HOME VISITATION IN 2005:
OUTCOMES FOR CHILDREN AND PARENTS

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By

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EXHIBITS

I. INTRODUCTION AND EXECUTIVE SUMMARY

Home visiting is one of the most commonly used approaches in serving families with young children, reaching as many as 400,000 children and families annually across the nation at a cost of perhaps $750 million to $1 billion.[1] In 2001, at least 37 states had state-based home visiting systems.[2]

Home visiting is an attractive strategy because it can bring services to socially or geographically isolated families, because services can be tailored to meet the needs of individual families, and because, if services result in parents improving their parenting skills, the programs can conceivably benefit siblings as well as target children. In addition, home visiting programs may also be more palatable to families who want to keep their children at home rather than place them in a center-based early childhood education program, especially when children are very young (birth – 3).

This paper explores the extent to which research indicates that home visitation produces benefits for parents and children. Although there are many different types of home visiting programs, this paper focuses on a subset – those primary prevention programs that send individuals into the homes of families with pregnant women, newborns, or young children under age 5 on an ongoing basis, and seek to improve the lives of the children by encouraging change in the attitudes, knowledge, and/or behaviors of the parents (See Table 1; endnote 3 provides references to exemplars or reviews of other types of home visiting programs not included in this review.).

Table 1.
Examples of Types of Home Visiting Programs
For 0-5-Year-Olds and Their Families

Home visiting is a strategy that is used in a wide variety of programs.[3] Home visiting program types that are highlighted in **bold** are included in this review:

Home Visiting as the Primary Service Strategy

- One-time visits to mothers who have been discharged early from the maternity ward
- One-time visits to all mothers in a community to screen children and refer to additional services
- **Ongoing home visiting to help promote child health and development and/or to prevent child abuse and neglect**
- Ongoing home visiting for families whose children are born low birth weight, are diagnosed with failure to thrive, or have physical or developmental delays or disabilities
- Home visits by Child Protective Services to determine if a child should be removed from the home
- Ongoing home visits by Child Protective Services to help families that have been reported to CPS remain together ("family preservation")
- Visits to families with children who are chronically ill to train them in disease management (e.g., asthma control)

Home Visiting in Combination with Other Services

- **Home visits in combination with early childhood education (e.g., preschool)**
- **Home visits as part of enhanced pediatric practice**

The following are the main conclusions of this review:

- The popularity of home visiting has been driven by the results of a few studies of programs such as the Nurse-Family Partnership that demonstrate long-term benefits for parents and children.
- However, there are very few long-term studies of home visiting programs. Instead, most home visiting evaluations assess results for children at the end of services or shortly thereafter. Results of these studies vary widely across program goals, program models, program sites implementing the same model, and families within a single program site.
- Home visiting programs *can* produce benefits for children and parents, but, with a few exceptions, most programs produce benefits that are modest in magnitude (.1 - .2 of a standard deviation in effect size).
- It is likely that results would improve if quality of home visiting services were bolstered. This would mean focusing on intensity of services that families actually receive, the skills of the home visitors, and the content of the home visiting curriculum.
- Home visiting services appear to be most beneficial for families where either the initial need is greatest and/or where parents perceive that their children need the services (e.g., because their children are born low birth weight, have special needs, or have behavioral problems which the parents are trying to address).
- Programs that offer home visiting services in conjunction with center-based early childhood education appear to produce larger and more long-lasting results than programs that offer home visiting services alone, especially for children's cognitive development or school achievement outcomes.

These findings suggest that program planners and funders should maintain modest expectations for what home visiting alone can accomplish, should link home visiting programs with center-based early childhood education, and, above all, should focus on making sure that services are of the highest quality.

This paper describes home visiting programs, including some of the largest national models in the United States (Section II), and then summarizes the literature on the effectiveness of home visiting in two ways. First, Section III summarizes short-term and long-term results by outcome area (e.g., changes in parenting skills, children's development, children's health, etc.). Then, for the convenience of readers interested in longitudinal studies, Section IV summarizes just those studies in which long-term results were obtained (children assessed at age 6 or older). Section V describes results from studies in which home visiting is not the primary service strategy but is linked with other services. Data on cost and cost-benefit analyses of home visiting programs are summarized in Section VI. Research on the importance of high-quality implementation of services in developing strong home visiting programs is summarized in Section VII.

Appendix A presents detailed descriptions of the six largest home visiting models in the United States today. Appendix B is an annotated bibliography of the recent literature reviews and meta-analyses of home visiting programs resources that were the primary source material for this review. Appendix C lists longitudinal studies of home visiting services.[a]

[a] **Acknowledgements**: Portions of this paper were adapted from Gomby, D.S. (2003) *Building school readiness through home visitation*. Prepared for and supported by the First 5 California Children and Families Commission. Available at: http://www.ccfc.ca.gov/SchoolReady.htm. Thanks to Ann Segal for her comments on earlier versions of this paper.

II. COMMONALITIES AND DIFFERENCES ACROSS HOME VISITING PROGRAMS

The home visiting programs discussed in this paper are primary prevention programs, beginning prenatally or soon after birth, and continuing for as long as the first 3 or 5 years of the child's life. These programs include nationally known models such as Early Head Start[b], Healthy Families America (HFA), Home Instruction for Parents of Preschool Youngsters (HIPPY), Nurse-Family Partnership (NFP), Parents as Teachers (PAT), and the Parent-Child Home Program (PCHP). Together, these programs have thousands of sites across the nation. Many other home visiting programs, not affiliated with these large national models exist nationally, but these programs are among the best known, most carefully researched, and probably also the most influential. They are the prototypes of most of the home visiting programs in the nation.

Specific goals vary, but these programs generally seek to:

- Promote enhanced parent knowledge, attitudes, and/or behavior related to childrearing;
- Promote children's health;
- Promote children's early learning and development;
- Prevent child abuse and neglect; and/or
- Enhance mothers' lives (e.g., decrease stress, provide social support, decrease rates of subsequent births and tenure on welfare rolls, and increase employment and education).

A. Common Characteristics in Home Visiting Programs

Home visiting programs share a reliance on a service delivery strategy (the home visit). In addition, most home visiting programs seek to create change by providing parents with (1) social support; (2) practical assistance, sometimes in the form of case management that links families with other community services; and (3) education about parenting or child development.[4] Figure 1 illustrates the logic model for a typical home visiting program.

The success of home visiting depends upon the relationship between the home visitor and the parent.

The social support and practical assistance help to engage families and to build a relationship of trust between home visitor and parent. A strong relationship, in turn, can help reassure and persuade parents that they should act on the information and advice provided by the program. Some researchers and practitioners also believe that, for some

[b] Early Head Start is offered as a center-based program, a home visiting program, or a mixed model that offers both services. This review focuses primarily on results of Early Head Start home-based services.

parents, creating a trusting relationship between the home visitor and the parent can be a first step in developing the parent's ability to form and sustain secure relationships with others, including with her own children.[5,6] If the home visitor-parent relationship is weak, then benefits for parents or children are much less likely. Many of the ways in which programs differ influence the capacity of the program to establish that home visitor-parent relationship.

B. Differences Among Home Visiting Programs

Home visiting programs differ in their goals, intensity of services, staffing, and whom they serve. Table 2 briefly describes the largest national home visiting models, and Appendix A provides more in-depth information. The differences among home visiting programs are not trivial. They have important implications for which program models should be selected for use in any community, for the families they are most likely to benefit, and for the likelihood that home visitor and parent will be able to form a close rapport.

1. *Goals*

Most of the large home visiting program models focus on improving parenting skills to promote healthy child development and to prevent child abuse and neglect. Some explicitly seek to improve the lives of parents by encouraging mothers to return to school, find a job, or defer subsequent pregnancies.

2. *Intensity of Services*

Programs also differ in the onset, duration, and intensity of their services. Some programs begin during pregnancy, while others begin at birth or later. Programs are slated to last from two to five years, and visits are scheduled from weekly to monthly. If visits are limited or too infrequent, it may be difficult to establish the close home visitor-parent relationship that is the precursor to behavior change.

3. *Staffing*

The experience and training requirements for home visitors also vary. Some programs primarily employ paraprofessionals, typically individuals from the community being served, with little formal education or training beyond that provided by the program. Because their backgrounds are similar to the backgrounds of the parents, they may be able to more easily form a rapport with the parents. Others employ both professional and paraprofessional home visitors, including individuals with bachelors and masters' degrees. Some require particular types of professionals, such as nurses.

4. *Populations Served*

Programs also vary in terms of the populations that they serve. Some programs screen a wide number of families at the birth of a child but enroll only those families identified as highly stressed or at-risk for potential child abuse; others seek to enroll all or most of the families who live in the geographic catchment area for the program.

Figure 1. Logic Model for a Typical Home Visiting Program

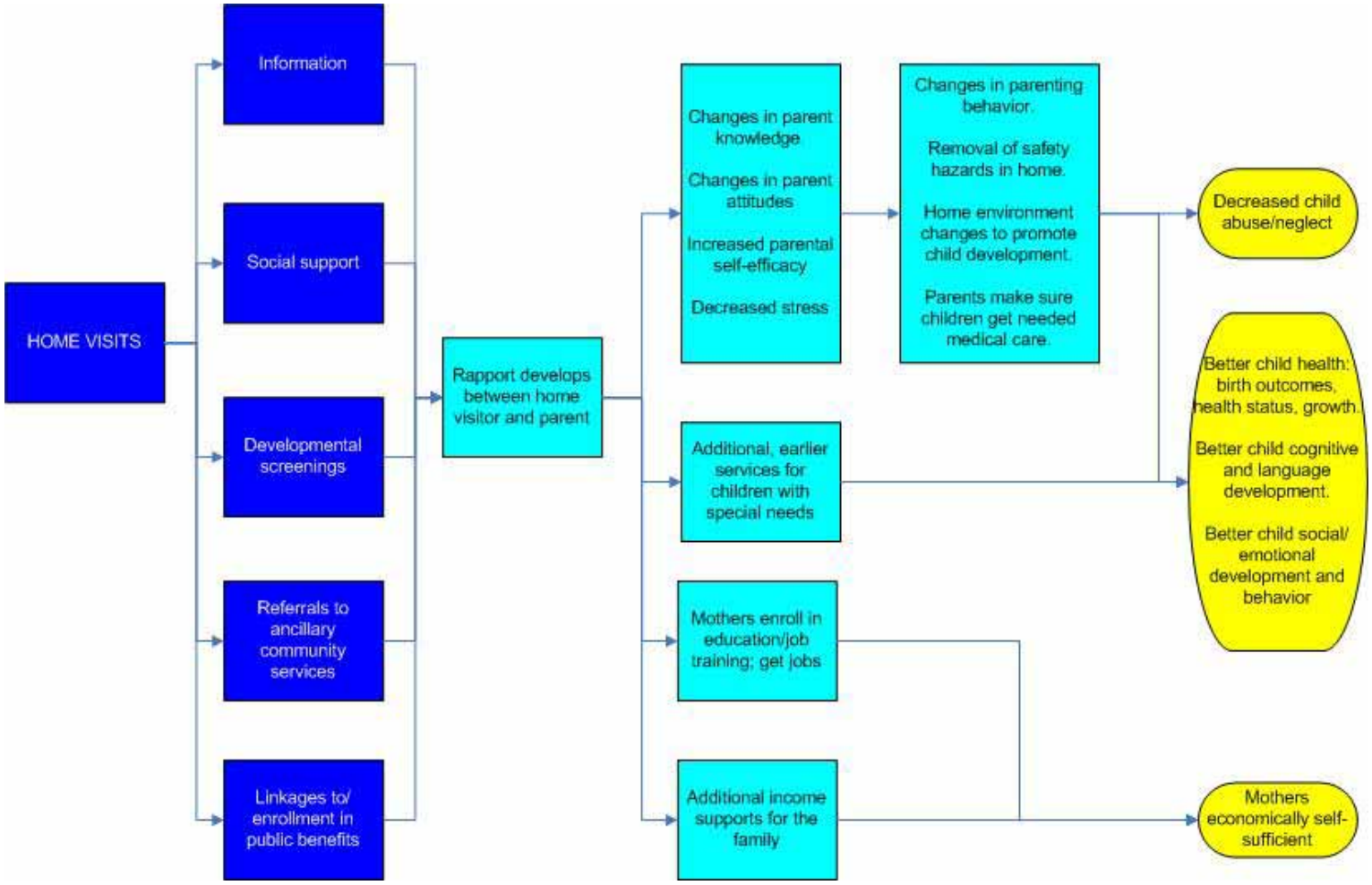

TABLE 2. DESCRIPTIONS OF KEY NATIONAL HOME VISITING PROGRAM MODELS

Program Model	Program Goals	Onset, Duration, and Frequency of Home Visits	Population Served	Background of Home Visitors	Training Requirements for Home Visitors
Early Head Start 708 sites nationally	• Promote healthy prenatal outcomes for pregnant women • Enhance the development of very young children • Promote healthy family functioning	For home-based Early Head Start model only: Birth through age 3 Weekly home visits	Low-income pregnant women and families with infants and toddlers; 10% of children may be from families with higher incomes; 10% of program spaces reserved for children with disabilities	No specific requirements, although experience with infants and toddlers is preferred	Vary by program. Staff development plans and ongoing professional development required.
Healthy Families America 430 sites nationally	• Promote positive parenting • Prevent child abuse and neglect.	Birth through 5th birthday Weekly, fading to quarterly	Parents in the mainland U.S. and Canada, all income levels and ethnicities, who are identified at the time of birth as at-risk for abuse and neglect	Paraprofessionals and Bachelor degrees	One week of pre-service training; 1 day of continuing training quarterly; 80 hours of additional training in the first 6 months of service are recommended by Prevent Child Abuse America.
The Home Instruction Program for Preschool Youngsters (HIPPY) 167 sites nationally	• Empower parents as primary educators of their children • Foster parent involvement in school and community life • Maximize children's chances for successful early school experiences	Academic year, or two years before, and through the end of kindergarten Bi-weekly, i.e., at least 15 times, over 30 weeks during the school year	Families in the United States, Guam, and at least 6 other nations; all ethnicities; many low-income and with limited formal education.	Paraprofessionals, typically members of the community and former HIPPY parents. Most work part-time (20-25 hours/week)	Two-day pre-service training in the HIPPY program model, plus weekly ongoing training and staff development.

Program Model	Program goals	Onset and duration	Population served	Background of home visitors	Training requirements for home visitors
The Nurse-Family Partnership 166 sites (250 communities) nationally	• Improve pregnancy outcomes • Improve child health and development • Improve families' economic self-sufficiency	Prenatal through 2nd birthday Weekly, fading to monthly	Low-income, first time mothers, all ethnicities	Public health nurses	Two weeks of training in the program model over the first year of service. Forty-six hours of continuing education in assessing parent-infant interaction, plus additional continuing education as needed.
The Parent-Child Home Program 137 sites nationally	• Develop children's language and literacy skills • Empower parents to be their children's first and most important teachers • Prepare children to enter school ready to learn • Enhance parenting skills • Prepare children for long-term academic success and parents to be their children's lifelong academic advocates	Typically 2nd through 4th birthdays, but as young as 16 months (two years total) Two visits/week	Families in the United States, Canada, Bermuda, and the Netherlands; low-income, low-education families; all ethnicities; families with English as a Second Language; teen parents; homeless families	Paid paraprofessionals from the community, many previously parents in the program. Small number of volunteers, who may be professional.	16 hours of training prior to becoming a home visitor. Weekly minimum two-hour ongoing training and supervision session.
Parents As Teachers 3,000 sites nationally	• Empower parents to give their child the best possible start in life • Give children a solid foundation for school success • Prevent and reduce child abuse • Increase parents' feelings of competence and confidence; • Develop home-school-community partnerships on behalf of children	Prenatal through 3rd birthday; may extend through 5th birthday Monthly, biweekly, or weekly, depending upon family needs and funding levels	Families in the United States and six other countries, all income levels and ethnicities.	Paraprofessionals, and AA, Bachelor, and advanced degrees	One week of pre-service training, 10-20 hours of in-service training, annual credentialing by the Parents As Teachers National Center

SOURCES: National program offices and the websites for each home visiting model. Numbers of programs drawn from websites March 2005. Program descriptions accurate as of 2/02. Some programs operate in conjunction with one another (e.g., 45% of PAT programs are blended with programs such as Even Start, Early Head Start, Head Start, or Healthy Families America).

For more detailed descriptions of these program models, see Appendices A1-A6.

III. BENEFITS OF HOME VISITATION PROGRAMS FOR PARENTS AND CHILDREN: BY OUTCOME

Given all the differences across programs, do home visiting programs produce benefits for parents and children?

The brief answer is, "They can, but they do not always do so." The popularity of home visiting has been propelled by the findings of large and long-term benefits in a few studies (most notably, the studies of the Nurse-Family Partnership). But, in practice, results vary widely across program goals, program models, different sites implementing the same model, and different families within a single site. When benefits are achieved, they are often small in magnitude. Across evaluations of many different home visiting models, the most rigorous studies show that programs may be somewhat more likely to produce benefits in outcomes related to families (i.e., in aspects of parenting), than in outcomes related to children (i.e., children's health or development). Less rigorous research suggests that school-administered home visiting programs may help parents become more involved with their children's schools in later years. Families that seek out services because their children have been identified as needing extra help, perhaps because they were born low birth weight or with other biological or developmental problems, are more likely to benefit from home visiting services than those families that are offered services primarily because they are socially at-risk (e.g., low income).

Table 3 summarizes the conclusions reached in 12 recent meta-analyses concerning home visiting.[7-18] The conclusions in this paper are based on these meta-analyses, comprehensive literature reviews,[19-29] and other studies too recent to have been included in these compilations (see Appendix B for descriptions of the meta-analyses and literature reviews). This review places a premium on more rigorous research (e.g., good quality randomized trials or quasi-experimental studies with strong comparison groups).

Table 3 illustrates both the wide-ranging goals that home visiting programs have been designed to address and the wide-ranging conclusions researchers have reached about whether or not home visiting programs have succeeded in reaching their goals. The variability in researcher opinion is related to (1) the studies that they included in their reviews (e.g., international versus only United States programs; family support versus only home visiting programs; home visiting plus other services or only home visiting services; programs serving families with children with identified biological problems such as low birth weight or special needs versus families whose only risk factor is low income; fairly rigorous research only versus a broader set of studies); and (2) the willingness of the researchers to draw conclusions from sometimes small numbers of studies.

Table 3.
Summary of Meta-Analyses of Home Visiting and Related Studies

OUTCOMES	Abt 2001 Short-Term[7]	Abt 2001 Follow-Up[7]	Sweet & Applebaum 2004[8]	Elkan et al 2000[9]	Roberts et al 1996[10]	Hodnett & Roberts 2001[11]	Guterman 1999[12]	MacLeod & Nelson 2000[13]	Nelson et al 2003[14] (At preK)	Nelson et al 2003[14] (K-8)	Geerart et al 2004[15]	Sikorski et al 2003[16]	Hodnett & Fredericks 2004[17]	Karoly et al, forth-coming[18]
PARENT OUTCOMES														
Parenting				+			+							
Parenting Knowledge and Attitudes	.18	ns	.11								.33			
Parenting Behavior (including HOME)	.25	.18	.14								.30-.36			
Maternal Life Course														
Stress, Social Support, Mental Health	.09	.17	ns	+/?							.25			
Economic Self-Sufficiency	.10	.39	ns	?							.38			
Education			.13	?										
CHILD OUTCOMES											.23			
Child Health and Safety														
Nutrition: Breastfeeding/Diet				+/?								+		
Preventive Health Services & Medical Home				ns		+								
Child Health Status														
Birth Outcomes: Preterm Birth and LBW													ns	
Child Health Status and Physical Growth	.09	ns		ns										
Child Safety	.15	ns												
Home Safety Hazards														
Unintentional Injuries				+		?(trend)					.26***			
Child Abuse and Neglect				?	?			.41						
Actual abuse/neglect			ns			ns					.20			
Potential abuse			.24											
Parenting stress			ns											
Children's Cognitive and Language Development, Academic Achievement	.09/.26/ .36*	.30	.18	+					.09	.22				.17
Social and Emotional Development, Child Behavior	.10/.26**	.09	.10	+										

NOTES: + indicates authors conclude there is a positive effect; **ns** indicates no effect; **?** indicates authors believe there are too few studies to draw a conclusion. Numerical values are in standard deviation units.

NOTES (cont.):

Variation across meta-analyses driven by the studies included:

Abt Associates (2001): U.S. only; family support (not just home visiting) programs, unless otherwise noted; analyses include special needs children, except where otherwise noted otherwise. Effect sizes are for randomized trials only.

*For children's cognitive development: effect sizes are for home visiting only, as delivered to differing populations: .09=untargeted population (no special needs); .26=both special needs and untargeted population; .36= children with special needs only.

**For children's social and emotional development: .10 = effect size for home visiting programs only, both short- and follow-up outcomes; .26 = short-term outcomes only, home visiting and other family support programs.

Elkan et al (2000): home visiting only; international; includes children with special needs.

***Hodnett & Fredericks* (2004)**: broad-based social support (9 of 16 studies involved home visits); international

Hodnett & Roberts (2001): home visiting only; international

Geerart et al (2004): home visiting, center-based, rooming in services combined; international (but primarily US); mostly quasi-experimental studies, including some without comparison groups

***For Unintentional injuries: this includes ER visits, hospitalizations, contacts with CPS, and out-of-home placements.

Guterman (1999): home visiting only; US only

Karoly et al (forthcoming): home visiting and parent education programs, including some services for children with special needs (in NICUs).

MacLeod & Nelson (2000): home visiting only; international (though primarily US). Effect size pooled across variety of outcomes.

***Nelson et al (2003)*:** "preschool prevention programs,"—includes home visiting and center-based early childhood education programs individually and together (71% of programs included home visiting as one of the program services); international (though primarily US). Results reported in this table are for programs without a preschool component.

***Roberts et al (1996)*:** home visiting only; international

***Sikorski et al (2003)*:** primary purpose of programs was support for breastfeeding (12/20 studies employed home visits); international.

***Sweet and Appelbaum (2004)*:** Based on Abt Associates (2001) database, but only includes studies in which home visiting was the primary service strategy. Includes studies with children with special needs (low birth weight).

See also Appendix B for details about and key findings from each meta-analysis.

Despite the variability in researcher conclusions, however, Table 3 illustrates three important points:

- Evaluators have assessed the effectiveness of home visiting in promoting change in at least 14 broad categories of outcomes.

- On average, when offered as the sole service strategy and when tested in high-quality research studies, home visiting has rarely produced effects exceeding .20 of a standard deviation in size – a magnitude of effect that is considered small in the human services arena. This means that home visiting programs will rarely produce large, easily-observed changes across most of the families they serve. Change will be especially difficult to detect if small numbers of families are being served in any one program or if the measures used to detect change are not very sensitive. Program planners should therefore moderate their expectations about just how much change any one home visiting program can produce or any evaluation will detect.

- Home visiting may be more effective at producing some outcomes than others.

Section III next summarizes the short- and long-term findings for children and parents by outcome area. For each outcome area, because results vary across studies with many studies producing either very small or no effects,[7] the "best case" results – the results that have captured the attention of policymakers and practitioners – are reported first, followed by the more typical findings.

