

Evaluation of the Family Connects Northeast Program in the North Carolina
Race to the Top Early Learning Transformation Zone:
Final Report

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Background and Significance

Over the past decade, home visiting services have become an increasingly popular approach for promoting child and family health and well-being across infancy and early childhood, with an estimated 400,000 to 500,000 families receiving home visiting services in the United States annually (Avellar & Paulsell, 2011). Federal investment in home visiting programs has accelerated in recent years through the Maternal, Infant, and Early Childhood Home Visiting Program (MIECHV; <http://mchb.hrsa.gov/programs/homevisiting>), which has allocated over \$2 billion since 2010 to states for implementation of evidence-based home visiting programs to improve health and well-being for at-risk children and families.

To date, the overwhelming majority of home visiting programs, including almost all programs supported by federal MIECHV funding provide long-term, intensive services to exclusively high-risk families selected based on demographic characteristics (HRSA, 2016). Further, in a meta-analytic review of 60 unique home visiting programs conducted by Sweet and Appelbaum (2004), only 7% were classified as universal in service delivery. Although a considerable body of evidence supports the positive impact of these “targeted” early childhood home-visiting programs on child and family well-being (e.g., Olds et al., 2007), these programs have not demonstrated population impact for children and families across an entire community (Daro & Dodge, 2009). Thus, there remains an urgent public

health need for the development of evidence-based home visiting models capable of improving outcomes for all families in a community.

Family Connects (FC) was developed in response to the challenge of improving child health and well-being for an entire community. The program was conceptualized in Durham, North Carolina (NC) through a public-private partnership and piloted for three years with iterative improvements in the program model prior to testing by an RCT. *FC* achieves population reach with low per-family cost (\$700/birth; Dodge et al., 2014) by engaging all families within the community, rapidly triaging families based on individually identified risk to concentrate resources to families with greater needs. Thus, the *FC* program is unique in being universal in delivery, but with additional services and intervention offered based on individually-identified risk. Importantly, it does not replace the need for more intensive services, including long-term home visiting, but rather serves as a universal assessment and triage tool to ensure optimal matching and follow-through of families with community services and resources. An 18-month randomized controlled trial (RCT) including every resident county birth in Durham, NC, at two county hospitals found evidence of high-quality program implementation as well as positive program impact on multiple indicators of mother and child health and well-being, including reducing infant emergency medical care utilization by 50% through age 12 months (Dodge et al., 2013; Dodge et al., 2014). Benefit-cost analyses based on *DC* implementation costs and average cost of child emergency care estimate \$3.02 in emergency health care savings for each \$1.00 spent on *FC* within the first year (Dodge et al, 2014), suggesting community investment in *FC* could yield a significant return-on-investment within the first year of implementation, through reductions in infant emergency medical care utilization.

While highly promising, *FC* implementation and impact have yet to be evaluated outside of Durham, NC, an urban community of approximately 3,200 births per year. As a result, it is unknown whether similar program implementation quality and positive impact on children and families would be observed in other communities, particularly those with meaningful differences in community demographic and resource profiles. Beginning in 2014, *FC* was disseminated to four low-income, rural counties in northeast North Carolina (Beaufort, Bertie, Chowan, and Hyde) through North Carolina's federal Race to the Top Early Learning Challenge grant, which funds a variety of programs and projects designed to improve early learning and development opportunities for families and young children in rural communities; collectively these four counties are referred to as the Early Childhood Transformation Zone. Independent of *FC* implementation, program evaluators conducted an independent evaluation of short-term program impact in these communities at infant age 4-8 months. *Thus, the current study represents an important opportunity to advance the fields of public health, public policy, and early childhood home visiting by evaluating the dissemination of a novel, universal home visiting program with promising evidence for population-level impact on health, well-being, and health care costs to rural communities characterized by low resources and chronic poverty.*

The Family Connects (*FC*) Home Visiting Model

FC consists of 4-7 intervention contacts, including 1) an initial family contact shortly after birth, either in hospital or by telephone, when a staff member communicates the importance of community support for parenting and schedules the *FC* integrated home visit (IHV), typically between infant ages 2-12 weeks; 2) an IHV conducted by a *FC* registered public health nurse to provide physical assessments for infant and mother, intervention and education, assessment of family-specific needs, and for families with significant nurse-identified risk, connections to matched

community resources to provide longer-term support; 3) 1-2 follow-up nurse home visits, as clinically necessary, to conduct additional family assessment, intervention, or to help facilitate family connections to community services and resources; 4) 1-2 nurse contacts with community service providers, as needed, to facilitate successful connections; and 5) a staff-member telephone follow-up one month after the nurse completes all home visits to assess nurse referral outcomes and family-consumer satisfaction.

During home visits, the nurse engages the mother (and father, when possible), utilizing motivational interviewing techniques (Miller & Rollnick, 2002) to provide brief educational interventions on topics common to all families (e.g., infant feeding, safe sleep) and to assess unique family strengths and needs across 12 empirically-derived factors linked to child and family health and well-being (the *Family Support Matrix*, described in detail below). The intervention protocol is manualized (i.e., nurses adhere to a standard protocol of topics to cover with each family), but delivered flexibly, so the nurse is able to cover topics as they naturally arise in conversation, and free to spend more or less time on specific topics based on each family's unique strengths and needs. The nurse also provides each family with a developmentally-informed gift bag with materials for the infant (diapers, thermometer, etc.).

