediaries or local programs might more specifically and comprehensively define intended content. Home visit content for the purposes of this report includes assessments; parent education and support; and referral, coordination, and linkages. For example, prior to or soon after enrolling a client, local programs must complete a comprehensive assessment of that individual using a standardized tool to determine the presence of various factors associated with increased risk for child maltreatment or other adverse childhood experiences. HFA indicates that home visits should focus on topics such as parent-child interaction, parenting skills, child development, child health and safety, and family functioning. HFA provides home visitors with core training on how to address these content areas, including how staff will observe families in these areas. In addition, local programs determine the materials and curricula to share information with families on these topics. HFA requires the use of observation and relationship development skills taught in core training, in addition to an evidence-informed curriculum to address parent-child interactions — though local programs have the flexibility to select which curriculum they use. HFA expects home visitors to provide referrals to community health and human service resources and services based on each family's identified needs.

- **Intended service delivery techniques.** HFA trains home visitors in recommended service delivery techniques. HFA encourages a variety of supportive strategies for working with families, including caregiver goal setting, caregiv-

er problem solving, crisis intervention, working to strengthen a family's support network, and providing emotional support, pamphlets, or other materials.

- **Intended staffing.** HFA recommends selecting home visiting staff based on a combination of personal characteristics (for example, being nonjudgmental, compassionate, and able to establish a trusting relationship); willingness to work in, or experience working with, culturally diverse communities; experience working with families who have multiple needs; an ability to maintain boundaries between personal and professional life; knowledge of infant and child development; and educational qualifications. HFA home visitor caseloads are determined by the mix of families across levels; home visitors should have no more than 15 families on weekly service intensity and no more than 25 families at any service intensity.

Nurse-Family Partnership (NFP) Service Model

The required components of NFP's service model and implementation system are comprehensive and specific. Implementation of NFP is guided by the NFP Model Elements and a set of implementation objectives that further specifies expectations for some of those elements. The NFP Model Elements were derived from evidence of effectiveness based on research, expert opinion, field lessons, and theory. Although some elements were specified and implemented in the initial NFP trials, the current version was articulated and finalized in 2007. NFP's National Service Office (NSO) suggests that if local programs implement the elements with fidelity, the local programs can have a high level of confidence that they will achieve the same outcomes as achieved in previous studies of NFP. If a local program intends to adapt any of the Model Elements, they must first receive approval from the national office. Similar to HFA's requirements, prior to being approved to implement NFP, agencies must develop an implementation plan that specifies how the NFP Model Elements will be implemented.

- **Intended recipients.** A pregnant woman and her child are eligible for NFP if the woman is expecting her first child and meets low-income criteria at intake. In addition, women must enroll in the program and receive their first home visit no later than the end of the 28th week of pregnancy. This means that all NFP enrollees will meet the gestational-age eligibility criteria for MIHOPE-Strong Start. Local programs must apply for a variance if they intend to modify the target population from that specified by the NFP NSO. NFP assumes responsibility for improving outcomes for the child and the mother of the child.

- **Intended goals and outcomes.** The mission of NFP is to empower first-time mothers living in poverty to improve their lives and the lives of their children

through evidence-based nurse home visiting. The goals of NFP are to (1) improve pregnancy outcomes by helping women engage in good preventive health practices, including obtaining thorough prenatal care, improving their diets, and reducing their use of cigarettes, alcohol, and illegal substances; (2) improve child health and development by helping parents provide responsible and competent care; and (3) improve the economic self-sufficiency of the family by helping parents develop a vision for their own future, plan future pregnancies, continue their education, and find work. Among the outcome areas often targeted by home visiting programs, NFP rated all domains as the highest priority for intended outcomes, including improving prenatal health, birth outcomes, maternal mental health, physical health, use of family planning, tobacco use, and positive parenting.

- **Intended service delivery: Dosage.** NFP home visitors conduct visits to women during pregnancy and through the child's second birthday. More frequent visits occur immediately following enrollment (to facilitate relationship building between the family and the home visitor) and after birth (to provide increased support to the family during the transition into parenthood). Visits are expected to occur weekly upon enrollment and to fade gradually to monthly visits as the child ages. The visit schedule may be adjusted by the home visitor to meet client needs.

- **Intended services: Content.** Home visitors follow the NFP Visit Guidelines, which specify the structure of the home visits, the frequency and timing of the visits, and the content to be covered. NFP provides curricula and materials that define the intended content of home visits. The model requires initial and ongoing assessments of the family's physical, emotional, social, and environmental strengths. Use of several standardized assessment tools, as well as data collection forms developed by NFP, is required at regular intervals. Local programs can supplement data collection processes by introducing additional tools. NFP home visitors conduct visits in accordance with the NFP Model Elements, apportioning time across five NFP model domains: personal health (for example, mental health functioning), environmental health (for example, neighborhood), life course development (for example, education), maternal role development (for example, mothering role), and family and friends (for example, assistance with child care). NFP requires home visitors to provide referrals to community health and human service resources and services based on each family's identified needs and goals.

- **Intended service delivery techniques.** NFP encourages a variety of supportive strategies for working with families, including caregiver goal setting, caregiver problem solving, crisis intervention, working to strengthen a family's support network, and the provision of emotional support, pamphlets, or other materials. Home visitors also apply reflective practice and motivational interviewing with women and their families to elicit positive changes in attitudes and behaviors.

- **Intended staffing.** NFP home visitors are professional registered nurses with a minimum of a baccalaureate degree in nursing, with preference for strong written and verbal communication skills, home visiting experience, and two years of recent experience in maternal and child health, public health, or mental/behavioral nursing. NFP programs must submit a formal variance to get approval from the NFP NSO to employ staff who do not meet the qualification standards. A full-time home visitor carries a caseload of no more than 25 active clients.

Conclusion

Differences in the HFA and NFP national models imply that there are likely to be somewhat different patterns of implementation in the local programs operating each model. Independent of national service models, however, there are likely to be important variations in how services are structured and delivered at the local level, whether through discretion that is provided to local sites, through deliberate adaptations by local sites, or through drift from the defined service model. These variations in service delivery, combined with estimates of the impacts of each local home visiting program on its enrolled families, will provide an opportunity to advance the understanding of how to design and implement effective home visiting programs.

Future reports on MIHOPE-Strong Start will examine the process by which local programs put evidence-based models into action, the range of home visiting services that are provided around the country as a result, and the service delivery strategies that are associated with the greatest improvements in birth outcomes, infant and maternal health, and infant and maternal health care use for families served by home visiting programs.

Chapter 1

Introduction

Despite major advancements in the past century, rates of adverse birth outcomes for mothers and infants in the United States remain high. In 2010, about 12 percent of infants born in the United States were born prematurely (before 37 weeks of gestation), and roughly 8 percent were classified as low birth weight (less than 2,500 grams).[1] These rates rank the United States relatively poorly in birth outcomes compared with other wealthy nations; in 2010, for example, it ranked 54th in preterm births out of over 180 countries, whose rates of preterm births ranged from 4.1 to 18.1.[2]

Adverse birth outcomes can result in significant emotional and economic costs for families and communities. Preterm and low-birth-weight infants are at a greater risk for mortality and a variety of health and developmental problems during the first year of life and beyond.[3] For example, research has shown that preterm and low-birth-weight infants are at increased risk of organ and system[4] complications — such as respiratory distress, jaundice, anemia, and infection — that are associated with poor neurocognitive outcomes.[5] Preterm and very low-birth-weight infants have more hospital readmissions in the weeks following discharge than normal-birth-weight children,[6] often because of respiratory illnesses and lower-respiratory-tract infections.[7] As a result, medical costs for low-birth-weight and premature infants can be substantially higher than for full-term and normal-weight infants.[8]

Low-birth-weight and premature births also pose an emotional burden on infants' caregivers. Following childbirth, mothers of preterm and low-birth-weight infants demonstrate greater levels of psychological distress than mothers of full-term infants, and research has documented greater symptoms of depression and anxiety among mothers of very low-birth-weight infants (less than 1,500 grams) during the neonatal period.[9] Daily caregiving tasks are

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[1]Martin et al. (2012).

[2]March of Dimes, PMNCH, Save the Children, and WHO (2012).

[3]Institute of Medicine (U.S.) Committee on Understanding Premature Birth and Assuring Healthy Outcomes (2007).

[4]Organs and systems may include pulmonary, gastrointestinal or nutritional, immunologic, central nervous system, cardiovascular, ophthalmologic, hematologic, renal, or endocrine.

[5]Centers for Disease Control and Prevention (2009); Institute of Medicine (U.S.) Committee on Understanding Premature Birth and Assuring Healthy Outcomes (2007).

[6]Lamarche-Vadel et al. (2004); Yüksel and Greenough (1994).

[7]Cunningham, McMillan, and Gross (1991); Doyle, Ford, and Davis (2003); Lamarche-Vadel et al. (2004).

[8]March of Dimes (2003).

[9]Singer et al. (1999).

also rendered more difficult for parents of infants with neonatal medical complications, which can exacerbate strains on maternal mental health, financial stress, and overall family stress.[10]

For these reasons, among others, improving birth outcomes has been a longstanding public health goal of the nation.[11] Improving healthy births begins with addressing the health, well-being, and resources of mothers and expectant families.[12] Inadequate access to prenatal health care and maternal health risk profiles — including young age, presence of chronic illness, history of poor birth outcomes, smoking, excessive drinking, psychosocial difficulties, and high levels of stress — are well-documented correlates of poor birth outcomes.[13] These maternal risk factors are often patterned by social and human capital (including minority status, lack of social support, and low educational attainment), economic dynamics (for example, low-income status and lack of wealth), and community-level contexts, such as living in high-crime, high-poverty, residentially segregated, or resource-poor neighborhoods.[14] Thus, the fundamental, underlying risks for poor birth outcomes and infant health are multifaceted. Identifying mothers who are most likely to experience poor birth and infant health outcomes and providing them with access to a wide range of services and interventions may mitigate and address some of these risk factors. Notwithstanding the importance of routine medical care, nonmedical interventions may be important avenues for impacting pregnancy and birth outcomes, as there is growing evidence that interventions that address the social determinants of health can lead to improved health outcomes and reductions in health disparities.[15]

In an effort to improve birth outcomes — including prematurity, low birth weight, and adverse health outcomes for mothers and infants, particularly for women enrolled in Medicaid and Children's Health Insurance Programs (CHIP) — the Centers for Medicare and Medicaid Services (CMS) developed the Strong Start for Mothers and Newborns (Strong Start) initiative.[16] Strong Start is testing and evaluating enhanced prenatal care interventions for women who are at risk of having a preterm birth or other poor birth outcomes. The four-year initiative focuses specifically on the impact of nonmedical prenatal interventions that, when provided in addition to routine obstetrical medical care, have the potential to improve birth outcomes for low-income women. The goal of Strong Start is to determine whether these approaches can reduce the rate of preterm births and low birth weight, improve the health outcomes and health

[10]Singer et al. (1999).

[11]U.S. Department of Health and Human Services (2013).

[12]Lu and Halfon (2003).

[13]Cooper, Petherick, and Wright (2013); Fraser, Brockert, and Ward (1995); Kogan, Alexander, Kotelchuck, and Nagey (1994); Lu and Halfon (2003); Nkansah-Amankra et al. (2010); Pollack, Lantz, and Frohna (2000); Rosenberg, Garbers, Lipkind, and Chiasson (2005).

[14]Kim and Saada (2013); Kramer, Séguin, Lydon, and Goulet (2000); Lu and Halfon (2003).

[15]Williams, Costa, Odunlami, and Mohammed (2008, Supplement).

[16]Centers for Medicare and Medicaid Services (2013).

care use of pregnant women and newborns, and decrease the anticipated total cost of medical care during pregnancy, delivery, and over the first year of a child's life.

Home visiting for low-income, pregnant women — whereby individualized in-home services (including direct education, assessments, and referrals to community resources) are provided to families — has been identified by the Strong Start initiative as one promising method for reaching women who are vulnerable to poor birth outcomes.[17] To understand the effects of this service strategy, CMS has partnered with the Health Resources and Services Administration (HRSA) and the Administration for Children and Families (ACF) — the two agencies that are implementing the Maternal, Infant, and Early Childhood Home Visiting (MIECHV) program authorized by the Patient Protection and Affordable Care Act (ACA) of 2010 — to implement the Mother and Infant Home Visiting Program Evaluation-Strong Start (MIHOPE-Strong Start). MIHOPE-Strong Start will evaluate the effectiveness of home visiting services at improving birth outcomes for women who are enrolled in Medicaid or CHIP,[18] as well as the effectiveness of these services at improving infant and maternal health, health care use, and prenatal care. MIHOPE-Strong Start will examine local programs that use either of two home visiting service models that have shown previous evidence of improving birth outcomes: Healthy Families America (HFA) and Nurse-Family Partnership (NFP). HFA and NFP provide disadvantaged expectant mothers with individualized in-home services, including assessment of prenatal and postnatal risks to child well-being; referrals to needed health care or social services; and direct education of parents by home visitors on such topics as healthy prenatal behaviors, parenting, and child development. As reported in April 2013, NFP is serving 25,944 families, with 1,588 home visitors, in 43 states and the U.S. Virgin Islands.[19] HFA is an even larger program; as of 2013, HFA programs served 75,000 families, with nearly 3,000 home visitors across 40 states, several U.S. territories, and Canada.[20]

In addition to estimating the impacts of home visiting services, MIHOPE-Strong Start will investigate the characteristics of home visitors and the families served and the features of HFA's and NFP's national home visiting models and local HFA and NFP sites that are associated with improved birth outcomes and reduced health care costs. The evaluation will also provide information needed by CMS to estimate any cost savings from home visiting for maternal Medicaid or CHIP recipients throughout their pregnancy and up to a year postpartum, as well as for infants up to the first year of life. CMS may use the results of the evaluation to inform Medicaid regulations related to home visiting services. MIHOPE-Strong Start is being

[17]The other strategies being employed in the Strong Start initiative — including a public-private partnership and awareness campaign to reduce the rate of early elective deliveries prior to 39 weeks and other prenatal care strategies aimed at reducing preterm birth — are not part of MIHOPE-Strong Start.

[18]The extent to which CHIP recipients are included will depend on availability of CHIP data in that state.

[19]Nurse-Family Partnership (2013).

[20]Healthy Families America, "About Us: Overview."

conducted by MDRC, James Bell Associates, Johns Hopkins University, and Mathematica Policy Research.

MIHOPE-Strong Start began in late 2012, and selection of sites for the study was under way as of spring 2013. The evaluation is using a random assignment design, which involves a lottery-like process that randomly places study participants into either a program group (which, in this case, will receive the home visiting services) or a control group (which will have access to the usual services that are available in the community but not to the particular home visiting services being studied). Random assignment ensures that the program and control groups are expected to be similar when they enter the study, so that any systematic differences in outcomes — or *impacts* — that are observed between the two groups are more likely to be attributed to the home visiting services than to some other characteristic or program. The evaluation will issue four annual reports, culminating in a final report that will present program implementation and impact results for the full sample of study enrollees. The current report is the first annual report and provides an introduction to the MIHOPE-Strong Start design, including the components of program implementation that will be studied and the family outcomes for which impacts will be measured.[21] The report also describes the approaches to service delivery of the two national models — HFA and NFP — whose local programs will be participating in the evaluation.