A. Benefits for Parents

All of the home visiting programs in this review seek to help parents become better parents, and many evaluations assess changes in parent knowledge, attitudes, and behavior. A more limited set of studies assess the effects of home visiting programs on mothers' lives outside their role as parents, including their stress levels and mental health and their rates of education and employment.

Many home visiting programs show small but consistent benefits in outcomes associated with parenting.

Results suggest that many programs lead to small increases in parents' knowledge of child development or improvements in parents' attitudes about parenting. Some also lead to changes in parent behavior or in the home environment – either to make it safer or more likely to promote child development. Other changes in mothers' lives are demonstrated less frequently.

1. Parenting Knowledge, Attitudes, and Behavior

Home visiting programs seek to change parents' knowledge of child development, their attitudes toward parenting, or their view of themselves as parents as the necessary first steps toward enhancing the parent-child relationship, reducing rates of child abuse and neglect, and promoting children's health and development. Parents who have an

accurate understanding of children's development will react with understanding and good humor rather than frustration or abuse when their young child cannot accomplish what an older child might. Parents who feel confident in their ability to be parents and who know a variety of ways to discipline their children will be warmer and more responsive to their children and less likely to resort to harsh discipline or physical violence. Children will develop better when there are more books and developmentally stimulating toys in the home and when parents talk with their children more and respond more quickly to them. Programs assume a cascading set of reactions: Once parents begin to respond with warmth and nurturance to their children, the children should begin to respond differently to their parents. They may become more attached, and that new close bond can become so rewarding to parents that they will spend more time nurturing their children, which should continue to make the interactions between parent and child more beneficial for both. That close bond, and the hoped-for decreases in abuse and greater success in school, might all lead children later in life to avoid delinquent or other maladaptive behavior.

These benefits can be measured directly, by impartial observers of the mother-child relationship, and/or indirectly, by mothers' reports of their own behavior or attitudes. Several home visiting programs have demonstrated benefits on one or more of these measures.

A review of several evaluations of the Healthy Families America (HFA) program, for example, concluded that the "most robust" effects of that program are found in areas related to parent-child interaction and parental capacity.[30] Interim results of a large national evaluation of the effects of Early Head Start services demonstrated improvements in a whole range of parenting knowledge, attitudes, and behaviors (effect size of .10-.15),[31] although benefits largely disappeared when the program ended at age 3 – at least for children at home-visit-only sites, rather than children at sties that offered home visits and/or center-based early childhood education.[32]

In several studies, differences on self-report scales designed to assess parental attitudes or behavior are found more often than are differences on measures of the home environment or observed mother-child interaction. For example, after one year of services, parents in Hawaii's Healthy Start program, which was the forerunner of the Healthy Families America program, reported experiencing less stress than members of the control group, less frequent use of harsh discipline, and a greater sense of efficacy as parents, but independent observers saw no notable differences in the mother-child relationship.[33]

The Abt Associates meta-analysis concludes that family support programs (which include both home visiting, center-based, and parent group approaches that have a parent education component) collectively yield benefits in parenting attitudes, knowledge, and behavior of about .18-.25 of a standard deviation, but the largest effects are generated by programs that use parent support groups rather than home visiting services.[7] In addition, the Abt researchers suggest that the largest effects on parent behavior are seen in those programs that focus on families where children are already identified with behavior

problems, rather than those programs that seek to promote good child rearing practices for a general population. They judge the effects for family support programs so small that, "It is not clear whether a difference of this size represents a change that is large enough to have the effect on children's well-being that it is ultimately intended to bring about."[34] (See Table 4 for a discussion of effect sizes.)

Table 4.
Statistical Significance and Effect Sizes:
When is a Result Large Enough to Be Important?

In good home visiting program evaluations, researchers compare families that received a service such as home visiting with families that did not, and then use statistical tests to assess whether the results are truly due to the intervention (e.g., home visiting) and not just to chance. If the difference between the two groups exceeds agreed-upon standards, then the results are called "**statistically significant**," and deemed likely to be obtained again if the study were repeated. Sometimes, very small differences between groups (e.g., one or two points on a standardized test) can be statistically significant, even though such differences may not have any practical or functional importance for the families.

To assess if a difference is large enough to be important in a real-world sense, researchers calculate an "**effect size**," which translates the difference between two groups into standardized units. Rules-of-thumb, used for many years in evaluations of social services programs, including education and early childhood services, define effect sizes up to .20 as small, .50 as moderate, and .80 as large, measured in standard deviation units (Cohen, 1983).

Home visiting programs typically produce effect sizes that would be judged under these rules to be too small to be meaningful. But, even small effects sometimes can be important. The effect size of aspirin in reducing heart attacks is only .03, but many physicians recommend that their patients take aspirin daily. The effect size of psychotherapy is about .32, but many people regularly see psychologists and psychiatrists (McCartney & Dearing, 2002).

Examples like these suggest that even a small change can be important if:

- it can be produced across a whole population,
- it is closely connected with a very significant event or outcome, and
- the intervention is relatively inexpensive to deliver.

This is the case for aspirin and heart attacks: an aspirin-a-day is a very inexpensive intervention, and the benefits that can be achieved if all adults participated would be enormous in terms of health, happiness, and reduced costs for the country.

If, on the other hand, a relatively expensive program produces only a small effect size on a paper-and-pencil test that does not predict actual behavior of parents or children, then the program may not be worth replicating. In other words, it is more important that home visiting programs produce even small benefits on actual changes in parenting behavior, child abuse and neglect, or children's school performance, than that they produce benefits on paper-and-pencil tests that may not predict real outcomes for children and parents.

References:

Cohen, J. *Statistical power analysis for the behavioral sciences*. Hillsdale, NJ: Erlbaum, 1983.

McCartney, K., & Dearing, E. (Winter 2002). Evaluating effect sizes in the policy arena. *Evaluation Exchange, 7(*1). Cambridge, MA: Harvard Family Research Project.

McCartney, K., & Rosenthal, R. (2000). Effect size, practical importance, and social policy for children. *Child Development*, *71*(1), 173-180.

The Sweet and Applebaum (2004) meta-analysis included just the subset of studies in the Abt database that employed home visiting. They too concluded that home visiting produces small benefits in parenting attitudes (.11 of a standard deviation) and parenting behavior (.14 of a standard deviation).[8]

In sum, the results suggest that home visiting programs may produce changes in the precursor parenting attitudes, and sometimes the parenting behaviors, that are related to prevention of abuse and neglect and promotion of healthy child development and school readiness. Effect sizes of less than .20 of a standard deviation appear to be the norm, and families that seek out services because they are trying to address an identified problem may benefit most.

2. Maternal Life Course

Some home visiting programs explicitly seek to help mothers improve their own lives. They provide social support so as to decrease maternal stress, relieve maternal depression, and improve mothers' mental health. Other programs seek to help mothers increase employment, complete their education, or defer subsequent births.

If successful, the programs should benefit the women's children, too. If women defer the birth of a second child, they may be better able to leave welfare and poverty, find employment, and focus more attention on their child, all of which are related to better outcomes for children.[35] Clinical depression can be a barrier to employment and can also affect mothers' interactions with their children – both of which are likely to contribute to the higher rates of behavior, academic, and health problems seen among children of depressed mothers, so addressing maternal depression should benefit children both directly and indirectly.[36]

However, with a few exceptions, most home visiting programs do not lead to large benefits for mothers in these domains.

a. Mothers' Stress, Social Support, and Mental Health

Some of the best evidence for effects in the area of mothers' psychological well-being comes from the UCLA Family Development Project, a small university-based program that employs clinically-trained home visitors to work closely with parents. Home visits are scheduled weekly during late pregnancy and in the first year, then biweekly in the second year, and then fading to phone and follow-up contacts only in the third and fourth years. Home visits are complemented by a weekly mother-infant group and referrals to other services. The program seeks to involve the father and other family members, and, in 87% of families, the father is involved in services. The program relies on the relationship between the home visitor and the mother to help the mother work through unresolved personal issues, including those related to her current relationships with the father, other family members, and her baby. This very clinically-

Most studies have not yet shown benefits in increasing mothers' social support, their use of community resources, or their mental health.

focused approach has yielded results such as less depression and anxiety on the part of the mother, and more frequent and satisfying support from the partner and other family members. These changes were also associated with better parent-child interaction.[5,37]

However, few home visiting programs provide such intensive, highly-trained clinical support for parents, and, for the most part, reviewers conclude that studies have not yet shown benefits in terms of increasing mothers' social support,[30] decreasing their stress,[8] or increasing their use of community resources (an aspect of social support),[9] and at best very small benefits in their mental health.[7]

b. Mothers' Self-Sufficiency

The best evidence for the potential of home visiting programs to help mothers improve their lives economically comes from the Nurse-Family Partnership (NFP), a program that uses nurses to deliver home visits to families beginning during pregnancy and continuing until children reach 2 years of age. The model has been tested with randomized trials in three sites: Elmira, New York; Memphis, Tennessee; and Denver, Colorado. In the first NFP site in Elmira, New York, over the course of 15 years after the birth of their children, poor unmarried women who had been home-visited had fewer subsequent pregnancies and births, were more likely to delay a second birth, spent fewer months on welfare or receiving food stamps, and had fewer problems due to substance abuse and fewer arrests than their counterparts in the control group. These were large differences: 60 versus 90 months on welfare, for example, and 65 versus 37 months between first and second births.[35] A 1998 RAND Corporation study indicated that these changes in maternal life course among high-risk mothers were primarily responsible for the program's net savings per family to government, and that the program did not produce benefits or cost savings when offered to a lower-risk population.[38] (More detail on cost-benefits of this and other programs appears in Section VI.)

The best evidence for the potential of home visiting programs to help mothers improve their lives economically comes from the NFP.

The sentinel finding for maternal self-sufficiency appears to be a reduction in the rate of subsequent births, which NFP researchers believe led to positive changes for parents and children later in life. In Memphis, the second NFP site, subsequent pregnancies were also deferred, although not as much as they had been in Elmira (a 67% reduction in Elmira versus 23% in Memphis at the end of program services), and there were no differences in employment or receipt of AFDC.[35] Follow-up is continuing to determine whether increased benefits will be observed in Memphis over time as they were in Elmira.

In contrast, studies of other large programs have not found many benefits in maternal self-sufficiency. For example, a recently completed randomized trial evaluation of Hawaii's Healthy Start program, the prototype for Healthy Families America, showed no effects on repeat births.[39] The three-city Teenage Parent Home Visitor Services Demonstration project employed paraprofessionals to help teen mothers leave welfare and enter the workforce.[40] Although home-visited teens spent more time than their

control group counterparts in education, they did not achieve any gains in educational degrees; they spent less time in job training; they were less likely to be employed; and they used equivalent amounts of welfare, Food Stamps, and Medicaid benefits. The program succeeded in promoting greater use of passive contraception, but there were no differences in overall rates of pregnancy or repeat births during the relatively brief follow-up period.

Similarly, Early Head Start participants did not differ from the control group in their participation in self-sufficiency activities or employment rates in the first 15 months of services. EHS parents who received home visiting services were more likely than control group parents to take part in high school and ESL classes, and in vocational courses, but there were no differences in achievement of educational degrees or credentials, in employment, or in welfare receipt.[31]

A meta-analysis of international studies suggests that home visiting programs have no effect on family size, public assistance, or employment, and too little is known about education to draw any conclusions.[9] The Abt Associates meta-analysis of US family support programs concludes that, with an effect size of .10 of a standard deviation, family support programs generally have "very little effect on parents' economic well-being."[41] The Sweet and Applebaum meta-analysis concludes that while home visiting services have no effect on mothers' economic self-sufficiency, they have a small effect (.13 of a standard deviation) on educational outcomes.[8]

In sum, with the exception of the NFP, few programs have produced meaningful benefits in self-sufficiency aspects of mothers' lives, although it is possible that programs do encourage mothers to go back to school, which might result in greater benefits in subsequent years.

B. Benefits for Children

Most of the home visiting programs examined in this paper seek to promote children's development (typically cognitive or language development and sometimes social and emotional development), and a substantial number also seek to promote changes in health care utilization and children's health status. A few evaluations have assessed changes in children's behavior over time.

When tested with rigorous methods, most home visiting programs have not increased the utilization of preventive health care or led to benefits in children's health status. The picture for cognitive development is a little more complex. Results suggest that benefits in children's cognitive development accrue more often among families where there are clearly identified needs to be addressed (e.g., children born low birthweight, children with physical disabilities and developmental delays). Cognitive benefits for other children, including children from low-income families, are not demonstrated reliably in randomized trials of home visiting programs, although there is a suggestion that home visiting services may help promote early language skills. Social development effects are

elusive, although one program found significant long-term benefits in children's behavior.

1. Child Health and Safety

Many home visiting programs seek to promote the utilization of preventive health services such as prenatal care, immunizations, or well-baby check-ups; encourage the removal of safety hazards in the home, and prevent child maltreatment. Generally, results suggest that home visiting programs are not associated with increases in utilization of preventive health care services or in improvements in broad measures of child health status, but they may help prevent injuries and perhaps alter the parenting attitudes that are associated with child abuse and neglect. Changes in actual child abuse and neglect rates, however, are rarely obtained.

a. Nutrition: Breastfeeding and Diet

Good health for children is heavily influenced by good nutrition, and many home visiting programs seek to encourage breastfeeding and healthy diets. At the Memphis, Tennessee, site of the Nurse-Family Partnership, for example, mothers who had been visited by a nurse home visitor were more likely to attempt breastfeeding than their control group counterparts (26% versus 16%), although the groups did not differ in duration of breastfeeding.[35]

Few studies have actually assessed the effects of home visiting on these outcomes, and one meta-analysis of international literature suggests there are too few studies to draw conclusions about the effects of home visiting on children's diets.[9] Nevertheless, two meta-analyses of international literature suggest that home visiting and social support programs that include home visiting do encourage breastfeeding.[9,16]

b. Preventive Health Services and a Medical Home

Many home visiting programs seek to educate parents about the benefits of preventive health services such as prenatal care, well-baby check-ups, dental care, or immunizations, and to link families with a "medical home" so that children can see the same doctor on an ongoing basis. Such continuity of care is a hallmark of high quality health services. It should lead to decreases in expensive and avoidable visits to emergency rooms, and to more appropriate medical care, including more timely immunizations and well-baby care.

Home visiting programs are not associated with increases in utilization of preventive health services.

Several HFA program sites report that up to 98% of enrolled families have medical homes, and that large percentages of children (e.g., 97% in three sites in Florida and eight sites in Tennessee) have received immunizations by age 2.[30] However, in most randomized trials, when home visited-children are compared against a control group, the groups make about the same use of preventive health services such as prenatal care,[35] immunizations, and well-child visits.[33]

Several meta-analyses and literature reviews have also concluded that home visiting programs do not lead to increased use of preventive health services either before or after birth.[9,42-44]

c. Child Health Status

Given that home visiting programs only sporadically produce benefits in utilization of health services or nutrition, it is unlikely that home visiting services will consistently lead to improved children's health status – and that is the case. Whether children's health status is measured in terms of birth outcomes, mothers' reports of their children's health, or children's actual height and weight, few benefits are found.

(1) Birth Outcomes: Preterm Birth and Low Birth Weight

Preventing preterm birth and low birthweight is very difficult, no matter the service strategy employed.[45] Many home visiting programs only enroll children after birth, which means that no effect on birth outcomes is possible. Among programs that enroll pregnant women, the NFP demonstrated fairly large decreases in preterm births and decreased percentages of low birth weight births for very young teens and smokers in the program's first site in Elmira, New York.[35] These findings were not replicated in the program's second study site in Memphis, Tennessee.[35]

The explanation may lie in the initial rates of cigarette smoking in the two sites: while 55% of mothers smoked at enrollment in Elmira, only 9% in Memphis did. To the extent that benefits were derived because the program led to decreases in smoking, these differences in initial smoking rates could have meant that it was not possible to achieve similar effects in Memphis: not enough mothers had the problem behavior that the home visiting program was seeking to alter.[35]

An international analysis of home visiting services concluded that the programs had no effect on birth outcomes.[17]

(2) Child Health Status and Physical Growth

Other studies have assessed the effects of home visiting on children's general health status, as reported by their mothers, or on the children's physical growth (height and weight). Meta-analyses have either concluded that there is no effect,[9] or that the effect size is very small (in the range of .09 - .12 on these domains), which would suggest minimal meaningful effects on children's physical health and development.[7]

d. Child Safety: Unintentional Injuries and Child Maltreatment

Home visiting programs seek to promote child safety by helping parents childproof their homes, teaching parents the importance of safety practices outside the home, such as the use of car seats, and/or by focusing on the prevention of child abuse and neglect. Home visiting is hypothesized to help decrease parental stress and to help parents learn new childrearing and disciplinary techniques, all of which should lead to better parent-child interactions and decreases in abuse and neglect.

Generally, meta-analyses suggest that home visiting may help decrease injuries and some of the parental attitudes toward discipline associated with child maltreatment, although most studies have not demonstrated decreases in rates of child abuse and neglect.

(1) Home Safety Hazards

Although most large studies (e.g., Early Head Start) have not found home visiting effective in helping parents identify and fix home health hazards, a few small studies have. The key may be the complexity of the item that needs to be fixed; the hazards that are the easiest and least expensive to fix are the most likely to improve as a result of home visiting.[9,46]

(2) Unintentional Injuries

Unintentional injuries can be the consequences of safety hazards at home or the disguised results of child maltreatment. Evaluators have treated them as both, and have sometimes used rates of hospitalizations for injuries or ingestions as proxies for measures of child abuse and neglect. For example, in the Nurse-Family Partnership, during the first two years of their lives, children in the home visiting group had fewer hospital visits for any cause or for injuries in Elmira, New York, and fewer health encounters for injuries and ingestions in Memphis. These effects were concentrated among those families with the fewest coping abilities initially.[35] Based on these and other studies, some meta-analyses and reviews suggest that home visiting may lower the incidence of such injuries.[9,19]

(3) Child Abuse and Neglect

Accurately measuring rates of child maltreatment is very difficult. First, abuse is a relatively rare event in the population, and most studies cannot afford to track the number of families necessary to detect its presence. Second, the most direct measure of child maltreatment, reports to Children's Protective Services (CPS), may over- or under-estimate the true rates of abuse and neglect.[47] Evaluators therefore have assessed child maltreatment using a variety of measures, including both initial and substantiated CPS reports, changes in parents' views of parenting or disciplinary practices, and rates of hospitalization or emergency room visits due to injuries and ingestions of poisonous substances, which may be proxies for physical abuse or neglect, as mentioned above.

(a) *Rates of Abuse and Neglect*. Healthy Families America and many similar programs were buoyed by results of post-hoc quasi-experimental studies that compared service recipients with non-recipients. Many of these showed striking benefits, such as 1% versus 18-20% rates of abuse and neglect for home visited versus at-risk but non-visited families, respectively, in Hawaii.[48] These types of studies continue to generate similar results today. An annual report from Oregon's Healthy Family America programs, for example, suggests that the rates of maltreatment were 12/1000 for HFA families versus 22/1000 for non-served 0-2-year-olds in the same counties.[49]

The strongest randomized trial evidence for the potential of home visiting to prevent child abuse and neglect comes from the Elmira, New York, study of the NFP. In that

randomized trial of home visiting by nurses, long-term follow-up of families indicated that participating families had about half as many substantiated reports over the course of the first 15 years of their children's lives than did families in the control group (an average of .29 versus .54 incidents per program participant). The families that benefited most were those in which mothers felt the least sense of control over their lives at enrollment.[50]

However, more recently, rigorous randomized trials of Hawaii Healthy Start and Healthy Families America, including a study of an HFA program in San Diego, California, have not yielded positive results with respect to decreased maltreatment rates.[30,33,51,52] A recent article including a review of 12 randomized trials of home visiting programs published since 1979, is decidedly mixed, with much of the positive evidence either derived from studies of the Nurse Family Partnership, studies including only short-term outcomes, or studies employing proxies for abuse and neglect.[52]

(b) Other Measures of Child Maltreatment. As implied above, the picture is more positive when proxy measures for child maltreatment prevention are used. For example, the NFP program showed decreased rates of hospitalizations for injuries or ingestions.[25] Home visiting programs (HFA and NFP) have also generated differences in maternal attitudes related to abuse and neglect, in mothers' self-reported use of harsh discipline, or in mothers' scores on scales associated with risk for abuse and neglect.[42]

Whether or not these are good proxies for child abuse and neglect is an open question, and some researchers have suggested that they are not.[53]

(c) Deciphering the Mixed Evidence Concerning Child Maltreatment. Despite the mixed evidence, organizations such as the United States General Accounting Office[54], the U.S. Advisory Board on Child Abuse and Neglect[55], the American Academy of Pediatrics[56], the Association of Maternal and Child Health Programs[57], the Centers for Disease Control and Prevention (CDC)[58], the Office of Juvenile Justice and Delinquency Prevention[59], the National Academy of Sciences[60], and the National Governors Association[61] have all endorsed the use of home visiting to prevent child maltreatment. In conjunction with the CDC, the Task Force on Community Preventive Services, has even concluded that up to 40% of all child maltreatment could be prevented if home visiting were widely available.[62]

These endorsements and the 40% estimate undoubtedly depend on the consideration of evidence from both randomized trials and less rigorous studies, and the inclusion of proxies for child abuse and neglect as well as changes in abuse and neglect rates. The Sweet and Applebaum meta-analysis, for example, concludes that while home visiting programs may have a small effect on decreasing the *potential* for abuse (.24 effect size), they have no effect on decreasing *actual* abuse and neglect rates.[8]

While that may explain why organizations have chosen to endorse home visiting, what accounts for the differences in actual program results? Why have some home visiting programs been able to demonstrate benefits and others have not? The varied

results may be due both to characteristics of the families and to characteristics of the services.

With respect to families, for example, early results from the Nurse-Family Partnership suggested that the families that benefited most were those in which mothers had low coping skills initially. Additional analyses revealed that home visiting services did not prevent child abuse among those families that experienced a great number of domestic violence episodes (about 21% of the families in the Elmira nurse-visited group).[50] NFP has since worked to develop additional services and content for families facing domestic violence.

The Abt Associates' meta-analysis further suggests that program structure and services may play important roles. Although they concluded that family support programs as a whole had almost no effect on child safety outcomes, the Abt researchers noted that greater child safety benefits were linked with those family support programs that

- served families with children under 3 years of age
- provided case management services
- provided parent-child activities, and
- worked with teenage parents (as a large percentage of the Elmira NFP families were).