During the course of the home visits, the nurse utilizes the *Family Support Matrix* to assess and rate family health and psychosocial risk in each of 12 empirically-derived areas in 4 domains known to predict child and family health and well-being (*Healthcare*: parent health, infant health, health care plans; *Parenting/childcare*: childcare plans, parent-infant relationship, management of infant crying; *Family violence/safety*: material supports, family violence, maltreatment history; and *Parent well-being*: depression/anxiety, substance abuse, social/emotional support). The assessment emphasizes a high inference, family-friendly discussion drawing on nurses' experience, clinical judgment about the family, and parent view of the family's needs. The interview also incorporates structured, validated screening instruments for psychosocial problems, including postpartum

depression (Edinburgh Postnatal Depression Scale; Cox, Holden, & Sagovsky, 1987), substance abuse (CAGE-AID; Brown & Rounds, 1995), and interpersonal/family violence (Conflict Tactics Scale – Short Form; Straus & Douglas, 2004). At the conclusion of the interview, the nurse scores each of the 12 factors and intervenes accordingly. A score of 1 (low risk) receives no subsequent intervention. A score of 2 (moderate risk) receives short-term, nurse-delivered intervention over 1-2 sessions. For a score of 3 (high risk) the nurse connects the family (with parent agreement) to matched community resources tailored to address that particular risk (such as, treatment for postpartum depression, a DSS social worker exclusively serving Durham Connects families for enrollment in Medicaid or food stamps, a multi-year home visiting program for long-term parent support). The nurse also provides follow up to make sure that each connection “sticks,” requiring additional contacts with the family or community agency. A score of 4 (imminent risk) receives emergency intervention (<1% of cases). A final post-visit connection (PVC) telephone session is completed by a *DC* support staff member approximately four weeks after the nurse has completed the case. This call ascertains whether the family has received needed supports from local community resources, if additional problem-solving is needed to address previously-identified or new family needs, and if the family was satisfied with their *DC* home visit.

Evaluation Objectives

Consistent with the goal of expanding and enhancing knowledge of *FC* implementation and impact on children and families across diverse settings, two specific objectives were examined:

Specific Aim 1. Toward the goal of understanding *FC* program functioning in the Early Learning Transformation Zone counties, the current evaluation examined multiple dimensions of *FC* implementation in these counties, including program

uptake, fidelity of nurse home visits, reliability in assessing family risk, and successful nurse referrals to community resources.

Specific Aim 2. Toward the goal of understanding short-term *FC* impact on child and family well-being in the Early Learning Transformation Zone counties, the current evaluation conducted blinded interviews with families in the four *FC* counties at infant age 4-8 months to examine associations between program eligibility and (1) family connections to community supports and services; (2) parenting and child care; (3) mother and infant health and well-being; and (5) mother and infant utilization of emergency medical care.

Evaluation Design

Evaluation of *FC* in the Early Learning Transformation Zone examined program implementation during a 17-month period, from September 1, 2014 – December 31, 2015, as well as short-term program impact via a 30-minute telephone interview with families of resident births in the four counties when infants are between 4-8 months of age. Because a randomized controlled trial (RCT) was inconsistent with the Early Learning Challenge Grant goal of delivering services to all children and families in the Transformation Zone, program impact was evaluated through a natural comparison design, examining outcomes for families of infants born prior to *FC* implementation (comparison group; February 1, 2014 – July 31, 2014 births) to outcomes for families of infants born during *FC* implementation (intervention group; September 1, 2014 – December 31, 2015 births). In order to reduce potential participation and response bias, all intervention group families participating in the impact evaluation were recruited without regard for *FC* participation

status; further, the evaluation also utilized a “blinded” design – families were not aware that the primary goal of the survey was to examine *FC* impact on child and family well-being, and interviewers did not know which families actually completed the *FC* program. Because the *FC* evaluation was a contracted service provided to the North Carolina Department of Public Health and not an original research proposal, the project was determined to be “not human subjects research” by the Duke University Institutional Review Board.

METHOD

***FC* Implementation Population**

From September 1, 2014, through December 31, 2015, *FC* staff attempted to schedule and visit families of all resident births in the four Transformation Zone counties. The population of eligible births was determined from infant hospital screening records provided to *FC* staff weekly by the North Carolina Department of Health and Human Services. In person recruitment and scheduling was conducted at one community hospital in the largest county (Beaufort); all other families were contacted via birth information obtained from infant hospital screening records. Program implementation and quality was evaluated across multiple dimensions, including 1) scheduling and home visiting completion rates; 2) fidelity in adhering to the *FC* manualized protocol; 3) reliability in assessing family risk on the 12-factor *Family Support Matrix*; and 4) successful family connections from nurse referrals to community resources and supports.

***FC* Impact Evaluation Population**

The *FC* impact evaluation included all resident county births in the Transformation Zone for two separate populations: 1) *comparison group* families (February 1, 2014 – July

31, 2014 births), and 2) *intervention group* families (September 1, 2014 – December 31, 2015 births). Short form public birth records provided by the North Carolina State Center for Health and Statistics (NC SCHS) were utilized to identify families eligible to participate in the evaluation survey. The infant hospital screening records used to identify families for participation in *FC* could not be utilized to solicit family participation in an evaluation survey because state regulations prohibited use of the screening records for such purposes. Additionally, the state birth records included important demographic and health information utilized both to test baseline equivalence between the comparison and intervention groups and to account for other factors that might predict between group differences in family outcomes above and beyond intervention eligibility. This demographic and health information was not available in the infant screen records.