There are several foundations on which MIHOPE-Strong Start is built, reflecting the broader collaboration across agencies and institutions toward employing evidence-based practice and assessing program effectiveness to improve maternal, birth, and infant health outcomes. As mentioned, one important foundation for MIHOPE-Strong Start is the federal Strong Start for Mothers and Newborns funding opportunity. Another is the Maternal, Infant, and Early Childhood Home Visiting (MIECHV) program, which is a federal funding source for some of the local programs in this study. There is also an ongoing evaluation of the MIECHV program — the Mother and Infant Home Visiting Program Evaluation (MIHOPE) — which is a companion study to MIHOPE-Strong Start. Finally, MIHOPE-Strong Start builds on existing evidence and prior research on home visiting programs' effectiveness at improving the outcomes of interest.

[21]For more information on the MIHOPE-Strong Start design, see Michalopoulos et al. (Forthcoming, 2014).

Maternal, Infant, and Early Childhood Home Visiting (MIECHV) Program and the Mother and Infant Home Visiting Program Evaluation (MIHOPE)

Current home visiting programs in the United States grew from three primary approaches that first became prominent in the 1960s: visits by public health nurses to promote infant and child health in disadvantaged families, Head Start home visiting to promote school readiness in hard-to-reach families,[22] and home-based family support to promote positive parenting and prevent child abuse in families who are at high risk of abuse and neglect. All these approaches sought to foster early childhood health and development by working together with families in the home to support and improve socialization, health, and education practices.[23]

Today, home visiting is seen as a particularly important strategy for reaching families who may be difficult to engage in other services. A study by the Pew Center on the States found that, in Fiscal Year 2009-2010, states spent more than $500 million to fund home visiting programs, and additional programs were funded by local governments and private foundations.[24] Moreover, through a provision in the ACA, federal funding of evidence-based home visiting programs is currently expanding: the ACA included $1.5 billion in funding for home visiting programs over five years.[25] The MIECHV program is designed to strengthen home visiting services in disadvantaged, underserved communities or areas with poor health outcomes by facilitating collaboration and partnership at the federal, state, and local levels to improve health and development outcomes for at-risk children, mothers, families, and communities. The legislation authorizing MIECHV requires that at least 75 percent of grant funds be spent on programs to implement "evidence-based" home visiting models. To determine which national models are evidence-based, HHS funded the Home Visiting Evidence of Effectiveness (HomVEE) review, conducted by Mathematica Policy Research. This review has thus far identified 14 models that meet the HHS criteria for effectiveness.[26]

The ACA also required an evaluation of the MIECHV program. That evaluation, called the Mother and Infant Home Visiting Program Evaluation (MIHOPE), is studying home visiting programs that use one of four evidence-based models identified in the HomVEE review that serve pregnant women and families with children younger than 6 months old. The four models included in MIHOPE are the Early Head Start-Home Visiting Option (EHS), Healthy Families America (HFA), the Nurse-Family Partnership (NFP), and Parents as Teachers

[22]Head Start is a federal program providing preschool and other services to children from low-income families.

[23]Weiss (1993).

[24]Pew Center on the States (2010).

[25]The Patient Protection and Affordable Care Act (ACA) of 2010.

[26]Avellar and Paulsell (2011).

(PAT).[27] These models were chosen for the evaluation because they were selected by at least 10 states in their MIECHV plans.

Effects of Home Visiting Programs on Birth Outcomes and on Infant and Maternal Health Outcomes: Findings from and Gaps in Prior Research

As noted above, poor birth outcomes are associated with a variety of social, psychological, behavioral, environmental, and biological factors, such as inadequate prenatal care, smoking and use of alcohol or illicit drugs, unhealthy maternal weight gain during pregnancy, maternal depression and stress, and intimate partner violence, in addition to community-level and structural factors.[28] The home visiting programs evaluated as part of MIHOPE-Strong Start have the potential to positively influence many of these behavioral and psychosocial risk factors and, thereby, to reduce adverse birth and health outcomes among Medicaid and CHIP beneficiaries. Through connecting families to a variety of local-level services and providers, home visiting programs also may improve families' abilities to navigate structural barriers and tap into appropriate community resources.

According to the HomVEE review, both HFA and NFP have produced some positive effects on birth outcomes for some subgroups of women in at least one rigorous, high-quality study. As of August 2013, HomVEE identified one HFA published paper that used rigorous evaluation research and examined impacts on birth outcomes. This trial, of Healthy Families New York (HFNY), reduced the likelihood of giving birth to a low-birth-weight child for mothers enrolled in HFNY at or before a gestational age of 30 weeks.[29] One high-quality NFP trial in Elmira found statistically significant impacts on preterm births for some subgroups of mothers, including adolescent mothers and smokers,[30] although no NFP study that was identified in HomVEE found statistically significant effects on birth outcomes for the full study sample. In addition, the HomVEE review identified several studies that show positive impacts of HFA and NFP on maternal and child health outcomes during pregnancy and through the child's fourth year. In one study, HFA demonstrated favorable effects on maternal use of health-related resources at 6-month and 12-month follow-ups, as well as reductions of maternal alcohol use at 12-month follow-up.[31] NFP has shown favorable effects on the number of

[27]Michalopoulos et al. (2013).

[28]Institute of Medicine (U.S.) Committee on Understanding Premature Birth and Assuring Healthy Outcomes (2007); Misra, Guyer, and Allston (2003); Maternal and Child Health Bureau (2006); Misra, Guyer, and Allston (2003).

[29]Lee et al. (2009).

[30]Olds, Henderson, Chamberlin, and Tatelbaum (1986).

[31]LeCroy and Krysik (2011).

emergency room visits in the child's first and second years of life. Studies of NFP have also shown favorable effects on maternal kidney infection from prenatal enrollment to delivery, number of yeast infections during pregnancy, and pregnancy-induced hypertension.

However, because so few randomized trials of home visiting have been conducted on a large scale and scope (among many people, across many locations, and across models), many gaps in knowledge remain about how home visiting — particularly when widely implemented across diverse communities in the current funding and implementation environment — affects preterm births and other birth outcomes. These gaps are discussed below.

Evidence of Effectiveness on Birth Outcomes

As noted above, only a handful of the most rigorous studies have examined impacts of home visiting programs on birth outcomes. MIHOPE-Strong Start thus presents an opportunity to conduct a rigorous evaluation with a sizable number of families, which will improve the ability to detect modest effects across sites and across the two models. Given the high cost of poor birth outcomes to families and the health care system, even small impacts could bring important benefits.

Evidence of Effectiveness in Subgroups

As mentioned above, the prior evidence suggests that NFP was most effective at reducing preterm birth for smokers and young teen mothers. However, the HomVEE review found that many studies of home visiting programs used too few families to allow a precise analysis of subgroup effects. Examining effects for different families is an important goal of MIHOPE-Strong Start because some subpopulations of mothers — including African-Americans, smokers, and teenagers — are at significantly higher risk than others for poor outcomes in this domain.[32] Having enough families for subgroup comparisons is particularly important in examining birth outcomes, since overall effects are likely to be small, given the low rates of adverse birth outcomes. Given these limitations of prior studies, the field will benefit from research that helps identify and clarify what works for different types of families.

Effects on Health Care Use

Home visiting programs could theoretically affect three types of health care use that are relevant to the Strong Start initiative's goal of improved maternal and infant health outcomes: (1) maternal and infant preventive and follow-up care (including maternal prenatal care, well-child visits, immunizations, and postpartum care for mothers who may experience complications during pregnancy and at birth); (2) perinatal care (that is, care of the mother and baby

[32]Lu and Halfon (2003); Pollack, Lantz, and Frohna (2000); Fraser, Brockert, and Ward (1995).

before, during, and up to seven days after delivery); and (3) treatment of health conditions in infancy, especially those related to low birth weight and prematurity. In 2007, only 71 percent of pregnant women in the United States received prenatal care in the first trimester.[33] Several meta-analyses and literature reviews have concluded that, in general, home visiting programs do not typically lead to an increase in the use of preventive health services, for mothers or for infants.[34] For example, there were no effects on the total number of prenatal care visits in a Memphis NFP trial.[35] However, with a very large sample of families, the evaluation should be able to identify effects on the use of preventive care that may be relatively small or specific to particular subgroups.

Even if preventive care does not increase, home visiting programs could affect perinatal or infant health by reducing the prevalence of chronic or acute conditions. This could occur through improved birth outcomes, reduced infant injuries, or improved health-related practices by parents of infants. Although these studies did not examine mechanisms of change, NFP's studies in Elmira and Memphis showed reductions in child injuries and hospital visits and reduced health encounters for injuries and ingestions during the child's first two years, particularly for parents with low psychological resources.[36] However, none of the moderate- and high-quality HFA studies reviewed by HomVEE that examined emergency room visits, sick child visits, injuries, or hospitalizations found statistically significant improvements in these outcomes in the three years following random assignment. The field will benefit from research that systematically examines home visiting's impact on infant health care use across a range of outcomes and subgroups.

Evidence on Home Visiting Program Implementation and Its Links to Impacts

Prior studies of human service programs have found that program effects are associated with a number of factors, such as clarity of program goals, having systems to monitor implementation progress, and the extent to which services target specific outcomes.[37] For example, one recent study found that NFP sites in Pennsylvania did not reduce the likelihood of repeat pregnancy within two years of the first birth until the program had been operating for at least three years.[38] Another study found associations between the clarity of a program's focus on a

[33]U.S. Department of Health and Human Services (2013).
[34]Gomby (2005).
[35]Kitzman et al. (1997).
[36]Haskins and Barnett (2010).
[37]Fixsen et al. (2005).
[38]Rubin et al. (2011).

particular outcome, the likelihood that the home visitor delivers services related to that outcome, and the program's impacts on that outcome.[39]

Of particular interest is to understand what "dosage" of home visiting would optimize program impacts and cost-effectiveness and, relatedly, whether program impacts vary depending on when in pregnancy the mother enrolls. Surprisingly, published evaluations of home visiting programs have rarely presented information on dosage or its associations with program impacts. However, a brief from Child Trends and coauthored by researchers from MDRC and Mathematica Policy Research includes some information on dosage in three NFP trials. Specifically, in three randomized controlled trials conducted on NFP, only approximately 45 percent to 62 percent of the intended visits were received by families, and yet the program had impacts on targeted outcomes.[40] That families in these three trials completed, on average, approximately 28 to 30 visits during the period from pregnancy to 24 months postpartum and that the programs improved outcomes of interest suggest that impacts were detectable at this level of dosage. However, there is still much to learn. For these reasons, MIHOPE-Strong Start is collecting detailed information on program implementation at the local level. The study can thus help inform the question of how program implementation features are related to impacts by systematically examining how dosage and other program characteristics are associated with service delivery, impacts on mothers' health and health care outcomes, and children's birth and health outcomes, among women who enroll prenatally in NFP and HFA.

It is clear from this brief review that MIHOPE-Strong Start represents an important opportunity to learn more about the extent to which, and under what conditions, home visiting can affect birth outcomes, infant health, and health care use. By measuring effects of HFA and NFP programs as well as studying the variation in effects for different subgroups, different program dosages, and other implementation factors, MIHOPE-Strong Start will provide information needed by states, communities, model developers, and program operators to build future programs that can best improve preterm births and other birth and health outcomes.

This first annual report from MIHOPE-Strong Start aims to begin to provide this important information. Chapter 2 presents an overview of the MIHOPE-Strong Start design, including the major research questions, the conceptual framework guiding the evaluation, and the measures being collected. Chapters 3 and 4 introduce the HFA and NFP national models, and Chapter 5 concludes the report with a discussion of the findings.

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[39]Duggan, DeCelle, Burrell, and Hernandez (2012).

[40]In the Denver trial, 28 of the 62 visits intended were completed (45 percent); 30 of the 63 intended visits (48 percent) were completed in the Memphis trial; and 31 of the 50 intended were completed in the Elmira trial. The difference in the number of visits intended by the model developers across the three trials came from modifications over time to the intended visit frequency (Olds's personal communication; cited in Wasik, Mattera, Lloyd, and Boller, 2013).

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Chapter 2

The MIHOPE-Strong Start Design

Chapter 2 presents a brief overview of the design of the Mother and Infant Home Visiting Program Evaluation-Strong Start (MIHOPE-Strong Start).[1] Specifically, this chapter summarizes key components of the evaluation, the study research questions, the conceptual framework of how home visiting programs may improve appropriate health care use and birth outcomes among targeted families, and the data sources within the evaluation for measuring the framework elements.

Overview of the Evaluation's Design

To provide unbiased estimates of the effects of home visiting programs, families who are eligible for the study will be randomly assigned either to a home visiting group (program group) that can receive home visiting services or to a non-home visiting group (control group) that can use other services available in the community. To reach a total sample of 15,000, some of the families will come from local HFA and NFP programs that are participating in MIHOPE, and some will come from other local HFA and NFP programs, including some that use federal Maternal, Infant, and Early Childhood Home Visiting (MIECHV) program funds and some that do not. The study will prioritize local home visiting programs that have been operating for at least two years so that impacts will not be measured in programs that are coping with early start-up challenges.[2] The next annual report will describe the final distribution of states and sites in the study.

MIHOPE-Strong Start will enroll pregnant Medicaid or Children's Health Insurance Program (CHIP) recipients who are interested in and eligible for home visiting services, are at least 15 years old, and are at least eight weeks from their due date for delivery. Women can enroll from the time they find out that they are pregnant until 32 weeks gestation.[3] With respect to these enrollees, the impact evaluation will address the following broad research questions:

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[1] A more detailed description of the design is provided in Michalopoulos et al. (Forthcoming, 2014).

[2] Although a recent study of NFP programs in Pennsylvania found reductions in repeat pregnancies only for programs that had been in operation for three or more years (Rubin et al., 2011), this result has not been replicated in other studies and, therefore, was not used in setting the criteria for including sites in MIHOPE-Strong Start.

[3] Per the national model's guidelines, women must enroll in NFP before the end of the 28th week of pregnancy. Women can enroll in HFA prenatally or postnatally; however, all women participating in the evaluation must enroll in home visiting before the 32nd week of pregnancy.

- What is the impact of home visiting programs that use one of these two evidence-based models on birth outcomes, maternal and infant health, and health care use up to the first year postpartum? How do impacts vary for key subgroups, such as smokers and young mothers?
- What is the impact of programs using each evidence-based model on the outcomes of MIHOPE Strong Start?

The design is also intended to provide information that would allow actuaries at the Centers for Medicare and Medicaid Services (CMS) to estimate the effects of the programs on Medicaid costs.