Programs that combined case management, parent-child activities, and a teenage parent population had the largest average effects (1.40 of a standard deviation), compared with average effect size of .20 for programs with none of these service elements.[7]

Several recent studies, however, demonstrate that simply targeting services to the neediest or highest risk families (e.g., teens, women with low coping skills) is not sufficient. Program services and curricula must also help the families they serve change the underlying risk factors for child abuse and neglect. In a meta-analysis that compared the effectiveness of programs that offered services universally or in a variety of more targeted approaches, the author concludes that using screening instruments to recruit families at very high risk for child maltreatment into services may unfortunately bring families into home visiting programs that are ill-equipped to serve them.[12]

This appears to be what happened in Hawaii's Healthy Start program, where a careful randomized trial showed that program staff were untrained, unwilling, or unable to recognize or address the true risk factors for abuse and neglect (e.g., domestic violence, mental illness, substance abuse). Not surprisingly, therefore, no differences in abuse or neglect rates were produced.[52]

An evaluation of a Santa Barbara Healthy Families America program that employed the Parents as Teachers curriculum also showed the importance of addressing underlying risk factors for abuse. In that study, families were assigned to (1) the standard HFA/PAT home visiting program, (2) an enhanced version of the program that included a cognitive skills training component, or (3) a control group. In the enhanced home visiting program,

parents were taught to read their children's cues, diagnose accurately the causes for any problem in parent-child interaction, and develop an action plan to address it. Physical abuse rates by mothers were cut significantly through the enhanced home visiting services (4% versus 23% in the traditional home visiting group and 26% in the control group),[63] and fathers in the enhanced condition also showed lower family violence rates than fathers in traditional home visiting.[64]

In sum, the strongest evidence for the benefits of home visiting programs in the prevention of child abuse and neglect comes primarily from one study (the NFP), or from multiple studies employing measures other than CPS reports. Program effects are dependent upon characteristics of the families served and the ability of the program to address the underlying risk factors associated with abuse and neglect.

2. Child Development, Achievement, and Behavior

Most home visiting programs seek to promote children's development by changing parent behavior. The mixed effects of home visiting in producing changes in parenting and the home environment suggest that results concerning children's development and behavior will be mixed as well, and they are. Key explanatory factors appear to be the risk status of the children and whether or not services provide significant direct attention to the children.

a. Children's Cognitive Development, Language Development, and Academic Achievement

Home visiting studies have typically assessed children's development using standardized tests, and a few have examined children's school achievement. Results are very mixed. Center-based early childhood education services or center-based early childhood education combined with home visiting yield larger and more long-lasting benefits in cognitive development than do home visiting services alone. (See subsequent section.)

Some studies of programs such as Parents as Teachers,[65] HIPPY,[66] or the Parent-Child Home Program[67] have demonstrated that home visited-children out-perform other children in the community through the 4th, 6th, or 12th grades, respectively, on measures such as school grades and achievement test scores on reading and math, suspensions, or high school graduation rates. However, large cognitive benefits such as these are *not* demonstrated reliably in high-quality randomized trials of home visiting programs.

In most studies, some subgroups of children do benefit, but the subgroups are not consistent across studies or across different sites of the same program model. For example, in an evaluation of HIPPY, children's cognitive development, school achievement, and classroom adaptation were assessed for two cohorts of children at each of two program sites and at two points in time. No clear pattern of results emerged: children in the first cohort benefited on some measures at one site but not at the other, or at one point in time but not at the other, and children in the second cohort did not benefit at either site.[68] Similarly mixed results with only some children benefiting can be found for many other home visiting programs.[69-71]

Results from Early Head Start further suggest that home visiting may offer different benefits than other service strategies. In interim Early Head Start results, when children were two years of age, home visiting services produced a small effect on children's language development (effect size of .13 of a standard deviation), but no effects on cognitive development. Larger effects (.19-.28) were achieved on language development at mixed-approach program sites that offered home visiting and/or center-based services to families, depending upon the needs of the families. Sites offering only center-based services generated effect sizes of .22 on cognitive development, but did not promote language development.[31] By age 3, however, only the mixed-approach sites produced significant effects in language development (effect size of about .23), and only center-based sites appeared to have any effect on cognitive development.[72] (See Section V for a discussion of programs that combine home visiting and center-based early childhood education.)

b. Deciphering the Mixed Evidence Concerning Cognitive Development

Most meta-analyses and literature reviews offer one clear conclusion: large benefits in children's cognitive development are most likely when services focus directly on the child, and not when they rely upon parents to intervene with the child, as most home visiting programs do. Even a home visiting program such as PCHP, which has more of a didactic child focus (i.e., home visitors work directly with the child a high percentage of the time) probably do not result in as much time spent directly with the child as does a center-based early childhood program. The Abt Associates meta-analysis compares the effect of home visiting and center-based early childhood education on cognitive development, and concludes that home visiting services generate an effect size for cognitive development of .26, but programs with early childhood education components generate effects almost twice as large (.48).[7] Nelson et al (2003) suggest that the preschool education component accounted for fully 63% of the variance in cognitive outcomes during the preschool years in their meta-analysis of early childhood interventions.[14]

Center-based, child-focused services or center-based services combined with home visiting yield larger and more long-lasting benefits in cognitive development than do home visiting services alone.

The Abt analyses include home visiting programs that focus on families of all income levels with children who have clear physical or developmental disabilities or biological risks (e.g., born low birth weight) as well as those that serve broader groups of children. Although home visiting programs for children with special needs were not addressed in this review, home visiting services appear to promote the development of these children more than for most other children.[7,9,44] (See Table 5 for a description of the Infant Health and Development Program, which is one example of a program that provided home visiting (as well as center-based and health services) to infants born low birthweight.) The Abt researchers conducted additional analyses and conclude that home visiting services generate short-term cognitive development benefits of moderate size (.36) when services are targeted to children with biological risks, but much smaller (.09) when they are not.[7]

Table 5. The Infant Health and Development Program (IHDP):
Home Visiting, Center-Based Early Childhood Education, and Health Services for Low Birthweight Infants

The IHDP was an eight-site randomized trial demonstration project that provided comprehensive services for three years to infants born low birthweight (2500 grams or less) and their families. 985 infants were randomly assigned into experimental or control groups, with the experimental group receiving the following services: (1) home visits, scheduled weekly for year 2, and then biweekly thereafter; (2) child development centers, five days per week for at least four hours per day, beginning at 12 months and continuing until 36 months; and (3) bimonthly parent group meetings to provide information and social support. Infants in both groups also received medical, developmental, and social assessments, and referrals for services such as health care. Published reports exist on follow-up of infants and their families through age 8 (age 9 at one site), and plans include continued follow-up through age 18. Analyses reported results for the sample as a whole and for subgroups of children, including those born heavier (> 2,000 g), and lighter (<2000 g).

At 36 months (the end of the intervention), children in the intervention group had higher scores than children in the control group on tests of language, cognitive development, and visual-motor and spatial skills. Their IQ scores were significantly higher (93.6 versus 84.2). They also showed fewer behavior problems. Additional analyses suggested that the intervention was more beneficial for the heavier infants and for African-American rather than white infants.

By age 5, most of the differences between the full control and experimental groups had disappeared, but some benefits remained for the heavier IHDP infants as versus their counterparts in the control group. These included higher IQ scores (97.9 versus 83.6) and borderline differences in behavior problems.

By age 8, there were no differences between intervention and control groups for any cognitive, school performance, or behavioral outcome measures for the full sample or for the lighter-weight infants. However, for heavier infants, IQ scores were higher in the intervention group (96.5 versus 92.1), and fewer IHDP children than control group children required special education. Follow-up of these children is continuing.

SOURCES: For summaries of IHDP and publications of its results, see www.promisingpractices.net/program.asp?programid=136.

Put another way, the Abt Associates meta-analysis suggests that home visiting programs that serve socially at-risk (e.g., low income) populations generate cognitive benefits of about .09 of a standard deviation; but programs that serve both biologically at-risk and non-at-risk children produce benefits that are about 3 times larger; and programs that serve only children with special needs produce benefits that are about 4 times larger.[7] But, none of these benefits on children's cognitive development were as large as the benefits gained via center-based or very child-focused services offered in conjunction with home visiting.

3. Social and Emotional Development and Children's Behavior

Because, as described above, home visiting programs can produce small but positive benefits in parenting attitudes and perhaps behavior, it is reasonable to expect that stronger parent-child attachments may emerge among home-visited families. Children with such strong attachments to their parents are better able to take advantage of the

opportunities that school offers, to develop better social skills and greater emotional stability, and to steer clear of later child behavior problems and delinquency.

At least one home visiting program has assessed children's long-term behavior and finds very important benefits. Families who had participated in the Elmira, New York NFP were contacted when the children were 15 years of age, some 13 years after program services ended. Teens who had been born to poor unmarried women who had been home-visited showed significant benefits over the control group in several areas: there were fewer instances of running away, arrests, convictions, cigarettes smoked per day, and days having consumed alcohol in the last six months, less lifetime promiscuity, and parents reported their children had fewer problems related to drug or alcohol use.[35] (See Section IV for additional discussion of this and other longitudinal studies.)

Most meta-analyses suggest that home visiting confers a small but positive benefit on social and emotional outcomes (effect size of .10 -.15).[8,9] The Abt Associates meta-analysis concludes that while family support programs can improve children's social and emotional development (effect size of .22-.26 for all family support programs), home visiting alone generated benefits only of about .10. The programs that have the largest effects on social and emotional development do not rely on home visiting or work with primarily low-income families, but instead (1) target children with developmental risks and/or behavioral problems, (2) have as a goal the development of parent competencies, and (3) tend to use professional staff to work with parents.[7] These are more likely to be programs in which parents have sought help to address a particular existing problem rather than primary prevention programs, and are therefore not the types of programs reflected by the national home visiting models described in this paper.

In sum, home visiting produces small cognitive and social/emotional benefits. There is also some suggestion that home visiting may help with language development. But, the clear finding is that the largest effects for cognitive development derive from home visiting programs that serve children with special needs and/or that are combined with center-based early childhood education.

C. Other Outcomes

Some home visiting programs suggest they provide additional benefits such as improving the work skills and professional development of the home visitors, easing children's transitions into school, or increasing parent involvement with their children's education, but these outcomes have not yet been assessed in rigorous studies. However, surveys of parents in PAT[73] and HIPPY[74] and reports by kindergarten teachers about children who had participated in PAT[75] suggest that the parents were very likely to participate in their children's later schooling (e.g., attending school events and parent-teacher conferences, PTA events, volunteering, and helping with homework). Both HIPPY and PAT are often administered by school districts, which may make parents feel more at-ease with school surroundings.

IV. Benefits of Home Visitation Programs: Long-Term Outcomes

While most evaluations of programs that have employed home visiting as the sole service strategy have assessed results only at the completion of services (perhaps when children are 2-3 or 5 years of age), at least 13 studies have reported long-term outcomes when children were age 6 or older. These programs are listed in Appendix C.[76-88] Results of most of these programs have already been included or alluded to in Section III, but this section of the paper focuses solely on these long-term studies. It describes how the studies vary, reviews the results briefly, and then discusses fade-out and sleeper effects.

A. Description of the Longitudinal Studies

Ten of the 13 studies listed in Appendix C focus on one of the national models described in Table 2 (i.e., either PAT, NFP, HIPPY, or PCHP). The three remaining studies are evaluations of programs begun decades ago that are no longer in operation. At the age of last follow-up, the children in these studies ranged from age 6 to age 15 and high school graduation.

With the exception of two programs which both employed nurse home visitors (NFP and the Gutelius et al studies), the programs being evaluated in these longitudinal studies grew out of the tradition in the 1960s and 1970s that led to Head Start: they sought to intervene early to promote children's development, including IQ, and to help children perform well in school. Of the programs still in operation today, all but PAT focus primarily on children from low-income or otherwise at-risk families. The studies of these programs reflect this focus on erasing the school achievement gaps created through social disadvantage.

While a wide range of measures have been used to detect changes in parental caregiving, abuse and neglect rates, maternal life course, children's cognitive development or school achievement, children's behavior and/or physical development, or children's physical health and the use of health services (see Table 6), the areas most commonly assessed across the 13 studies are children's cognitive development or school achievement. Indeed, with the exception of the NFP evaluations, most longitudinal studies have used a relatively circumscribed set of outcomes, often relying on what can be gathered easily from school records. The NFP stands out as an example of a series of studies that employs a wide range of measures, with increasingly sophisticated measures being used as studies have continued over the years in the Elmira, Memphis, and Denver sites. While multiple measures can provide a more nuanced view of what is happening, they can sometimes yield mixed results, which can make interpretation challenging.

Table 6. Outcomes Assessed in Longitudinal Studies at Follow-Up

Parental Caregiving

- Child's diet
- Home environment: toys, books, educational materials in home; home hazards
- Parent-child interaction: verbal interaction, behavior management, use of punishment/harsh discipline (self-report; observed), sensitive/responsive mother-child interaction
- Attitudes toward child
- Mother's involvement in child's schooling

Abuse & Neglect

- Reported/substantiated cases

Maternal Life Course

- Education: mother's education, mother in school; partner's education
- Employment: Maternal employment (%/months employed); father job stability, SES of partner's current job
- Receipt of public benefits (welfare/TANF, Medicaid, Food Stamps)
- Subsequent pregnancies/births: number, months between 1st and 2nd birth
- Maternal substance use: impairments, use of marijuana, moderate/heavy drinker, behavioral problems attributable to substance use
- Maternal arrests, convictions
- Marital status: married, has partner, lives with father of child, months with current partner
- Mother's sense of mastery
- Mother's mental health
- Domestic violence

Child Cognitive Development, School Achievement

- IQ, performance on child development scales
- School/other achievement tests: math, reading
- Special education
- Vocabulary test scores
- % incoherent stories (story test)

Child Behavior and/or Physical Development

- Motor development
- Night-waking
- Shyness
- Behavior problems: internalizing/externalizing disregulated aggression (story stems test)
- Positive behavior: self-confidence, social skills, warmth/empathy (story stems test)
- Classroom behavior: academically engaged, social skills
- School attendance
- School suspension
- Classroom grades
- Grade retention
- High school graduation/drop-out

Physical Health and Use of Health Services

- Well-child care
- Birth outcomes of subsequent child

The studies also differ in important ways with respect to research design. Many were randomized trials, but the longitudinal studies of PAT and at least one study of HIPPY were quasi-experimental in nature – generally considered a weaker research design. Even among randomized trials, however, some studies suffered from attrition that threatened the research design.[80] Some quasi-experimental studies restricted the intervention group to only those children who had completed more than 10 home visits,[65] or 6 months[86] or one year[66] of the intervention. Because attrition rates from home visiting programs are as high as 50% within a single year (discussed in Section VII), restricting the sample in this fashion may mean that the families who are included in the intervention group differ in important ways from those in the comparison group and from those who typically enroll in the programs.

Studies also differ in the extent to which they report results for the whole sample and/or for a subgroup. For example, studies of the Nurse Family Partnership frequently report results for the whole sample as well as for mothers with low psychological resources.[81,82,84] Such subgroup analyses are risky because the families in the subgroup probably differ from the population generally in some ways that may influence their outcomes. When benefits for subgroups are identified, the best approach is to attempt to replicate those findings in other studies with those subgroups. That is the approach that the NFP has taken.

B. Results

Results in each of the studies included in Appendix C are mixed – just as they are in most of studies of home visiting.

For those studies that were seeking to improve children's cognitive development and early school performance (e.g., HIPPY, PAT, PCHP, Lambie et al,[77,78] Jester & Guinagh[80]), benefits are produced on measures such as grades, placement in special education, achievement tests, and high school graduation. Benefits are found at 2nd, 3rd, 4th, and 6th grades, as well as at high school. Long-term benefits in IQ are not reliably found. These results parallel those produced by studies of center-based early childhood education programs, in which long-term benefits in school performance persist even after IQ gains fade.

However, these findings are not as compelling as they might be because they are not reliably replicated in high-quality studies – or even for all children within these studies. For example, as described in Section III, in two studies of HIPPY, children in the first of two cohorts showed benefits in this general set of outcomes, while, inexplicably, children in the second cohort in each study did not.[68]

The most compelling of these longitudinal studies, therefore, because of their careful research methods, the length of follow-up, and the breadth of findings, are the examinations of the Nurse Family Partnership. NFP researchers have focused more on maternal life course, children's social development and behavior, and child maltreatment, than on children's cognitive development or school performance. As reported in Section III, 15-year follow-up results from the Elmira, New York, site demonstrated that mothers

who were visited by the NFP nurses spent fewer months on AFDC or receiving Food Stamps over the 15-year interval than mothers in the control group. They had fewer pregnancies, better spacing between pregnancies, less substance use, and less involvement with the criminal justice system. These differences pertained only to the poorest, unmarried women in the sample. Some of these outcomes have been replicated in the Memphis, TN site, though the magnitude of the benefits is generally smaller.[35]

Children in the Elmira sample experienced less substantiated abuse over the 15 years,[81] but only if they did not live in the approximately 20% of households that also experienced considerable domestic violence.[50] The children experienced fewer arrests, convictions, probation violations over the course of the 15 years (this pertained both to the whole sample and to the lowest-income subgroup), but there were no differences in measures of externalizing/internalizing problems, acting-out problems, the number of times they were sent to youth correction, or whether they had ever had sexual intercourse, been pregnant, or made someone pregnant. Those youth who were children of the poorest, unmarried women in the sample had fewer sex partners and drank alcohol and used drugs less frequently.[82] The authors conclude that NFP "prevented only the more serious forms of antisocial behavior leading to arrests and convictions. Other types of prevention programs may be necessary to reduce more normative types of disruptive behavior among young adolescents."[89]

C. Fade-Out and Sleeper Effects

In many longitudinal studies of center-based childhood programs, effects fade over time, either diminishing in magnitude or disappearing entirely. This appears to be particularly true for IQ differences and is the case for these home visiting programs as well.

However, for some home visiting programs, "sleeper effects" that were not present in the early years emerge later, perhaps as the cumulative impact of services begins to take effect. For example, in the evaluation of NFP in Elmira, New York, statistically significant differences between nurse-visited and control groups were not observed in child abuse and neglect rates shortly after the end of the intervention, but they were observed 15 years later.

Such sleeper effects are not often seen, however, without at least some precursor suggestions that they might emerge. In NFP, for example, while there were no significant short-term differences in abuse and neglect rates, there was a trend in that direction. Similarly, in Early Head Start sites that employ home visiting, better parenting at 24 months did seem to predict some child benefits at 36 months.[90]

This notion of sleeper effects has important implications for services, research, and estimation of long-term benefits. If significant effects or their precursors are not present early, then it is unlikely that the effects will appear later. For service providers, that means that a dearth of short-term outcomes should lead to review of program content or implementation. For researchers, it means that it may not be worthwhile maintaining a longitudinal study if early results are not present. For policymakers, it means that long-

term benefits or cost savings that might be predicted based on other studies are unlikely to be obtained.

D. Effects on Siblings and Grandchildren

If the primary mechanism for change in home visiting programs is change in parent behavior, then benefits for siblings as well as target children should be observed. In addition, if children are changed significantly, then their children (the grandchildren) could conceivably also be changed. Researchers are currently assessing grandchildren in the center-based early childhood education Abecedarian program, for example, to see if grandchildren have enjoyed any benefits from their parents' enhanced lives.

Assessments of such spillover effects on siblings or grandchildren have largely not been conducted in studies of home visiting, although the NFP has assessed low birth weight among subsequent children in Memphis (no significant differences found)[84] and Denver (benefits for women visited by paraprofessionals but not by nurses).[c] However, evaluations of home visiting *combined* with other services (e.g., early childhood education, medical care) have assessed changes in siblings.[91,92] As discussed in Section V, when home visiting is combined with other services, benefits appear to be broader and longer lasting. These two studies served small numbers of African-American children beginning in the 1960s and 1970s, and produced some benefits for siblings, suggesting that the interventions had altered parent-child interactions or home environments sufficiently to lead to change among siblings who had not been the target of the interventions.

E. Conclusions about Longitudinal Studies of Home Visiting

Very few longitudinal studies of programs that employ home visiting as the primary service strategy exist. Of those that do, the NFP studies are the most carefully controlled in the home visiting literature, and they have produced the largest and broadest range of outcomes. But, even they illustrate that home visiting results vary across measures, sites, and families. These results also illustrate that the specific outcomes of one home visiting program model are not generalizable to another program model, and that replication of all results across populations and sites is critical. These conclusions pertain to the other studies included in this review as well.

[c] The Denver, Colorado NFP study is not included in Appendix C because children at follow-up in the last published study of the program were only 4 years of age, younger than the age 6 cut-off for Appendix C. For Denver results, see Olds, D.L., Robinson, J., Pettitt, L., et al. (2004)Effects of home visits by paraprofessionals and by nurses: Age 4 follow-up results of a randomized trial. *Pediatrics, 114,* 1560-1568.

V. Delivering Home Visits in Combination with Other Services

The previous sections describe mixed results and modest-in-magnitude effects for most home visiting programs in which home visiting was the primary service strategy. This section reviews studies of programs in which home visiting was combined with other services. Results suggest that benefits in children's development and, in particular, in cognitive outcomes would be magnified if home visiting were combined with center-based early childhood education programs.

> *"Programs that combine child-focused educational activities with explicit attention to parent-child interaction patterns have the greatest impacts."*
> *--National Academy of Sciences (2001)*

A. Home Visiting and Center-Based Early Childhood Education

Over the past 30 years, some of the programs that produced the most substantial long-term outcomes for children combined center-based early education services for children with significant parent involvement through home visiting, joint parent-child activities, parent groups, or some other means.[93] In these programs, children demonstrated benefits in academic achievement throughout their school years, and were more productive citizens (less crime and delinquency, for example) as young adults. Examples from the past include programs such as the High/Scope Perry Preschool Program,[94] the Syracuse University Family Development Research Program,[95] the Houston Parent Child Development Center.[96] The Infant Health and Development Program (IHDP), described in Table 5, is another example of a program that combined home visiting with other center-based services for children – although the population of low birth weight infants served by IHDP is unlike the population served by most of these other programs.

In the older studies, long-term benefits were seen in children's achievement and social and emotional behavior (e.g., crime and delinquency prevention).[93] In more recent studies, which do not have such long-term follow-up, children also appear to benefit from combined services. In Early Head Start, for example, the children in program sites where both home visits and center-based services were offered demonstrated larger and broader cognitive and language development benefits than children in sites which offered only center-based or only home visiting services at the conclusion of services when children were 3 years of age.[72] In quasi-experimental studies of children entering kindergarten in Missouri, children who had participated in PAT and center-based early childhood educational services outscored their peers on school readiness scales.[97,98]

The latter set of studies of Parents as Teachers are particularly interesting because they may also illustrate what can be expected when a home visiting service is offered universally, as PAT is in Missouri. Even though PAT is offered to all parents, just 6% of children entering kindergarten in the Missouri study had participated only in PAT, whereas 37% had received PAT plus either child care and/or prekindergarten classes.[98] Many families, therefore, appear to need or prefer a combination of home- and center-based services.

One randomized trial explicitly tested the added valued of combining center-based early childhood education with home visiting. Launched in North Carolina in the 1980s, Project CARE randomly assigned children to (1) home visiting; (2) home visiting plus center-based early childhood education; (3) a control group. Only the children receiving the center-based group care plus home visiting services outperformed the control group.[99]

The National Academy of Sciences has concluded, "Programs that combine child-focused educational activities with explicit attention to parent-child interaction patterns and relationship building appear to have the greatest impacts. In contrast, services that are based on generic family support, often without a clear delineation of intervention strategies matched directly to measurable objectives, and that are funded by more modest budgets, appear to be less effective."[100] In other words, while parent involvement confers a unique advantage in early childhood programs, it is parent involvement that has been coupled with child-focused programs like a good quality child care or preschool program that has helped produce the longest-lasting, broadest range, and largest magnitude changes in children.