Evaluation Recruitment and Interview Procedures

All family recruitment and interview materials and procedures utilized for the *FC* evaluation in the Early Learning Transformation Zone were adapted from three ongoing evaluations of the *FC* program in Durham, NC. Research aides were hired to recruit and conduct evaluation interviews with eligible families. To accommodate the Spanish speaking population, at least one bilingual staff member was included on interviewer teams at all times. Prior to contacting families, all interviewers were trained and certified in recruitment and interviewing procedures by the evaluation project coordinator. All evaluation surveys were conducted by telephone at times pre-arranged with participants; mothers provided verbal consent prior to participation and received \$40 as compensation for their time.

For recruitment purposes, an initial letter was sent to eligible families when their child was approximately four months old. The letter described the evaluation survey and included a postcard and a stamped return envelope to inform project staff of the best means and times to contact them regarding participation. Families were offered \$10 for returning the postcard, even if they decided not to participate in the survey.

In the absence of a return postcard, project interviewers sent out a second recruitment letter and began making phone calls to participants using numbers obtained through the birth record data or through the infant hospital screening records. To further increase participation rates, an in-person visit was also made to the residence of each eligible participant. If the participant was at home, project staff described the survey, answered any questions, and scheduled a time to complete the survey if the family was willing to participate. If the family declined to participate, project staff thanked the family for their time. If the family was not present during the home visit, a letter with a postcard and an addressed envelope were left at the door. Two local, part-time recruiters were hired beginning in 2015 to further increase recruitment rates. The recruiters conducted in-person recruitment visits to families unresponsive to the first two letters/phone recruitment efforts, or whose phone numbers were disconnected.

Three months after the initial letters were sent, one last letter was sent to all families who did not respond to recruitment attempts up to that point, outlining the survey and informing the family that this would be the last attempt to establish contact.

Participant Recruitment and Evaluation Survey Completions Rates

From February 1, 2014 – December 31, 2015, birth records were obtained for 1,427 families (1,453 infants); a total of 185 families (189 infants) were determined to be

ineligible to participate in the impact evaluation survey: 171 families (175 infants) could not be confirmed as living in one of the four Transformation Zone counties; 5 families (5 infants) moved out of county prior to the interview; 3 families (3 infants) experienced a death of the infant prior to the interview; 3 families (3 infants) experienced a death of the mother prior to the interview; 2 families (2 infants) did not speak English or Spanish and could not be consented; and 1 family (1 infant) had a birth record error that incorrectly identified the family as eligible for the evaluation study. Of the 1,242 families (1,264 infants) eligible to participate, 41.6% of families (517 families; 528 infants) successfully completed the survey, with no significant difference in participation rates between eligible families in the comparison and intervention groups (comparison participation = 37.6% (126 of 335 families); intervention participation = 43.1% (391 of 907 families), $X^2(1) = 3.04, p < 0.10$).

Representativeness of the Evaluation Sample

We compared the full birth population of 1427 families (n =1427 mothers; n = 1453 infants) giving birth in the four Transformation Zone counties between February 1, 2014 – December 31, 2015 with the 1242 families (n =1242 mothers; n = 1264 infants) eligible to participate in the evaluation survey, as well as the 517 families (n =517 mothers; n = 528 infants) that successfully completed the evaluation survey on 15 demographic and risk characteristics available from the public birth records (see Table 1). Across the 30 tests only one significant difference was identified: mothers completing the evaluation survey had significantly higher education levels compared to mothers in the full birth population ($M_{\text{population}} = 3.8, M_{\text{survey}} = 4.0, t(1941) = 2.28, p < 0.05$). Next, we tested whether comparison group families (n = 126 mothers; 131 infants) and intervention group families (n = 391

mothers; n = 397 infants) participating in the evaluation survey differed on the 15 variables noted above. Only one significant difference was identified: mothers in the intervention were more likely to be married (comparison = 38.9%, intervention = 51.7%; $X^2(1) = 6.22, p < 0.05$). Overall, only two significant differences were identified across 45 separate tests (4.4% of all tests identified sample differences). We concluded that we had obtained an evaluation sample that was representative of the broader population, and that participation was not biased between comparison and intervention groups.

Measures

Survey questionnaires for the current evaluation collected information on family demographics and assessed family utilization of community resources, as well as family functioning across all domains of risk assessed by the *FC* nurse home visitor (infant and parent health, parenting and child care, financial stability and home safety, and parent well-being and support).

Community Service Utilization. Mothers reported the total number of professional, paraprofessional, and informal community resources they had utilized since their baby was born (*number of community connections*). This is the primary measure of the program's proximal goal to improve community connections. For any services utilized by the family, mothers also reported on how many times they utilized the service (*frequently of service use*), whether or not they were currently utilizing that service (*services used now*), and how helpful the services were to the family (*helpfulness of services*). Examples of service use assessed included Medicaid /SCHIP (state health insurance for children), WIC, food stamps, breastfeeding support, child care services, and the Department of Social Services (DSS; job search assistance, housing assistance, cash assistance, etc.).

