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Early Childhood Home Visitation Program Models: An Objective Summary of the Evidence About Which Are Effective

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Based on Congressional and Administration interest in expanding early childhood home visitation services, we have prepared this short memo summarizing findings from rigorous evaluations of the following widely-implemented U.S. home visitation program models: Hawaii Healthy Start, Healthy Families New York, Home Instruction Program for Preschool Youngsters (HIPPY), Nurse-Family Partnership, Parents As Teachers, and Parent-Child Home Program. This cover page highlights items we believe may be of particular interest in the current policy discussions.

Factors supporting the validity of this summary:

- (1) **The Coalition is a neutral, objective party in assessing the evidence.** We are a foundation-supported nonprofit organization with broad experience reviewing evidence for Congress and the federal agencies. We have no affiliation with any program models in home visitation or any other policy area.
- (2) **Our findings are based on randomized trials – the study design identified in a recent National Academy of Sciences report as necessary to establish strong evidence.** Per the Academy's January 2009 report on prevention programs for young people: "The highest level of confidence [in program efficacy or effectiveness] is provided by multiple, well-conducted randomized experimental trials.... When evaluations with such experimental designs are not available, evidence for efficacy or effectiveness cannot be considered definitive, even if based on the next strongest designs.... Programs that have widespread community support ... should be subject to experimental evaluations before being considered evidence-based."¹

Main conclusion: Rigorous studies support the effectiveness of the Nurse-Family Partnership, and find few validated effects for the six other models. The evidence for each model, based on all publicly-available randomized controlled trials, is summarized in the attachment.

Our findings are consistent with results of an authoritative evidence review recently published in *The Lancet* – one of the top medical journals. Key conclusions of that review include the following:

"The programme with the best evidence for preventing child abuse and neglect is the Nurse-Family Partnership, which has shown reductions in objective measures of child maltreatment or associated outcomes when administered to high-risk families prenatally and in the first 2 years of a child's life; however, most home visiting programmes have failed to show such benefits."

"Most of the RCTs [randomized controlled trials] that assessed the effectiveness of home-visitiation programmes for preventing physical abuse and neglect have focused on models with service delivery by paraprofessionals, specifically the Hawaii Healthy Start Program and Healthy Families America. Overall, results have been disappointing ..."²

Evidence summaries circulated by several home visitation organizations contain flawed claims of effectiveness. These include, for example: (i) selectively reporting one or two positive findings in an RCT from an overall pattern of disappointing results; (ii) reporting effects that are not statistically significant, and so could be due to chance; and (iii) reporting short-term effects that faded to insignificance in subsequent follow-ups. In many cases, these claims of effectiveness are at odds with the stated conclusions of the authors of these studies (summarized in the attachment).

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¹ *Preventing Mental, Emotional, and Behavioral Disorders Among Young People: Progress and Possibilities* (National Academies Press, 2009, p. 371).

² Harriet L. MacMillan et. al., “Interventions To Prevent Child Maltreatment and Associated Impairment,” *Lancet*, vol. 373, January 17, 2009, pp. 250-266. Full text of this paper is available on-line, free of charge, at [http://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(08\)61708-0/fulltext](http://www.thelancet.com/journals/lancet/article/PIIS0140-6736(08)61708-0/fulltext).

Evidence on the Effectiveness of Six Widely-Implemented Early Childhood Home Visitation Models

This attachment summarizes findings from all publicly-available randomized controlled trials of the following widely-implemented home visitation program models: Nurse Family Partnership, Parents As Teachers, Parent-Child Home Program, Healthy Families New York, Hawaii Healthy Start, and HIPPY.

1. Nurse-Family Partnership (NFP): Strong Evidence of Effects on Important Life Outcomes of Children and Mothers

NFP provides nurse home visits to pregnant women with no previous live births, most of whom are (i) low-income, (ii) unmarried, and (iii) teenagers. The nurses visit the women approximately once per month during their pregnancy and the first two years of their children's lives. The nurses teach (i) positive health related behaviors, (ii) competent care of children, and (iii) maternal personal development (family planning, educational achievement, and participation in the workforce).