B. Home Visiting and the Medical System

In 1996, the Commonwealth Fund and other funders launched the Healthy Steps for Young Children Program (HS), a multi-site demonstration project that incorporated developmental specialists and enhanced developmental services into standard pediatric care.[101-104] Each developmental specialist provided advice to parents at pediatricians' offices, over the phone, in written materials, and via parent groups. In addition, specialists screened children for developmental delays and conducted home visits (six per family were scheduled over 3 years; the program averaged two visits per family over the first 2½ years of services). The program operated through clinical practices, including large HMOs such as Kaiser, and the population served was more varied with respect to income level than in most home visiting programs. The evaluation followed a cohort of children from birth to age 3 at 15 sites, six of which employed randomized trials and nine of which compared children to a matched comparison group at similar organizational settings in the community.

The results suggested that parents who participated in HS were more satisfied with care, and their children were more likely to receive well-baby check-ups and immunizations on time. There were no effects on hospitalizations or emergency room use, child behavior problems, or home safety practices. At quasi-experimental sites and for the sample overall, parents reported that they were less likely to use harsh discipline.

While these differences cannot be attributed solely to home visiting, especially since the number of home visits was so low, the results do suggest that parents in a broad range of income levels welcome the pairing of health services with developmental services and find such services can be useful.

VI. Costs and Cost-Benefit Analyses

In recent years, several cost analyses of home visiting programs have been developed.[18,105-108] The tables in this section summarize the most recent of these analyses.[d] Comments on the analyses follow the tables.

A. Aos et al (2004) and Karoly et al (forthcoming)

Table 7 combines the results from Aos et al (2004)[108] and Karoly et al (forthcoming)[18] because they are largely equivalent. Aos et al include estimates for a greater number of programs, while Karoly et al separate out the effects of NFP for high- and low-risk samples and also include cost-benefit calculations for programs such as the High/Scope Perry Preschool project. Both groups of researchers note that not all program benefits are easily monetized, so that calculations for IHDP and PCHP seem to suggest the programs are not good investments – even though both have produced benefits. Karoly et al also note that benefits that can be monetized more easily (e.g., crime prevention, special education placement, grade retention) are more likely to be possible in studies with longer-term follow-up – which may also help explain some of the differences in results.

Table 7 includes an estimate of the costs and benefits of "home visiting programs for at-risk mothers and children," based on a meta-analysis of a series of home visiting programs. These include programs designed to serve particular populations such as babies with failure to thrive, women with substance abuse problems, and so on. These programs are quite different in purpose and content than many of the large national home visiting models and the programs included in this literature review. In addition, Aos et al note that some of these programs also included services such as preschool in addition to home visiting services,[109] so this estimate may not be representative of costs and benefits in many of the most widely available home visiting programs in the United States today.

[d] Other cost analyses include: (1) Cost analyses for home visiting programs, not reviewed here, that provide 1-2 visits to mothers discharged early from the hospital after giving birth. See, for example: Casiro, O.G., McKenzie, M.E., McFadyen, L., Shapiro, C., et al. (1993) Earlier discharge with community-based intervention for low birth weight infants: a randomized trial. *Pediatrics*, *92*(1), 128-134; (2) Cost data are included in a study of a program offering a one-time home visit to prevent childhood injury: King, J.A., Klassen, T.P. LeBlanc, J., et al. (2001). The effectiveness of a home visit to prevent childhood injury. *Pediatrics*, *108*(2), 382-388; (3) an estimate of costs and benefits of PAT: Drazen, S.M., & Haust, M. (8/12/1996). Lasting academic gains from an early home visitation program. Presented at American Psychological Association Annual meeting, Toronto, Ontario.

Table 7. Costs and Benefits for Selected Home Visiting Programs: Results from Aos et al (2004) and Karoly et al (forthcoming, 2005), in 2003 dollars

Program	Benefits	Costs	Benefits Per Dollar of Cost	Benefits Minus Costs
Home Visiting Programs				
Home Instruction for Parents of Preschool Youngsters (HIPPY)†	$3,313	$1,837	$1.80	$1,476
HIPPY‡	3,032	1,681	1.80	1,351
Parents as Teachers†	4,300	3,500	1.23	800
Parent Child Home Program†	0	3,890	0	-3,890
NFP –overall sample†,‡	26,298	9,118	2.88	17,180
NFP –Higher risk sample‡	41,419	7,271	5.70	34,148
NFP—Lower risk sample‡	9,151	7,271	1.26	1,880
Healthy Families America‡	2,052	3,314	.62	-1,263
Home visiting programs for at-risk mothers and children (meta-analysis)†‡	10,969	4,892	2.24	6,077
Home Visiting Plus Other Services				
Even Start†	0	4,863	.23	-16,203
Comprehensive Child Development Program†	-9	37,388	0	-37,397
Infant Health and Development Program†	0	49,021	0	-49,021
High/Scope Perry Preschool Project‡	253,154	14,830	17.07	238,324

Sources:

† Aos, S., Lieb, R., Mayfield, J., Miller, M., Pennucci, A. (2004). *Benefits and costs of prevention and early intervention programs for youth.* Olympia: Washington State Institute for Public Policy.

‡ Karoly, L.A., Kilburn, M.R., & Cannon, J.S. (forthcoming, 2005). *Early childhood interventions: proven results, future promise*, MG-341. Santa Monica, CA: RAND Corporation.

B. Additional Cost and Benefit Analyses of the Nurse-Family Partnership

Tables 8-10 are based on analyses by David Olds and his colleagues of the NFP at its first three sites (Elmira, Memphis, and Denver). Costs, benefits, and pay-off differ from the information in Aos et al and Karoly et al, based on different assumptions about initial costs, differences in the range of outcomes that were included in the calculations, and in the years in which dollars are estimated (i.e., the tables below report results in 2001 dollars; Table 7 above reports results in 2003 dollars).

Tables 8a and 8b illustrate that NFP had its greatest pay-off in Elmira and among the higher-risk families in that community.

Table 8a. Nurse-Family Partnership: Average per family net cost to government, period from study child's birth to 15th year. Elmira, New York, 2001 dollars

Type of Cost/Revenue	Comparison Group (N=134)	Nurse-visited Group (N=87)	Difference	P-Value
Government programs	$148,998	$101,190	$47,808	p =.049
Tax revenues	45,157	53,494	8,337	p = .238
Net Government Cost	103,841	47,287	56,145	p = .028
Home visitation program cost	----	14,287	14,287	
Percent recovery	----	----	393%	

Table 8b. Nurse-Family Partnership: Comparison of Per Family Government Expenditures and Taxes Paid Between Study Child's Birth and 15th Year According to Hollingshead Socio-Economic Status Categories. Elmira, New York, 2001 Dollars

Hollingshead Categories IV and V

Type of Cost/Revenue	Comparison Group (n=82)	Nurse-visited Group (n=48)	Difference	P-Value
Government programs	$188,759	$123,800	$64,959	p =.033
Tax revenues	40,216	46,877	6,661	p = .261
Total (Govt prog savings + taxes paid)			71,620	p = .040
Per capita program cost			14,287	
Percent recovery	----	----	501%	

Hollingshead Categories I-III

Type of Cost/Revenue	Comparison Group (n=52)	Nurse-visited Group (n=39)	Difference	P-Value
Government programs	$86,299	$73,363	$12,936	p = .800
Tax revenues	52,949	61,637	8,688	p = .662
Total (Govt prog savings + taxes paid)			21,624	p = ..384
Per capita program cost			14,287	
Percent recovery	----	----	151%	

SOURCE for Tables 8a-8b: Glazner, J., Bondy, J., Luckey, D., & Olds, D. Effect of the Nurse Family Partnership on government expenditures for vulnerable first-time mothers and their children in Elmira, New York, Memphis, Tennessee, and Denver, Colorado. Final Report to the Administration for Children and Families.
www.acf.hhs.gov/programs/opre/welfare_employ/economic_analysis/reports/effect_nursefam/effect_nursefam.pdf (Accessed 6/29/05)

Table 9. Average per Family Net Cost to Government, Pregnancy to Study Child's 4th Year, Comparison Group, Nurse-visited, and paraprofessional-visited Families in Denver, 2001 Dollars

Type of Cost/Revenue	Control (N=224)	Nurse (N=206)	Para-professional (N=211)	Difference (Control – Nurse)	P-Value	Difference (Control – Para-professional)	P-value
Government programs	$14,964	$13,361	$15,582	$1,603	P = .378	(618)	p = .651
Tax revenues	5,575	6,449	5,946	874	P = .957	371	P = .864
Net Government Cost	9,389	6,912	9,636	2,477	P = .761	(247)	P = .396
Home visitation program cost	-----	8,661	5,838	8,661		5,838	
Percent recovery				28.6%		-0.4%	

Table 10. Nurse-Family Partnership: Average per Family Net Cost to Government, Period from Study Child's Birth to age 4½ Years; Comparison Group and Nurse-visited Families in Memphis, 2001 dollars

Type of Cost/Revenue	Comparison Group (N=456)	Nurse-visited Group (N=204)	Difference	P-Value
Government programs	$27,865	$25,580	$2,285	p =.041
Tax revenues	1,872	2,090	218	p = .976
Net Government Cost	25,993	23,490	2,503	p = .053
Home visitation program cost	----	9,755	9,755	
Percent recovery			25.7%	

SOURCE for Tables 8-10: Glazner, J., Bondy, J., Luckey, D., & Olds, D. Effect of the Nurse Family Partnership on government expenditures for vulnerable first-time mothers and their children in Elmira, New York, Memphis, Tennessee, and Denver, Colorado. Final Report to the Administration for Children and Families.
www.acf.hhs.gov/programs/opre/welfare_employ/economic_analysis/reports/effect_nursefam/effect_nursefam.pdf (Accessed 6/29/05)

C. Comments on Benefits and Costs Analyses

Generally, Tables 7-10 suggest the following:

- Home visiting programs do produce some financial benefits, with the NFP leading the way in pay-off.
- However, even the NFP demonstrates that results vary across sites implementing the same model (although the follow-up period differs in these specific calculations), such that a single cost-benefit calculation probably will not adequately reflect the results at all sites.
- Welfare reform and its imposition of time limits may have truncated the benefits that can be generated. The authors for the analyses of the NFP suggest that the differences in results across sites may be due in part because the Elmira program operated before welfare reform, the other sites after. Since so much of the NFP

savings to government are related to welfare reform, the benefits at other sites must be smaller post-welfare reform.[81]

- Programs that offer home visits in combination with other services *can* but do not always provide a greater return than programs that offer home visits alone.

Both the benefit and cost estimates in Tables 7-10 should be considered rough. For example, as mentioned above, the estimates of benefits may be low because some benefits were not easily monetized and so were not included in the calculations, or the follow-up periods were too short to see all the long-term benefits. Also, none of these calculations include benefits to siblings that might emerge in the future. Finally, for those programs that provide early childhood education (child care), there may also be benefits to employers from enhanced productivity and job performance, and these effects are not captured.[18]

Estimates of costs may also be too high or too low. At least some of the costs for the home visiting programs included in the Aos et al and Karoly et al publications do not reflect the costs of the programs as they were implemented but rather are more general cost estimates based on examination of the web sites for the national program offices or conversation with staff from the national offices. The budgets for programs as actually implemented probably differed from the national averages.

For example, Montgomery et al (2000)[26] calculated the costs of the PAT program in Salinas, which was used to generate at least some of the benefits for the PAT program in the Aos et al review. Montgomery at al (2000) report that the actual costs in 1998 dollars were $2,118 per family per year, or $5,295 for a 2.5 year intervention, which is $1,795 more than the costs estimated in the Aos study, even before adjusting the dollars for inflation. Of course, this makes the benefits per dollar of cost ratio listed in Table 7 worse for PAT rather than better, but the point is that it is exceedingly difficult to estimate costs for home visiting programs based on a general model, when sites can vary significantly in programs implementation. (Discussion of program implementation and site-to-site variation follows in Section VI.)

Finally, in contrast with many early childhood programs, home visiting programs usually see one of their goals as connecting families to other health or social services in the community. None of these cost estimates include the costs of services to which families and children may be referred. These services may not be an “official” part of the program, but if the purpose of the benefit and cost analysis is to assess whether there is an eventual pay-off for taxpayers or clients, then it may be important to include the costs of the services to which families are referred, because they are functionally part of the program for the families, and especially if the expenses of those ancillary service programs increase to accommodate the referred families.

In sum, these analyses should be considered starting points in assessing the costs and benefits of home visiting programs and not the final word on the subject. In future, more careful assessment of costs as programs are ongoing and a more comprehensive cataloguing of benefits might be helpful.

VII. The Importance of Quality Services

Across all the mixed study results, there is one consistent finding: Every home visiting program struggles to deliver high quality services to families. Benefits for children and parents would be stronger and more consistent if program quality were enhanced. For example, the National Academy of Sciences has concluded that the key to program effectiveness is "likely to be found in the quality of program implementation…"[110]

Benefits for children and parents would be stronger and more consistent if program quality were enhanced.

The primary components of program quality are family engagement, the curriculum, the home visitors, cultural consonance between the program and its clientele, and the program's ability to deliver appropriate services to high-risk families. Research suggests that dedicated quality improvement efforts can indeed improve these aspects of quality, and that higher-quality programs are more likely to produce benefits for children and families.

A. Family Engagement

Family engagement encompasses four primary elements: The ability of the program to (1) enroll families, (2) deliver services at the intended level of intensity, (3) retain families in the program, and (4) maintain enthusiastic and active family involvement during home visiting and in recommended activities between visits. For an intervention such as home visiting, in which the total scheduled amount of contact between a family and home visitor might be as few as 12 hours per year, decreasing any aspect of engagement can have a substantial effect on overall program outcomes.

Too often, families receive a watered down version of home visiting services.[42] Up to 40% of families that are invited to enroll in home visiting programs choose not to participate, with rates highest for families enrolling in research projects and lowest for families entering a program offered to everyone in the community.[22,25] Once enrolled, between 20% and 80% of families leave home visiting programs before services are scheduled to end, with attrition rates often hovering at about 50%.[43,69,70,111-115] Families who remain in the program typically receive about half the scheduled number of home visits.[33,35,40,69,116-117] And, between visits, families do not always do the "homework" that has been assigned to them – and upon which the benefits for children depend. For example, families must read to their children between visits, attend group meetings, or follow up with referrals to other services – but research indicates that parents do not always follow the recommendations of their home visitors.[68,116,118]

Research does not definitively identify which types of families are more or less likely to stay in the program or to be engaged. In the Early Head Start study, for example, non-English speaking families tended to drop out more, but non-English speaking Hispanic families were rated more engaged during their home visits.[90] In a Healthy

Families America program in Florida, white families left the program sooner than African-American families.[119] Other studies have identified other patterns.

There is a suggestion from one study, however, that the families who drop out earlier may be precisely those families who need the services more. An evaluation of Healthy Families America in Florida suggests that those families who leave within the first three months are already doing less well and making less progress than those who stay.[119] This has important implications for both evaluation and for services. With respect to research, high attrition rates mean that quasi-experimental evaluations that compare the outcomes of those families who have completed their home visiting program with those of demographically similar individuals in the community are likely to over-state the benefits of the home visiting program.

The implications with respect to services are more complex. The largest national home visiting programs have begun to work on bolstering the quality of their services. Many have examined the issue of family engagement and are testing out new approaches such as offering more frequent visits initially and then tapering the number of visits. Some have worked harder to make sure that visits are delivered as scheduled, while others are working to offer families very flexible scheduling, with the hope that the flexibility will encourage families to maintain contact. Some programs may view home visits as a way to build trust with a family, and then seek to link the family with services that involve other parents, hoping that the social support of their peers may engage families. Still other programs are offering families tangible incentives, including books and toys for the children, gift certificates from local merchants, raffles for television sets, and even refrigerators.

B. The Skills and Abilities of the Home Visitors

The success of a home visiting program rides on the shoulders of its home visitors. From the point of view of families, home visitors *are* the program. They draw families to the program, and they deliver the curriculum. Home visitors must have the personal skills to establish rapport with families, the organizational skills to deliver the home visiting curriculum while still responding to family crises that may arise, the problem-solving skills to be able to address issues that families present in the moment when they are presented, and the cognitive skills to do the paperwork that is required. These are not minimal skills, and there is no substitute for them if programs are to be successful.

Hiring the right home visitor is therefore crucial for program success. Unfortunately, research can provide only limited advice on who makes the best home visitors, and most researchers believe it is not possible at this time to conclude that individuals from a particular professional or educational discipline are better home visitors than others.[21,120] However, many of the most recent studies of programs that employed paraprofessionals produced either no or only very modest results,[40,51,52,121] and a recent study of the NFP in Denver, Colorado, which directly compared the effectiveness of nurse and paraprofessional home visitors, indicated that paraprofessionals produced benefits of only about half the magnitude of those produced by nurses in outcomes such as deferral of

second pregnancies, maternal employment in the second year of the child's life, and mother-infant interaction.[71]

Extremely well-trained visitors are probably needed to serve families who are facing multiple, complex issues; or to work in programs with multiple, broad goals or with a curriculum that allows a great deal of flexibility.[21] Paraprofessionals may do best in programs such as HIPPY and PCHP with circumscribed goals and a relatively proscriptive curriculum, where lesson plans are detailed and clear. A randomized trial that employed volunteer home visitors to work with teen mothers demonstrated benefits in self-reported parenting behaviors, but did not decrease mothers' levels of mental health problems or stress.[122] The authors conclude that the largely non-professional volunteers may not have had the necessary skills to lead to change.

Once they have hired their home visitors, programs must work hard to retain them. Turnover can have a devastating effect on program success rates because it disrupts the rapport and connection between home visitor and parent, and it is that rapport which makes parents more likely to follow the advice of their home visitors. In the NFP in Memphis, for example, turnover among nurses was 50%, and the evaluators suggest that this may be at least part of the reason that results were more limited in Memphis than in Elmira.[35]

Turnover may be a special problem in programs using lower-paid paraprofessionals for whom home visiting may be their first job. In an HFA program in Florida, turnover hovered at about 35% in one year, and in similar programs in San Diego and Sacramento, California, turnover rates were about 70% over 18-36 months.[51,113] Further, there is some evaluation evidence that low wages, averaging $9.77 per hour in Early Head Start program sites, contributed to staff unhappiness.[117]

C. Content and Focus of Visits

Evidence suggests that benefits are most likely to occur in those program areas that have been emphasized by home visitors in their interactions with families.[40,51] For example, in Early Head Start home visits, the more child-focused the home visits were in content, the higher the levels of children's cognitive and language development, the greater the parents' support for language and literacy, and the greater the overall quality of the home environment. Unfortunately, parents at greater risk tended to receive home visits that concentrated more on parent needs than on child needs.[90] It is important, therefore, that program planners select a curriculum that directly addresses the goals that have been established for the home visiting program.

But, home visitors can vary greatly in their delivery of the home visit – addressing different content, staying in the home for differing lengths of time – even if they are all trained to deliver the same model. Programs must therefore both (1) employ curricula that clearly address the behaviors associated with a poor outcome (e.g., smoking cessation during pregnancy to prevent low birth weight; the presence of domestic violence to

prevent child maltreatment); and (2) deliver those curricula as intended by the program designers.

D. Cultural Consonance

Parenting practices are strongly bound by culture. Parents of different cultures possess strongly held beliefs about the best approaches to handling sleeping, crying, breastfeeding,[27] discipline,[21] early literacy skills,[123] and obedience and autonomy in children.[21] Further, it appears that the same parenting practices can yield different results for children from different cultures. For example, one recent review suggests that although an authori*tative* parenting style may be associated with more positive outcomes for white children, a stricter, authori*tarian* style may be associated with more positive outcomes for African-American and Asian-American children.[21]

These differences in parenting practices across cultures may render home visiting programs less effective with some families – if the advice offered by the home visitors is not consonant with the family's beliefs about parenting. In one study, some African-American and Latina mothers characterized home visitor advice as "white people stuff" and ignored it. In the same study, white working class families sometimes questioned home visitors' advice regarding parenting practices, including reading daily to infants.[116]

These different beliefs may be especially important in families in which mothers live with their mothers or extended family. In those families, even if the mother is persuaded that she ought to change an aspect of her behavior, she must also persuade her relatives. Such change can cause strife within the family,[27] and, therefore, some interventions seek to involve grandparents, fathers, or other family members.[37,124] Early Head Start programs, for example, employ a variety of strategies to engage fathers.

There is no clear evidence as to which groups benefit most. For example, in a Salinas Valley PAT project, children of Latina mothers benefited more than other groups on child development outcomes.[69] In interim results for Early Head Start, however, African-American children benefited most, with very few benefits for Hispanics,[125] although both groups benefited more than white families by the time the study ended.[72] In San Diego's HFA program, white but not African-American or Hispanic women deferred second pregnancies.[51]

The National Academy of Sciences concludes that "…parenting interventions that respond to cultural differences in a dismissive or pejorative manner are likely to precipitate significant conflict or be rejected as unacceptable."[126] This may contribute to high attrition rates.

E. Developing Services Appropriate for High-Risk Families

As home visiting programs extend their outreach to families at higher levels of risk, they face increasing challenges in developing curricula that can address the needs of those families. For example, HFA uses a screening tool to select higher-need families; NFP only enrolls low-income, first-time pregnant women; and programs drawing their clientele from TANF rolls may find that more and more women have higher levels of need as most women with fewer needs have already entered the workforce. For most programs, therefore, quality services require having curricula and staff in place to serve a high-risk population.

To achieve long-term change, home visiting programs should address three issues which can create especially high risk for children: (1) domestic violence in families; (2) maternal mental health problems, especially depression; and (3) parental substance abuse. Results from many home visiting programs suggest that these issues are among the hardest for home visitors to recognize or to address effectively, and, along with contraception, are the issues that they feel least comfortable discussing.[51,113,127] But, these are precisely the issues that are most likely to stymie progress for parents and to harm children.

For example, about 20% of the general population, as many as 30-40% of the welfare and Head Start populations,[36,127] and up to 50% of families in some home visiting programs have symptoms of clinical depression.[51,113,128] Every woman enrolled in an HFA program in Lancaster, California had mental health issues upon initial screening.[129] Fully 16% of the caseload in an HFA program in Oregon experienced domestic violence just within the first 6 months after enrollment,[111] and 48% of the families experienced domestic violence in the Elmira, New York site of the NFP over a period of 15 years.[50] In the Oregon HFA program, families that experienced domestic violence within the first 6 months of their children's lives were three times more likely to have physical child abuse confirmed than families without domestic violence during that six-month window.[111] Home visiting services must be modified to respond to domestic violence and these other issues because they are sentinel events that have substantial impact on children over the long run.