Mother parenting beliefs and behaviors. Mothers completed reliable and valid questionnaires assessing their parenting behaviors and infant intentionality. Mothers reported on use of *positive parenting behaviors* (7 items, e.g., “comforted infant”; Durham Family Initiative, 2008) and *negative parenting behaviors* (10 items, e.g., “shouted at infant”; Lounds et al., 2004; Straus et al., 1995) in the past month. Mothers also completed the Infant Intentionality Questionnaire to assess parent beliefs about *infant negative intentionality* (e.g., “Can your baby do things on purpose to annoy you?”; Feldman & Reznick, 1996).

Father involvement. If the biological father was involved with the infant, mothers reported on father-infant relationship quality (Center for Research on Child Wellbeing, 2008), including *father-child relationship quality* (10 items, e.g., “Hugs or shows physical affection toward child”), father *help with family work* (4 items, e.g., “How often does he look after child?”), and father *financial support* (6 items, e.g., father buys “child care items, such as diapers and baby wipes”).

Child care. Mothers also completed a brief questionnaire (Bates et al., 1994) on *non-parental child care use* (no vs. yes) and, if the mother reported that the infant was in regulated childcare, the *child care center star rating* was collected (based on North Carolina’s 5-Star rating).

Mother social support. Mothers completed a modified, 12-item version of the Social Provision Scale (Cutrona, 1984), a self-report measure assessing parents’ perception of multiple dimensions of social support, such as social integration, reassurance of worth, and reliable alliances (e.g., “There are people I can depend on to help me if I really need it.”). Higher scores reflect greater perceptions of social support.

Mother mental health. Mothers completed the 10-item Edinburgh Postnatal Depression Scale (EDPS; Cox et al., 1987; Wisner et al., 2002); a dichotomous score was created from mother responses to indicate *possible clinical depression* (cut-point=10). Mothers also completed the Generalized Anxiety Disorder-7 questionnaire (e.g., GAD-7; Spitzer et al., 2006); a dichotomous score was created from mother responses to indicate *possible clinical anxiety* (cut-point=5).

Mother and infant health. Mothers reported on their own health and health care, including *completion of a 6-week postpartum check-up* (no vs. yes), and *mother and partner use of contraception or birth control* (no vs. yes). Mothers also reported on multiple aspects of infant health, including if the *infant sleeps on his/her back* (no vs. yes), if the *infant is currently breastfeeding* (no vs. yes), if the *infant is exposed to household smoking* (no vs. yes), and if the *infant's immunizations are up-to-date* (no vs. yes).

Mother and infant emergency medical care. Mothers reported on the total number of mother and infant emergency medical care episodes experienced since the infant was discharged from the initial hospital birthing visit. Specifically, mothers were asked to report on the *total number of emergency medical visits* to an urgent care doctor or emergency room and *number of overnight stays in the hospital* for non-birth-related medical care. These two variables were summed to calculate the *total number of emergency medical care episodes* for mothers and infants since birth.

Evaluation Plan of Analysis

Evaluation analyses included interview data from 517 families of births between February 1, 2014 – December 31, 2015. All analyses for the impact evaluation were conducted using SAS version 9.4 software with a two-tailed “intent-to-treat” design that

included interviewed families without regard to intervention adherence ($n = 126$ mothers and 131 infants in the comparison group; $n = 391$ mothers and 397 infants in the intervention group). Probability levels of $< .05$ were called significant; probability levels of $< .10$ were considered to approach significance. Ordinary Least Squares (OLS) regression models and multinomial logistic regression models estimated the impact of FC eligibility on continuous and categorical outcomes, respectively. Poisson regression models were employed for the emergency medical care episode variables, as these were count variables with skewed distributions (Coxe, West, & Aiken, 2009). All models included infant birth risk (no vs. yes), infant age at time of interview, infant gender, Medicaid insurance status at birth (no vs. yes), family minority race/ethnicity (vs. majority), and mother marital status as covariates. Intervention effect sizes for continuous indicators were calculated as $(\text{Mean}_{\text{Comparison}} - \text{Mean}_{\text{Intervention}}) / \text{Pooled standard deviation}$ (Hedges & Olkin, 1985); intervention impact for dichotomous indicators were calculated as percentage increase or decrease between the comparison group and the intervention group.

RESULTS

Family Connects Implementation

Recruitment and Participation. A total of 994 eligible births in the four Transformation Zone counties were identified based on infant hospital screening records across the 17-month implementation period (September 1, 2014 - December 31, 2015). Of these 994 families, 770 (77.5%) were successfully scheduled for a FC integrated home visit (IHV) and, of those families scheduled, 641 (83.2%) successfully completed the program (net participation = 64.5%), exceeding the program goal of 60% program completion. It should be noted that this implementation period included a four-month “ramp-up” period

(September 1, 2014 – December 31, 2014 births), during which *FC* nurses conducted home visits while working toward full population reach in all four counties. Implementation results during the full implementation period (January 1, 2015 - December 31, 2015 births) demonstrate greater program completion rates than those during the complete implementation period. Specifically, of the 726 eligible births during the full implementation period, 621 (85.5%) home visits were successfully scheduled, and of those scheduled 520 (83.7%) successfully completed the program (net participation = 71.6%).