Guided by the study's conceptual framework (discussed below), the implementation study for MIHOPE-Strong Start will document the key features of HFA's and NFP's service models and implementation systems (at the national and local levels) that are expected to affect birth and health outcomes. The implementation research will answer these specific questions:

- How is each evidence-based service model — HFA and NFP — defined?
- How do local home visiting programs specify or adapt their service models relative to the national models with which they are affiliated?
- To what extent are local service models and implementation systems focused on preterm birth and related outcomes?
- What dosage of services do families actually receive in local programs and how much does it differ from the intended dosage?
- What kinds of referrals are provided to community services that could affect birth outcomes and the child's and mother's health?
- How do programs' inputs (such as the two evidence-based models, the extent of focus on birth outcomes, family characteristics, staff attributes, and community characteristics) relate to achieved outputs (in particular, the dosage of services received and referrals provided)?

Finally, the study will examine the intersection of impacts and implementation, for example how dosage relates to outcomes, to answer the research question:

- How do home visiting programs using these two evidence-based models achieve their results?

Components of MIHOPE-Strong Start: Data Sources

The primary sources of data for MIHOPE-Strong Start include interviews with model developers, reviews of national model documents, management information systems, structured Web-based surveys of program staff, structured surveys of families at baseline, 2010 Census data, Medicaid data, birth certificates, and infant death records. Table 2.1 lists the data sources for each component of the conceptual framework (described in detail in the following sections), from inputs to outcomes.

The Mother and Infant Home Visiting Program Evaluation-Strong Start (MIHOPE-Strong Start)

Table 2.1

Constructs and Data Collection Instruments for MIHOPE-Strong Start

Construct	Data Collection Instrument
Community resources	
Neighborhood characteristics	2010 Census data
Service availability	Web-based surveys of local managers
Service coordination	Web-based surveys of local managers
Inputs	
Service model	Interviews with national model office; national model documents; Web-based surveys of local managers
Implementation system	Interviews with national model office; national model documents; Web-based surveys of local managers
Organizational influences	Web-based surveys of local managers
Family attributes	Baseline family interview
Staff attributes	Web-based surveys of home visitors
Outputs	
Dosage	HFA and NFP management information systems
Referrals	HFA and NFP management information systems
Outcomes	
Birth outcomes	Birth certificates
Maternal prenatal health and health care use	Medicaid and SCHIP records; birth certificates
Infant health and health care use	Medicaid and SCHIP records; birth certificates; infant death records

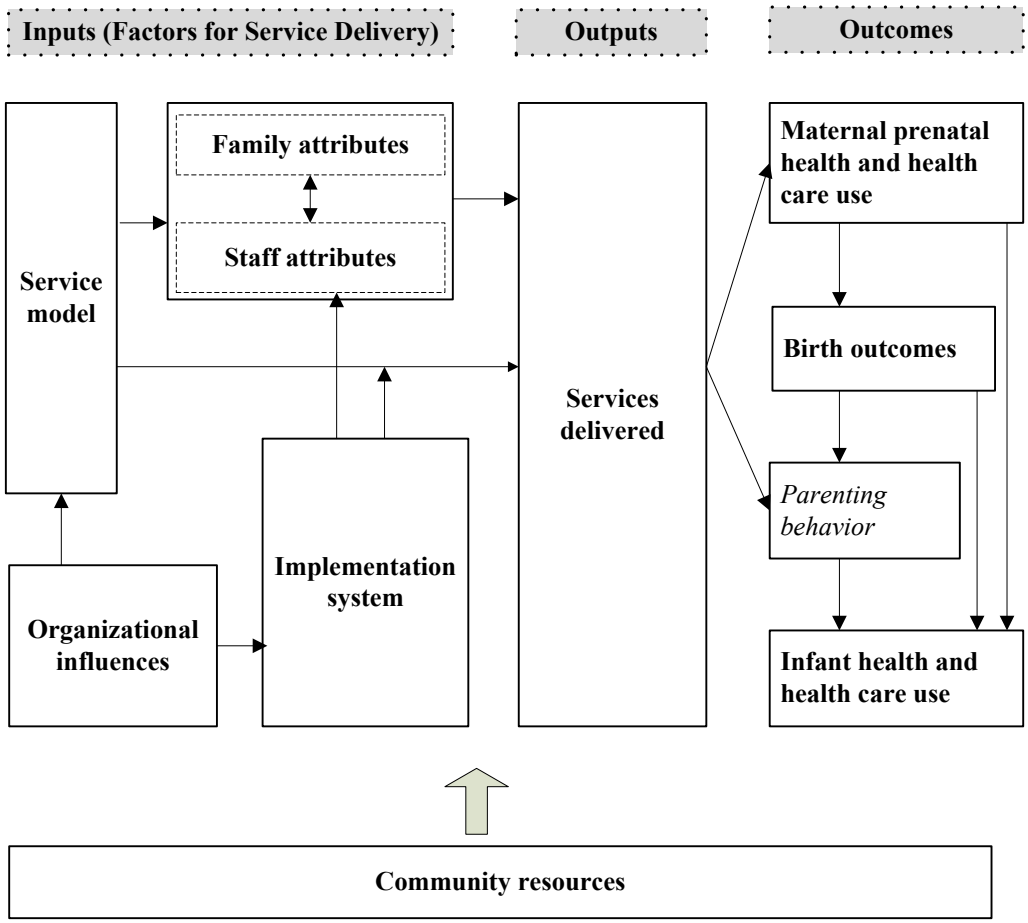
Components of MIHOPE-Strong Start: Conceptual Framework

The MIHOPE-Strong Start conceptual framework (Figure 2.1) has three broad components: (1) inputs (the factors influencing service delivery, including the service model and the implementation system); (2) outputs (the services delivered); and (3) outcomes for families. It also shows

The Mother and Infant Home Visiting Program Evaluation-Strong Start (MIHOPE-Strong Start)

Figure 2.1

Conceptual Framework for Home Visiting Programs



NOTE: Parenting behavior is italicized in the Outcomes column because, although they are not formal Strong Start outcomes, parenting behaviors regarding infant health and development are primary targets of home visiting programs and are key mediators of infant health and health care use.

the three major outcomes specific to the study's focus: maternal prenatal health and health care use, preterm births and other birth outcomes, and infant health and health care use.

Note that although MIHOPE-Strong Start includes measurement of all aspects of the conceptual framework (as described below), Chapters 3 and 4 of this report provide an initial

overview of the HFA and NFP service models only. Future reports will discuss additional aspects of the conceptual framework as data are collected, including the local sites' service models (to the extent that they differ from those of the two national models), staff attributes, family attributes, the implementation system, and services delivered.

Community Resources

At the bottom of Figure 2.1, community resources provide a foundation from which programs operate. In particular, community resources determine the outside referral services available to home visiting programs and the opportunities available to families in both the program and the control group. Examples include prenatal care for low-income families, substance abuse treatment, and other resources needed to produce healthy birth outcomes. The conceptualization of community resources in MIHOPE-Strong Start includes neighborhood characteristics, service availability, and coordination of services within a community.

In MIHOPE-Strong Start, neighborhood characteristics are being measured using 2010 Census data and will include such measures as income and poverty, household characteristics, and housing, for the census tracts in which sample members reside. The availability of relevant community services will be measured by surveying local home visiting program staff about their experiences with such services, focusing on services that are particularly relevant to birth and health outcomes. These include prenatal and adult health care, mental health care, substance abuse treatment, services to address family violence, and pediatric primary care. Surveys of local home visiting program staff will also provide information on the coordination of these services with the home visiting program.

The measurement of community resources is key for understanding the difference in services actually received by program and control group members, or the "treatment differential." It is this differential that may influence program impacts, since the more that control group members receive services similar to those provided by HFA and NFP, the smaller the treatment differential and the harder it is to detect impacts of the program (because the two groups are not different enough from each other).

Measuring and accounting for neighborhood characteristics, including neighborhood poverty and housing, is also important, as prior research has found that children who reside in disadvantaged communities are more likely to experience poor outcomes, over and above the influence of families' individual characteristics.[4] In addition, neighborhood characteristics may interact with community resources in important ways for understanding families' abilities to access providers. For example, high-poverty communities in urban areas may have a high

[4]Leventhal and Brooks-Gunn (2000).

concentration of community resources, but they may also have a higher share of families who are in need of such services, rendering access more constrained than in mixed-income, high-service-availability areas. Thus, although community resources are likely to be important, it is difficult to predict a priori whether residing in a highly disadvantaged community will lead to larger or smaller impacts on birth outcomes.

Service Model

The service model (under "Inputs" in Figure 2.1) includes such information as the intended recipients; goals and outcomes; intended frequency, duration, and content of home visits; and intended linkages with other services. In MIHOPE-Strong Start, the service model will be defined at two levels: (1) by the policies, procedures, and requirements of the national evidence-based model and (2) by refinements or adaptations made to the national model by the agency that is operating a local HFA or NFP program. For the purposes of this report, an overview of each national service model is provided in Chapters 3 and 4, including information gleaned from model developer interviews and surveys regarding the models' prioritization of various outcomes (including birth outcomes) that are common in evidence-based home visiting programs;[5] the expected frequency, duration, and content of home visits; and intended linkages with other services. Future reports will detail the local programs' definitions of their individual service models, using program managers' responses from Web-based surveys.

MIHOPE-Strong Start will document the extent to which national models and local programs have defined policies or protocols for helping parents in obtaining three types of services: (1) prenatal care, (2) other services needed to reduce the risk of poor birth outcomes (for example, mental health and substance abuse services, intimate partner violence counseling), and (3) infant health care. The clarity, coherence, and complexity of the service model with respect to each of these outcome domains may be important factors in programs' effectiveness.[6] For example, a local program that identifies improving birth outcomes and relevant mediating outcomes as important programmatic goals, enrolls at-risk pregnant mothers, specifies evidence-based actions that staff should take to address risk factors for poor birth outcomes and to reinforce behaviors associated with good birth outcomes, and defines and supports staff competencies that home visitors must possess to carry out these actions successfully is more likely to be effective at improving birth outcomes. However, a program with multiple intended outcomes, recipients, services, and staffing has a more complex and diffuse service model that may lead to reduced fidelity and impacts.

[5]Michalopoulos et al. (Forthcoming, 2014).
[6]Fixsen et al. (2005).

Therefore, it is important to clearly understand how HFA and NFP define their service models. This includes how much discretion they leave to the local programs in defining the local service model. One approach to scaling up models is to define the expected services with a high degree of specificity and then ask local programs to largely adhere to the original model. Another is to provide goals and operating principles but expect states, regional intermediaries, or local programs to fill in the operational details to fit local circumstances. Under either approach, one would expect to see some variation in the service model as defined by local programs, since even local programs that are using a model with a highly prescribed approach may still deliberately adapt models to fit their local contexts. Moreover, states, intermediaries, or local programs that are given more discretion may have different capacities or inclination to "fill in" the specifics, so that the staff of some local programs are operating with more discretion than others. To the extent that the services that families receive diverge from the recommendations of the national model, it is important to understand whether this occurred because the local program managers purposely defined their program somewhat differently than the national model or because the services were not delivered as the local managers intended. MIHOPE-Strong Start aims to capture these important service model distinctions through interviews with the national model and surveys of local managers and home visitors.

Implementation System

The implementation system includes the resources for carrying out the service model. It incorporates policies and procedures for staff recruitment, training, supervision, and evaluation; assessment tools, protocols, and curricula to guide service delivery; administrative supports, such as management information systems to promote staff adherence to the model; available consultation to address issues beyond the home visitor's skills and expertise; and the program's relationships with other organizations to facilitate referral and service coordination. In fields outside of home visiting, there is evidence that as the adequacy of the implementation system increases, so does fidelity to the intended program model.[7]

The quality and nature of training, supervision, and technical assistance for human service professions have been linked to larger program impacts; this could occur either because well-trained home visitors will deliver services that have greater fidelity to the national or local service model or because more highly skilled and supported service providers are likely to deliver higher-quality services, even in areas that may not be well specified in the service model.[8] MIHOPE-Strong Start includes assessment of training, supervision, and technical assistance at all levels of implementation — the national model (through interviews and

[7]Carroll et al. (2007).
[8]Durlak and DuPre (2008); Fixsen et al. (2005).

document review), state (through interviews), and local site (through staff surveys) — defined generally as well as specifically in terms of birth outcomes, infant health, and health care use.

Organizational Influences

Prior research has found that several organization-level dimensions influence programs' effectiveness (Figure 2.1). Basic organizational characteristics, such as the type and size of an agency, can influence how evidence-based programs are implemented. Using the program manager surveys, the evaluation is collecting information on such organizational influences as the type of implementing agency in which the home visiting program is housed (for example, community-based nonprofit organization or local health department) and the program's funding sources.

Although the local implementing agency is the nexus for defining the service model and establishing the implementation system, it does not operate independently. Other influential organizations include the national model developer, service delivery organizations, public agencies, philanthropic organizations, education and advocacy organizations, and professional organizations. The influence that each one exerts might be in sync or in conflict with that of other organizations. When influential organizations are in conflict over how they want a program to operate, it can increase the model's complexity and decrease its clarity and coherence. The study will assess the role of various influential organizations through interviews with the national model developers and state administrators; review of the national model developers' documents; and surveys of program managers and home visitors.

Family and Staff Attributes

In addition to organizational influences, home visiting services are directly affected by the characteristics of parents and home visitors (family attributes and staff attributes in Figure 2.1). For example, the characteristics of parents who enroll in a home visiting program can influence the services that the program provides because home visitors are expected to tailor services to the family's strengths, needs, and concerns; because families vary in their understanding of the program and the benefits that they are likely to derive from it; and because parents vary in their cognitive and emotional capacity to engage in the services offered. Although HFA and NFP specify who their programs can serve, local programs may have a narrower or broader focus because of funder preferences or community characteristics or because they vary in their processes for recruitment. In addition to affecting services, the attributes of mothers might alter the program's opportunities to affect birth outcomes. For example, programs might have greater effects on subgroups of mothers who exhibit some of the risk factors for preterm birth — including late inception of prenatal care, young maternal age, smoking status, or obesity status — than on their counterparts who obtain early prenatal care,

are not teenagers, are nonsmokers, or are of normal weight status. Mothers' characteristics that are relevant to program implementation are collected in the family baseline survey.

The attributes of staff in a given program can also affect the services delivered. For example, NFP specifies that home visitors must be nurses, while HFA gives local sites considerable discretion in this regard (although local HFA offices might specify particular credentials). Such differences in educational background or training can affect the content or quality provided during a home visit. Moreover, an individual staff person's own psychological well-being — for example, whether the person is depressed — can influence how that individual approaches the work with families. In addition to these global attributes, staff may vary in their degree of focus, confidence, and competence in carrying out responsibilities with respect to prenatal, infant health, and maternal health outcomes. These home visitor attributes will be collected through staff surveys.