F. The Malleability of Quality

There is heartening evidence that program quality can be monitored, shaped, and improved. For example, when Healthy Start program administrators in Hawaii discovered that attrition rates varied from 38% to 64% across home visiting agencies, they developed program performance guidelines to govern the time from enrollment to first home visit, home visit frequency, and program attrition. A quick feedback loop in which data on program performance is fed back to program managers is one mechanism by which these variations can begin to be understood and controlled. Arizona's Healthy Families America programs have engaged in a concerted effort to improve quality, and

have increased the average length of time enrolled families stay in the program from 595 days to 698 days.[130]

When quality improves, outcomes for children improve, too. Early Head Start sites that had early, full implementation of the program's performance standards generated longer-lasting benefits in children's cognitive and language development than did sites which had not yet met the standards.[131] In Hawaii's Healthy Start program, program sites that delivered services with the greatest fidelity to the model had the greatest effect on mothers' mental health.[112]

VIII. CONCLUSIONS

Home visiting services can produce the results that prepare children for school, but they do not always do so in practice. And, benefits are often small. When averaged across program models, sites, and families, results for most outcomes are about .1 or .2 of a standard deviation in size, an effect size that is considered small in human services. Effects are most consistent for outcomes related to parenting. Home visiting programs do not generate consistent benefits in child development or in improving the course of mothers' lives. Families in which children have obvious risk factors (e.g., they are biologically at-risk, developmentally delayed, or they already have behavior problems) appear to benefit most. Some studies also suggest that the highest-risk mothers (e.g., low income teen mothers; mothers with poor coping skills, low IQs, and mental health problems) may benefit most.

For every outcome, as many as half of the studies and programs demonstrate extremely small or no benefits at all. But, for every outcome, a few programs or program sites demonstrate larger benefits, and it is those more positive results which have driven the expansion of home visiting programs and which illustrate the *potential* of home visiting.

The mixed and modest results, however, illustrate just how fragile an intervention home visiting can be. The most intensive national models are slated to bring about 100 hours of intervention into the lives of families. More typically, programs deliver perhaps 20 or 40 hours of intervention over the course of a few years. That is not much time in which to address issues as complex as child abuse and neglect, school readiness, and deferral of second pregnancies. But, that is the task that has been set for home visiting programs. It is therefore important for policymakers and practitioners to keep their expectations modest about what can be accomplished through any single intervention.

Nevertheless, high quality home visiting programs can play a part in helping prepare children for school and for life. Together with other services such as center-based early childhood education, joint parent-child activities, and parent groups, home visiting can produce meaningful benefits for children and families. For that reason, home visiting services should be embedded in a system that employs multiple service strategies, focused both on parents and children.

Even in such a system, the key to effectiveness is quality of services. Only the best home visiting programs have a chance to benefit children and parents, and funders and program administrators must strive to make each funded home visiting program a strong, high quality program.

To be effective, programs must focus on the goals that they seek to accomplish and make sure that their curricula match those goals, that their staffs are in sync with the goals, and that the families they serve receive information and assistance related to those goals. Programs must seek to enroll, engage, and retain families with services delivered at an intensity level that is as close to the standards for their program model as possible. They should hire the best, most qualified staff they can, and pay them wages that will encourage them to stay. They should seek the counsel of their clients to make sure that they are offering services that their customers want and need. The good news is that quality is malleable, and that programs that set performance standards, monitor their progress toward achieving them, and make corrections along the way are much more likely to produce benefits.

Home visiting services have the potential to promote children's healthy development. They are best delivered as one of a range of community services offered to families with young children. They are not a silver bullet for all that ails families and children, but then no single program or services strategy can be. When done well, home visiting services recognize and honor the special role that parents play in shaping the lives of their children, and they can benefit parents and children.

Endnotes

1. Calculations by the author, based on numbers of children enrolled in the seven largest home visiting programs nationally (Even Start, Early Head Start, Parents As Teachers, HIPPY, Healthy Families America, Nurse-Family Partnership, and the Parent-Child Home Program), and assuming some duplication in counts across the programs (at least 45% for PAT), and then assuming a range of $1000 to $3000 per family per year.
2. Johnson, K.A. (May 2001). *No place like home: State home visiting policies and programs*. Johnson Group Consulting, Inc. Report commissioned by The Commonwealth Fund. Available at www.cmwf.org.
3. Table 1 outlines some of the many purposes for which home visiting has been used. The following are examples of studies or review articles concerning types of home visiting programs that are not included in this review:

   One-time visits to mothers who have been discharged early from the maternity ward:

   Brown, S., Small, R., Faber, B., et al. (2004) Early postnatal discharge from hospital for healthy mothers and term infants (Cochrane Review). In: The Cochrane Library, Issue, 3, 2004. Oxford: Update Software.

   Casiro, O.G., McKenzie, M.E., McFadyen, L., Shapiro, C., et al. (1993) Earlier discharge with community-based intervention for low birth weight infants: a randomized trial. *Pediatrics*, *92*(1), 128-134. [includes cost data]

   Escobar, G.J., Braveman, P.A., Ackerson, L., et al. (2001). A randomized comparison of home visits and hospital-based group follow-up visits after early postpartum discharge. *Pediatrics*, *108,* 719-727.

   One-time visits to new mothers:

   Cuyahoga County in Ohio offers one-time visits to all first-time mothers and all teen mothers as part of a community-wide initiative that offers all members of the community home visiting, child care, and health insurance. For an executive summary of the evaluation of the entire initiative, see: Coulton, D. (May 2005). *Cuyahoga County Early Childhood Initiative Evaluation: Phase II Final Report*. Center on Urban Poverty and Social Change. http://povertycenter.cwru.edu/urban_poverty/dev/pdf/ECIExecsum_Final_Rev_0505.PDF

   Home visiting for families whose children are born low birthweight:

   Affleck, G., Tennen, H., Rowe, J., et al. (1989). Effects of formal support on mothers' adaptation to the hospital-to-home transition of high-risk infants: The benefits and costs of helping. *Child Development*, *60*(2), 488-501.

   Gardner, J.M., Walker, S.P. Powell, C.A. et al. (2003). A randomized controlled trial of a home-visiting intervention on cognition and behavior in term low birth weight infants. *Journal of Pediatrics, 143*, 634-639.

Rauh, V.A., Achenbach, T.M., Nurcombe, B., et al. (1988). Minimizing adverse effects of low birthweight: Four-year results of an early intervention program. *Child Development, 59*(3), 544-553.

The Infant Health and Development Program is an example of a comprehensive program that complements home visits with center-based early childhood education, and health services. It is described in Table 4 in this paper.

Home visiting for families whose children are diagnosed with failure to thrive:

Raynor, P., Rudolf, M.C.J., Cooper, K., et al. (1999) A randomized controlled trial of specialist health visitor intervention for failure to thrive. *Arch Dis Child*, *80*, 500-506.

Home visiting for children born drug-exposed:

Butz, A.M., Pulsifer, M., Marano, N., et al. (2001). Effectiveness of a home intervention for perceived child behavioral problems and parenting stress in children with in utero drug exposure. *Arch Pediatr Adolesc Med, 155*, 1029-1037.

Home visiting for families whose children have physical or developmental delays or disabilities:

Farran, D.C., in J.P. Shonkoff & S.J. Meisels (Eds.) (2000). Another decade of intervention for children who are low income or disabled: What do we know now? *Handbook of early childhood intervention*. Cambridge, UK: Cambridge University Press, 510-548.

Guralnick, M.J. (Ed.) (1997). *The effectiveness of early intervention*. Baltimore: Paul H. Brookes.

Home visits to reduce lead exposure:

Kimbrough, R.D., LeVois, M., & Webb, D.R. (1994). Management of children with slightly elevated blood lead levels. *Pediatrics, 93*(2), 188-191.

Lioy, P.J., Yiin, M., Adgate, J., et al. (1998). *Journal of Exposure Analysis and Environmental Epidemiology, 8*(1), 17-35.

Shultz, B., Pawel, D., & Murphy, A. (1999) A retrospective examination of in-home educational visits to reduce childhood lead levels. *Environmental Research, 80*(4), 364-368.

Ongoing home visits by Child Protective Services to keep families together ("family preservation"):

Westat, Inc., in association with James Bell Associates, Inc., and The Chapin Hall Center for Children at the University of Chicago. (May 30, 1995). A review of family preservation and family reunification programs. Report for the Office of the Assistance Secretary for Planning and Evaluation, U.S. Department of Health and Human Services. Available at: http://aspe.hhs.gov/hsp/cyp/fpprogs.htm.

Visits to families with children who have/are at-risk for asthma:

Brown, J.V., Bakeman, R., Celano, M.P., et al. (2002). Home-based asthma education of young low-income children and their families. *Journal of Pediatric Psychology, 27*(8), 677-688.

Klinnert, M.D., Liu, A.H., Pearson, M.R., et al. (2005). Short-term impact of a randomized multifaceted intervention for wheezing infants in low-income families. *Arch Pediatr Adolesc Med, 159*, 75-82.

Tsitoura, S., Nestoridou, K., Botis, P., et al. (2002). Randomized trial to prevent sensitization to mite allergens in toddlers and preschoolers by allergen reduction and education. *Arch Pediatr Adolesc Med, 156,* 1021-1027.

4. Larner, M., Halpern, R., & Harkavy, O. (Eds.) 1992. *Fair start for children: Lessons learned from seven demonstration projects*. New Haven, CT: Yale University Press.
5. Heinecke, C.M. & Ponce, V.A. (1998). Relation-based early family intervention. In Cichetti, D., & Toth, S.L. (Eds.). *Rochester Symposium on Developmental Psycholpathology, Volume IX; Developmental Approaches to Prevention and Intervention*. Rochester, NY: University of Rochester Press.
6. Barnard, K.E. Developing, implementing, and documenting interventions with parents and young children. *Zero to Three* (Feb/Mar 1998) 18(4):23-29.
7. Layzer, J.I. Goodson, B.D., Bernstein, L., & Price, C. (April 2001) *National evaluation of family support programs*. Final Report Volume A: The meta-analysis. Cambridge, MA: Abt Associates, Inc.
8. Sweet, M.A., & Appelbaum, M.I. (2004) Is home visiting an effective strategy? A meta-analytic review of home visiting programs for families with young children. *Child Development, 75*(5), 1435-1456.
9. Elkan, R., Kendrick, D., Hewitt, M., Robinson JJA., et al. (2000). The effectiveness of domiciliary health visiting: A systematic review of international studies and a selective review of the British literature. *Health Technology Assessment, 4*(13).
10. Roberts, I., Kramer, M.S., & Suissa, S. (1996). Does home visiting prevent childhood injury? A systematic review of randomised controlled trials. *BMJ, 312*, 29-33.
11. Hodnett, E.D., & Roberts, I. (2004). Home-based social support for socially disadvantaged mothers (Cochrane Review). In: *The Cochrane Library*, Issue 3, 2004. Oxford: Update Software.
12. Guterman, N.B. (1999) Enrollment strategies in early home visitation to prevent physical child abuse and neglect and the "universal versus targeted" debate: A meta-analysis of population-based and screening-based programs. *Child Abuse & Neglect, 23*(9), 863-890.
13. MacLeod, J., & Nelson, G. (2000) Programs for the promotion of family wellness and the prevention of child maltreatment: A meta-analytic review. *Child Abuse & Neglect, 24*(9), 1127-1149.
14. Nelson, G., Westhues, A., & MacLeod, J. (2003). A meta-analysis of longitudinal research on preschool prevention programs for children. *Prevention & Treatment, 6*. Available at http://journals.apa.org/prevention/volume6/pre0060031a.html.
15. Geerart, L., Van den Noortgate, W., Grietens, H., & Onghena, P. (2004). The effects of early prevention programs for families with young children at risk for physical child abuse and neglect: A meta-analysis. *Child Maltreatment, 9*(3), 277-291.

16. Sikorski, J., Renfrew, M.S., Pindoria, S., & Wade, A. (2004). Support for breastfeeding mothers (Cochrane Review). In: *The Cochrane Library*, Issue 3, 2004. Oxford: Update Software.
17. Hodnett, E.D. & Fredericks, S. (2004). Support during pregnancy for women at increased risk of low birthweight babies (Cochrane Review). In: *The Cochrane Library*, Issue 3, 2004. Oxford: Update Software.
18. Karoly, L.A., Kilburn, M.R., & Cannon, J.S., (forthcoming, 2005). *Early childhood interventions: proven results, future promise*. MG-341. Santa Monica, CA: The RAND Corporation.
19. Bull, J., McCormick, G., Swann, C., Mulvihill, C. (February 2004). *Ante- and post-natal home-visiting programmes: a review of reviews*. Health Development Agency, National Health Service. http://194.83.94.67/uhtbin/cgisirsi.exe/1112044798/0/520/EBBD_Home_pdf_ft
20. Ciliska, D., Mastrilli, P., Ploeg, J., Hayward, S., et al. (2001). The effectiveness of home visiting as a delivery strategy for public health nursing interventions to clients in the prenatal and postnatal period: A systematic review. *Primary Health Care Research and Development, 2*(1), 41-54. Abstract from web: http://www.ingentaconnect.com/content/arn/phcr/2001/00000002/00000001/art00040
21. Cowan, P.A., Powell, D., & Cowan, C.P. (1998). Parenting interventions: A family systems perspective. In Sigel, I.E., & Renninger, K.A., (volume editors), Damon, W. (editor-in-chief), *Handbook of child psychology*. New York: John Wiley and Sons, p. 3-72.
22. Gomby, D.S., & Culross, P. (eds.) (1999). Home Visiting: Recent Program Evaluations. *The Future of Children, 9*(1), 1-224.
23. Gomby, D.S., & Larson, C.S. (eds.) (1993). Home Visiting. *The Future of Children, 3*(3), 1-216.
24. Guterman, N.B. (2001) *Stopping child maltreatment before it starts: Emerging horizons in early home visitation services*. Thousand Oaks, CA: Sage Publications.
25. MacMillan, H.L. with the Canadian Task Force on Preventive Health Care. (2000). Preventive health care, 2000 update: prevention of child maltreatment. *CMAJ, 163*(11); 1451-1458.
26. Montgomery, D., Phillips, G., Merickel, A. (September 29, 2000). Home visiting programs: Varying costs and elusive effects. Report submitted to The David and Lucile Packard Foundation. Palo Alto, CA: American Institutes for Research.
27. National Research Council and Institute of Medicine (2000) *From neurons to neighborhoods: The science of early childhood development*. Committee on Integrating the Science of Early Childhood Development. Jack P. Shonkoff and Deborah A. Phillips, eds. Board on Children, Youth, and Families, Commission on Behavioral and Social Sciences and Education. Washington, D.C.: National Academy Press.
28. Olds, D., et al. (2000). Update on home-visiting for pregnant women and parents of young children. *Current Problems in Pediatrics*. *30*: 109-41.
29. Wade, K., Cava, M., Douglas, C., Feldman, L. et al. (March 1999). A systematic review of the effectiveness of peer/paraprofessional 1:1 interventions targeted toward mothers (parents) of 0-6 year old children in promoting positive maternal (parental)

and/or child health/developmental outcomes. Effective Public Health Practice Project. Ontario Public Health Research, Education & Development Program. http://www.city.hamilton.on.ca/PHCS/EPHPP/Research/Full-Reviews/98-99/Para-Professional-Parenting-Interventions-review.pdf

30. Daro, D.A. & Harding, K.A. (1999) Healthy Families America: Using research to enhance practice. *The Future of Children*, 9(1), 152-176.
31. Love, J.M., Kisker, E.E., Ross, C.M., Schochet, P.Z. et al. (June 2001) *Building their futures: How Early Head Start programs are enhancing the lives of infants and toddlers in low-income families. Volume I: Technical Report*. Prepared for Commissioner's Office of Research and Evaluation; Administration on Children, Youth and Families; U.S. Department of Health and Human Services, Washington, D.C. Available at http://www.acf.dhhs.gov/programs/core/ongoing_research/ehs/ehs_intro.html
32. Love, J.M., Kisker, E.E., Ross, C.M., Schochet, P.Z., et al. (June 2002). *Making a difference in the lives of infants and toddlers and their families: The impacts of Early Head Start. Volume I. Final Technical Report*. Department of Health and Human Services, Washington, DC. Available at http://www.acf.dhhs.gov/programs/core/ongoing_research/ehs/ehs_intro.html
33. Duggan, A.K., McFarlane, E.C., Windham, A.M., Rohde, C.A., et al. (1999) Evaluation of Hawaii's Healthy Start program. *The Future of Children*, 9(1), 66-90.
34. Layzer, J.I. Goodson, B.D., Bernstein, L., & Price, C. (April 2001) *National evaluation of family support programs*. Final Report Volume A: The meta-analysis. Cambridge, MA: Abt Associates, Inc., p. A5-8
35. Olds, D.L., Henderson, C.R., Kitzman, H.J., Eckenrode, J.J, et al. (1999) Prenatal and infancy home visitation by nurses: Recent findings. *The Future of Children*, 9(1), 44-65.
36. Ahluwalia, S.K., McGroder, S.M., Zaslow, M.J., & Hair, E. C. (December 2001) Symptoms of depression among welfare recipients: A concern for two generations. *Child Trends Research Brief*. Washington, DC: Child Trends. Available at www.childtrends.org.
37. Heinicke, C.M., Goorsky, M., Moscov, S., Dudley, K., et al. (1998) Partner support as a mediator of intervention outcome. *American Journal of Orthopsychiatry*, *68*(4), 534-541.
38. Fully 57% of the cost savings were due to decreases in welfare costs, 23% to taxes paid on increased maternal income, and 20% to decreases in criminal justice costs. Karoly, L.A., Greenwood, P.W., Everingham, S.S., Hoube, J., et al. *Investing in our children: What we know and don't know about the costs and benefits of early childhood interventions*. Santa Monica, CA: RAND, 1998.
39. El-Kamary, S.S., Higman, S.M., Fuddy, L., McFarlane, E. et al. (2004). Hawaii's Healthy Start home visiting program: Determinants and impact of rapid repeat birth. *Pediatrics, 114*, 317-326.
40. Kelsey, M., Johnson, A., & Maynard, R. (July 2001). The potential of home visitor services to strengthen welfare-to-work programs for teenage parents on cash assistance. U.S. Department of Health and Human Services, Grant Number 90FF0036101.

41. Layzer, J.I. Goodson, B.D., Bernstein, L., & Price, C. (April 2001) *National evaluation of family support programs*. Final Report Volume A: The meta-analysis. Cambridge, MA: Abt Associates, Inc., p. A5-9.
42. Gomby, D.S., Culross, P.L., & Behrman, R.E. (1999) Home visiting: Recent program evaluations – Analysis and recommendations. *The Future of Children*, 9(1), 4-26.
43. Kendrick, D., Elkan, R., Hewitt, M., Dewey, M., et al. (2000) Does home visiting improve parenting and the quality of the home environment? A systematic review and meta analysis. *Arch Dis Child, 82*, 443-451.
44. Olds, D.L. & Kitzman, H. (1993) Review of research on home visiting for pregnant women and parents of young children. *The Future of Children*, *3*(3), 53-92.
45. Shiono, P.H. & Behrman, R.E. (Spring 1995). Low birth weight: Analysis and recommendations. *The Future of Children*, 5(1), 4-18.
46. King, W.J., Klassen, T.P., LeBlanc, J., Bernard-Bonnin, A-C, et al. (2001). The effectiveness of a home visit to prevent childhood injury. *Pediatrics, 108*(2), 382-388.
47. Abuse is difficult to measure because, (1) it is a relatively rare event in the population, and most studies cannot afford to track the number of families necessary to detect its presence; and (2) the most direct measure of child maltreatment, reports to Children's Protective Services (CPS), may over- or under-estimate the true rates of abuse and neglect. Across a community, reports to Child Protective Services probably underestimate the true rates of child maltreatment in that community. However, because home visitors, like teachers or doctors, are mandated reporters of child maltreatment, the rates of CPS reports in a home-visited group may be higher than those in a comparison group, simply because the visited group has been observed more frequently. In addition, because any report may sometimes be an exaggeration, many studies choose to rely upon substantiated reports of child maltreatment, rather than just the initial reports.
48. U.S. General Accounting Office. (August 1992). *Child abuse prevention programs need greater emphasis.* Report to the Chairman, Subcommittee on Oversight of Government Management, Committee on Governmental Affairs, U.S. Senate. GAO/HRD-92-99. Washington, DC: General Accounting Office.
49. Green, B.L., Mackin, J.R., Tarte, J.M., et al. (June 2004). Healthy Start: 2002-2003 Status Report. Prepared for Oregon Commission on Children and Families. Portland, OR: NPC Research. http://www.npcresearch.com/Files/Healthy%20Start%20Status%20Report%202002-2003%20FINAL.PDF
50. Eckenrode, J., Ganzel, B., Henderson, C.R., Smith, E., et al. (2000). Preventing child abuse and neglect with a program of nurse home visitation: The limiting effects of domestic violence. *Journal of the Medical Association, 284*(11), 1385-1391.
51. Landsverk, J., Carillio, T., Connelly, C., Leslie, L., Ganger, W., and Sylmen, D. (2002). Healthy Families San Diego Clinical Trial: Technical Report. Child and Adolescent Services Research Center, Children's Hospital - San Diego, San Diego, California. Executive summary available by sending an e-mail to jlandsverk@aol.com.

52. Duggan, A., McFarlane, E., Fuddy, L., Burrell, L, et al. (2004) Randomized trial of a statewide home visiting program: impact in preventing child abuse and neglect. *Child Abuse & Neglect, 28*, 597-622.
53. Chaffin, M. (2004). Is it time to rethink Healthy Start/Healthy Families? *Child Abuse & Neglect, 28*, 589-595.
54. U.S. General Accounting Office, Report to the Chairman, Subcommittee on Labor, health and Human Services, Education, and Related Agencies, Committee on Appropriations, U.S. Senate. Home visiting: A promising early intervention strategy for at-risk families. GAO/HRD-90-83. Washington, DC: U.S. Government Printing Office, July 1990. Available from the U.S. General Accounting Office, P.O. Box 6015, Gaithersburg, MD 20877.
55. U.S. Advisory Board on Child Abuse and Neglect. *Creating caring communities: Blueprint for an effective federal policy on child abuse and neglect*. Washington, DC: Department of Health and Human Services, Administration for Children and Families, 1991.
56. AAP Council on Child and Adolescent Health –The American Academy of Pediatrics. The role of home visitation programs in improving health outcomes for children and families. *Pediatrics*, 1998; 101:486-489.
57. Association of Maternal and Child Health Programs. Fact Sheet Home Visiting: An effective strategy for improving the health of mothers and children. March 1999.
58. T. Thornton et al. (September 2000) *Best practices of youth violence prevention: A sourcebook for community action*, Division of Violence Prevention, Centers for Disease Control and Prevention, Atlanta, GA.
59. Olds, D., Hill, P., & Rumsey, E. (Nov 1998) Prenatal early childhood home visitation. *OJJDP Juvenile Justice Bulletin*.
60. Chalk, R., & King, P.A. (eds.) (1998) *Violence in families: Assessing prevention and treatment programs*. Committee on the Assessment of Family Violence Interventions, Board on Children, Youth, and Families, National Research Council and Institute of Medicine. Washington, D.C.: National Academy Press.
61. Author. (June 14, 2002) The benefits and financing of home visiting programs. Issue Brief, NGA Center for Best Practices.
62. Hahn, R.A., Bilukha, O.O., Crosby, A., Fullilove, M.T., et al. (October 3, 2003). First reports evaluating the effectives of strategies for preventing violence: Early childhood home visitation. Findings from the Task Force on Community Preventive Services. Morbidity and Mortality Weekly Report, 52(RR-14), 1-9. Also, (Author). *New findings prove early childhood home visitation prevents child maltreatment*. Guide to Community Preventive Services: Systematic Reviews and Evidence Based Recommendations. Available at: http://www.thecommunityguide.org/violence/default.htm.
63. Bugental, D. B., Ellerson, P.C., Rainey, B., Lin, E.K, et al. (2002). A cognitive approach to child abuse prevention. *Journal of Family Psychology, 16*(3), 243-258.
64. Bugental, E. (2004). Finding ways to reduce the prevalence of child maltreatment among fathers: A comment on the alternative approaches. *Clinical Psychology: Science and Practice, 11*(1), 112-115.
65. Coates, D. Early childhood evaluation: A report to the Parkway Board of Education. St. Louis, MO: Parkway School District, 1994; Coates, D. Memo on one-year update

on Stanford scores of students. Early Childhood Evaluation Study Group, December 26, 1996. As cited in Winter, M.M. (1999).Parents as Teachers, *The Future of Children*, *9*(1), p. 179-189.