Of 641 families successfully completing the program 33.2% ($n = 213$) were White, 35.7% ($n = 229$) were Black, 10.0% were Hispanic ($n = 64$), and 21.1% ($n = 135$) were other/multiracial. Sixty-nine percent ($n = 441$) of families received Medicaid. Forty-one percent ($n = 265$) were married.

Fidelity. Intervention program adherence was assessed by having the nursing director accompany the nurse on a home visit for 22 of 641 families (3.4%). From a list of necessary program elements, the expert checked adherence (or not) to each 62 model elements (see Appendix A). Additionally, the nursing director and the nurse independently rated the family on the 12 factors of the Family Support Matrix assessed by the nurse during the home visit. Overall observer-rated nurse adherence to the manualized protocol was 87.0% (range = 68.9% - 95.1%), which exceeded the program goal of 75%, and is judged to be high. Inter-rater agreement on scoring of risk yielded a mean Cohen's Kappa coefficient across all nurses of 0.78, with a range across the 12 individual risk factors of 0.57 – 1.00 (Coefficients greater than .60 are considered substantial; Landis & Koch, 1977).

Nurse assessment of family risk. As shown in Table 3, 5 of 641 families (0.8%) were assessed by the nurse as having an emergency risk requiring immediate intervention

(scored as “4” on the 4-point scale). 348 families (54.3%) were scored with at least one “3”, indicating serious risk served best by referral to a community agency provider; 285 (44.5%) received at least one “2” (but not “3” or “4”), indicating mild-to-moderate risk that was addressed by brief nurse supportive guidance and intervention in-home. Only 3 (0.5%) families received lowest-need scores (“1”) in all 12 domains. The full distribution of family risk across each of the 12 risk factors is presented in Table 4.

Nurse referrals to community resources. Nurses made a total of 667 referrals during home visits. Post-visit connection (PVC) follow-up contacts four weeks after case closure were successfully completed with 262 families, accessing outcomes for 326 (48.9%) of all nurse referrals. Families reported that a successful connection had been established with the community service provider for 85.9% (280/326) of referrals, and community services had already been received for 81.0% (264/326) of the total.

Family Connects Evaluation

Community connections. As shown in Table 4, ordinary least squares (OLS) regression models revealed that intervention eligible families (herein called *FC* families) accessed significantly more total community resources since birth relative to comparison families ($M_{\text{comparison}} = 5.37$; $M_{\text{intervention}} = 5.57$; $p < 0.01$; effect size = 0.07). *FC* families also reported using the community resources they accessed more frequently than comparison families, although this difference only approached significance ($M_{\text{comparison}} = 22.05$; $M_{\text{intervention}} = 22.63$; $p < 0.10$). No differences were observed in the number of community resources currently being utilized ($M_{\text{comparison}} = 4.73$; $M_{\text{intervention}} = 4.46$; *ns*) or the relative helpfulness of the resources ($M_{\text{comparison}} = 3.76$; $M_{\text{intervention}} = 3.72$; *ns*).

Mother parenting beliefs and behaviors. No differences were observed between the *FC* families and comparison families for mother reported positive parenting behaviors ($M_{\text{comparison}} = 4.52$; $M_{\text{intervention}} = 4.56$; *ns*) or negative parenting behaviors ($M_{\text{comparison}} = 0.06$; $M_{\text{intervention}} = 0.07$; *ns*). Similarly, no between group differences were observed for mother negative intentionality beliefs about infant behaviors ($M_{\text{comparison}} = 0.13$; $M_{\text{intervention}} = 0.12$; *ns*).

Father involvement. In contrast to patterns observed for mother parenting, significant between group differences were observed for multiple aspects of mother-reported father involvement, including father-infant relationship quality ($M_{\text{comparison}} = 2.12$; $M_{\text{intervention}} = 2.28$; $p < 0.05$; effect size = 0.27) and father help with family work ($M_{\text{comparison}} = 2.11$; $M_{\text{intervention}} = 2.35$; $p < 0.05$; effect size = 0.33). No intervention effect was observed, however, for father financial support for the infant ($M_{\text{comparison}} = 2.02$; $M_{\text{intervention}} = 2.06$; *ns*).

Child care. Multinomial logistic regression models revealed that *FC* families and comparison groups families reported utilizing non-parenting child care at similar rates, ($M_{\text{comparison}} = 0.62$; $M_{\text{intervention}} = 0.57$; *ns*). For mothers that reported using regulated childcare, no between group differences were observed in the quality of that care as rated by the North Carolina 5-Star Child Care Rating System. It should be noted however, that both comparison families and *FC* families reported using very high-quality out-of-home child care, overall ($M_{\text{comparison}} = 4.67$; $M_{\text{intervention}} = 4.74$; *ns*)

Mother mental health and social support. As shown in Table 6, *FC* mothers reported greater overall rates of social support, although this difference only approached significance ($M_{\text{comparison}} = 2.11$; $M_{\text{intervention}} = 2.35$; $p < 0.05$). *FC mothers* were also 18% less likely than comparison mothers to report possible clinical depression, although this difference was not

statistically significant ($M_{\text{comparison}} = 3.37$; $M_{\text{intervention}} = 3.48$; $p < 0.10$). No significant differences were observed for mother reported possible clinical anxiety ($M_{\text{comparison}} = 0.29$; $M_{\text{intervention}} = 0.24$, *ns*).