Services Delivered

As shown in the MIHOPE-Strong Start conceptual framework (Figure 2.1), the services that are actually delivered to families — or outputs — are the means by which the program directly influences family outcomes. Thus, an important goal of the study is to understand the services that families receive. MIHOPE-Strong Start focuses on understanding two aspects of service delivery that are fundamental to whether home visiting programs accomplish their goals: (1) the dosage — or frequency, intensity, and duration of services — to which a family is exposed and (2) the frequency and types of referrals that home visitors provide to outside services.

Dosage

In MIHOPE-Strong Start, national model-, state-, and site-level management information system (MIS) data will be the primary sources of information about dosage. Dosage is measured by indicators including the number of visits, the frequency of visits, the length of each visit, and the duration of family enrollment in the program. Fidelity measures — such as the ratio of visits achieved to visits intended by the national service model and the local service model — will also be created and analyzed.

Referrals

While dosage and duration of enrollment are the key service delivery variables of interest in MIHOPE-Strong Start, referrals made by home visitors to other community services will also be examined because these services are a primary mechanism through which home visiting can affect birth outcomes and infant health and health care use outcomes. Referrals are particularly important, given the multiple risks faced by families included in MIHOPE-Strong Start.

Service models may specify procedures for providing referrals for parents with particular high-priority needs. For example, the model may specify that all mothers should be screened for substance use using a particular screening tool and that mothers who have symptoms of substance abuse should be referred for further evaluation. Using baseline measures of maternal and family risks and MIS data, the study will examine indices of how closely home visitors are following the service models' protocols for subgroups of parents who report particular baseline risks that are relevant to birth outcomes. A preliminary list includes depression, substance abuse, intimate partner violence, smoking, and inadequate prenatal care.

Outcomes

Key parent and child outcomes (at the right side of Figure 2.1) will be measured using data on Medicaid fee-for-service and managed care as well as birth and infant death records. Outcomes will be measured in three primary areas: (1) birth outcomes, (2) maternal prenatal health and health care use, and (3) infant health and health care use. As the conceptual framework shows, parenting behaviors (including sleep, feeding, and abuse and neglect) — while not directly measured in MIHOPE-Strong Start — also influence infant health and health care use.

Birth Outcomes

As discussed, birth outcomes are key measures for MIHOPE-Strong Start. Studies that assess the impact of interventions on birth outcomes typically focus on the likelihood of women giving birth to small or preterm infants. However, other birth outcomes are important predictors of neonatal and infant health and could be influenced by home visiting; for example, overly large babies may experience birth injury and are more likely to have a cesarean delivery.[9] Similarly, abnormal size for gestational age, which reflects fetal growth, is associated with risk of health complications. MIHOPE-Strong Start will therefore examine the effects of home visiting on birth weight, gestational age at birth, and fetal (intrauterine) growth. Using the U.S. Standard Certificate of Live Birth, which includes information on infants' weight at birth, the study will be able to classify infants as low birth weight and very low birth weight. The study will also examine the impact of home visiting on the likelihood of overly large babies (more than 4,000 grams). Information from birth certificates will also be used to identify preterm and very preterm births. By combining information on birth weight, gestational age, and the baby's sex, the prevalence of infants who are small for gestational age or large for gestational age will be estimated and examined. Finally, because poor prenatal care and poor birth outcomes can result in infant death, rates of fetal mortality, neonatal mortality, postneonatal mortality, and overall infant mortality will be examined, although these outcomes will be considered more

[9]Stotland, Caughey, Breed, and Escobar (2004).

exploratory because the incidence of infant death is likely to be too low to provide reliable impact estimates.

Maternal Prenatal Health and Health Care Use

As shown in Figure 2.1, home visiting programs may also improve access to and use of health care for mothers, both during pregnancy and in the postpartum period. In particular, an important part of health care use during pregnancy is accessing appropriate prenatal care. Therefore, a primary outcome for MIHOPE-Strong Start will be the use of prenatal care.

Data on health care use among mothers will be obtained from both Medicaid files and birth certificates. From Medicaid files, the study will examine impacts on emergency department use and hospitalizations during pregnancy and up to 60 days postpartum. In addition, admissions to intensive care units (ICUs) following delivery and the length of hospital stays for delivery will be analyzed. Birth certificate data will be used to assess the date of the first prenatal care visit and the total number of prenatal care visits. In some states, particularly those with a low concentration of managed care, Medicaid data may also provide information to assess the effect of home visiting programs on prenatal care and the quality of data on prenatal care coming from birth certificates. These data, along with gestational age at birth, can be used to estimate the adequacy of prenatal care.

In addition to measures of women's health care use, home visiting's impacts on prenatal health behaviors and maternal health outcomes can be examined using information found on the U.S. Standard Birth Certificate as well as information collected from mothers through MIHOPE-Strong Start surveys.[10] For instance, the revised birth certificate includes information about the number of cigarettes smoked during each trimester of pregnancy as well as an indicator of whether the infant was being breastfed at the time of hospital discharge. The revised birth certificate also includes measures of maternal health that may be of interest for the analysis. Specifically, it includes indicators of whether a woman developed gestational diabetes or hypertension during pregnancy. Body Mass Index (BMI) information in the birth certificate data

[10]The U.S. Standard Birth Certificate was revised in 2003. For purposes of the evaluation, the revised birth certificate is preferable to the previous (1989) version because (1) it includes a field for the mother's Social Security number (which will facilitate linking of Medicaid and birth certificate data files); (2) it includes new or improved information about a number of maternal behaviors and health risks that may be influenced by home visiting programs, including number and timing of prenatal care visits, smoking during pregnancy, mother's weight before pregnancy, BMI and pregnancy weight gain, diagnosis of gestational diabetes and diagnosis of gestational hypertension; and (3) hospitals are using improved procedures to collect and code or enter data. Most states switched to the standard, revised birth certificate over the past few years, although the quality of these data still varies from state to state. States are being prioritized for inclusion in MIHOPE-Strong Start based on the completeness of birth record data and the usability of Medicaid claims data. Given the variation in administrative data quality across the states, MIHOPE-Strong Start aims to include states from which the study will be able to gather the highest-quality data.

(before pregnancy and at delivery) can be used to determine whether pregnancy weight gain conformed to recommendations from the Institute of Medicine, which are based on a woman's BMI before pregnancy.[11] Because some evidence suggests that the quality of the birth certificate data on several of these variables may be problematic (due to inaccuracies or missing data), these analyses will be considered more exploratory and will not be the central focus of MIHOPE-Strong Start.

Infant Health and Health Care Use

MIHOPE-Strong Start will also provide information on the effects of home visiting on infant's health and health care use during the first week postpartum, the first 60 days postpartum, and the first year of life. Medicaid files will provide information on use of neonatal intensive care units at birth as well as the number and type of health care visits (such as well-baby visits), emergency room visits, hospital admissions, and medications during the first 60 days of life and the first year of life. The revised birth certificate includes indicators for adverse birth outcomes, such as a low Apgar score (a five-factor measure of an infant's physical condition at birth that assesses skin color and complexion, pulse rate, reflexes, muscle tone, and breathing), birth injury, respiratory distress, and congenital anomalies. Because these outcomes are rare, they would not be a focus of MIHOPE-Strong Start, but they are important to analyze because of their effect on well-being and the high costs associated with subsequent treatment.

MIHOPE-Strong Start and Evidence-Based Home Visiting

MIHOPE-Strong Start is designed to answer questions that are relevant across the local evidence-based home visiting programs included in the study (which use one of the two evidence-based national models: HFA or NFP) on birth outcomes, infant health and health care use, and maternal health and health care use. The study, in particular, will analyze the delivery and impacts of services using common measures across a large number of programs and locations. As outlined in the conceptual framework (Figure 2.1), in order to understand similarities and differences in home visiting service delivery and how this variation relates to key impacts on mothers and infants, it is important first to understand the service models as defined by HFA's and NFP's national evidence-based home visiting models. The national model developers guide the work of their local affiliates through the articulation of their service models, through their focus on particular outcomes and particular families, their targeting of other outcomes of importance, and their guidelines regarding the dosage of services. These national service models thus serve as key inputs and the critical context for understanding the implementation of local programs. Chapters 3 and 4 present detailed descriptions of the two national models.

[11] Institute of Medicine (2009).

Chapter 3

The Healthy Families America Service Model

Chapter 3 introduces the Healthy Families America (HFA) intended service model, as defined at the national level. Sources of information on HFA for the current report include interviews with national program office representatives and information from the HFA Web site.

HFA was developed and implemented in 1992 by Prevent Child Abuse (PCA) America, an organization that works to ensure the healthy development of children in the United States. The model has been evaluated in randomized trials in Alaska, Arizona, Hawaii, and New York.[1] Support for the implementation of HFA is provided by the HFA national office, based out of PCA America. HFA is currently being implemented in 41 states; Washington, DC; several U.S. territories; and Canada.

As described further below, one distinctive feature of HFA's national home visiting model is that it provides a basic framework for the program, such as the primary program goals and principles for service delivery, while allowing considerable flexibility for local programs to decide target population characteristics based on community need, which specific curricula to use, and the educational background of home visiting staff. Implementation of HFA is guided by HFA's 12 Critical Elements and a set of more than 100 accompanying standards that operationalize policy and practice expectations for each element. (See Appendix A.) The Critical Elements, developed in the early 1990s, define HFA's service model and implementation system, focusing on the timing of service initiation, service content, and administration. These Critical Elements were derived from literature on best practices and expert opinion about effective strategies for working with families, and they have been updated as new research becomes available. This report draws from the 12 Critical Elements and standards available at the time of the writing of this report, which preceded the release of revised HFA standards in mid-2013.[2] Future reports will discuss the implications of the new standards for local programs, as these could affect implementation of local programs included in this study.

While the national HFA office allows state and local affiliates a fair amount of operational discretion, the national office also provides technical assistance on meeting HFA's standards by working with each local program through an affiliation and accreditation process. Prior to becoming an affiliate with HFA, an implementing agency must have an approved implementation plan that specifies operationally how the agency will implement these elements and

[1]Duggan et al. (2007); Duggan et al. (1999); LeCroy and Krysik (2011); Lee et al. (2009).
[2]Local programs have until July 2014 to demonstrate adherence to the new standards.

standards. Most programs affiliate before or around the time they begin initiating services.[3] As an affiliate, HFA requires that the local program must commit to beginning the accreditation process within a specific time frame, must have a management information system (MIS) in place, and can use the HFA name as long as it is implementing with fidelity according to annual reports submitted to the national office and in compliance with accreditation requirements.

The HFA accreditation process typically takes approximately two years. During this period, HFA programs work through three phases: (1) self-study, (2) a site visit, and (3) a response period. During the first phase, HFA affiliate programs complete a self-assessment that reflects adherence to the 12 Critical Elements. If a local program intends to adapt any of the Critical Elements or the approach to implementing standards, it must first receive approval from the national office. Following the completion of the self-assessment, a team of external, trained peer reviewers conducts a site visit to review and validate the program's self-assessment and adherence to the Critical Elements.[4] Local programs must provide a written response that includes evidence of implemented strategies to address standards not yet meeting expectations as noted by the peer reviewers following a site visit. Information from the self-assessment, peer-review site visit, and program response to standards out of adherence is reviewed by the HFA Accreditation Panel, an elected group of researchers, HFA trainers, program managers, and state leaders with authority to grant or delay accreditation. Individual programs or groups of programs (that is, HFA's multisite systems) are granted accreditation for four years.

Intended Recipients

HFA intends to enroll families with a pregnant woman or a child up to 3 months of age.[5] Because women can enroll in HFA at any point during their pregnancy, not all HFA enrollees will meet the gestational-age eligibility criteria for MIHOPE-Strong Start, which will enroll women only up to eight weeks before their due date.

In addition to specifying the age range of children to be enrolled, HFA specifies that enrollment must be voluntary. Local programs have flexibility in selecting participant eligibility criteria that represent risk factors for child maltreatment or other negative child outcomes; these criteria are often driven by an agency's funder and must be proposed to HFA's national office in the affiliation implementation plan. Examples of risk populations include parents facing such challenges as single parenthood, low income, childhood history of substance abuse, mental

[3]Healthy Families America (HFA) Model Developer Interview, January 10, 2013.

[4]Healthy Families America, "Best Practice Standards."

[5]Up to 20 percent of families can enroll when their child is older than 3 months (Healthy Families America, "12 Critical Elements").

health issues, and intimate partner violence.[6] HFA does not make any recommendations regarding prioritizing certain families over others; this decision is made by local implementing agencies in order to meet the unique needs of their communities.

Although HFA's traditional model of assessment is a two-step process beginning with a brief screening and followed by a full assessment of family characteristics and functioning, local programs have the flexibility to determine program eligibility using a brief screening tool or a more detailed assessment (bypassing the brief screening tool). HFA requires that 80 percent of eligibility screenings or assessments occur either prenatally or within the first two weeks after the birth of the baby.[7]

HFA's primary focus is the parent-child relationship.[8] Of course, to achieve improvements in parent-child relationships, the program works with individual family members. As specified in Table 3.1, HFA assumes responsibility for improving outcomes for the child, and for the mother and biological father of the child, depending on the extent to which they are present and involved in daily family interactions.[9] For example, if one of the parents is not closely involved due to such factors as lack of geographic proximity or incarceration, then the programs would assume more responsibility for the primary caregiver, regardless of whether it is the father or the mother. HFA assumes some responsibility for improving outcomes for other father figures and for the child's other familial caregivers and siblings as well. Decisions about whether to focus on subsequent pregnancies and children are made at the local program level.

Intended Goals and Outcomes

The mission of HFA is to promote child well-being and, through home visiting services, to prevent abuse and neglect of the nation's children.[10] The goals of HFA, which are intended to help it accomplish its mission, are (1) to build and sustain community partners to systematically engage overburdened families in home visiting services prenatally or at birth, (2) to cultivate and strengthen nurturing parent-child relationships, (3) to promote healthy childhood growth and development, and (4) to enhance family functioning by reducing risk and building protective factors.[11]

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[6]Healthy Families America, "Healthy Families America Self Assessment Tool 2008-2011."

[7]Healthy Families America, "Healthy Families America Self Assessment Tool 2008-2011."

[8]Healthy Families America (HFA) Model Developer Survey Part 1, April 17, 2013.

[9]Children living with an adult caregiver other than a biological parent can be enrolled in HFA with that caregiver.

[10]Healthy Families America, "About Us: Overview."

[11]Healthy Families America, "About Us: Overview."

Table 3.1

Intended Recipients: Healthy Families America's Ratings of Individuals for Whom the Model Assumes Responsibility for Improving Outcomes

Individuals	Major Responsibility	Some Responsibility	No Responsibility
Child	X		
Mother	X	X	
Biological father	X	X	
Other father figure		X	
Child's other familial caregivers		X	
Mother's other children		X	
Subsequent pregnancies and children		X	

SOURCE: Healthy Families America (HFA) Model Developer Survey Part 1, April 17, 2013.

NOTE: Individuals who are identified as a "major responsibility" are those who are the model's primary intended benefactors of home visiting, the ones for whom the model aims to improve outcomes.