NFP has been evaluated in three well-implemented randomized controlled trials – each carried out in a different population and setting. All three trials found the program to produce sizeable, sustained effects on important mother and child outcomes. This provides confidence that this program would be effective if faithfully replicated in other, similar populations and settings. What follows is an overview of key findings from the three trials¹:

Study 1 (Elmira, New York, 15-year follow-up)²

This was a randomized controlled trial of 300 women in Elmira, New York, a semi-rural community. Approximately 90% of the women were white, 60% were low income, and 60% were unmarried. Their average age was 19. The study had fairly low sample attrition – about 20% at the 15-year follow-up.

Effects on the children of the nurse-visited women at age 15 (vs. the control group):

- 48% fewer officially-verified incidents of child abuse and neglect.
- 59% fewer self-reported arrests.

¹ A full summary of the results from all three trials is posted at <http://evidencebasedpolicy.org/docs/NurseFamilyPartnershipTTDec08.pdf>. The full summary reports the results for all of the main outcomes measured in the trials (including any outcomes for which no effect was found), whereas the overview above lists the key positive effects that were found. All effects shown are in comparison to the control group, and are statistically significant at the 0.05 level unless noted otherwise in the text.

² Luckey, Dennis W., David L. Olds, Weiming Zhang, Charles Henderson, Michael Knudtson John Eckenrode, Harriet Kitzman, Robert Cole, and Lisa Pettitt, "Revised Analysis of 15-Year Outcomes in the Elmira Trial of the Nurse-Family Partnership," *Prevention Research Center for Family and Child Health, University of Colorado Department of Pediatrics*, 2008. Olds, David L., Charles R. Henderson Jr, Robert Cole, John Eckenrode, Harriet Kitzman, Dennis Luckey, Lisa Pettitt, Kimberly Sidora, Pamela Morris, and Jane Powers, "Long-term Effects of Nurse Home Visitation on Children's Criminal and Antisocial Behavior: 15-Year Follow-up of a Randomized Controlled Trial," *Journal of the American Medical Association*, vol. 280, no. 14, October 14, 1998, pp. 1238-1244. Olds, David L., John Eckenrode, Charles R. Henderson Jr, Harriet Kitzman, Jane Powers, Robert Cole, Kimberly Sidora, Pamela Morris, Lisa M. Pettitt, and Dennis Luckey, "Long-term Effects of Home Visitation on Maternal Life Course and Child Abuse and Neglect: 15-Year Follow-up of a Randomized Trial," *Journal of the American Medical Association*, August 27, 1997, vol. 278, no. 8, pp. 637-643.

- 57% fewer self-reported convictions and probation violations. *This effect was statistically significant at the .10 level, but not the .05 level.*

Effects on the nurse-visited women when their children reached age 15 (vs. the control group):

- 20% less time spent on welfare. *This effect was statistically significant at the .10 level, but not the .05 level.*
- 19% fewer subsequent births.
- 61% fewer self-reported arrests.
- 72% fewer self-reported convictions³.

Study 2 (Memphis, Tennessee, 9-year follow-up)⁴

This was a randomized controlled trial of 743 women in Memphis, Tennessee. Approximately 90% of the women were African-American, 85% were low-income, and almost all were unmarried. Their average age was 18. The study had fairly low sample attrition – between 10% and 23% (depending on the outcome measure) at the 9-year follow-up.

Effects on the children of nurse-visited women at age 2 (versus the control group):

- 23% fewer health care encounters for children's injuries or ingestions.
- 78% fewer days hospitalized for injuries or ingestions

Effects on the children of nurse-visited women at age 9 (vs. the control group):

- Lower mortality rate (0.4% of the children in the nurse-visited group died before age 9 vs. 1.9% of children in the control group). *This effect was statistically significant at the .10 level, but not the .05 level.*
- The subsample of children whose mothers had low intelligence and/or poor mental health prior to program participation made sizeable gains in academic performance. These children:
 - Scored 9 percentile points higher on Tennessee state reading and math achievement tests in grades 1-3.
 - Had 10% higher reading and math grade point averages (GPA) in grades 1-3.

Effects on the nurse-visited women when their children reached age 9 (vs. the control group):

- 12% less time on welfare during the nine years.
- 13% fewer subsequent live births.
- 33% fewer subsequent low birth weight newborns. *This effect was significant at the .10 level, but not the .05 level.*

³ Official records of criminal activity and/or delinquency, although not complete, tended to corroborate the mothers' self-reports. Such crime/delinquency records were too incomplete to provide similar corroboration for the children's self-reports.