Mother health and health care. There were no differences between comparison families and *FC* families in mothers' 6-week postpartum check-up completion rates, although completion rates for both groups was over 90% ($M_{\text{comparison}} = 0.94$; $M_{\text{intervention}} = 0.93$; *ns*). Surprisingly, however, *FC* mothers were 16% less likely to report that they, or their partner, were currently using contraception/birth control ($M_{\text{comparison}} = 0.95$; $M_{\text{intervention}} = 0.80$; $p < 0.01$).

Infant health and health care. Infants in comparison families and *FC* families did not differ in the rates with which they slept on their backs ($M_{\text{comparison}} = 0.67$; $M_{\text{intervention}} = 0.73$; *ns*) or the rates with which their immunizations were up-to-date ($M_{\text{comparison}} = 0.93$; $M_{\text{intervention}} = 0.92$; *ns*). Additionally, although *FC* infants were 40% less likely to be exposed to household smoking ($M_{\text{comparison}} = 0.09$; $M_{\text{intervention}} = 0.05$; *ns*) and 40% more likely to be breastfeeding at the time of the interview ($M_{\text{comparison}} = 0.22$; $M_{\text{intervention}} = 0.31$; *ns*), these differences were not statistically significant.

Because of age-related developmental differences during infancy, exploratory, post-hoc analyses including only families with infants younger than age 6 months examined *FC* impact on infant sleep position (infants younger than age 6 months are less likely to roll over when sleeping) and breastfeeding (solid food is not recommended for infants prior to age 6 months). Relative to comparison families, infants younger than age 6 months in *FC* families were 15% more likely to sleep on their back ($M_{\text{comparison}} = 0.65$; $M_{\text{intervention}} = 0.77$; p

< 0.10) and 38% more likely to be currently breastfeeding ($M_{\text{comparison}} = 0.26$; $M_{\text{intervention}} = 0.34$; $p = 0.33$), although neither finding was statistically significant (see Table 7).

Mother and infant emergency medical care. As shown in Table 6, multivariate Poisson regression models suggest variable *FC* impact on mother self-reported emergency medical care since infant birth. Specifically, *FC* mothers reported 37% more urgent care or emergency room visits than comparison mothers ($M_{\text{comparison}} = 0.52$; $M_{\text{intervention}} = 0.71$; $p < 0.05$). However, *FC* mothers also reported 77% fewer hospital overnight stays since discharge from the initial birthing hospital stay, relative to comparison mothers ($M_{\text{comparison}} = 0.13$; $M_{\text{intervention}} = 0.03$; $p < 0.01$). No significant differences were observed for mothers' total emergency medical care utilization ($M_{\text{comparison}} = 0.64$; $M_{\text{intervention}} = 0.74$; *ns*).

In contrast to patterns observed for mothers, evaluation results suggest *FC* had consistent, positive impacts on infant utilization of emergency medical care. Relative to infants in comparison families, *FC* mothers reported that their infants utilized 25% less total emergency medical care since initial hospital discharge ($M_{\text{comparison}} = 1.46$; $M_{\text{intervention}} = 1.10$; $p < 0.01$; effect size = 0.18), including 24% fewer urgent care or emergency room visits ($M_{\text{comparison}} = 1.31$; $M_{\text{intervention}} = 0.99$; $p < 0.01$; effect size = 0.18) and 31% fewer hospital overnight stays, although the latter difference was not statistically significant ($M_{\text{comparison}} = 0.16$; $M_{\text{intervention}} = 0.11$; *ns*).

DISCUSSION

The current report presents implementation and evaluation results from a dissemination of the Family Connects (*FC*) community-wide, newborn nurse home visiting program to four low-income, rural counties in northeast North Carolina (Beaufort, Bertie, Chowan and Hyde) through North Carolina's federal Race to the Top Early Learning

Challenge grant. This evaluation represents the first formal evaluation of the *FC* program outside of Durham, NC, where the program was first established, as well as the first formal evaluation of program implementation and impact in communities characterized by chronic economic disadvantage and rurality.

Overall, implementation results provide strongly support that the *FC* program can be successfully disseminated to communities outside of Durham, NC, and that the transition from initial program launch to full program implementation can be achieved in a relatively short time duration. Further, evaluation of multiple indicators of implementation quality reveal that, in these four counties comprising the Early Childhood Transformation Zone, *FC* was successful in reaching a large percentage of eligible families, delivering home visits with strong adherence to the manualized protocol and reliable assessment of family risk, and connecting families to matched community resources to provide longer-term support.

Further, independent impact findings indicate that eligibility for the *FC* program at birth has a dramatic positive impact on reducing infant utilization of emergency medical care, primarily through reductions in urgent care and emergency room visits. These results support previously-reported results from an 18-month randomized controlled trial of *FC* in Durham, NC (Dodge et al., 2013; Dodge et al., 2014), but represent the first time these results have been replicated outside of the Durham community.

Additional findings support positive impact in other domains. The program was effective in its proximal goal of improving a family's connections to community resources, as well as increasing the frequency with which families utilized these resources.