Table 3.2 displays HFA's ratings of the importance to the model of outcomes that are common to many evidence-based home visiting programs.[12] Not all the outcomes that the research team asked national model developers to rank are directly related to birth and infant and maternal health outcomes, because home visiting programs like HFA and NFP often have goals that go beyond these health outcomes, such as increased school readiness or positive parenting. The full set of ratings provides a starting point for understanding how highly focused the HFA and NFP national models are on the Strong Start outcomes.

HFA rates outcomes associated with parenting and children to be of highest priority. Rating the domains as a high priority means that HFA places strong emphasis on these areas in guidance about conducting home visits and in supervision and training. For programs that enroll participants prenatally, outcomes associated with pregnancy are ranked moderately high. Other maternal outcomes — such as physical health, use of family planning, and tobacco use — are rated lower but are still of moderately high priority.

[12]Michalopoulos et al. (2013); HFA may prioritize other outcomes that were not included in the MIHOPE-Strong Start survey.

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Table 3.2

Intended Outcomes: Priorities Given to Outcomes by Healthy Families America

Outcome	HFA Rating[a]
Maternal health and well-being	
Mental health and substance use	8
Prenatal health domains	
Prenatal health[b]	7
Nutrition during pregnancy[b]	7
Exercise during pregnancy[b]	5
Rest during pregnancy[b]	7
Tobacco use during pregnancy[b]	9
Postnatal health domains	
Maternal physical health	7
Nutrition outside of pregnancy	5
Exercise outside of pregnancy	5
Rest outside of pregnancy	7
Tobacco use outside of pregnancy	7
Family planning and birth spacing	7
Intimate partner violence	8
Family economic self-sufficiency	8
Child health and development	
Birth outcomes[b]	9
Child preventative care	10
Child development outcomes	10
Parenting	
Breastfeeding	10
Positive parenting behavior	10
Child abuse and neglect	10
Healthy sleep habits for infants; for example:	
Naps and adequate hours of nightly sleep	10
Discourage bed sharing	10
Sleeping on back	10

SOURCE: Healthy Families America (HFA) Model Developer Survey Part 2, June 5, 2013.

NOTES:
[a]Possible range is 0 to10, with 0 = not a priority at all; 5 = moderate priority; 10 = highest priority.
[b]These apply only to the HFA sites that enroll families prenatally (since prenatal enrollment is not required of the model).

Intended Service Delivery

This section presents an overview of the HFA national model's intended dosage, content, and service delivery techniques, as reported in interviews with national HFA administrators or through written program descriptions. Future reports will provide more detailed information about these components.

Dosage

Table 3.3 displays HFA's dosage requirements, including the timing of initiation of service, duration of enrollment, visit frequency, and visit length.[13] Services should be offered at least weekly (Level 1) during pregnancy and for the first six months after birth or six months after enrollment (whichever is longer). HFA specifies that the first six months after birth is critical for parent-child bonding, newborn safety and care, and adjustment to parenthood.[14] Although up to 10 percent of families can receive less frequent visits within the six-month time frame due to family preference or conflicts, home visitors' caseloads should allow for weekly home visits for all families on Level 1.

The Mother and Infant Home Visiting Program Evaluation-Strong Start (MIHOPE-Strong Start)

Table 3.3

Healthy Families America's Dosage Requirements

Dosage Category	Requirement
Service initiation	Pregnancy or within the first 3 months after a child's birth
Duration of enrollment	Through child's third birthday but can extend to child's fifth birthday
Frequency of visits	Minimum of weekly during pregnancy and first 6 months after child's birth. Subsequent visit schedule depends on risk level, ranging from weekly to quarterly: Level 1 = weekly Level 2 = every other week Level 3 = monthly Level 4 = quarterly
Length of visits	60 minutes

SOURCE: Healthy Family America's (HFA) 12 Critical Elements, July 15, 2011.

[13]Healthy Families America, "Healthy Families America Self Assessment Tool 2008-2011"; Healthy Families America, "12 Critical Elements."

[14]Healthy Families America, "Healthy Families America Self Assessment Tool 2008-2011."

After the first six months, the frequency of visits is based on a level system determined by family well-being, stability, and self-sufficiency. Local programs define the criteria for progression to less frequent visits as risk status decreases — from weekly to bimonthly, monthly, and finally quarterly. The intensity of visits may also increase over time as a result of changes in family risk characteristics. The decision to change to a new level of service after the first six months is based on family progress, which should be assessed as often as necessary, not based on the age of the child.[15]

If a family is not participating in regular visits as prescribed by their level, they may be placed on "creative outreach," during which programs try to reengage families. Local programs define the activities to be carried out during creative outreach.[16] Local programs also define the circumstances — including the number of missed visits or length of time without contact — under which a family is placed on creative outreach. HFA specifies that families should be on creative outreach for a minimum of three months before the program discontinues services, unless the family reengages in services, refuses services, or has moved out of the service area.[17] The length of time that local programs keep families on creative outreach will have implications for dosage measured in this study.

Content

While HFA outlines some parameters for the content of home visits, local programs more specifically and comprehensively define intended home visit content. For the purposes of this report, home visit content includes assessments; parent education and support; and referral, coordination, and linkages. These are described below.

Assessment

Prior to or soon after enrolling a client, local programs must complete a comprehensive assessment of that individual using a standardized tool to determine the presence of various factors associated with increased risk for child maltreatment or other adverse childhood experiences, such as social isolation, substance abuse, and parental history of abuse in childhood.[18] HFA recommends the use of the Parent Survey, formerly called the Kempe Family Stress Checklist;[19] if a program would like to use a tool other than the Parent Survey, it must get approval from HFA's national office. The Parent Survey is the most common assessment tool used by local HFA programs. It covers 10 topics and a variety of domains, such as psychiatric

[15]Healthy Families America, "Healthy Families America Self Assessment Tool 2008-2011."
[16]Healthy Families America, "Healthy Families America Self Assessment Tool 2008-2011."
[17]Healthy Families America, "Healthy Families America Self Assessment Tool 2008-2011."
[18]Healthy Families America, "12 Critical Elements."
[19]Helfer and Kempe (1976).

history, substance abuse history, and level of parental stress. HFA home visitors incorporate family strengths and challenges identified in the assessment into the family's individualized service plan.

Table 3.4 summarizes HFA's data collection approach to use in several common home visiting outcome domains. In addition to the Parent Survey (which provides preliminary screening for parent-child bonding/attachment, parental stress, substance abuse, and intimate partner violence), HFA requires at least twice annual screening for developmental delay. Local programs have discretion in selecting a specific tool, though the vast majority of HFA sites administer the Ages and Stages Questionnaire (ASQ) or the Ages and Stages Questionnaire: Social-Emotional (ASQ-SE).

Table 3.4

Healthy Families America's Assessment and Screening Tools

Domain	Name of Tool
Parent's emotional well-being, depression, or stress	HFA requires an initial screen for parental stress but does not specify the tool to be used.
Maternal substance use, including tobacco, alcohol, or other drug use	HFA requires an initial screen for substance use but does not specify the tool to be used.
Intimate partner violence	HFA requires an initial screen for intimate partner violence but does not specify the tool to be used.
Developmental delay	HFA requires the use of a developmental screening tool, but local programs select the specific tool.

SOURCE: Healthy Families America (HFA) Model Developer Survey Part 1, April 17, 2013.

Parent Education and Support

HFA indicates that home visits should focus on such topics as parent-child interaction, parenting skills, child development, child health and safety, and family functioning.[20] HFA provides home visitors with core training on how staff will observe families in these areas. In addition, local programs determine which materials and curricula to share information with families on these topics.

HFA requires the use of observation and relationship-development skills taught in HFA core training, in addition to an evidence-informed or research-based curriculum to address par-

[20]Healthy Families America, "Healthy Families America Self Assessment Tool 2008-2011."

ent-child interactions, though local programs have the flexibility to select which one. If requested, HFA can provide a local program a list of curricula selected by other HFA programs. Thus, the specific content of each session that focuses on parent-child interactions is shaped by the home visitor's observations and by the curriculum or curricula selected by local programs.

HFA does not provide specific guidance on how home visitors should provide information in other domains, such as maternal health (including prenatal health), child health and safety, intimate partner violence, mental health, and substance abuse; these decisions are made by local programs. HFA does, however, have requirements that staff be trained in these areas within 12 months of hire. Topics that should be covered in the training workshops are outlined in detail by HFA.[21] There are no formal requirements regarding content or training for other domains, such as economic self-sufficiency and finances.

Referral, Coordination, and Linkages

HFA expects home visitors to provide referrals to community health and human service resources and services, based on each family's identified needs.[22] HFA encourages local programs to make referrals and linkages when necessary, such as when a pregnant mother needs assistance obtaining prenatal care.[23] HFA standards require home visitors to refer families to health care providers postnatally as well, to ensure optimal health and development.[24] These requirements include referrals for all family members to medical providers for preventive care, if they do not already have a provider, and to other health care resources as needed, such as smoking cessation groups, immunization clinics, and nutrition classes. Home visitors are expected to ensure that children receive timely immunizations and preventive pediatric health care and to make a referral if the home visitor suspects a child has a developmental delay. Referrals for other resources are up to the discretion of local programs.[25]

Depending on the family's needs, home visitors may also refer families to such services as financial, food, housing, and child care assistance; school readiness programs; job search and job training programs; family support centers; substance abuse treatment; and intimate partner violence shelters.[26] Home visitors work in consultation with their supervisor and the family to determine which referrals should be made. HFA does not specify how referrals should be made; local programs are expected to indicate when and how referrals are made, to whom, how to determine the outcome of the referral, and how to participate in the process to mutually support

[21]HFA staff training will be discussed in more detail in a subsequent report.
[22]Healthy Families America, "12 Critical Elements."
[23]Healthy Families America, "Healthy Families America Self Assessment Tool 2008-2011."
[24]Healthy Families America, "Healthy Families America Self Assessment Tool 2008-2011."
[25]Prevent Child Abuse America (2001).
[26]Healthy Families America, "Best Practice Standards."

the family.[27] Local programs are required to document the referrals made and whether the family has accessed or obtained the recommended resources.

Service Delivery Techniques

HFA's national office or HFA certified trainers instruct home visitors in recommended service delivery techniques. As displayed in Table 3.5, HFA encourages a variety of supportive strategies for working with families, including caregiver goal setting, caregiver problem solving, crisis intervention, working to strengthen a family's support network, and providing emotional support, pamphlets, or other materials. Efforts to improve family engagement and retention are also encouraged — for example, through the comprehensive "creative outreach" techniques discussed above. The model neither encourages local programs to use nor discourages them from using incentives to encourage participation in services.

Table 3.5

Healthy Families America's Intended Techiniques

Intended Technique	
Supportive strategies	
Caregiver goal setting	Encourage
Caregiver problem solving	Encourage
Crisis intervention	Encourage
Emotional support	Encourage
Strengthening support network	Encourage
Provision of pamphlets or other materials	Encourage
Improving client engagement	Encourage
Improving client retention	Encourage
Use of incentives	Neither encourage nor discourage

SOURCE: Healthy Families America (HFA) Model Developer Survey Part 1, April 17, 2013.

NOTE: Response options were "encourage," "discourage," or "neither encourage nor discourage."

[27]Healthy Families America (HFA) Model Developer Interview, January 10, 2013.

Intended Staffing

Local HFA programs typically employ two types of frontline staff: (1) Family Assessment Workers complete the initial family assessment and then transfer the family to (2) a Family Support Worker, who is considered the primary home visitor and who provides services to families via those visits. Some local programs employ only Family Support Workers and train them to both complete the initial family assessment and conduct home visits.

HFA does not provide specific education requirements for either type of staff. Rather, HFA recommends selecting Family Assessment Workers and Family Support Workers based on a combination of personal characteristics (for example, being nonjudgmental, compassionate, and able to establish a trusting relationship; willingness to work in, or experience working with, culturally diverse communities; experience working with families who have multiple needs; an ability to maintain boundaries between personal and professional life; knowledge of infant and child development; and educational qualifications).[28]

HFA home visitor caseloads are determined by the mix of families across levels; home visitors should have no more than 15 families on weekly service intensity (level one) and no more than 25 families at any service intensity. A full-time supervisor is meant to provide supervision to no more than six Family Assessment or Family Support Workers.[29]

[28]Healthy Families America, "Healthy Families America Self Assessment Tool 2008-2011"; Healthy Families America, "12 Critical Elements."

[29]Healthy Families America, "12 Critical Elements."

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Chapter 4

The Nurse-Family Partnership Service Model

Chapter 4 introduces the Nurse-Family Partnership (NFP) intended service model, as defined at the national level. As for the Healthy Families America (HFA) service model (Chapter 3), sources of information about this model include interviews with NFP's national program office representatives and the NFP Web site.

NFP was developed in 1977 by Dr. David Olds, a professor of pediatrics, psychiatry, and preventive medicine. Over the course of 20 years, NFP was studied through randomized trials in Elmira, New York; Memphis, Tennessee; and Denver, Colorado. NFP was first disseminated into local communities in 1996. Support for its implementation is provided by the NFP National Service Office (NSO). NFP is currently being implemented in 43 states, 5 tribal nations, 1 territory, and internationally.

The required components of NFP's service model and implementation system are comprehensive and specific. Implementation of NFP is guided by the NFP Model Elements (Appendix B) and a set of implementation objectives that further specifies expectations for some of those elements. The NFP Model Elements were derived from evidence of effectiveness based on research, expert opinion, field lessons, and theory.[1] Although some elements were specified and implemented in the initial NFP trials, the current version was articulated and finalized in 2007.[2] NFP's NSO suggests that if local programs implement the elements with fidelity, the local programs can have a high level of confidence that they will achieve the same outcomes as achieved in previous studies of NFP.[3] Although not encouraged to do so by the NSO, if a local NFP program intends to adapt any of the Model Elements, it first must receive approval from the national office.

The process of becoming a local NFP program begins with a formal readiness assessment that is conducted by the NFP NSO over a period of three to six months.[4] During this time, the NSO works with local implementing agencies to determine whether NFP and the local implementing agency will be a good fit and to discuss the time line and process for establishing a new program. Once the NSO and a local implementing agency agree that NFP will be a good fit for the agency, a contract is signed between them. As with HFA, before NFP implementation can begin, agencies must develop an implementation plan that specifies how the NFP Model

[1]Nurse-Family Partnership (2011b).
[2]Nurse-Family Partnership (NFP) Model Developer Interview, January 6, 2012.
[3]Nurse-Family Partnership (2011b).
[4]MIHOPE Interview, January 6, 2012.