⁴Olds, David L., Harriet Kitzman, Carole Hanks, Robert Cole, Elizabeth Anson, Kimberly Sidora-Arcoleo, Dennis W. Luckey, Charles R. Henderson Jr, John Holmberg, Robin A. Tutt, Amanda J. Stevenson and Jessica Bondy. "Effects of Nurse Home Visiting on Maternal and Child Functioning: Age-9 Follow-up of a Randomized Trial," *Pediatrics*, vol. 120, October 2007, pp. e832-e845.

- 41% fewer substances used in the past three years – i.e. marijuana, cocaine, or moderate-heavy alcohol use. *This effect was significant at the .10 level, but not the .05 level.*

Study 3 (Denver, Colorado, 4-year follow-up)⁵

This was a randomized controlled trial of 490 women in Denver, Colorado. The women were almost all low-income, 46% were Mexican American, 36% were white, 15% were African American, and 84% were unmarried. Their average age was 20. The study had fairly low sample attrition – between 14% and 18% (depending on the outcome measure) at the 4-year follow-up.

Effects on the children of nurse-visited women at age 4 (vs. the control group):

- The subsample of children whose mothers had low intelligence and/or poor mental health prior to program participation made sizeable gains in –
 - Language development (standardized effect size of 0.31⁶);
 - Behavioral adaptation – e.g., attention, impulse control, sociability (standardized effect size of 0.38); and
 - Executive functioning – e.g., capacity for sustained attention, fine and gross motor skills (standardized effect size of 0.47).

Effects on the nurse-visited women when their children reached age 4 (vs. the control group):

- There were no significant effects on most of the women’s outcomes (e.g., welfare receipt, substance use, low birth weight newborns).
- There were a few significant effects, including a 20% longer interval between the women’s 1st and 2nd births.

2. The Parents as Teachers (PAT) program: Few validated effects on child and parent outcomes found in randomized evaluations.

PAT provides monthly home visitation services by paraprofessionals to mothers of young children from the child’s infancy until age 2 or 3; the visits are designed to inform parents of the principles of child development and good parenting. This program has been evaluated in three randomized controlled trials that found small or no effects on child and parent outcomes, as follows.

Wagner and Clayton (1999) report the findings of two randomized controlled trials of PAT, with samples of 497 families and 704 families respectively.⁷ The first trial had moderate sample attrition – 27% at the age-2 follow-up; the second trial had high sample attrition – 48% at the age-2 follow-up. Both studies found an overall pattern of weak or no statistically-significant effects on a broad range of parent knowledge/attitudes, child development, and child health outcomes (and the few effects found

⁵ Olds, David L., JoAnn Robinson, Lisa Pettitt, Dennis W. Luckey, John Holmberg, Rossanna K. Ng, Kathy Isacks, Karen Sheff and Charles R. Henderson Jr., “Effects of Home Visits by Paraprofessionals and by Nurses: Age 4 Follow-Up Results of a Randomized Trial,” *Pediatrics*, vol. 114, no. 6, December 2004, pp 1560-1568.

⁶ To provide a general, intuitive sense of what these “standardized effect sizes” mean, an effect size on child IQ of 0.31 translates to 4.6 IQ points; an effect size of 0.38 translates to 5.7 IQ points, and an effect size of 0.47 translates to 7.1 IQ points.

⁷ Mary M. Wagner and Serena L. Clayton, “The Parents As Teachers Program: Results From Two Demonstrations,” *The Future of Children*, vol. 9, no. 1, Spring/Summer 1999, pp 91-115.

could have been due to chance, given the large number of outcomes measured). The authors' stated conclusion is that "the overall effects of PAT in both demonstrations were not large. Neither demonstration achieved consistent positive effects on parenting knowledge, attitudes, or behaviors. Some benefits to children in the area of child development were identified in both demonstrations, although they were small and not consistent across developmental domains."

The third randomized controlled trial of PAT (Wagner, Spiker, and Linn 2002) was a multi-site trial that randomized 665 families to PAT or a control group, and measured child and parent outcomes at age 2.⁸ This study had high sample attrition – 60% at the age-2 follow-up. The study found no statistically-significant effects on any child developmental outcomes, and few statistically-significant effects on parent knowledge, attitude, or behaviors. The study authors conclude that "the findings from this study revealed that the effects of the PAT program generally were small, with few being statistically significant, and they did not accrue uniformly for all outcomes examined."