66. Bradley, R.H., & Gilkey, B., (2002). The impact of the Home Instructional Program for Preschool Youngsters (HIPPY) on school performance in 3rd and 6th grades. *Early Education and Development, 13*(3), 302-311.
67. Levenstein, P., Levenstein, S., Shiminski, J.A., & Stolzberg, J.E. (1998) Long-term impact of a verbal interaction program for at-risk toddlers: An exploratory study of high school outcomes in a replication of the Mother-Child Home Program. *Journal of Applied Developmental Psychology*, *19*(2): 267-285.
68. Baker, J.L., Piotrkowski, C.S., & Brooks-Gunn, J. (1999) The Home Instruction Program for Preschool Youngsters (HIPPY). *The Future of Children*, 9(1), 116-133.
69. Wagner, M.M., & Clayton, S.L. (1999) The Parents as Teachers program: results from two demonstrations. *The Future of Children*, 9(1), 91-115.
70. Wagner, M., Spiker, D., Hernandez, F., Song, J., et al. (June 2001) Multisite Parents as Teachers evaluation: Experiences and outcomes for children and families. Menlo Park, CA: SRI International.
71. Olds, D.L., Robinson, J., O'Brien, R., Luckey, D.W., et al. (2002) Home visiting by paraprofessionals and by nurses: A randomized, controlled trial. *Pediatrics, 110*(3), 486-496.
72. Love, J.M., Kisker, E.E., Ross, C.M., Schochet, P.Z., et al. (June 2002). *Making a difference in the lives of infants and toddlers and their families: The impacts of Early Head Start. Volume I: Final Technical Report*. Department of Health and Human Services, Washington, DC. Available at http://www.acf.dhhs.gov/programs/core/ongoing_research/ehs/ehs_intro.html
73. Pfannenstiel, J., Lambson, T., & Yarnell, V. (1996) *The Parents as Teachers program: Longitudinal followup to the Second Wave Study*. Overland Park, KS: Resarch & Training Associates.
74. Jacobson, A.L. Ramisetty-Mikler, S. (August 2000). The HIPPYCORPS Initiative: Getting things done. 1999-2000 Annual Program Evaluation Report. Prepared for The Texas HIPPY Center, System Center at Dallas, Texas.
75. O'Brien, T., Garnett, D.M., proctor, K. (2002). Report: Impact of the Parents as Teachers program Canon City, CO (Fremont County) School Year 1999-2000. Contact: tobrien@carbon.cudenver.edu.
76. Gutelius, M.F., Kirsch, A.D., MacDonald, S., et al. (1972). Promising results from a cognitive stimulation program in infancy. *Clinical Pediatrics, 11*(10), 585-593.
77. Gutelius, M.F., Kirsch, A.D., MacDonald, S., et al. (1977). Controlled study of child health supervision: Behavioral results. *Pediatrics, 60*(3), 294-304.
78. Lambie, D.Z., Bond, J.T., & Weikart, D.P. (1974). Home teaching with mothers and infants. *Mongraphs of the High/Scope Educational Research Foundation*, No. 2. Ypsilanti, Michigan: The High/Scope Press.
79. Epstein, A.S., & Weikart, D.P. (1979). The Ypsilanti-Carnegie Infant Education Project: Longitudinal follow-up. *Monographs of the High/Scope Educational Research Foundation*, No. 6. Ypsilanti, Michigan: The High/Scope Press.
80. Jester, R.E., & Guinagh, B.J. (1983). The Gordon parent education infant and toddler program. In The Consortium for Longitudinal Studies, *As the twig is bent…Lasting*

effects of preschool programs, Chapter 4, pp. 103-132. Lawrence Erlbaum Asso: Hillsdale, NJ.
81. Olds, D.L., Eckenrode, J., Henderson, C.R., et al. (1997). Long-term effects of home visitation on maternal life course and child abuse and neglect: Fifteen-year follow-up of a randomized trial. *JAMA, 278*(8), 637-643.
82. Olds, D., Henderson, C.R., Cole, R., et al. (1998). Long-term effects of nurse home visitation on children's criminal and antisocial behavior: 15-year follow-up of a randomized controlled trial. *JAMA, 280*(14), 1238-1244.
83. Olds, D.L. (2002) Prenatal and infancy home visiting by nurses: From randomized trials to community replication. *Prevention Science, 3*(3), 153-172.
84. Olds, D.L., Kitzman, H., Cole, R. et al. Effects of nurse home-visiting on maternal life course and child development: Age 6 follow-up results of a randomized trial. *Pediatrics, 114*, 1550-1559.
85. Drazen, S.M., & Haust, M. (May 1, 1995) PACT Validation Study: Evidence of Effectiveness Section: The Effects of the Parents and Children Together (PACT) program on school achievement. Obtained from PAT National Center.
86. Drazen, S.M., & Haust, M. (August 12, 1996). Lasting academic gains from an early home visitation program. Paper presented at annual meeting of the American Psychological Association, Toronto, Ontario.
87. Madden, J., O'Hara, H., & Levenstein, P. (1984). Home again: Effects of the Mother-Child Home Program on mother and child. *Child Development, 55*, 636-647.
88. Levenstein, P., Levenstein, S., & Oliver, D. (2002). First grade school readiness of former child participants in a South Carolina replication of the Parent-Child Home Program. *Applied Developmental Psychology, 23*, 331-353.
89. Olds, D., Henderson, C.R., Cole, R., et al. (1998). Long-term effects of nurse home visitation on children's criminal and antisocial behavior: 15-year follow-up of a randomized controlled trial. *JAMA, 280*(14), p. 1243.
90. Early Head Start Research and Evaluation Project. (December 2003) *Research to practice: Early Head Start home-based services*. Administration for Children and Families, U.S. Department of Health and Human Services. http://www.acf.hhs.gov/programs/opre/ehs/ehs_resrch/reports/homebase_services/homebase_services.pdf (Accessed 7/18/05)
91. Gray, S.W., & Klaus, R.A. (1970). The Early Training Project: a seventh-year report. *Child Development, 41*, 909-924.
92. Seitz, V., Apfel, N.H. (1994). Parent-focused intervention: Diffusion effects on siblings. *Child Development, 65*(2), 677-683.
93. Yoshikawa, H. 1995. Long-term effects of early childhood programs on social outcomes and delinquency. *The Future of Children, 5*(3), 51-75.
94. Schweinhart, L.J. (2004). The High/Scope Perry Preschool Study through age 40: Summary, conclusions, and frequently asked questions. http://www.highscope.org/Research/PerryProject/PerryAge40SumWeb.pdf.
95. Lally, J.R., Mangione, P.L., & Honig, A.S. (September 1987). The Syracuse University Family Development Research Program: Long-range impact of an early intervention with low-income children and their families. Sausalito, CA: The Center for Child & Family Studies, Far West Laboratory.

96. Johnson, D.L., & Walker, T. (1987). Primary prevention of behavior problems in Mexican-American children. American Journal of Community Psychology, *15*(4), 374-385.
97. Pfannenstiel, J.C., Seitz, V., & Zigler, E. (2002) Promoting school readiness: The role of the Parents as Teachers program. *NHSA Dialog, 6*(1), 71-86.
98. Pfannenstiel, J. (1999). School entry assessment project: Report of findings. Prepared for the Missouri Department of Elementary and Secondary Education. Overland Park, KA: Research & Training Associates, Inc.
99. Wasik, B.H., Ramey, C.T., Bryant, D.M., & Sparling, J.J. A longitudinal study of two early intervention strategies: Project CARE. *Child Development* (1990) 61: 1682-96.
100. National Research Council and Institute of Medicine (2000) *From neurons to neighborhoods: The science of early childhood development*. Committee on Integrating the Science of Early Childhood Development. Jack P. Shonkoff and Deborah A. Phillips, eds. Board on Children, Youth, and Families, Commission on Behavioral and Social Sciences and Education. Washington, D.C.: National Academy Press, p. 11.
101. McLearn, K.T., Strobino, D.M., Minkovitz, C.S., Marks, E., et al. (2004). Narrowing the income gaps in preventive care for young children: Families in Healthy Steps. *Journal of Urban Health: Bulletin of the New York Academy of Medicine, 81*(4), 556-567.
102. Minkovitz, C.S., Hughart, N., Strobino, D., Scharfstein, D., et al. (2003). A practice-based intervention to enhance quality of care in the first 3 years of life: The Healthy Steps for Young Children Program. JAMA, 290(23), 3081-3091.
103. Guyer, B., Hughart, N., Strobino, D., Jones, A, et al. (2000). Assessing the impact of pediatric-based developmental services on infants, families, and Clinicians: Challenges to evaluating the Healthy Steps Program. *Pediatrics, 105*(3). http://www.pediatrics.org/cgi/content/full/105/3/e33.
104. Zuckerman, B.,M., Parker, S., Kaplan-Sanoff, M., et al. (2004). Healthy Steps: A case study of innovation in pediatric practice. *Pediatrics, 114*, 820-826.
105. Olds, D.L., Henderson, C.R., Phelps, C., et al. (1993) Effect of prenatal and infancy nurse home visitation on government spending. *Medical Care, 31*(2), 155-174.
106. Karoly, L.A., Greenwood, P.W., Everingham, S.S., Hoube, J., et al. *Investing in our children: What we know and don't know about the costs and benefits of early childhood interventions*. Santa Monica, CA: RAND, 1998.
107. Glazner, J., Bondy, J., Luckey, D., & Olds, D. Effect of the Nurse Family Partnership on government expenditures for vulnerable first-time mothers and their children in Elmira, New York, Memphis, Tennessee, and Denver, Colorado. Final Report to the Administration for Children and Families. www.acf.hhs.gov/programs/opre/welfare_employ/economic_analysis/reports/effect_nursefam/effect_nursefam.pdf
108. Aos, S., Lieb, R., Mayfield, J., Miller, M., Pennucci, A. (2004). *Benefits and costs of prevention and early intervention programs for youth*. Olympia: Washington State Institute for Public Policy.

109. Aos, S., Lieb, R., Mayfield, J., Miller, M., Pennucci, A. (2004). *Benefits and costs of prevention and early intervention programs for youth*. Olympia: Washington State Institute for Public Policy, p. 12.
110. National Research Council and Institute of Medicine (2000) *From neurons to neighborhoods: The science of early childhood development*. Committee on Integrating the Science of Early Childhood Development. Jack P. Shonkoff and Deborah A. Phillips, eds. Board on Children, Youth, and Families, Commission on Behavioral and Social Sciences and Education. Washington, D.C.: National Academy Press, p. 398.
111. McGuigan, W.M., & Pratt, C.C. (2001). The predictive impact of domestic violence on three types of child maltreatment. *Child Abuse & Neglect, 25*, 869-883.
112. Duggan, A., Windham, A., McFarlane, E., Fuddy, L, et al. (2000) Hawaii's Healthy Start program of home visiting for at-risk families: Evaluation of family identification, family engagement, and service delivery. *Pediatrics*, *105*(1), 250-259.
113. LPC Consulting Associates. (October 11, 2001). *Birth & Beyond: Year Two Report*. Submitted to Department of Health and Human Services.
114. Korfmacher, J., O'Brien, R., Hiatt, S., & Olds, D. (1999) Differences in program implementation between nurses and paraprofessionals providing home visits during pregnancy and infancy: A randomized trial. *American Journal of Public Health, 89*(12), 1847-1851.
115. O'Brien, R., Molritz, P., & McClatchey, M. (4/21/01). Replication of a model program of prenatal and infancy home visiting by nurses outside of research settings. Presentation at Society for Research on Child Development, Minneapolis, Minnesota.
116. Wagner, M., Spiker, D., Gerlach-Downie, S., & Hernandez, F. (February 2000) *Parental engagement in home visiting programs—findings from the Parents as Teachers multisite evaluation*. Menlo Park, CA: SRI International.
117. Kisker, E.E., Love, J.M., Raikes, H., Boller, K. et al. (December 1999). *Leading the way: Characteristics and early experiences of selected Early Head Start programs. Volume I: Cross-site perspectives*. Prepared for Administration on Children, Youth and Families, U.S. Department of Health and Human Services, Washington, D.C.
118. Paulsell, D., Kisker, E.E., Love, J.M., Raikes, H., et al. (December 2000). *Leading the way: characteristics and early experiences of selected Early Head Start programs. Vol. III: Program implementation*. Report prepared for The Commissioner's Office of Research and Evaluation and the Head Start Bureau, Administration on Children, Youth and Families, Department of Health and Human Services.
119. Williams, Stern & Associates (February 2005). Healthy Families Florida Evaluation Report. January 1, 1999-December 31, 2003. Miami, FL www.wsahealth.com**.**
120. Wasik, B.H. (1993) Staffing issues for home visiting programs. *The Future of Children, 3*(3), 140-157.
121. Duggan, A., Fuddy, L., Burrell, L., Higman, S.M., et al. (2004). Randomized trial of a statewide home visiting program: impact in reducing parental risk factors. *Child Abuse & Neglect, 28*, 623-643.

122. Barnet, B., Duggan, A.K., Devoe, M., et al. (2002). The effect of volunteer home visitation for adolescent mothers on parenting and mental health outcomes: A randomized trial. *Arch Pediatr Adolesc Med, 156,* 1216-1222.
123. Vernon-Feagans, L., Hammer, C.S., Miccio, A., & Manlove, E. (2001).Early language and literacy skills in low-income African American and Hispanic children. In S. B. Neuman, & D. K. Dickinson (Eds.), *Handbook of Early Literacy*. New York: Guilford Press, p. 192-210.
124. Black, M.M., Siegel, E. H., Abel, Y.A., & Bentley, M.E. (2001) Home and videotape intervention delays complementary feeding among adolescent mothers. *Pediatrics, 107*(5). Available at http://www.pediatrics.org/cgi/content/full/107/5/e67
125. Love, J.M., Kisker, E.E., Ross, C.M., Schochet, P.Z. et al. (June 2001) *Building their futures: How Early Head Start programs are enhancing the lives of infants and toddlers in low-income families. Volume II: Technical Report, Appendixes*. Prepared for Commissioner's Office of Research and Evaluation; Administration on Children, Youth and Families; U.S. Department of Health and Human Services, Washington, D.C. Available at http://www.acf.dhhs.gov/programs/core/ongoing_research/ehs/ehs_intro.html
126. National Research Council and Institute of Medicine (2000) *From neurons to neighborhoods: The science of early childhood development*. Committee on Integrating the Science of Early Childhood Development. Jack P. Shonkoff and Deborah A. Phillips, eds. Board on Children, Youth, and Families, Commission on Behavioral and Social Sciences and Education. Washington, D.C.: National Academy Press, p. 371.
127. Lanzi, R.G., Pascoe, J.M., Keltner, B., et al. (1999). Correlates of maternal depressive symptoms in a national Head Start program sample. *Arch Pediatr Adolsc Med, 153*, 801-807.
128. Windham, A., Duggan, A.K., Rohde, C., Young, E., et al. 2000? Comprehensive evaluation of the Hawaii Healthy Start program: Effects on maternal mental health, substance use and social support at one year. 11th Annual Research Conference Proceedings.
129. Gomby, D. (2003). Building school readiness through home visitation. For the First 5 California Children and Families Commission. Available at: http://www.ccfc.ca.gov/SchoolReady.htm.
130. LeCroy & Milligan Associates, Inc. (November 2003). Healthy Families Arizona Evaluation Report 2003. Prepared for the Arizona Department of Economic Security. Tucson, AZ: LeCroy & Milligan Associates, Inc.
131. Love, J.M., Kisker, E.E., Ross, C.M., Schochet, P.Z. et al. (June 2001) *Building their futures: How Early Head Start programs are enhancing the lives of infants and toddlers in low-income families. Volume II: Technical Report, Appendixes*. Prepared for Commissioner's Office of Research and Evaluation; Administration on Children, Youth and Families; U.S. Department of Health and Human Services, Washington, D.C. Available at http://www.acf.dhhs.gov/programs/core/ongoing_research/ehs/ehs_intro.html

Appendix A-1
Early Head Start[e]

Early Head Start (EHS) was established in 1994, when the Head Start Authorization Act of 1994 mandated new Head Start services for families with infants and toddlers. In FY 2004, the budget for EHS was nearly $677 million, which was used to support more than 650 programs serving nearly 62,000 children under age 3.[f]

Early Head Start programs are comprehensive, "two-generation" programs that seek to produce outcomes for children and parents. EHS addresses four main domains:

- *Children's development*: including health, resiliency, social competence, and cognitive and language development
- *Family development*: parenting and relationships with children, the home environment and family functioning, family health, parent involvement, and economic self-sufficiency
- *Staff development*: professional development and relationships with parents
- *Community development*: enhanced child care quality, community collaboration, and integration of services to support families with young children

Early Head Start serves low-income pregnant women and families with infants and toddlers. Most families must have incomes at or below the federal poverty level or be eligible for public assistance, although 10% of children may be from families that exceed these income eligibility criteria. Programs must reserve at least 10 percent of their spaces for children with disabilities.

Program services include early education both in and out of the home; parenting education; comprehensive health and mental health services, including services to women before, during, and after pregnancy; nutrition education; and family support services.

Programs may offer these services through primarily center- or home-based strategies, or through a combination of approaches. Each program component must meet Early Head Start performance standards, and programs are visited every three years to determine if they are in compliance with program guidelines. In home-based programs, home visits are scheduled weekly and are complemented by group socialization opportunities, scheduled biweekly. Home visitors need not have any special training or background.

A network of training and technical assistance supports EHS sites. The Early Head Start National Resource Center provides ongoing support, training, and technical assistance under a contract with the organization Zero to Three, and in conjunction with the Head

[e] Appendices A1-A6 are adapted from Gomby, D. (2003) Building school readiness through home visitation. For the First 5 California Children and Families Commission. Available at: http://www.ccfc.ca.gov/SchoolReady.htm.

[f] www.acf.hhs.gov/programs/hsb/research/2005.htm

Start Quality Improvement Centers and the Head Start Disabilities Services quality Improvement Centers.

Head Start programs are required to involve parents and community representatives in all areas of the program, including policy, program design, curriculum, and management decisions.

Appendix A-2
Healthy Families America

In 1992, the organization then known as National Committee to Prevent Child Abuse – now known as Prevent Child Abuse America (PCA America) – launched Healthy Families America (HFA), an initiative to provide voluntary home visitation services for new families at greater risk for parenting problems, including child abuse and neglect. As of 2002, HFA programs served more than 66,000 families in more than 450 communities in 39 states, the District of Columbia, and Canada.

HFA's goals are to promote positive parenting, enhance child health and development, and prevent child abuse and neglect by enhancing parent-child interaction, promoting the use of community resources, and creating community systems of support to assist parents in caring for their newborns.

Systematic assessment of all families in an intended population within a community is a distinguishing feature of HFA. More than 90% of all HFA programs reach out to either all new parents or all first-time parents within a community. Assessment usually occurs in the hospital or home with a specially trained person who listens to the family's interests and concerns and links the family with appropriate community resources.

Families at greater risk of parenting difficulties are encouraged to participate in home visiting, beginning with weekly visits. Visit frequency is reduced as families meet specific goals, which they develop with their home visitors during the initial visits. Services begin at a child's birth (or during pregnancy) and can continue until the child is five years of age.

Home visitors are selected on the basis of personal characteristics rather than formal education. The most important criterion is the ability to engage families and establish trusting relationships. As of 2002, most HFA home visitors (82%) had attended or graduated from college, specializing in child development, social work, nursing, or education. Most (87%) also had prior experience in home visitation programs.

Although initially guided by the Hawaii Healthy Start Program and other major family support initiatives, HFA is not a strict replication model. Flexibility is deemed essential to allow implementation in a wide range of communities. For example, each HFA program must systematically assess all families in its intended service population, but each community defines its intended population (for example, first-time parents, or all families living in selected neighborhoods).

To ensure quality with flexibility, HFA's home visitation effort is defined by 12 critical elements, which are based upon two decades of research regarding best practice standards. In partnership with the Council on Accreditation of Services to Families and Children (COA), PCA America developed and implemented a credentialing process to document that each HFA program adheres to the critical elements.

The average annual cost per family for HFA services typically ranges from $3,000 - $5,000. In 2000, the average program budget was $495,000. Most HFA program sites have multiple funding sources such as local charities; foundations, TANF; the Family Preservation and Support Act; Children's Trust Funds; Maternal and Child Health Services Block Grant (Title V); Early Intervention, Part H/C; Medicaid; and the Office of Juvenile Justice and Delinquency Prevention.

PCA America serves as the national headquarters for HFA. Regional centers also provide assistance to local programs. The national and regional centers divide tasks to offer sites the following: credential programs, train and certify HFA trainers, provide individualized technical assistance and written materials to state and community HFA leaders, conduct and coordinate research on HFA, and host HFA conferences. PCA America also links evaluation research with practice by convening the HFA Research Network to analyze program evaluations and design issues.

Appendix A-3
Home Instruction for Parents of Preschool Youngsters (HIPPY)

The Home Instruction for Parents of Preschool Youngsters (HIPPY) program aims to maximize children's chances for successful early school experiences by empowering parents as primary educators of their children and fostering parent involvement in school and community life. HIPPY USA supports the development and operation of HIPPY programs in communities across the United States through ongoing curriculum development and technical assistance.

HIPPY was developed in Israel in 1969, and the first HIPPY programs were established in the United States in 1984. In 2002, 160 HIPPY programs served more than 16,000 families in 27 states, plus the District of Columbia and Guam, and programs operate in other nations as well. In the United States, participating families are a richly multiethnic, multilinguistic group, primarily low-income, and living in wide-ranging urban, suburban, and rural environments.