Elements will be implemented. The implementation plan is reviewed by a team made up of members with clinical, quality, and programmatic perspectives. The implementation plan is reviewed to identify areas of strength and areas that need more support. There is a formal process through which an agency may respond to questions generated by the review team. Following the completion of an implementation plan and securing the appropriate funding, an agency enters into an agreement with the NFP NSO.[5]

Intended Recipients

A pregnant woman and her child are eligible for NFP if the woman is expecting her first child and meets low-income criteria at intake. In addition, women must voluntarily enroll in the program and receive their first home visit no later than the end of the 28th week of pregnancy.[6] This means that all NFP enrollees will meet the gestational-age eligibility criteria for MIHOPE-Strong Start (that is, eight weeks before the due date). Local NFP programs are strongly encouraged to enroll women early in their pregnancies, with an aim of enrolling 60 percent of pregnant women prior to 16 weeks gestation.[7] NFP does not recommend prioritizing enrollment to certain families over others; however, some local funders place a higher priority on serving specific subgroups of women. Local programs must apply for a variance if they intend to modify the target population from that specified by the NFP NSO. Local programs determine how to screen women for eligibility, and they define the criteria for classifying women as low income.

NFP assumes responsibility for improving outcomes for the child and the mother of the child (Table 4.1). Fathers and other adult family members or children are not the intended beneficiaries of NFP.

Intended Goals and Outcomes

The mission of NFP is to "empower first-time mothers living in poverty to successfully change their lives and the lives of their children through evidence-based nurse home visiting."[8] The goals of NFP are to (1) improve pregnancy outcomes by helping women engage in good preventive health practices, including obtaining thorough prenatal care from their health care providers, improving their diets, and reducing their use of cigarettes, alcohol, and illegal substances; (2) improve child health and development by helping parents provide responsible and competent care; and (3) improve the economic self-sufficiency of the family by helping

[5]Nurse-Family Partnership (NFP) Model Developer Interview, January 6, 2012.
[6]Nurse-Family Partnership (2011b).
[7]Nurse-Family Partnership Implementation Objectives.
[8]Nurse-Family Partnership (2011a).

The Mother and Infant Home Visiting Program Evaluation-Strong Start (MIHOPE-Strong Start)

Table 4.1

Intended Recipients: Nurse-Family Partnership's Ratings of Individuals for Whom the Model Assumes Responsibility for Improving Outcomes

Individuals	Major Responsibility	Some Responsibility	No Responsibility
Child	X		
Mother	X		
Biological father			X
Other father figure			X
Child's other familial caregivers			X
Mother's other children			X
Subsequent pregnancies and children			X

SOURCE: Nurse-Family Partnership (NFP) Model Developer Survey Part 1, April 25, 2013.

NOTE: Individuals who are identified as a "major responsibility" are those who are the model's primary intended benefactors of home visiting, the ones for whom the model aims to improve outcomes.

parents develop a vision for their own future, plan future pregnancies, continue their education, and find work.[9]

Table 4.2 displays NFP's ratings of the importance to its model of outcomes that are common to many evidence-based home visiting programs.[10] NFP rated all 24 domains as the highest priority for intended outcomes as a result of participating in NFP.[11] Rating the domains as a high priority means that NFP places strong emphasis on these areas in guidance about conducting home visits and in supervision and training.

Intended Service Delivery

This section presents an overview of the NFP national model's intended dosage, content, and service delivery techniques, as reported by national NFP administrators. Future reports will provide more detailed information about these components.

[9]Nurse-Family Partnership (2012).
[10]NFP may prioritize other outcomes that were not included in the MIHOPE-Strong Start survey.
[11]NFP Model Developer Survey Part 2, Ju 4, 2013.

The Mother and Infant Home Visiting Program Evaluation-Strong Start (MIHOPE-Strong Start)

Table 4.2

Intended Outcomes: Priorities Given to Outcomes by Nurse-Family Partnership

Outcome	NFP Rating[a]
Maternal health and well-being	
Mental health and substance use	10
Prenatal health domains	
Prenatal health	10
Nutrition during pregnancy	10
Exercise during pregnancy	10
Rest during pregnancy	10
Tobacco use during pregnancy	10
Postnatal health domains	
Maternal physical health	10
Nutrition outside of pregnancy	10
Exercise outside of pregnancy	10
Rest outside of pregnancy	10
Tobacco use outside of pregnancy	10
Family planning and birth spacing	10
Intimate partner violence	10
Family economic self-sufficiency	10
Child health and development	
Birth outcomes	10
Child preventive care	10
Child development outcomes	10
Parenting	
Breastfeeding	10
Positive parenting behavior	10
Child abuse and neglect	10
Healthy sleep habits for infants; for example:	
Naps and adequate hours of nightly sleep	10
Discourage bed sharing	10
Sleeping on back	10

SOURCE: Nurse-Family Partnership (NFP) Model Developer Survey Part 2, June 4, 2013.

NOTE:
[a]Possible range is 0 to 10, with 0 = not a priority at all; 5 = moderate priority; 10 = highest priority.

Dosage

Table 4.3 displays NFP's dosage requirements, including the timing of initiation of service, duration of enrollment, visit frequency, and visit length.[12] Home visitors conduct visits to women during pregnancy and through the child's second birthday. These visits are meant to follow the NFP Visit Guidelines, which specify the structure of the home visits, the frequency and timing of the visits, and the content to be covered. More frequent visits occur immediately following enrollment (to facilitate relationship building between the family and the home visitor) and after birth (to provide increased support to the family during the transition into parenthood). Visits are expected to occur weekly upon enrollment and to fade gradually to monthly visits as the child ages. The visit schedule may be adjusted by the home visitor to meet client needs.

The Mother and Infant Home Visiting Program Evaluation-Strong Start (MIHOPE-Strong Start)

Table 4.3

Nurse-Family Partnership's Dosage Requirements

Dosage Category	Requirement
Service initiation	Before the end of the 28th week of pregnancy
Duration of enrollment	Through the child's second birthday
Frequency of visits	Schedule depends on developmental period, ranging from weekly to monthly: First month after enrollment = weekly Between first month and delivery of baby = every other week First 6 weeks after delivery of baby = weekly Until child is 20 months old = every other week 21 to 24 months old = monthly
Length of visits	60 to 90 minutes

SOURCE: The Home Visit Experience, Nurse-Family Partnership (NFP) Model Elements.

Content

NFP provides nursing education and materials that define the intended content of home visits. Home visit content for the purposes of this report includes assessments; parent education and support; and referral, coordination, and linkages. These are described below.

[12]Nurse-Family Partnership (2013).

Assessment

NFP views data as essential for guiding clinical practice and monitoring program progress toward goals and outcomes.[13] Building on this philosophy, NFP requires initial and ongoing assessments of a family's physical, emotional, social, and environmental strengths. Table 4.4 summarizes NFP's data collection approach in several common home visiting outcome domains. The use of several standardized assessment tools, as well as data collection forms developed by NFP, is required at regular intervals. Local programs can supplement data collection processes by adding additional tools, upon receiving approval from the NFP NSO.

Table 4.4

Nurse-Family Partnership's Assessment and Screening Tools

Domain	Name of Tool
Parent's emotional well-being, depression, or stress	NFP requires the use of the Edinburgh Postnatal Depression Screen or the Patient Health Questionnaire-9 at 36 weeks gestation, at 1-8 weeks, 4-6 months, 12 months postpartum, and as needed.
Maternal substance use, including tobacco, alcohol, or other drug use	NFP requires the use of the NFP Health Habits Form at intake and at 36 weeks gestation.
Intimate partner violence	NFP requires the use of the NFP Relationship Assessment Form at intake, at 36 weeks gestation, at 12 months postpartum, and as needed.
Developmental delay	
Cognitive and language	NFP requires the use of the Ages and Stages Questionnaire when the child is 6, 12, 18, and 24 months.
Socio-emotional	NFP requires the use of the Ages and Stages Questionnaire: Social Emotional (ASQ:SE) when the child is 6 and 12 months.
Physical	NFP requires the use of the NFP Infant Health Care Form when the child is 6 and 12 months.

SOURCE: Nurse-Family Partnership (NFP) Model Developer Survey Part 1, April 25, 2013.

Parent Education and Support

According to program documents, NFP home visitors are expected to use professional knowledge, judgment, and skill to apply the Visit Guidelines, individualizing them to fit the strengths and challenges of each family.[14] NFP home visitors are trained to conduct home visits

[13]Nurse-Family Partnership (2010).
[14]Nurse-Family Partnership (2011b).

in accordance with the NFP program elements, apportioning time across five NFP model domains: personal health (for example, mental health functioning), environmental health (for example, neighborhood), life course development (for example, education), maternal role development (for example, mothering role), and family and friends (for example, assistance with child care). (See Appendix B.)

NFP home visitors aim to improve birth outcomes by helping clients obtain prenatal care from their physician; reduce their use of cigarettes, alcohol, and illegal drugs; and teach them about healthy nutrition during pregnancy.[15] Home visitors also aim to improve child health and development by teaching parents how to provide more competent and more nurturing care to their child; create a safe environment, both within and around the home, where their child can live and thrive; use safe and consistent practices of child discipline; and obtain proper health care for their child.[16]

Referral, Coordination, and Linkages

NFP requires home visitors to provide referrals to community health and human service resources and services, based on each family's identified needs and goals. Referrals are based on the home visitor's clinical judgment and a family's preference. NFP home visitors are also expected to consult and collaborate with other professionals involved in providing services to women and families.[17] In other words, home visitors work with other service providers as needed to ensure appropriate care for families. NFP does not specify how referrals should be made; this decision is individualized to the capacity of each family. Local programs are expected to document referrals in the central NFP management information system.[18]

Service Delivery Techniques

Table 4.5 shows NFP's views about service delivery techniques. NFP encourages a variety of supportive strategies for working with families, including caregiver goal setting, caregiver problem solving, crisis intervention, working to strengthen a family's support network, and the provision of emotional support, pamphlets, or other materials. The model discourages local programs from using incentives to encourage participation in services. Home visitors also apply reflective practice and motivational interviewing with women and their families to elicit positive changes in attitudes and behaviors.[19] These techniques will be described in more detail in subsequent reports.

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[15]Nurse-Family Partnership (2009).
[16]Nurse-Family Partnership (2009).
[17]Nurse-Family Partnership (2011c).
[18]Nurse-Family Partnership (NFP) Model Developer Interview, January 6, 2012.
[19]Nurse-Family Partnership (NFP) Model Developer Interview, January 6, 2012.

Table 4.5

Nurse-Family Partnership's Intended Techniques

Intended Technique	
Supportive strategies	
Caregiver goal setting	Encourage
Caregiver problem solving	Encourage
Crisis intervention	Encourage
Emotional support	Encourage
Strengthening support network	Encourage
Provision of pamphlets or other materials	Encourage
Improving client engagement	Encourage
Improving client retention	Encourage
Use of incentives	Discourage

SOURCE: Nurse-Family Partnership (NFP) Model Developer Survey Part 1, April 25, 2013.

NOTE: Response options were "encourage," "discourage," or "neither encourage nor discourage."

Intended Staffing

NFP requires that home visitors be professional registered nurses (RNs) with a minimum of a baccalaureate degree in nursing and an RN license in good standing.[20] It is preferred that home visitors have strong written and verbal communication skills, home visiting experience, and two years of recent experience in maternal and child health, public health, or mental/behavioral nursing.[21] NFP programs must submit a formal variance to get approval from the NFP NSO to employ staff who do not meet the qualification standards. A full-time home visitor carries a caseload of no more than 25 active clients. NFP home visitors conduct all family assessments and conduct home visits. A full-time nurse supervisor provides supervision to no more than eight nurse home visitors.[22]

[20]Nurse-Family Partnership (2011b).
[21]Nurse-Family Partnership (2011c).
[22]Nurse-Family Partnership (2011b).

Chapter 5

Conclusion

The Mother and Infant Home Visiting Program Evaluation-Strong Start (MIHOPE-Strong Start) is designed to answer questions about the impacts of evidence-based home visiting programs on a critically important set of outcomes — specifically, birth outcomes, infant and maternal health, and maternal and infant health care use. As an introduction to MIHOPE-Strong Start, the current report focuses on how the two national models articulate their service approaches. The descriptions gleaned from initial interviews with the national models — Healthy Families America (HFA; Chapter 3) and the Nurse-Family Partnership (NFP; Chapter 4) — have revealed interesting similarities and differences that may have implications both for the implementation of local programs and for program impacts. Table 5.1 highlights key aspects of HFA's and NFP's service models and the ways in which they overlap and differ in guidance and structure.

The definition of the national service model can influence the services delivered and, therefore, program impacts in several fundamental ways. For instance, how focused is the model on the outcomes and the populations of interest in MIHOPE-Strong Start? Does the model also target other outcomes? How are the duration and intensity of intended services defined?

National Models' Focus on Populations of Interest in MIHOPE-Strong Start

The populations who will be enrolled in the study through NFP and HFA programs are likely to be similar in some respects. Both programs target low-income, at-risk pregnant mothers, for example, with some variation from community to community in the types of families who end up enrolling. However, unlike HFA, NFP enrolls *only* expectant mothers and provides a few additional restrictions, requiring mothers to be first-time mothers in their 28th week of pregnancy or earlier. Enrolling mothers earlier and focusing solely on enrolling pregnant women may improve NFP's ability to affect prenatal health and birth outcomes. HFA's enrollment window is broader than NFP's, ranging from pregnancy to three months postpartum, reflecting HFA's historical focus on preventing child maltreatment and improving the parent-child relationship. To learn how these factors intersect with program impacts, MIHOPE-Strong Start will aim to leverage the variation in populations served, variation in the timing of enrollment during pregnancy, and HFA's enrollment of both first-time and multiparous mothers.

The Mother and Infant Home Visiting Program Evaluation-Strong Start (MIHOPE-Strong Start)

Table 5.1

Summary of Healthy Families America's and Nurse-Family Partnership's Home Visiting Service Models

HFA	NFP
Intended recipients (or target population)	
Families with risk factors for child maltreatment or other negative childhood outcomes. Families enroll prenatally or within the first 3 months after a child's birth.	First-time, low-income pregnant women. Families receive their first home visit no later than the end of week 28 of pregnancy.
Focus on MIHOPE-Strong Start outcomes	
Variable, but moderately high ratings on prenatal, health, and birth outcomes.	Uniformly high ratings on prenatal, health, and birth outcomes.
Duration and intensity of services	
Visits ranging from weekly to monthly through child's third birthday (though can extend to child's fifth birthday). Weekly visits during pregnancy.	Visits ranging from weekly to monthly through child's second birthday. Weekly or biweekly visits during pregnancy.
Content focus on MIHOPE-Strong Start outcomes	
Screenings and assessments required at intake, but sites select tools.	Screenings and assessments required on an ongoing basis; timing and instruments prescribed by national model.
Education and supportive strategies	
Topic focus on parent-child interaction, parenting skills, child development, child health and safety, and family functioning. Local programs determine how to address these content areas. Strategies include caregiver goal setting, caregiver problem solving, crisis intervention, working to strengthen a family's support network, and providing emotional support, pamphlets, or other materials.	Topic-apportioned time across 5 NFP model domains: personal health, environmental health, life course development, maternal role development, and family and friends. Strategies include caregiver goal setting, caregiver problem solving, crisis intervention, working to strengthen a family's support network, and the provision of emotional support, pamphlets, or other materials.
Intended staffing	
Recommends selecting home visiting staff based on a combination of personal characteristics (for example, nonjudgmental, compassionate, experience working with families, child development knowledge, and educational qualifications).	Home visitors must be registered professional nurses with a minimum of a baccalaureate degree in nursing. NFP programs must submit a formal variance to get approval to employ staff who do not meet the staff qualification standards.
Flexibility toward intended recipients, services, and implementation	
Implementing agencies follow a set of program principles, but operational decisions (such as targeted risk factors or populations, and the structure and content of home visits) are left up to the discretion of local agency.	Highly defined and structured approach and expects local programs to strive for fidelity to the service model as it has been defined at the national level.