Intervention eligibility also predicted other indicators of child and family well-being, specifically, greater father involvement with their children and in family work, reductions

in mother overnight hospitalizations, greater mother overall social support, and a greater percentage of mothers putting their infants to sleep on their backs (for infants younger than age 6 months). Evaluation results also indicate higher rates of infant breastfeeding and lower rates of infant exposure to household smoking in families eligible for *FC*, although these differences were not statistically significant and should be interpreted with caution. Effect sizes for program impact are in the modest range, but they are similar to previously-reported effects sizes for the program in Durham, NC (Dodge et al., 2014).

Limitations

Although the current evaluation sought to maximize scientific rigor, incorporating a “blinded” design and recruited families without regard for *FC* participation, the evaluation was not a randomized controlled trial (RCT). Thus, although extensive analyses of family characteristics at birth suggest that the evaluation sample was representative of the broader population, and that participation was not biased between comparison and intervention groups, it is possible that positive impacts observed in families eligible for *FC* are a result of other, unmeasured differences between the two groups.

Several unexpected findings also emerged from the current evaluation results. First, *FC* mothers reported greater utilization of urgent care and emergency room services. Although *FC* emphasizes the importance of a strong connection to a primary medical home, few, if any, primary care providers in the Transformation Zone counties are currently accepting new Medicaid patients. This is an important limitation, as 63% of mothers in these communities receive Medicaid. Thus, it is possible that *FC* nurses were successful in educating mothers about the importance of attending to their own health care needs, but that the lack of primary care providers for Medicaid patients in these communities resulted

in increased mother use of urgent care and emergency room services. Second, *FC* mothers reported that they and their partner were less likely to be currently using birth control or contraception. Although it is possible that positive *FC* impacts on children and families increased families' readiness for an additional child, reduced birth control or contraception utilization at infant age 6 months is inconsistent with *FC* protocols for teaching about family planning and pregnancy spacing.

Conclusions

We conclude that the Family Connects brief, universal, postnatal, nurse home-visiting program has been successfully disseminated to the four counties comprising the NC Early Childhood Transformation Zone. Further, we conclude that the program can be implemented in rural communities characterized by chronic economic disadvantage with broad population reach, high fidelity to the manualized protocol, success in connecting families to community services, and positive impact on infant and family health and well-being. Finally, we conclude that the current findings are comparable to findings previously reported in Durham, NC, suggesting that Family Connects could represent an effective strategy for improving infant and family health and well-being for communities throughout the state of North Carolina.

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Table 1.

Comparisons of Baseline Sample Characteristics for Family Connects, Northeast Full Evaluation Population, Evaluation Eligible Sample, and Evaluation Participating Sample

	Full Birth Population vs. Evaluation Eligible and Evaluation Participating Samples		
	Full Evaluation Birth Population (n=1427 mothers; n=1453 infants), Mean	Full Evaluation Eligible Sample (n=1242 mothers; n=1264 infants), Mean (<i>p</i> -value)	Full Evaluation Participating Sample (n=517 mothers; n=528 infants), Mean (<i>p</i> -value)
Infant birth characteristics			
Any birth risk, %	19.9	19.5 (0.82)	20.1 (0.93)
Low birth weight, %	11.8	11.2 (0.62)	10.8 (0.52)
Premature birth, %	12.1	11.9 (0.80)	11.9 (0.88)
Any birth complications, %	10.6	10.7 (0.94)	11.2 (0.71)
Infant female, %	50.5	50.2 (0.85)	51.9 (0.59)
Mother birth characteristics			
Multiple births, %	1.8	1.7 (0.80)	1.9 (0.40)
Mother Medicaid at birth %	62.5	60.4 (0.28)	60.4 (0.69)
Adolescent mother, %	8.9	8.7 (0.85)	9.3 (0.79)
Mother age, yrs.	27.3	27.4 (0.53)	27.3 (0.97)
Mother education	3.8	3.9 (0.23)	4.0 (0.03)
Mother is married, %	44.7	46.8 (0.28)	48.6 (0.14)
Mother race / ethnicity			
White, %	47.2	49.4 (0.24)	48.7 (0.54)
Black, %	40.0	38.6 (0.45)	40.6 (0.81)
Hispanic, %	9.9	9.3 (0.59)	8.9 (0.52)
Other, %	2.9	2.7 (0.75)	1.7 (0.14)

Note. The evaluation eligible and evaluation participating samples are compared with the full evaluation population.

Table 2.

*Comparisons of Baseline Sample Characteristics for Family Connects, Northeast Evaluation
Pre-Intervention and Intervention-Eligible Participating Samples*

	Full Evaluation Participating Sample (n=517 mothers; n=528 infants), Mean (<i>p</i> -value)	Pre-Intervention Participating Sample (n=126 mothers; n=131 infants) Mean	Intervention-Eligible Participating Sample (n=391 mothers; n=397 infants), Mean (<i>p</i> -value)
Infant birth characteristics			
Any birth risk, %	20.1	22.1	19.4 (0.50)
Low birth weight, %	10.8	12.2	10.3 (0.54)
Premature birth, %	11.9	14.5	11.1 (0.30)
Any birth complications, %	11.2	9.9	11.6 (0.59)
Infant female, %	51.9	58.0	49.9 (0.11)
Mother birth characteristics			
Multiple births, %	1.9	4.0	1.3 (0.06)
Mother Medicaid at birth, %	60.4	67.5	58.1 (0.07)
Adolescent mother, %	9.3	9.5	9.2 (0.92)
Mother age, yrs.	27.3	26.9	27.4 (0.38)
Mother education	4.0	3.8	4.1 (0.07)
Mother is married, %	48.6	38.9	51.7 (0.02)
Mother race / ethnicity			
White, %	48.7	46.0	49.6 (0.48)
Black, %	40.6	42.1	40.2 (0.70)
Hispanic, %	8.9	9.5	8.7 (0.78)
Other, %	1.7	2.4	1.5 (0.53)

Note. The participating pre-intervention sample is compared with the participating intervention-eligible sample

Table 3.