HIPPY in the United States was a two-year program for parents of children ages four and five until 1994, when HIPPY USA introduced a new curriculum for three-year-olds, offering U.S. HIPPY programs the option of operating as either two- or three-year programs. The HIPPY curriculum focuses on the development of cognitive skills, including language development, problem solving, logical thinking, and perceptual skills. The curriculum also fosters the development of social/emotional and fine and gross motor skills.

HIPPY activities are written in a structured format, comparable to a well-designed lesson plan for a novice teacher. Available in English, Spanish, and Chinese, the curriculum contains 30 weekly activity packets, nine story books, and a set of 20 manipulative shapes for each year. Skills and concepts are developed through activities such as reading, writing, drawing, listening, talking, singing, playing games, puppetry, cooking, sewing, poetry, movement, and finger plays.

Parents are trained to use the curriculum through weekly visits with paraprofessionals who are also parents in the program. Every other week (or at least 15 times per year), the home visitors role-play the activities with parents during visits that each last at least 30 minutes each. Children need not be present during the visits. On alternate weeks, all of the parents and home visitors meet at the HIPPY site to role-play the activities as a group.

HIPPY home visitors are members of the participating communities and are themselves parents in the program. Home visitors have typically obtained a high school or equivalency diploma, and receive both intensive initial training and ongoing weekly training.

Each HIPPY program is supervised by a professional coordinator, typically an individual with a background in early childhood education or social work, who recruits parents, hires and trains paraprofessional home visitors, organizes parent group meetings, and

ensures that families are linked to other services in the community. The coordinator and the paraprofessionals meet weekly to role-play the materials, discuss the previous week's activities, share experiences, solve problems, and also develop individual career-development plans for the paraprofessionals.

The HIPPY model has been adapted to meet societal changes and local community needs. For example, HIPPY has responded to the work requirements imposed on families by welfare reform with evening and weekend home visits, lunch hour visits at the workplace, or after-work visits at the child care center. Some HIPPY programs employ a schedule of weekly home visits and monthly group meetings to reach families that live in remote locations.

Local HIPPY programs are funded through many private and public sources, including the U.S. Departments of Education, health and Human Services, and Housing and Urban Development; federal community service programs such as AmeriCorps and Volunteers in Service to America (VISTA); federal and state job training and early intervention/prevention programs; and foundations and corporations. Collaboration with such programs as Head Start and Even Start ensures broader services to families and maximizes funding and other resources. The average annual cost per family was $1,200 in 1999-2000. Average program site budgets were about $180,000.

HIPPY USA provides each HIPPY program with intensive preservice training, comprehensive training guides for both program coordinators and home visitors, annual site visits with on-site training, an annual national conference, a newsletter published three times each year, and ongoing telephone support. HIPPY programs participate in a biannual self-assessment and validation process. They submit to HIPPY USA demographic information on program participants annually for analysis and dissemination.

HIPPY USA conducts ongoing curriculum development to ensure that all materials are developmentally appropriate, culturally relevant, and reflective of the growth that occurs in children and parents as they progress through the program. Recent revisions and additions to the curriculum include revised curricula; parent materials, including enrichment guides for families who want or need more practice in certain areas; a home visitor guide; and a nutrition curriculum (in collaboration with the Center on Hunger, Poverty and Nutrition Policy at Tufts University).

Appendix A-4
Nurse-Family Partnership (NFP)

Established in 1977 as a research-demonstration project in Elmira, New York, the Nurse-Family Partnership (formerly the Nurse Home Visitation Program) consists of nurses who visit first-time, low-income mothers and their families in their homes during pregnancy and the first two years of the child's life to accomplish three goals:

1. Improve pregnancy outcomes by helping women to alter their health-related behaviors, including reducing the use of cigarettes, alcohol, and illegal drugs;

2. Improve child health and development by helping parents provide more responsible and competent care for their children; and

3. Improve families' economic self-sufficiency by helping parents develop a vision for their own future, plan future pregnancies, continue their education, and find work.

The program has been tested in scientifically controlled studies in three communities (Elmira, New York; Memphis, Tennessee; and Denver, Colorado). As of 2002, the program operated in 250 communities in 22 states, serving more than 24,000 women. Plans exist to expand services gradually to reach, by 2020, fifty percent of the low-income, first-time mothers in the country. New sites must commit to implementing the program model as it was tested in the earlier studies. The program developers believe that this is the best way to ensure that local programs will achieve the results produced in the studies.

Not surprisingly, therefore, program services have remained remarkably consistent across all sites. Briefly, nurses visit families from pregnancy (typically beginning before the end of the second trimester) through the child's second year of life. The frequency of home visits changes with the stages of pregnancy and as the child grows, and can be adapted to the mother's needs. The goal is to visit every week to two weeks, depending upon the phase of the program.

Each visit lasts approximately 60 to 90 minutes and is designed to encourage the mother to develop necessary knowledge and skills, and to change those behaviors that may lead to poor pregnancy outcomes, problems in child health or development, or compromised parental life course. Visitors help mothers strengthen relationships with family members and friends and link them with other health and human services. Detailed visit-by-visit program guidelines are organized around challenges mothers and children typically encounter during pregnancy and infancy. Topics focus on six domains: (1) personal health; (2) environmental health; (3) life-course development; (4) maternal role; (5) family and friends; and (6) health and human services. Maternal, child, and family functioning are assessed, and specific strength-based interventions are used depending upon the results of those assessments and the interests and priorities of each family.

A key element in the model is the use of nurses as home visitors. In the communities where the program is now being implemented, the nurses work for departments of health, visiting nurse associations, or hospitals that provides primary care for mothers and children. Typically public health nurses, the visitors are required to have a minimum of a bachelor's degree. Each attends a two-week training course spread out over the first year of his or her involvement in the program. Each carries a caseload of 20 to 25 families and receives regular clinical supervision from a more senior nurse. In addition to receipt of training in the program model, nurses are expected to become proficient in assessing parent-infant interaction within the first year after the initial training. This requires 45 hours of continuing education provided by the University of Washington's Nursing Child Assessment Satellite Training (NCAST) and qualifies for three college credits. Continuing education after that is expected at each site but is tailored to the individual needs of each nurse. Areas of expected proficiency are made available as part of the training in the program model.

A hallmark of this program is its use of research to determine program effectiveness and to improve services. Program implementation is monitored carefully in each site, using a management information system that is integral to the program. Longitudinal follow-ups are being conducted in Elmira, Memphis, and Denver.

Program services are usually funded through a variety of public and private sources. Public dollars include state and local dollars, as well as federal dollars from Medicaid, Maternal and Child Health Services Block Grant, and Temporary Assistance to Needy Families. The average annual program cost in 2002 was $3,000 per family, with variations in cost primarily dependent upon local nurses' salaries.

The national office for the program and the National Center for Children, Families, and Communities at the University of Colorado together provide planning assistance to states, communities and operating agencies, nurse-training, evaluation services, and ongoing consultation in the development of the program.

Appendix A-5
Parents as Teachers (PAT)

The Parents as Teachers (PAT) program began as a pilot project in 1981, implemented by the Missouri Department of Elementary and Secondary Education in collaboration with four school districts. Concerned that school-district programs for disadvantaged preschoolers that began at age three were intervening too late, school-district program designers sought to test the feasibility of influencing children's education from the onset of learning through a partnership with their parents. The goal of the intervention was to reduce the number of children entering school in need of special help.

The results of an independent evaluation of the program's benefits to participating children, as assessed at their third birthdays, led to funding for statewide implementation. The findings of this and subsequent studies contributed to the program's expansion by 2003 to about 3,000 sites in all 50 states, the District of Columbia, and six other countries, serving about 330,000 children prenatally to age five.

The PAT program is based on two simple ideas: babies are born learners, and parents play a critical role from the beginning in determining what their children will become. The tenet that *all* parents deserve to be supported in their role as first teachers led to a program designed for the voluntary participation of all families, and adaptable to the needs of broadly diverse families, cultures, and special populations. In 2002, the program's major goals were to (1) empower parents to give their children the best possible start in life through increased knowledge of child development and appropriate ways to foster growth and learning; (2) give children a solid foundation for school success; (3) prevent and reduce child abuse; (4) increase parents' feelings of competence and confidence; and (5) develop true home-school-community partnerships on behalf of children.

PAT program services include four components:

1. Regularly scheduled personal visits by trained and credentialed parent educators who provide information on the child's development, model and involve parents in age-appropriate activities with the child, and respond to parents' questions and concerns.

2. Group meetings in which parents share insights and build informal support networks.

3. Health and developmental screening to detect and treat any emerging problems as early as possible.

4. Linking of families with needed community services that are beyond the scope of the program.

Home visits are usually one hour in length and are scheduled monthly, biweekly, or weekly, depending upon family needs and local program budgetary restrictions. In Missouri, for example, state funds provide for a minimum of 4-5 visits per family per

year and up to 25 visits per year for high-need families—that is, families with one or more of the following characteristics: teen parents, single parents, children of parents with disabilities, low educational attainment, English as a Second Language, unemployment, chemical dependencies, foster parents, numerous family relocations, high stress, or involvement with the corrections system, or mental health, health, of social service agencies.

PAT programs are offered by school districts, hospitals, churches, and social service agencies as stand-alone programs or as part of more comprehensive service-delivery systems, such as Head Start or Even Start programs, or family resource centers. Funding is often a combination of federal (for example, Title I, Goals 2000, Even Start, and Head Start), state, and local dollars, as well as private monies.

Established in 1987, the Parents as Teachers National Center (PATNC) develops, promotes, and evaluates programs and public policies that provide family support and education through the earliest years of a child's life. PATNC provides training and technical assistance, curriculum and materials development, and research and evaluation coordination in support of quality PAT programs. PATNC maintains updated implementation plans for all programs, and programs submit annual reports about the services delivered and populations served.

Although programs select the personnel who will serve as parent educators, PATNC strongly recommends professional education and experience in the fields of education, health care, or social work related to young children and families. All parent educators (home visitors) receive one week of preservice training by trainers certified by PATNC. PATNC credentials parent educators on annually, contingent upon the local administering agency's approval of their service to families and their completion of the required 10 to 20 hours of annual in-service training, depending on length of service. Responsibility for supervision of service personnel rests with the local administering agency.

The PAT curriculum has evolved over the years. Originally designed as a birth- or prenatal-to-age-three program, the PAT curriculum now extends through age five. Special curricula have been created for child care providers and for teen parents. Child care providers are sometimes trained to deliver home visits as well.

The entire curriculum was revised in 1999 to translate the latest research about brain development into improved outcomes for young children. Dubbed the Born to Learn™ Curriculum, the curriculum now combines detailed home visiting plans in weekly, biweekly, and monthly formats with resource materials for parent educators, handouts for parents written at two different reading levels, and a 16-segment video series.

Appendix A-6
The Parent-Child Home Program (PCHP)

Established by the Verbal Interaction Project in 1965 under the direction of Dr. Phyllis Levenstein, the Parent-Child Home Program is an intensive home visiting model focused on increasing parent-child verbal interaction and enabling parents to prepare their children to enter school ready to learn and to achieve long-term academic success.

As of 2005, approximately 4,000 families were served at 140 program sites in 12 states. PCHP programs are often sponsored by school districts, individual schools, social service agencies, community-based organizations, community health centers and public libraries. Many sites operate in conjunction with local family resource centers.

Families receive two home visits per week for a minimum of 23 weeks in each of two years (a total of at least 92 visits over the course of two years, which typically follow the school year calendar). Families with children as young as 16 months may enter the program, but participants are usually families with 2- and 3-year-olds.

Paid paraprofessionals from the community, many of whom are former parent-participants in the program, work with families that are challenged by poverty, low levels of education, language barriers, and other obstacles to educational success. These are often the first jobs for the paraprofessionals, and advancing their education and careers is an important additional impact of the program.

PCHP works with primary caregivers to develop their children's literacy and language skills and to prepare children to enter school ready to succeed. The PCHP curriculum focuses on two major areas: cognitive (sensory-motor skills, conceptual development, language development) and affective (social emotional competence and parenting skills). The home visitor emphasizes verbal interaction and learning through play using carefully chosen books and toys.

Families receive a minimum of 12 books and 11 toys free of charge each year. Many families have no children's books and few developmentally appropriate toys when they enter the program, but, upon completion, each family has a library of children's literature and a collection of the types of educational puzzles, blocks, and simple games that their children will be expected to have experienced when they enter kindergarten.

The program also seeks to connect families with needed services to help them reach the next appropriate educational step for their children and themselves. To that end, the Parent-Child Home Program Coordinator serves as a source of referrals to link families with social services or early childhood and parenting education opportunities in their communities.

The national office of the Parent-Child Home Program serves as a clearinghouse for the more than 35 years of evaluation and research on PCHP. The National Center provides

start-up and technical assistance to individual sites; training and administrative materials to program coordinators, who then train their own home visitors locally; an annual conference for coordinators and home visitors; and assistance with conducting research and evaluation projects and with pilot projects serving special populations, such as homeless families, teen parents, and children younger than 16 months.

PCHP programs are funded through a variety of sources, including Title I; Even Start; TANF; state funds, including budget line items, First 5 in California, and parenting and literacy funds; school district funds; and private foundations and corporations. In 2002, the average annual cost was $2,000 per family, and the average program site budget was $120,000.

APPENDIX B.
META-ANALYSES AND LITERATURE REVIEWS OF HOME VISITING PROGRAMS

I. Introduction

II. Meta-Analyses

A. Meta-Analyses Derived from the Abt Associates, Inc., Database
   1. Layzer et al (2001)
   2. Sweet and Applebaum (2004)

B. Meta-Analyses Derived from the Elkan et al Database
   1. Elkan et al (2000)
   2. Kendrick et al (2000a)
   3. Kendrick et al (2000b)

C. Other Meta-Analyses
   1. Geerart et al (2004)
   2. Guterman (1999)
   3. Hodnett & Roberts (2001)
   4. Hodnett & Fredericks (2004)
   5. MacLeod & Nelson (2000)
   6. Nelson et al (2003)
   7. Roberts et al (1996)
   8. Sikorski et al (2003)

III. Literature Reviews

A. Bull et al (2004)
B. Ciliska et al (2001)
C. Cowan et al (1998)
D. Gomby & Larson (1993)
E. Gomby & Culross (1993)
F. Guterman (2001)
G. MacMillan, HL (2000)
H. Montgomery et al (2000)
I. National Research Council and Institute of Medicine (2000)
J. Wade et al (1999)
K. Olds et al (2000)

I. INTRODUCTION

Home visiting research has blossomed in the past two decades, and new studies continue to be produced each year. This Appendix is an annotated bibliography of several of the most recent literature reviews and meta-analyses. These, along with some very recent studies that have not been included in these thorough reviews, are the primary sources of information that were used to form the conclusions reached in this report.

II. META-ANALYSES

Table 2 summarizes the key findings from several of the most recent meta-analyses of home visiting programs. Some of these meta-analyses are described below:

A. Meta-Analyses Derived from the Abt Associates Database

As part of a contract with the federal government to assess family support programs, Abt Associates undertook a meta-analysis of the family support literature since 1965. The Abt Associates database included all family support programs. Appelbaum and Sweet used the Abt database to conduct a meta-analysis that included only those family programs that employed home visiting. In contrast, the Abt researchers conducted some analyses that focused on family support broadly, some on home visiting programs, and some that contrasted the use of home visiting with other service strategies. The following summarizes the results of both efforts.

1. Sweet, M.A., & Appelbaum, M.I. (2004). Is home visiting an effective strategy? A meta-analytic review of home visiting programs for families with young children. Child Development, 75(5), 1435-1456.

Employs the database of studies from Abt Associates (see below) but examines only programs employing home visiting services as the primary means of service delivery, and only considers end-of-treatment outcomes and whole group comparisons. Reports the following effect sizes:

- *Child Development*
  - Cognitive child development: .18, $p<.001$
  - Socioemotional child development. .10, $p<.001$
- *Parenting*
  - Parenting behaviors: .14, $p<.001$
  - Parenting attitudes: .11, $p<.01$
- *Prevention of child abuse*
  - Actual abuse: .32, not statistically significant
  - Potential abuse: .24, $p<.001$
  - Parent stress: .21, not statistically significant
- *Maternal life course*
  - Education: .13, $p<.01$

- Employment/wages: .02, not statistically significant
- Reliance on public assistance: -.04, not statistically significant

The authors conclude:

a. Effect sizes, while significant, are small for both child and parent outcomes.
b. Increased length or intensity of services were not consistently related to outcomes.
c. No differences in outcomes were found between professional and paraprofessional home visitors.
d. There are no consistent effects across outcome groups for targeted populations, except that programs targeting families with low-birth-weight children were more effective than other programs for both child cognitive and parenting behavior outcomes.
e. No consistent effects across outcome groups for primary program goals (e.g., programs that focus on child-related goals do not necessarily achieve child outcomes more than do programs that focus on parent-related goals).

2. Layzer, J.I., Goodson, B.D., Bernstein, L, & Price, C. *National evaluation of family support programs. Final Report Volume A: The meta-analysis.* Abt Associates, April 2001.

Meta-analysis of family support programs, including home visiting programs, conducted since 1965. The authors identified 900 research reports, coded 665 studies (representing 260 programs), and eventually included the most methodologically rigorous of those studies in the meta-analysis. That resulted in two databases: (1) an end-of-treatment database of 351 randomized or quasi-experimental studies of 191 programs, and (2) a follow-up database of 158 randomized or quasi-experimental studies of 87 programs. Approximately half of these programs included home visiting services as the primary mode of service delivery, and another 12% used home visits to deliver some services. The analyses cover the short-term and long-term effects of the programs and the differential effectiveness of alternative service strategies. Table 3 in the body of this paper lists the effect sizes from the Abt meta-analysis for randomized trials for both short-term and follow-up outcomes. Considering home visiting programs only, effect sizes for randomized and quasi-experimental studies did not differ significantly.

Selected findings:

- Family support services generate small positive effects in children's cognitive development, social and emotional development, and parenting attitudes and knowledge, parenting behavior, and family functioning.
- Services generate statistically significant but very small and perhaps functionally meaningless benefits on children's physical health and development, safety, parents' mental health or risk behaviors, and family economic self-sufficiency.
- Programs that focus on children with special needs have larger effects on children's cognitive outcomes, as do programs that provide early childhood education directly to children.

- In contrast, programs that use home visiting as a primary intervention have weaker effects on children's cognitive outcomes.
- Programs that use professional staff to help parents to be effective adults, and that provide opportunities for parents to meet in support groups are more effective in producing positive outcomes for parents.
- Strategies showing the weakest effects were those relying on home visits, delivered by paraprofessional staff, with non-targeted services.
- Teens benefited from having a case manager, and organized parent-child activities.

The following tables from the Layzer et al paper list the magnitude of the effect sizes for cognitive development in programs with various characteristics. Generally, they show that center-based early childhood education programs and parent peer support groups have larger effects on child cognitive development than do home visiting programs, and that children with biological risks benefit more than other children.

Average Effects on Children's Cognitive Development for Different Program Characteristics: Randomized Studies

Program Characteristic	Present	Absent	Effect Size of Difference
Early childhood education	.48	.25	2.1 s.d.
Targeted to special needs children	.54	.26	2.5 s.d.
Peer support opportunities for parents	.40	.25	.9 s.d.
Home visiting (vs. parent groups)	.26	.49	1.4 s.d.

Average Effects on Cognitive Development of Children with Biological Risks in Programs with and without Early Childhood Education: Randomized Studies

	Targeted to Children At Biological Risk	Not Targeted
Early childhood education	.67	.45
No early childhood education	.50	.26

A difference of .05 represents an effect size of one standard deviation.

Average Effects on Cognitive Development of Children with Biological Risks in Programs with Home Visiting vs. Parent Groups: Randomized Studies

Primary Method of Delivering Parent Education	Targeted to Children at Biological Risk	Not Targeted
Home visiting	.36	.09
Parent peer support groups	.54	.27

A difference of .11 represents an effect size of one standard deviation.

B. Meta-Analyses Derived from The Elkan et al Database

British researchers Elkan, Kendrick, Hewitt, Robinson and their colleagues identified 1218 studies from all over the world, and eventually included 102 studies that met requirements for methodological rigor. The studies evaluated 86 home visiting programs. The relevance of non-United States studies to the United States is unclear, given the differences in health and human service systems across countries, the needs of the populations, and the extent to which home visiting is much more common across all socioeconomic strata in European nations. Nevertheless, the review is very comprehensive (at least through about 1996). The authors also published other studies based on the same database to examine the effects of home visiting on immunizations and parenting.

1. Elkan, R., Kendrick, D., Hewitt, M, Robinson, JJA., et al. The effectiveness of domiciliary health visiting: a systematic review of international studies and a selective review of the British literature. *Health Technology Assessment* 2000; Vol 4(13).

The review concludes the following:

Home visiting is associated with improvements in:

- Parenting skills and the home environment
- Breastfeeding
- Social support for mothers
- Child intellectual development (especially among children with low birth weight or failure to thrive)

Home visiting is associated with reductions in:

- Some child behavioral problems
- Frequency of unintentional injury
- Maternal postnatal depression.

Home visiting has no effects on

- Children's motor development
- Immunization rates
- Preventive health services
- Emergency room services
- Hospital admission rates

There is insufficient evidence to draw conclusions regarding:

- Physical development
- Child illness
- Children's diet
- Rates of child abuse and neglect
- Mothers' use of informal community resources or the size of their informal support network

- Mothers' return to education, participation in the workforce, use of public assistance, family size, number of subsequent pregnancies

2. **Kendrick, D., Elkan, R., Hewitt, M., Dewey, M., et al. Does home visiting improve parenting and the quality of the home environment? A systematic review and meta analysis. *Arch Dis Child* 2000; *82*:443-451 (June).**

   Meta-analysis of home visiting programs from 1966 to October 1996. Included randomized trials and quasi-experimental studies of home visiting programs that included at least one postnatal home visit. Part of a larger meta-analysis (cf. Elkan at al, 2000). Found 1218 references, and eventually included 34 studies that reported HOME scores and/or other measures of parenting. Studies included 12 non-US studies (Canada, UK, Ireland, Bermuda, Jamaica). Concludes that home visiting services were associated with an improvement in the home environment (HOME scores) and improvements in parenting (measured in many different ways).

3. **Kendrick, D., Hewitt, M., Dewey, M., Elkan, R., et al. (2000). The effect of home visiting programmes on uptake of childhood immunization: A systematic review and meta-analysis. *Journal of Public Health Medicine,* 22(1), 90-98.**

   Meta-analysis of studies from 1966 to 1996. Identified 1218 references in the literature, eventually including only 11 studies that met methodological criteria and reported on immunization rates. Includes four non-U.S. studies (Canada, UK, Turkey, and Ireland). "Our findings suggest that multi-faceted home visiting programmes are not sufficient to increase uptake, and that more specific interventions may be required to achieve this." (p. 93)

C. Other Meta-Analyses

Other notable meta-analyses include the following. Differences in conclusions illustrate the influence of different studies being included in the reviews.