National Models' Focus on Outcomes of Interest in MIHOPE-Strong Start

Both NFP and HFA consider birth and health outcomes high priorities. However, NFP gave uniformly higher rankings than HFA did for prenatal health, nutrition during pregnancy, exercise during pregnancy, rest during pregnancy, tobacco use during pregnancy, and birth outcomes. NFP gave these the highest-priority ranking (10), while HFA's rankings for these outcomes ranged from 5 to 9, with the highest score of 10 being reserved for nonprenatal outcomes, such as child abuse and neglect, child development outcomes, and parenting. This suggests that HFA puts greater emphasis on parenting and child development outcomes than on birth and health outcomes and that NFP sees prenatal outcomes as a more central goal than HFA (although NFP ranks them equal to other domains, and HFA still ranks them as important). While one would expect that local HFA and NFP programs' ranking of these priorities will reflect national model priorities, at least to some extent, there may also be local variation that will provide some leverage to examine how local priorities affect service delivery and impacts.

Duration and Intensity of Intended Services

Both programs are designed as multiple-session, long-term programs, though the details differ. Of particular interest for MIHOPE-Strong Start are the number of visits that programs expect prior to the birth. For mothers enrolled prenatally, HFA requires visits weekly during pregnancy, while NFP requires weekly visits for the first month of enrollment only, after which visits occur every two weeks until birth. As noted above, however, NFP places more emphasis on enrolling women early in pregnancy. As a result, HFA requires more frequent visits prior to birth once enrolled, but NFP may provide a similar number of visits overall during pregnancy by enrolling mothers earlier. The study will help explain whether and how these kinds of distinctions may affect the total dosage of services that expectant mothers receive before giving birth and, in turn, the impacts on maternal health, birth outcomes, infant health, and health care use.

Content Focus on MIHOPE-Strong Start Outcomes

The schedule and requirements for screenings and assessments are quite different for HFA and NFP. HFA requires an initial screening for maternal emotional well-being, substance use, intimate partner violence, and parenting, but it does not recommend a particular instrument. HFA also requires a developmental screening for the child, but local programs can decide which instrument to use and the appropriate timing. In contrast, NFP has a highly specified and more frequent schedule of screenings and assessments for parental emotional well-being, substance

use, and intimate partner violence and for parenting and child development; for example, emotional well-being, partner violence, and substance use are assessed both at intake and at 36 weeks. This difference in approach could have implications for the likelihood of service referral and receipt in the prenatal period in these important outcome areas. It could also affect the educational content provided to, or approaches taken with, mothers during home visits.

Education and Supportive Strategies

The study has not yet directly examined home visitor training materials and program educational materials to understand the relative weight that home visit activities are expected to place on birth outcomes and other maternal and child health issues. Based on interviews and program summary materials, however, HFA and NFP each focus on multiple areas of family well-being during home visits; NFP places greater emphasis on parents' life course and health-related issues, and HFA places greater emphasis on the parent-child relationship. NFP reports that home visitors apportion time across personal health, environmental health, life course development, maternal role development, and family and friends, while HFA indicates that home visits should focus on such topics as parent-child interaction, parenting skills, child development, child health and safety, and family functioning. HFA and NFP encourage home visitors to use a similar range of supportive strategies, with the exception of the use of incentives to promote engagement in the program. NFP discourages the use of incentives, while HFA neither encourages nor discourages their use.

Intended Staffing

At the national level, required levels of staff education and experience are greater for NFP home visitors than for HFA home visitors. NFP home visitors should be professional registered nurses with a minimum of a baccalaureate degree in nursing, and the model prefers that home visitors have home visiting experience and two years of recent experience in maternal and child health, public health, or mental/behavioral nursing. In contrast, HFA does not provide specific education requirements for home visitors, although it expects them to have the skills and experiences needed to work well with families enrolled in HFA and to consult regularly with their supervisors about service strategies for particular families.

Flexibility About Intended Recipients, Services, and Implementation

One component of program implementation that MIHOPE-Strong Start will investigate is how local programs and staff go about operating these two national models, which take quite different approaches to disseminating their evidence-based programs. One model, HFA, asks

state or local implementing agencies to follow a set of program principles but then to make operational decisions, such as which particular risk factors should define the program's target group, the ways in which home visits will be structured, and the assessment tools or curricula that will be used when working with parents on particular topics. The other model, NFP, has a more highly defined and structured approach and expects local programs to strive for fidelity to the service model as it has been defined at the national level.

MIHOPE-Strong Start is also designed to shed light on the implementation and impacts of evidence-based home visiting approaches at the local level, regardless of what program model a site uses. Thus, questions about program implementation will be answered by collecting the same information from all local programs and staff about how the programs define their individual service models, how staff are supported in doing their work, and how services are actually delivered to individual families who have different characteristics. Important variations are expected in how services are structured and delivered at the local level across both service models, whether through discretion that is provided to local sites, through deliberate adaptations by local sites, or through drift from the defined service model. These variations in service delivery — combined with estimates of each local program's impacts on its enrolled families — will provide a unique opportunity to advance the understanding of how to design and implement effective home visiting programs.

Future reports on MIHOPE-Strong Start will address these questions by examining the process by which local programs put evidence-based models into action; the range of home visiting services that are provided around the country as a result; and the service delivery strategies that are associated with the greatest improvements in birth outcomes, infant and maternal health, and infant and maternal health care use for families served by home visiting programs.

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Appendix A

Healthy Families America's 12 Critical Elements

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Healthy Families America's 12 Critical Elements make up the essential components of the HFA service model discussed in Chapter 3. Reproduced below by courtesy of HFA, the elements can be divided into three broad areas: service initiation, service content, and administration.

Service Initiation

1. **Initiate services prenatally or at birth.**

    a. Screening and assessment within two weeks after the birth of the baby (up to 20% of families can fall outside of this timeframe).

    b. First home visit within three months after the birth of the baby — preferably prenatally (up to 20% of families can fall outside of this timeframe).

    c. Must monitor and address various levels of program contact prior to enrollment.

    d. Must track and measure acceptance rates, complete an acceptance analysis of families who refuse services compared to families who accept services and identify strategies to increase acceptance rates every two years.

2. **Standardized (i.e. in a consistent way for all families) assessment**

    a. Assessment Tool (typically the Parent Survey aka Kempe Family Stress Checklist) is used to identify the family strengths as well as family history and/or issues related to higher risk of child maltreatment and/or poor childhood outcomes.

    b. Staff must be well trained in how to administer and score the assessment.

3. **Offer services voluntarily and use positive outreach efforts to build family trust.**

    a. Services must be voluntary

    b. Program staff must identify positive ways to establish a relationship with a family and keep families interested and connected over time because many participants are often reluctant to engage in services and may have difficulty building trusting relationships.

    c. Creative Outreach are offered for a minimum of three months.

    d. Must track and measure retention of participants at different intervals (i.e., 6 months, 12 months, 24 months, etc.), complete a retention analysis of families who drop out of services compared to families who remain in services and identify strategies to increase retention rates every two years.

Service Content

4. **Offer services intensively with well-defined criteria for increasing or decreasing frequency of service and over the long-term**

    a. Services offered *at least weekly* during the 1st six months after the birth of the baby (up to 10% of families can receive less than weekly visits within the timeframe).

    b. Family's progress is used for determining service intensity — as family's confidence and self-sufficiency increases frequency of visits decrease.

    c. Programs offer services a minimum of three years and up to five years after the birth of the baby.

5. **Services are culturally sensitive**

    a. Programs must track service population characteristics.

    b. Ethnic, racial, language, demographic, and other cultural characteristics identified by the program must be taken into account in when selecting program materials (i.e., curriculum) and overseeing staff-family interactions.

    c. Staff receives training designed to increase understanding and sensitivity of the unique characteristics of the service population.

    d. The program analyzes through the development of a cultural sensitivity review the extent to which all aspects of its service delivery system (assessment, home visitation, and supervision) are culturally sensitive.

6. **Services focus on supporting the parent as well as supporting parent-child interaction and child development.**

    a. Home visiting staff discuss and review, in supervision and with families, issues identified in the initial assessment during the course of home visiting services.

    b. Home visitors must develop an Individual Family Support Plan (IFSP) that identifies strengths, needs, goals, and objectives. The IFSP must be reviewed in supervision and serve as a guide for services.

    c. The program must promote positive parent-child interaction, child development skills, and health and safety practices with families through the use of curriculum and other educational materials.

    d. The program monitors the development of participating infants and children with a standardized developmental screen, tracks children who are suspected of having a developmental delay and follows through with appropriate

referrals and follow-up. Home visitors must be trained in the use of the developmental tool.

7. **At a minimum, all families should be linked to a medical provider to assure optimal health and development (e.g. timely immunizations, well-child care, etc.) Depending on the family's needs, they may also be linked to additional services such as financial, food, and housing assistance programs, school readiness programs, child care, job training programs, family support centers, substance abuse treatment programs, and domestic violence shelters.**

   a. Participating Target Children must be linked to a medical/health care provider

   b. The program ensures immunizations are up-to-date for target children and provides information, referrals, and linkages to available health care resources for all participating family members.

   c. Families are connected to additional services in the community.

8. **Services are provided by staff with limited caseloads**

   a. No more than 15 families on weekly service intensity

   b. No more than 25 families at any given service intensity

   c. Policies and procedures for assigning families to staff.

Administration (Personnel Selection, Staffing, Training, Supervision, Governance & Administration)

9. **Service providers are selected because of their personal characteristics (i.e. non-judgmental, compassionate, ability to establish a trusting relationship, etc.), their willingness to work in or their experience working with culturally diverse communities, and their skills to do the job. Service providers have a framework, based on education or experience, for handling the variety of situations they may encounter when working with at-risk families.**

   a. Each program has required criteria to screen for during employment.

   b. Must follow EOE protocol

   c. Must follow HR protocol (job postings, interview questions, 2 references).

   d. Must have criminal background checks and if possible CAN registry checks.

   e. Must complete a staff turnover analysis every two years and include staff satisfaction in an effort to retain staff.

10. **All service providers (assessment, home visitors, supervisors) must receive basic training in areas such as cultural competency, substance abuse, reporting child abuse, domestic violence, drug-exposed infants, and services in their community.**

    a. All service providers must receive Orientation training prior to working with families (topics outlined in best practice standards)

    b. All service providers must receive Wraparound training topics (topics outlined in best practice standards) within 6 months and 12 months of hire (distance learning modules and/or in person)

    c. All service providers must receive ongoing training based on their current skill set in an effort to continue to build skills and competencies.

11. **Service providers receive intensive training specific to their role.**

    a. All service providers must receive HFA CORE (assessment or home visiting) training from a certified HFA trainer within 6 months of hire.

    b. Supervisors also receive training based on the track (assessment or home visiting) they supervise and administrative, clinical and reflective practice training from a certified HFA trainer within 6 months of hire.

12. **Service providers receive ongoing, effective accountable, clinical and reflective supervision.**

    a. Direct service providers must receive weekly, individualized supervision.

    b. Fulltime supervisors are to have 6 or fewer direct services staff.

    c. Direct service staff must receive skill development and professional support and be held accountable for the quality of their work.

    d. Supervisors and Program Managers are also held accountable for the quality of their work and provided with skill development and professional support

Governance & Administration (not a Critical Element)

- Programs must have an Advisory Committee to focus on program planning, implementation and evaluation.
- Participants must have a mechanism for providing feedback, including a grievance process.
- The program must monitor and evaluate the quality of services through analyzing the ability to meet program goals and objectives, and through the implementation of a quality assurance plan.

- Programs must have policy and procedures for reviewing and recommending approval or denial of research proposals, whether internal or external, which involve past or present families.
- Programs must have policy and procedures for informing families of their rights and ensuring confidentiality of information both during the intake process as well as during the course of services.
- The program must report suspected cases of child abuse and neglect to the appropriate authorities and have proper policy and procedures for doing so.
- The program must have a comprehensive policy and procedure manual outlining all of the necessary policy and procedures.
- Programs must have an operating budget, annual report and audit.

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Appendix B

Nurse-Family Partnership's Model Elements

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As discussed in Chapter 4, fidelity to the elements of the Nurse-Family Partnership (NFP) intended service model, as defined at the national level, is the key to local programs' success. The elements are reproduced below by courtesy of the NFP.

Element 1: Client participates voluntarily in the Nurse-Family Partnership program.

Element 2: Client is a first-time mother.

Element 3: Client meets low-income criteria at intake.

Element 4: Client is enrolled in the program early in her pregnancy and receives her first home visit by no later than the end of week 28 of pregnancy.

Element 5: Client is visited one-to-one, one nurse home visitor to one first-time mother or family.

Element 6: Client is visited in her home.

Element 7: Client is visited throughout her pregnancy and the first two years of her child's life in accordance with the current Nurse-Family Partnership guidelines.

Element 8: Nurse home visitors and nurse supervisors are registered professional nurses with a minimum of a baccalaureate degree in nursing.

Element 9: Nurse home visitors and nurse supervisors complete core educational sessions required by the Nurse-Family Partnership National Service Office and deliver the intervention with fidelity to the Nurse-Family Partnership model.

Element 10: Nurse home visitors, using professional knowledge, judgment, and skill, apply the Nurse-Family Partnership visit guidelines, individualizing them to the strengths and challenges of each family and apportioning time across defined program domains.

Element 11: Nurse home visitors apply the theoretical framework that underpins the program, emphasizing self-efficacy, human ecology, and attachment theories, through current clinical methods.

Element 12: A full-time nurse home visitor carries a caseload of no more than 25 active clients.

Element 13: A full-time nurse supervisor provides supervision to no more than eight individual nurse home visitors.

Element 14: Nurse supervisors provide nurse home visitors clinical supervision with reflection, demonstrate integration of the theories, and facilitate professional development essential to the nurse home visitor role through specific supervisory activities including one-to-one clinical supervision, case conferences, team meetings, and field supervision.

Element 15: Nurse home visitors and nurse supervisors collect data as specified by the Nurse-Family Partnership National Service Office and use Nurse-Family Partnership reports to guide their practice, assess and guide program implementation, inform clinical supervision, enhance program quality, and demonstrate program fidelity.

Element 16: A Nurse-Family Partnership Implementing Agency is located in and operated by an organization known in the community for being a successful provider of prevention services to low-income families.