3. Parent-Child Home Program: Few validated effects on child and parent outcomes found in randomized evaluations.

The Parent-Child Home Program provides paraprofessional home visitation services focused on improving parent-child interactions so as to strengthen children's cognitive development and early literacy. The home visits are provided twice-weekly over a two-year period, to low-income families with children between ages 2 and 4. This program has been evaluated in two randomized controlled trials in the U.S., as follows.

The first trial (Madden et. al., 1984) randomized 127 families in 1973 and 1976 (the two cohorts for which three year follow-up data were obtained).⁹ The study had high sample attrition – 47% in the first-grade follow-up, three years after the end of the program. The study found no significant effects on any child outcomes at the three-year follow-up. The study authors conclude: "The goal of the [Parent-Child Home Program] is to prevent educational disadvantage. The first-grade results provide no evidence that this goal has been attained. There were no differences between [program] and control groups in teachers' ratings of school problems or of socioemotional adjustment in the school setting. Rates of retention in kindergarten and of attendance in special class did not depend on program experience (although first grade may be too early to find program effects on school performance). Nor were any differences found in project-administered achievement or IQ tests We must conclude that, for the setting and families described, the [program] did not achieve its purpose."

The second study (Levenstein et. al., 1998) has been cited by program proponents as finding a sizeable effect on participants' high school graduation rates at the 16-year follow-up, compared to the control group.¹⁰ However, we believe the study does not provide strong evidence for such an effect, for the following reasons.

Part of this study was a randomized controlled trial, comparing children who participated in the program in 1979-80 to a randomized control group. This was a very small trial, with 40-45 children

⁸ Mary Wagner, Donna Spiker, and Margaret Inman Linn, "The Effectiveness of the Parents As Teachers Program with Low-Income Parents and Children," *Topics in Early Childhood Special Education*, 22:2, 2002, pp. 67-81.

⁹ John Madden, John O'Hara, and Phyllis Levenstein, "Home Again: Effects of the Mother-Child Home Program on Mother and Child," *Child Development*, vol. 55, 1984, pp. 636-647.

¹⁰ Phyllis Levenstein et. al., "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*, vol. 19, no. 2, 1998, pp. 267-285.

randomized (the exact number is not clearly reported), and 39 children in the final sample 16 years after program entry. The other part was a comparison-group study, in which the same control group was compared not only to the randomized treatment group, but also to the children who participated in the program in earlier years (1976-1978).

Both components of this study found that the treatment group had a higher graduation rate than the control (or comparison) group. However, in neither case did the effect approach statistical significance, after the authors adjusted for the fact that the treatment group had higher pre-program IQ scores (as toddlers) than the control group. So the effect, while tantalizing, could well have been due to chance rather than to the program. (The p-value in the randomized controlled trial was 0.39, and the p-value in the comparison-group study was 0.28, neither of which is close to significance.)

4. Healthy Families New York (HFNY): Randomized evaluation finds promising initial effects on child outcomes, but they appear to fade after the first program year.

HFNY is a home visitation program for new or expectant parents deemed to be at risk of abusing or neglecting their children. The program is based on the Healthy Families America model, and provides home visits by paraprofessionals starting in pregnancy and continuing until the child reaches age 5. The program seeks to (i) promote positive parenting skills and parent-child interaction; (ii) prevent child abuse and neglect; (iii) support optimal prenatal care, and child health and development; and (iv) improve parents' self-sufficiency.

HFNY was evaluated in a large, multi-site trial that randomized 1,297 women and had a follow-up two years after random assignment, with low-to-moderate sample attrition (25% at the two-year follow-up).¹¹ For the *whole sample* of women, there were positive, statistically-significant effects on about one-third of the child abuse/neglect outcomes measured at the end of year 1, but these effects had mostly diminished to insignificance by the end of year 2 (at which point only 1 measure out of 16 was statistically significant at the 0.05 level, 2 at the 0.10 level). For the *subgroup* of first-time mothers enrolled by 30 weeks gestation, the study found (i) a statistically significant reduction in the incidence of low birth weight newborns; and (ii) suggestive evidence of positive effects on child abuse/neglect outcomes, but for most outcomes – 14 out of the 16 measured – the effects did not reach statistical significance and so are not certain. (It is possible that even the two statistically-significant effects that were found could have been due to chance, given the large number of outcomes measured.) Our overall thought is that the evidence of effectiveness is not strong enough at this point to justify broad program expansion.