1. **Geerart, L., Van den Noortgate, W., Grietens, H., & Onghena, P. (2004). The effects of early prevention programs for families with young children at risk for physical child abuse and neglect: A meta-analysis. *Child Maltreatment, 9*(3), 277-291.**

   Includes studies focused on the prevention of child maltreatment in families identified as at-risk for child maltreatment but where no physical abuse or neglect had yet been identified or substantiated, and which began either prenatally or in the first 3 years after birth. Studies from 1975-September 2002 which used any pretest-posttest design or independent groups design were included. Forty studies were identified, 17 of which were of Healthy Families America. Most of these programs appear to be home visiting, but in-hospital rooming in and center-based group services are also included. 36 of 40 programs were from the United States.

Most of the interventions produced positive effects, but as many as 70% of the effect sizes were not statistically significant at a .05 alpha level. Results indicated no differences between HFA and non-HFA programs. Overall results for the sample included the following:

Risk Reduction (overall effect size of .29):

- Child functioning (health, development, and behavior of the child): .23
- Parent-Child Interaction
  - Atmosphere (attachment, sensitivity, smiling, warmth): .30
  - Parent Management (parental reaction to behavioral problems of the child, restriction, punishment and playing): .36
- Parent Functioning:
  - Physical (health, subsequent pregnancies, infections of the parent): .28
  - Psycho-social (depression, anxiety, self-esteem): .25
  - As a parent (parenting knowledge, attitudes, or skills): .33
- Family Functioning (relations between parents, housekeeping, relation with siblings): .33
- Context
  - Material situation (finances, housing): .38
  - Network (informal social contacts and use of community services):.25

Abuse Reduction (overall effect size of .26):

- Reports (CPS): .20
- Indirect indicators (injuries, hospitalizations, ER visits, contacts with youth protective services, out-of-home placement): .26

2. Guterman, N.B. (1999). Enrollment strategies in early home visitation to prevent physical child abuse and neglect and the "universal versus targeted" debate: A meta-analysis of population-based and screening-based programs. *Child Abuse & Neglect,* 23(9), 863-890.

Compared effect sizes from 19 controlled outcome studies across screening-based and population-based enrollment strategies. Effect sizes were calculated on protective services data and on child maltreatment-related measures of parenting. Contrasts programs that are population-based in that they enroll only on the basis of demographic factors (e.g., everyone in a community, or everyone in a community who is a first-time teen mother – as in the Nurse-Family Partnership), or use active screening-based strategies that assess risk at the individual-level and target services on the basis of psychosocial risk (e.g., using a screen at birth to identify families at high-risk for abuse, or families with substance abuse problems – as in Healthy Families America).

Concludes that each approach produces some benefits, but only the population-based approach produces benefits large enough to be functionally meaningful. Suggests

three possible explanations: (1) psychosocial screens may not be accurate at identifying families at risk for future maltreatment; (2) screens may somehow screen in higher proportions of families who are less amenable to change and screen out families who are more amenable to change; and (3) screens may enroll high-need families, but program services may not adequately address their needs.

3. **Hodnett, E.D., & Fredericks, S. (2004).** ***Support during pregnancy for women at increased risk of low birthweight babies (Cochrane Review).*** **In: The Cochrane Library, Issue 3, 2004. Oxford: Update Software.**

   The Cochrane Collaboration is a group dedicated to using rigorous standards to review the literature in a variety of health-related domains. Generally, only the most methodologically stringent studies are included. This review focuses on the evaluations of programs for pregnant women believed to be at high risk for giving birth to a preterm or small for gestational age baby, that have the provision of support as a major component. Support included emotional support, with or without information/advice, and/or tangible assistance such as transportation to appointments or respite care for other children. Nine of 16 included studies involved home visiting. All studies were randomized trials.

   Results indicated social support was associated with improvements in immediate psychosocial outcomes such as anxiety, but that there were no effects on the numbers of preterm or low birthweight babies. There was a decreased likelihood of caesarean births, but a subset of studies indicated that women who received social support were almost 3 times more likely to have their pregnancies teminated.

4. **Hodnett, E.D., & Roberts, I. (2001).** ***Home-based social support for socially disadvantaged mothers (Cochrane Review).*** **In: The Cochrane Library, Issue3, 2004. Oxford: Update Software.**

   The Cochrane Collaboration is a group dedicated to using rigorous standards to review the literature in a variety of health-related domains. Generally, only the most methodologically stringent studies are included. Eleven studies that were either randomized or quasi-randomized trials of one or more post-natal home visits, with the aim of providing home-based support for socially disadvantaged women who had recently given birth, compared to usual care. Studies through about 1998 were included, and three studies were non-United States. The authors caution that results may change when an additional seven trials are included.

   Results indicated home-visited children were more likely to be immunized, a non-statistically significant trend towards reduced child injury rates, but no effects on child abuse and neglect.

5. **Roberts, I., Kramer, M.S., Suissa, S. Does home visiting prevent childhood injury? A systematic review of randomised controlled trials.** ***British Medical***

***Journal*, 1996;312:29-33 (6 January). Available at http://www.bmj.com/cgi/content/full/312/7022/29.**
Meta-analysis of home visiting programs from January 1966 to April 1995. Identified 33 experimental or quasi-experimental trials of home visiting programs and eventually included 11 which reported outcome data on injury or abuse or both. Concludes that home visiting has the potential to reduce the rates of childhood injury, but that results concerning abuse are equivocal, at least in part because the use of reported abuse is problematic in evaluations.

6. **MacLeod, J., & Nelson, G. (2000) Programs for the promotion of family wellness and the prevention of child maltreatment: A meta-analytic review. *Child Abuse & Neglect, 24*(9), 1127-1149.**
Included 56 studies from 1979-1998 of programs that were designed to promote family wellness and prevent child maltreatment in families with children up to age 12. Included studies that employed a "prospective, controlled design," including quasi-experimental studies. Included family preservation programs as well as primary prevention home visiting programs, although analyses were conducted separately for the two types of programs. Effect sizes for a range of outcomes (out-of-home placement rates, maltreatment, parent attitude, parent behavior, and HOME) were pooled to create an overall effect size for home visiting (.41).

   Additional analyses suggested that benefits on the maltreatment construct were greater with more visits and longer interventions (although the relationship was not perfectly linear), and for programs *without* a social support component. Effect size on the parent behavior construct was greater with more visits. Effect size for change in HOME scores was greater for programs in which concrete support was *not* provided to families.

7. **Nelson, G., Westhues, A., & MacLeod, J. (2003). A meta-analysis of longitudinal research on preschool prevention programs for children. *Prevention & Treatment,* Volume 6, Article 31, posted December 18, 2003. Available at: http://www.journals.apa.org/prevention/volume6/pre0060031a.html.**

   This meta-analysis included any intervention that occurred in the 0-5 age range with at least some outcome(s) assessed in the school years or later. Thirty-four studies from 1970-2000 were included, involving programs that provided home visiting services as well as center-based preschool programs. Fully 71% of the programs involved home visiting as at least one of the services provided.

   Analyses examined cognitive and social-emotional effects for children and parent-family effects, and outcomes during preschool, at K-8, and high school and beyond.

   During the preschool time period, programs with a preschool education component produced cognitive effects that were much larger than for programs that did not have a preschool component (effect size of .53 versus .09). [Note that this is very similar to the effect sizes derived in the Abt Associates meta-analysis.] During this time

period, the preschool education component accounted for 63% of the variance in cognitive outcomes. At K-8, the differences in effect sizes were no longer statistically significant (.30 for preschool versus .22 for programs without preschool).

8. **Sikorski, J., Renfrew, M.J., Pindoria, S., & Wade, A. (2004). Support for breastfeeding mothers (Cochrane Review). In: The Cochrane Library, Issue 3, 2004. Oxford: Update Software.**

   The Cochrane Collaboration is a group dedicated to using rigorous standards to review the literature in a variety of health-related domains. Generally, only the most methodologically stringent studies are included. This review focuses on 20 randomized or quasi-randomized controlled trials from 10 countries involving 23,712 mother-infant pairs. All the interventions focused primarily on promoting breastfeeding and did not necessarily address broader parent or child issues. Home visiting services were included in 12 of the programs, and ranged from 3-15 or more visits.

   There was a beneficial effect on the duration of any breastfeeding, on exclusive breastfeeding, and on the cessation of breastfeeding before six months. Professional support appears to have more beneficial than lay support.

III. LITERATURE REVIEWS

Several literature reviews and volumes of collected studies have been published on home visiting in the past decade, and this paper relies on several of them. Key collections include the following:

A. **Bull, J., McCormick, G., Swann, C., Mulvihill, C. (February 2004).** ***Ante- and post-natal home-visiting programmes: a review of reviews*****. Health Development Agency, National Health Service.**
   http://194.83.94.67/uhtbin/cgisirsi.exe/1112044798/0/520/EBBD_Home_pdf_ft

   In 2001, the Department of Health in the United Kingdom gave responsibility to the Health Development Agency for maintaining an up-to-date map of the evidence base of public health and health improvement. One of the approaches that the HDA has taken is to develop evidence briefings which are essentially reviews of other reviews. This review includes international and US studies.

   The findings are as follows:

   Parenting

   - Good evidence that home visiting can produce positive effects

Child Health

- Low birth weight or other pregnancy outcomes: Insufficient evidence to draw any conclusions
- Breastfeeding: potential but more evidence is needed.
- Children's diets: weak evidence of positive effect, but studies are methodologically flawed
- Immunizations or hospitalizations: Insufficient evidence
- Child abuse: inconclusive, though evidence appears stronger for changes in measures of parenting than in measures of abuse. Problems of report and surveillance bias.
- Childhood injury: good evidence to suggest an effect

Parent Outcomes

- Postnatal depression: some evidence for positive effect on detection and management of postnatal depression, although issues of measurement and report bias need consideration in future trials.
- Access to social support: insufficient evidence to show any effect
- Maternal life course: insufficient evidence

B. Ciliska, D., Mastrilli, P., Ploeg, J., Hayward, S. et al. (2001). The effectiveness of home visiting as a delivery strategy for public health nursing interventions to clients in the prenatal and postnatal period: A systematic review. *Primary Health Care Research and Development,* 2, 41-54.

Reviews 20 studies through 1998, that are methodologically strong and that focus on the use of nurses as home visitors. Includes studies that combine home visiting with center-based early education services; studies that focus on home visiting for children with biological risks (born low birth weight or very low birth weight); international studies.

Concludes that nurse home visiting has no negative effects.

Positive effects include improvement in children's mental development, mental health and physical growth, reduction in mother's depression, improvement in maternal employment, education, nutrition and other health habits and government cost saving. [Many of these are based on the Nurse-Family Partnership.] No proven impact on birth outcomes.

C. Cowan, P.A., Powell, D. & Cowan, C.P. (1998). Parenting interventions: A family systems perspective. In I.E. Sigel and K. Ann Renninger, (eds.), *Handbook of Child Psychology,* Volume 4. *Child Psychology in Practice,* pp. 3-72. Literature review of parenting interventions, including home visiting services for young children.

D. Gomby, D.S., & Larson, C.S. (eds.) (1993). Home Visiting. *The Future of Children, 3*(3), 1-216.

Special issue of *The Future of Children* which provides an overview of home visiting programs, their history, underlying conceptual models, and staffing; reviews the research literature through about 1992, including the research on the costs and benefits of home visiting programs; describes international (primarily European) home visiting programs; discusses the context of serving families of color and families in poverty; and contains a proposal for a universal system of home visiting by the U.S. Advisory Board on Child Abuse and Neglect. Appendices provide contact information for several national home visiting programs. Available at www.futureofchildren.org.

E. Gomby, D.S. & Culross, P.L. (eds). (1999). Home Visiting: Recent Program Evaluations. *The Future of Children, 9*(1), 1-224.

Special issue of *The Future of Children* which updates the 1993 issue, and includes reports on the most recent studies of the Nurse Home Visitation Program (now called the Nurse-Family Partnership), Hawaii Healthy Start, Parents as Teachers, The Home Instruction Program for Preschool Youngsters (now the Home Instruction for Parents of Preschool Youngsters program), the Comprehensive Child Development Program, and Healthy Families America. Appendices provide contact and program information. Available at www.futureofchildren.org.

F. Guterman, N.B. (2001) *Stopping child maltreatment before it starts: Emerging horizons in early home visitation services*. Thousand Oaks, CA: Sage Publications.

Volume that focuses on the use of home visiting to prevent child maltreatment. Provides background information on child maltreatment, including prevalence and risk factors; the rationale for and the history of home visiting services to prevent child maltreatment; core elements in the delivery of home visiting services; who receives and benefits from home visiting services; addressing substance abuse via home visitation; the role of families' social networks; and empowering parents. Throughout the book, many programs are profiled as examples of practice, and practice principles are outlined.

G. MacMillan, HL with the Canadian Task Force on Preventive Health Care. (2000). Preventive health care, 2000 update: prevention of child maltreatment. *CMAJ, 163*(11), 1451-1458.

This is an update to a review conducted in 1993, and focuses on interventions to prevent child maltreatment. Concludes that there is good evidence to recommend a program of home visitation for disadvantaged families during the perinatal period extending through infancy to prevent child abuse and neglect. The target group for the intervention should be first-time mothers with one or more of the following characteristics: age less than 19 years, single parent status, low socioeconomic status. The strongest evidence is for an intensive program delivered by nurses, beginning prenatally and extending until the child's second birthday. [This is largely based on the Nurse-Family Partnership.]

H. Montgomery, D., Phillips, G., & Merickel, A. (September, 29, 2000). *Home visiting programs: Varying costs and elusive effects*. American Institutes for Research. Report submitted to The David and Lucile Packard Foundation for Grant #97-6152.

Reviews literature on costs and effectiveness of home visiting programs. Suggests that the annual costs per family for six major models of home visiting services (in 1998 dollars) are as follows:

$1,341 for HIPPY
$2,118 for PAT
$2,203 for Healthy Families America
$2,995 for Hawaii's Healthy Start
$2,842-$3,249 for the Nurse-Family Partnership (costs are less after three years, when all nurses are trained and full caseloads attained)
$11,935 for the Comprehensive Child Development Program

Describes the components that go into costs for programs (primarily salaries), and the results of time studies of home visitor activities, and includes recommendations for policymakers and program administrators.

I. National Research Council and Institute of Medicine (2000). *From neurons to neighborhoods: The science of early childhood development.* Committee on Integrating the Science of Early Childhood Development. Jack P. Shonkoff & Deborah A. Phillips, eds. Board on Children, Youth, and Families, Commission on Behavioral and Social Sciences and Education. Washington, D.C.: National Academy Press.

Comprehensive review of the science of all aspects of early childhood development, including the basic biology of child development, core concepts of child development, the interaction between nature and nurture, the role of culture in development, and the roles of family, economics, child care, community, and intervention programs (including home visiting) in promoting child development. Contains recommendations for policy, program, and research.

J. Olds, D., Hill, P., Robinson, J., Song, N. et al. (2000). Update on home visiting for pregnant women and parents of young children. *Current Problems in Pediatrics, 30*: 109-41.

This review updates a review by Olds and colleagues that appeared in the Gomby & Larson (1993). The review focuses on high-quality randomized trials or quasi-experimental studies of home visiting from the United States and other nations. Research concerning the NFP, Hawaii Healthy Start, HFA, the Comprehensive Child Development Program, Parents as Teachers, and HIPPY is summarized first, followed by descriptions of randomized trials organized by whether they affected (1) maternal psychological distress; (2) parent-child interaction/quality of the home environment; and (3) child functioning; or (4) had no discernible effects.

The authors conclude:

- Birth outcomes: no effect, other than in the initial NFP study in Elmira, New York, for a subset of women
- For low-birth-weight, sick newborns: Positive effects are seen from multiple programs
- For disabled and chronically ill children: positive effects are seen from multiple programs
- For children at social or economic risk, findings are mixed. For the following domains:
    - Parenting, qualities of the home environment, children's cognitive development: Mixed effects on parenting, but minimal effects on children's cognitive development.
    - Child neglect and abuse and injuries to children: Differences in mothers' attitudes and beliefs related to abuse and neglect, but few differences in child abuse and neglect rates or injuries and ingestions other than from the NFP.
    - Children's behavior problems: benefits in attachment security between mothers and infants from several programs, but few positive results in long-term change, with the exception of the NFP and other programs that used nurse or other professional home visitors
    - Children's physical health: Minimal effects on the use of well child check-ups or immunizations.
    - Maternal life course: none, except through the NFP.

K. Wade, K., Cava, M., Douglas, C., Feldman, L. et al. (March 1999). A systematic review of the effectiveness of peer/paraprofessional 1:1 interventions targeted toward mothers (parents) of 0-6 year old children in promoting positive maternal (parental) and/or child health/developmental outcomes. Effective Public Health Practice Project. Ontario Public Health Research, Education & Development Program.
http://www.city.hamilton.on.ca/PHCS/EPHPP/Research/Full-Reviews/98-99/Para-Professional-Parenting-Interventions-review.pdf
In 1998-99, the Public Health Branch of the Ontario Ministry of Health in Canada provided funding for a project designed to release summary statements about the effectiveness of 15 public health practices in Ontario. This review focuses on the use of peers and paraprofessional 1:1 interventions to promote positive maternal and/or child health and developmental outcomes among children ages 0-6 and their parents. All programs involved home visits, and some also involved additional early childhood, nutritional, and parent support services. Studies were international. Studies included randomized and comparison group quasi-experimental studies as well as studies based on qualitative methodology (e.g., grounded theory, ethnography, phenomenology).

The reviewers conclude:

- Peers/paraprofessionals can have a positive impact on child development and parent-child interaction, especially when the intervention is high in intensity (weekly or bi-weekly visits for at least one year), and part of a multifaceted intervention which includes professionals.
- There is not yet evidence for benefits from peer/paraprofessional interventions in the prevention of child abuse and neglect.
- There is not sufficient evidence to draw conclusions about effects on health care utilization, child health status, child behavior, or maternal psychosocial health status.

Appendix C. Longitudinal Studies of Home Visiting with Follow-Up at Age 6 or Older

Author, Date of Study, Citation #	Sample	Description of Study and Intervention	Age of Child at Last Follow-up	Outcomes Assessed at Age 6 or Later					
				Parental Caregiving	Abuse and Neglect	Maternal Life Course	Child Cognitive Development, School Achievement	Child Behavior and/or Physical Development	Physical Health, Use of Health Services
Gutelius et al (1972, 1977)[76,77]	Low-income African-American unmarried first-time mothers	Randomized trial. Nurse home visitor. Visits: prenatal-3 yrs	6th birthday	X		X	X	X	X
Lambie et al (1974);[78] Epstein & Weikart (1979)[79]	Low SES families with infants 3, 7, 11 months old	Randomized trial. Comparison of volunteer and paraprofessional home visitors, professional home visitors and control group. 16 months of weekly home visits	6-7.5 years	X			X	X	
Jester & Guinagh (1983)[80]	Low-income, no history of mental illness or retardation in mother; singleton, uncomplicated birth; 80% African-American, 20% white	Complex design with low retention (E: 171, to 29 at follow-up; C: 109 to 23 at follow-up). Paraprofessional home visitors. Visits: 3 most – 3 yrs.	11 years	X			X		
Olds et al, 1986-2001 (NFP: Elmira, NY) [35,50,81-83]	First-time mothers < 30 weeks pregnant; 61% social classes IV and V; 62% unmarried; 47% teens <19; 89% white, 10% African-American; 23% poor, unmarried teens	Randomized trial of nurse home visiting. Comparison of: C1: screening C2: screening plus transportation C3: prenatal home visits C4: prenatal and postnatal home visits Visits: <30 wks gestation – 24 mos postpartum	15 years	X	X	X		X	

Author, Date of Study, Citation #	Sample	Description of Study and Intervention	Age of Child at Last Follow-up	Outcomes Assessed at Age 6 or Later					
				Parental Caregiving	Abuse and Neglect	Maternal Life Course	Child Cognitive Development, School Achievement	Child Behavior and/or Physical Development	Physical Health, Use of Health Services
Olds et al, 2004 (NFP: Memphis, TN)[35,83,84]	First-time mothers < 29 weeks gestation, and at least two risk conditions: unmarried, <12 yrs education, or unemployed. 92% African-American; 98% unmarried, 64% <= 18 yrs, 85% <= FPL	Randomized trial of nurse home visiting. Comparison of: C1: transportation to prenatal apptments C2: transportation plus screening C3: transportation plus prenatal home visiting C4: transportation, prenatal and postnatal home visits Visits: To age 2.	6 years			X	X	X	X (birth outcomes of subsequent child)
Coates (12/26/96) Parkway School District, Missouri (PAT)[65]		Quasi-experimental. Children who had participated in PAT compared to community peers who had not.	4th grade				X		
Drazen & Haust (1995, 1996) (PAT)[85,86]	75% eligible for school luch program; 79% white, 17% African-American	Quasi-experimental. Children who completed at least 6 months of PAT compared to matched peers.	2nd grade				X		
O'Brien et al (2002)[75]	Primarily white (86-94%) or Hispanic (3-14%)	Quasi-experimental. 2 cohorts; children with at least 10 completed PAT visits compared to matched comparisons	3rd grade				X		

Author, Date of Study, Citation #	Sample	Description of Study and Intervention	Age of Child at Last Follow-up	Outcomes Assessed at Age 6 or Later					
				Parental Caregiving	Abuse and Neglect	Maternal Life Course	Child Cognitive Development, School Achievement	Child Behavior and/or Physical Development	Physical Health, Use of Health Services
Bradley & Gilkey (2002) (HIPPY)[66]	32.2% Afriican-American; 65.2% white; low-income	Quasi-experimental post how within-classroom matching design; two cohorts, at 3rd and 6th grades. HIPPY participants had completed at least 1 year of HIPPY. Visits: 30 wks per year for 1-3 yrs. Biweekly visits, plus biweekly parent group meetings; book distribution	6th grade				X	X	
Baker et al (1999) (HIPPY)[68]	African-American, Latino, and white. 34%-46% on public assistance	Two studies, each with two cohorts: (1) randomized trial comparing HIPPY vs. HIPPY plus preschool; (2) quasi-experimental study comparing HIPPY vs. non-HIPPY (and no preschool).	1st and 2nd grade				X	X	
Levenstein, 1998 Pittsfield, MA (PCHP)[67]	Participants met 5/8 criteria: • Child's IQ <100 on PPVT • Single parent • Unemployed mother • Unemployed father • Parent educ < 12th grade • Poverty level family income • Older sibling in Chapter 1 remedial program	Randomized trial (five years of cohorts). Biweekly home visits over 7 months in each of 2 years (ages 2-3). Paraprofessional or volunteer home visitors. 12 books/11 toys given to each family each year.	High school graduation				X		

Author, Date of Study, Citation #	Sample	Description of Study and Intervention	Age of Child at Last Follow-up	Outcomes Assessed at Age 6 or Later					
Madden et al 1984 New York City (precursor to PCHP)[87]	Criteria: • Family qualified for low-income housing • Lived in rented housing Neither resident parent had more than 12th grade education nor occupational level higher than semi-skilled.	Randomized trial with 4 cohorts of families, and different conditions. Comparisons included PCHP versus	3 years post-program (1st grade)	X			X		
Levenstein et al (2002) (PCHP) South Carolina)[88]	89% African-American; 11% white; low income; 96% free lunch	Quasi-experimental. 4 cohorts	1st grade				X		