Element 17: A Nurse-Family Partnership Implementing Agency convenes a long-term community advisory board that meets at least quarterly to promote a community support system to the program and to promote program quality and sustainability.

Element 18: Adequate support and structure shall be in place to support nurse home visitors and nurse supervisors to implement the program and to assure that data are accurately entered into the database in a timely manner.

References

Avellar, Sarah, and Diane Paulsell. 2011. *Lessons Learned from the Home Visiting Evidence of Effectiveness Review.* Princeton, NJ: Mathematica Policy Research, Inc.

Carroll, Christopher, Malcolm Patterson, Stephen Wood, Andrew Booth, Jo Rick, and Shashi Balain. 2007. "A Conceptual Framework for Implementation Fidelity." *Implementation Science* 2, 40.

Centers for Disease Control and Prevention. 2009. "Prematurity." Web site: www.cdc.gov/Features/PrematureBirth/.

Centers for Medicare and Medicaid Services. 2013. "Strong Start for Mothers and Newborns Frequently Asked Questions." Web site: http://innovation.cms.gov/initiatives/Strong-Start/Strong-Start-for-Mothers-and-Newborns-FAQ-page.html.

Cooper, Duncan L., Emily S. Petherick, and John Wright. 2013. "The Association Between Binge Drinking and Birth Outcomes: Results from the Born in Bradford Cohort Study." *Journal of Epidemiology and Community Health* 67, 10: 821-828.

Cunningham, Coleen K., Julia A. McMillan, and Steven J. Gross. 1991. "Rehospitalization for Respiratory Illness in Infants of Less Than 32 Weeks' Gestation." *Pediatrics* 88, 3: 527-532.

Doyle, Lex W., Geoffrey Ford, and Noni Davis. 2003. "Health and Hospitalizations After Discharge in Extremely Low Birth Weight Infants." *Seminars in Neonatology* 8, 2: 137-145.

Duggan, Anne, Debra Caldera, Kira Rodriguez, Lori Burrell, Charles Rohde, and Sarah Shea Crowne. 2007. "Impact of a Statewide Home Visiting Program to Prevent Child Abuse." *Child Abuse and Neglect* 31, 8: 801-827.

Duggan, Anne, Kristen DeCelle, Lori Burrell, and Gina Hernandez. 2012. "Implementing Home Visiting Programs: Organizational and Provider-Level Factors for Fidelity." Presentation at New Jersey Department of Children and Families, Division of Prevention and Community Partnership, October 13.

Duggan, Anne K., Elizabeth C. McFarlane, Amy M. Windham, Charles A. Rohde, David S. Salkever, Loretta Fuddy, Leon A. Rosenberg, Sharon B. Buchbinder, and Calvin C. J. Sia. 1999. "Evaluation of Hawaii's Healthy Start Program." *Future of Children: Home Visiting: Recent Program Evaluations* 9, 1: 66-90.

Durlak, Joseph A., and Emily P. DuPre. 2008. "Implementation Matters: A review of Research on the Influence of Implementation on Program Outcomes and the Factors Affecting Implementation." *American Journal of Community Psychology* 41, 3-4: 327-350.

Fixsen, Dean L., Sandra F. Naoom, Karen A. Blase, Robert M. Friedman, and Frances Wallace. 2005. *Implementation Research: A Synthesis of the Literature*. FMHI Publication 231. Tampa, Florida: University of South Florida, Louis de la Parte Florida Mental Health Institute, National Implementation Research Network.

Fraser, Alison M., John E. Brockert, and R. H. Ward. 1995. "Association of Young Maternal Age with Adverse Reproductive Outcomes." *New England Journal of Medicine* 332, 17: 1113-1118.

Gomby, Deanna S. 2005. *Home Visitation in 2005: Outcomes for Children and Parents.* Invest in Kids Working Paper No. 7. Washington, DC: Committee for Economic Development, Invest in Kids Working Group.

Haskins, Ron, and W. Steven Barnett (eds). 2010. *Investing in Young Children: New Directions in Federal Preschool and Early Childhood Policy*. Washington, DC: Brookings Institution; and New Brunswick, NJ: Rutgers, The State University of New Jersey, National Institute for Early Education Research.

Healthy Families America. "About Us: FAQ." Web site: www.healthyfamiliesamerica.org/about_us/faq.shtml.

Healthy Families America. "About Us: Overview." Web site: www.healthyfamiliesamerica.org/about_us/index.shtml.

Healthy Families America. "Best Practice Standards." Web site: www.healthyfamiliesamerica.org.

Healthy Families America. "Healthy Families America Self Assessment Tool 2008-2011." Web site: www.healthyfamiliesamerica.org.

Healthy Families America (HFA) Model Developer Interview, January 10, 2013.

Healthy Families America (HFA) Model Developer Survey Part 1, April 17, 2013.

Healthy Families America (HFA) Model Developer Survey Part 2, June 5, 2013.

Helfer, Ray E., and C. Henry Kempe. 1976. Pages 115-126 in Helfer and Kempe (eds.), *Child Abuse and Neglect: The Family and the Community.* Cambridge, MA: Ballinger.

Institute of Medicine. 2009. *Weight Gain During Pregnancy: Reexamining the Guidelines.* Washington, DC: National Academies Press.

Institute of Medicine (U.S.) Committee on Understanding Premature Birth and Assuring Healthy Outcomes. 2007. *Preterm Birth: Causes, Consequences, and Prevention.* Washington, DC: National Academy of Sciences.

Kitzman, Harriet, David L. Olds, Charles R. Henderson, Carole Hanks, Robert Cole, Robert Tatelbaum, Kenneth M. McConnochie, Kimberly Sidora, Dennis W. Luckey, David Shaver, Kay Engelhardt, David James, and Kathryn Barnard. 1997. "Effect of Prenatal and Infancy Home Visitation by Nurses on Pregnancy Outcomes, Childhood Injuries, and Repeated Childbearing: A Randomized Controlled Trial." *Journal of the American Medical Association* 278, 8: 644-652.

Kogan, Michael D., Greg R. Alexander, Milton Kotelchuck, and David A. Nagey. 1994. "Relation of the Content of Prenatal Care to the Risk of Low Birth Weight. Maternal Reports of Health Behavior Advice and Initial Prenatal Care Procedures." *Journal of the American Medical Association* 271, 17: 1340-1345.

Kramer, Michael S., Louise Séguin, John E. Lydon, and L. Goulet. 2000. "Socio-Economic Disparities in Pregnancy Outcome: Why Do the Poor Fare So Poorly?" *Paediatric and Perinatal Epidemiology* 14, 3: 194-210.

Lamarche-Vadel, A., B. Blondel, P. Truffert, A. Burguet, G. Cambonie, D. Selton, C. Arnaud, C. Lardennois, C. du Mazaubrun, S. N'Guyen, J. Mathis, G. Bréart, and M. Kaminski. 2004. "Re-Hospitalization in Infants Younger than 29 Weeks' Gestation in the EPIPAGE Cohort." *Acta Paediatrica* 93, 10: 1340-1345.

LeCroy, Craig Winston, and Judy Krysik. 2011. "Randomized Trial of the Healthy Families Arizona Home Visiting Program." *Children and Youth Services Review* 33, 10: 1761-1766.

Lee, Eunju, Susan D. Mitchell-Herzfeld, Ann A. Lowenfels, Rose Greene, Vajeera Dorabawila, and Kimberly A. DuMont. 2009. "Reducing Low Birth Weight Through Home Visitation: A Randomized Controlled Trial " *American Journal of Preventive Medicine* 36, 2: 154–160.

Leventhal, Tama, and Jeanne Brooks-Gunn. 2000. "The Neighborhoods They Live In: The Effects of Neighborhood Residence on Child and Adolescent Outcomes." *Psychological Bulletin* 126, 2: 309-337.

Lu, Michael C., and Neal Halfon. 2003. "Racial and Ethnic Disparities in Birth Outcomes: A Life-Course Perspective." *Maternal and Child Health Journal* 7, 1: 13-30.

March of Dimes. 2003. "Hospital Charges for Prematurity: 2001 Data." March of Dimes Perinatal Data Center.

March of Dimes, PMNCH, Save the Children, and WHO. 2012. *Born Too Soon: The Global Action Report on Preterm Birth.* Geneva: World Health Organization.

Martin, Joyce A., Brady E. Hamilton, Stephanie J. Ventura, Michelle J. K. Osterman, Elizabeth C. Wilson, and T. J. Mathews. 2012. *Births: Final Data for 2010.* National Vital Statistics Report 61(1). Hyattsville, MD: National Center for Health Statistics.

Maternal and Child Health Bureau. 2006. *A Report from the Healthy Start National Evaluation 2006: Racial and Ethnic Disparities in Infant Mortality*. Washington, DC: U.S. Department of Health and Human Services, Health Resources and Services Administration, Maternal and Child Health Bureau.

Michalopoulos, Charles, Anne Duggan, Virginia Knox, Jill H. Filene, Helen Lee, Emily K. Snell, Sarah Crowne, Erika Lundquist, Phaedra S. Corso, and Justin B. Ingels. 2013. *Revised Design for the Mother and Infant Home Visiting Program Evaluation*. OPRE Report 2013-18. Washington, DC: U.S. Department of Health and Human Services, Administration for Children and Families, Office of Planning, Research and Evaluation.

Michalopoulos, Charles, Anne Duggan, Virginia Knox, Jill H. Filene, Helen Lee, Emily K. Snell, Sarah Crowne, and Jennifer Somers. Forthcoming, 2014. "Design for the Mother and Infant Home Visiting Program Evaluation-Strong Start." Unpublished document.

Misra, Dawn P., Bernard Guyer, and Adam Allston. 2003. "Integrated Perinatal Health Framework: A Multiple Determinants Model with a Life Span Approach." *American Journal of Preventive Medicine* 25, 1: 65-75.

Nkansah-Amankra, Stephen, Kathryn J. Luchok, James Robert Hussey, Ken Watkins, and Xiaofeng Liu. 2010. "Effects of Maternal Stress on Low Birth Weight and Preterm Birth Outcomes Across Neighborhoods of South Carolina, 2000-2003." *Maternal and Child Health Journal* 14, 2: 215-226.

Nurse-Family Partnership. "The Home Visit Experience." Web site: www.nursefamilypartnership.org/assets/PDF/Nurse-documents/home_visit_experience.

Nurse-Family Partnership. 2009. "Home Visit Goals."
Web site: www.nursefamilypartnership.org/assets/PDF/Nurse-documents/home_visit_goals.

Nurse-Family Partnership. 2010. "Implementation Overview & Planning: A guide for prospective Nurse-Family Partnership Implementing Agencies."
Web site: www.nursefamilypartnership.org.

Nurse-Family Partnership. 2011a. "Mission, Vision, and Values."
Web site: www.nursefamilypartnership.org/about/Mission-Vision-Values.

Nurse-Family Partnership. 2011b. "Nurse-Family Partnership Model Elements."
Web site: www.nursefamilypartnership.org/communities/model-elements.

Nurse-Family Partnership. 2011c. "SAMPLE Job Description: Nurse Home Visitor."
Web site: www.nursefamilypartnership.org.

Nurse-Family Partnership. 2012. "Overview." Web site: www.nursefamilypartnership.org.

Nurse-Family Partnership. 2013. "Nurse-Family Partnership Snapshot."
Web site: www.nursefamilypartnership.org/assets/PDF/Fact-sheets/NFP_Snapshot.

Nurse-Family Partnership (NFP) Model Developer Interview, January 6, 2012.

Nurse-Family Partnership (NFP) Model Developer Survey Part 1, April 25, 2013.

Nurse-Family Partnership (NFP) Model Developer Survey Part 2, June 4, 2013.

Olds, David L., Charles R. Henderson, Robert Chamberlin, and Robert Tatelbaum. 1986. "Preventing Child Abuse and Neglect: A Randomized Trial of Nurse Home Visitation." *Pediatrics* 78, 1: 65-78.

Pew Center on the States. 2010. "Home Visiting Inventory." Web site:
http://www.pewstates.org/research/data-visualizations/home-visiting-inventory-85899372712.

Pollack, Harold, Paula M. Lantz, and John G. Frohna. 2000. "Maternal Smoking and Adverse Birth Outcomes Among Singletons and Twins." *American Journal of Public Health* 90, 3: 395-400.

Prevent Child Abuse America. 2001. "Critical Elements Rationale."
Web site: http://www.healthyfamiliesamerica.org/downloads/critical_elements_rationale.pdf.

Rosenberg, Terry J., Samantha Garbers, Heather Lipkind, and Mary Ann Chiasson. 2005. "Maternal Obesity and Diabetes as Risk Factors for Adverse Pregnancy Outcomes: Differences Among 4 Racial/Ethnic Groups." *American Journal of Public Health* 95, 9: 1545-1551.

Rubin, David M., Amanda L. R. O'Reilly, Xianqun Luan, Dingwei Dai, A. Russell Localio, and Cindy W. Christian. 2011. "Variation in Pregnancy Outcomes Following Statewide Implementation of a Prenatal Home Visitation Program." *Archives of Pediatrics and Adolescent Medicine* 165, 3: 198-204.

Singer, Lynn, Ann Salvator, Shenyang Guo, Marc Collin, Lawrence Lilien, and Jill Baley. 1999. "Maternal Psychological Distress and Parenting Stress After the Birth of a Very Low-Birth-Weight Infant." *Journal of the American Medical Association* 281, 9: 799-805.

Stotland, Naomi E., Aaron B. Caughey, Emily M. Breed, and Gabriel J. Escobar. 2004. "Risk Factors and Obstetric Complications Associated with Macrosomia." *International Journal of Gynecology and Obstetrics* 87, 3: 220-226.

U.S. Department of Health and Human Services. 2013. "Maternal, Infant, and Child Health: Morbidity and Mortality." Web site:
http://www.healthypeople.gov/2020/topicsobjectives2020/objectiveslist.aspx?topicId=26.

Wasik, Barbara A., Shira Kolnik Mattera, Chrishana M. Lloyd, and Kimberly Boller. 2013. *Intervention Dosage in Early Childhood Care and Education: It's Complicated.* OPRE

Research Brief OPRE 2013-15. Washington, DC: U.S. Department of Health and Human Services, Administration for Children and Families, Office of Planning, Research and Evaluation.

Weiss, Heather B. 1993. "Home Visits: Necessary But Not Sufficient." *Future of Children* 3, 3: 113-128.

Williams, David R., Manuela V. Costa, Adebola O. Odunlami, and Selina A. Mohammed. 2008 (Supplement). "Moving Upstream: How Interventions That Address the Social Determinants of Health Can Improve Health and Reduce Disparities." *Journal of Public Health Management and Practice* 14, 6: S8-S17.

Yüksel, Bülend, and Anne Greenough. 1994. "Birth Weight and Hospital Readmission of Infants Born Prematurely." *Archives of Pediatrics and Adolescent Medicine* 148, 4: 384-388.