5. Hawaii Healthy Start: Few validated effects on child and parent outcomes found in a randomized evaluation.

Hawaii Healthy Start is a large, statewide program in Hawaii that provides home visits by trained paraprofessionals to mothers who (i) have just given birth and (ii) whose families' were identified as at-risk of child abuse and neglect based on risk factors like parental substance abuse, poor mental health, or history of domestic abuse. Paraprofessionals visit these women for the first three to five

¹¹ Dumont, Kimberly A, Susan Mitchell-Herzfeld, Rose Greene, Eunju Lee, Ann Lowenfels and Monica Rodriguez, "Healthy Families New York (HFNY) Randomized Trial: Impacts on Parenting after the First Two Years," Office of Children and Family Services Working Paper #1, June 2006. Dumont, Kimberly, Susan Mitchell-Herzfeld, Rosa Greene, Eunju Lee, Ann Lowenfels, Monica Rodriguez, and Vajeera Dorabawila, "Healthy Families New York (HFNY) randomized trial: Effects on early child abuse and neglect," *Child Abuse and Neglect*, 2008, vol. 32, no. 3, pp. 295-315. Lee, Eunju, PhD., et al, "Reducing low birth weight through home visitation," *American Journal of Preventive Medicine*, vol. 36, no. 1, 2009.

years of their child's life and (i) help parents with crises; (ii) model problem-solving skills, (iii) help parents access needed social services, and (iv) provide parenting education. The program has served as a model for many other U.S. paraprofessional home visitation programs, coordinated by the Healthy Families America organization.

There has been one published randomized controlled trial evaluating this program (Duggan et. al, 2004) – a multi-site trial of 685 families, which followed program participants and a control group for three years after program entry, and had fairly low sample attrition (19% at the three-year follow-up).¹²

The study found weak or no effects on all major outcomes. The study authors conclude: “At the outset of this study, we hypothesized that the HSP [Hawaii Healthy Start Program] model would prevent child abuse and neglect However, we found little program impact in preventing child abuse. The HSP and control groups did not differ in indicators of severe abuse HSP and control group mothers were similar on measures of less severe abuse HSP mothers were less likely to report neglectful behaviors There were very few instances where program impact achieved even our cutoff of a trend within population subgroups or for families with a high dose of service. Instances included program effects in both favorable and unfavorable directions and showed no pattern, suggesting they resulted from chance.”

6. The Home Instruction Program for Preschool Youngsters (HIPPY): Evidence is not strong enough to draw valid conclusions about effectiveness.

HIPPY is an early education program designed to assist parents in preparing their kids (ages 4 and 5) for elementary school. The two-year, home-based program includes bi-monthly home visits by paraprofessionals, and parent-centered group meetings.

HIPPY has been evaluated in one randomized controlled trial in the U.S., in which 247 families in New York were assigned to HIPPY or to a control group (Baker et. al., 1999).¹³ The study had moderate-to-high attrition – approximately 40% at the end of first grade and beginning of second grade (roughly one year after program completion). At these follow-ups, the study found mixed effects on educational outcomes -- a positive effect on standardized reading achievement and classroom adaptation for children who entered the program in 1990, but no effect on these measures for children who entered the program in 1991.

However, the study contained an important design limitation that reduces the validity of its results – a violation of “intention to treat.” Specifically, families in the intervention group that dropped out of the program within the first month (many because they were “not... prepared for the time commitment the program required”) were not tracked and their data were not included in the analysis of outcomes. So, within the first month of the program’s start, 31% of the intervention group members were lost to follow-up, compared to 22% of control group members. This likely distilled the intervention group down to the more motivated families, undermining the equivalence of the two groups in motivational level. It’s very possible that the difference in motivation between the intervention and control groups, rather than the program itself, caused any superior outcomes observed for the intervention group.

¹² Anne Duggan et. al., “Randomized trial of a statewide home visiting program: impact in preventing child abuse and neglect,” *Child Abuse & Neglect*, vol. 28, 2004, pp. 597-622.

¹³ Amy Baker et al., “The Home Instruction Program for Preschool Youngsters,” *The Future of Children*, Vol. 9, No. 1, Spring/Summer 1999, pp. 116-133.