Family Connects Highest Family Risk Matrix Score by Domain and Overall: Implementation Results from September 1, 2014 – December 31, 2015 Births (n = 641)

	Highest Family Risk Matrix Score				
	0: Unable to assess risk or needs	1: No risk or immediate needs	2: Mild risk addressed during home visit	3: Significant risk requiring follow-up and community referral	4: Emergency situation for family
Domain 1: Support for health care	0 (0.0%)	26 (4.1%)	386 (60.2%)	229 (35.7%)	0 (0.0%)
Domain 2: Support for caring for infant	5 (0.8%)	277 (43.2%)	323 (50.4%)	36 (5.6%)	0 (0.0%)
Domain 3: Support for a safe home	0 (0.0%)	326 (50.9%)	201 (31.4%)	109 (17.0%)	5 (0.8%)
Domain 4: Support for parents	0 (0.0%)	233 (36.3%)	248 (38.7%)	159 (24.8%)	1 (0.2%)
Overall risk – all domains	0 (0.0%)	3 (0.5%)	285 (44.5%)	348 (54.3%)	5 (0.8%)

Table 4.

Family Connects Family Risk Matrix Scores by Risk Factor: Implementation Results from September 1, 2014 – December 31, 2015 Births (n = 641)

Risk Factor	Family Risk Matrix Score				
	0: Unable to assess risk or needs	1: No risk or immediate needs	2: Mild risk addressed during home visit	3: Significant risk requiring follow-up and community referral	4: Emergency situation for family
Domain 1: Support for health care					
Parent health	1 (0.2%)	199 (31.0%)	337 (52.6%)	104 (16.2%)	0 (0.0%)
Infant health	6 (0.9%)	90 (14.0%)	431 (67.2%)	114 (17.8%)	0 (0.0%)
Health care plans	1 (0.2%)	294 (45.9%)	286 (44.6%)	60 (9.4%)	0 (0.0%)
Domain 2: Support for caring for infant					
Child care plans	5 (0.8%)	486 (75.8%)	119 (18.6%)	31 (4.8%)	0 (0.0%)
Parent-child relationship	6 (0.9%)	536 (83.6%)	95 (14.8%)	4 (0.6%)	0 (0.0%)
Management of infant crying	6 (0.9%)	390 (60.8%)	244 (38.1%)	1 (0.2%)	0 (0.0%)
Domain 3: Support for a safe home					
Household / material supports	0 (0.0%)	394 (61.5%)	155 (24.2%)	92 (14.4%)	0 (0.0%)
Family and community violence	0 (0.0%)	554 (86.4%)	74 (11.5%)	13 (2.0%)	0 (0.0%)
History of parenting difficulties	0 (0.0%)	537 (83.8%)	73 (11.4%)	26 (4.1%)	5 (0.8%)
Domain 4: Support for parents					
Parent mental health	0 (0.0%)	316 (49.3%)	198 (30.9%)	127 (19.8%)	0 (0.0%)
Parent emotional support	0 (0.0%)	456 (71.1%)	146 (22.8%)	39 (6.1%)	0 (0.0%)
Parent substance use	0 (0.0%)	525 (81.9%)	90 (14.0%)	25 (3.9%)	1 (0.2%)

Table 5.

Regression Models Testing Impact of Family Connects, Northeast on Community Resources and Supports, Parenting, and Child Care: Pre-Intervention vs. Intervention-Eligible Families (n = 517 families; n=528 infants).

Variable	Pre-Intervention		Intervention-Eligible		b	Model	
	M	%	M	%		OR	95% CI
Community Resources & Supports							
Total number of community connections	5.37	—	5.57	—	0.55**	—	0.13, 0.96
Frequency of community service use	22.05	—	22.63	—	1.81 [†]	—	-0.06, 3.67
Total services used now	4.73	—	4.46	—	0.05	—	-0.33, 0.43
Helpfulness of community services	3.76	—	3.72	—	-0.02	—	-0.11, 0.06
Mother Parenting Beliefs & Behaviors							
Mother positive parenting behaviors	4.52	—	4.56	—	-0.004	—	-0.10, 0.09
Mother negative parenting behaviors	0.06	—	0.07	—	0.001	—	-0.03, 0.03
Mother negative intentionality beliefs	0.13	—	0.12	—	0.01	—	-0.06, 0.08
Father Involvement							
Father – infant relationship quality (n=450)	2.12	—	2.28	—	0.13*	—	0.01, 0.26
Father help with family work (n=450)	2.11	—	2.35	—	0.17*	—	0.02, 0.33
Father financial support for infant (n=450)	2.02	—	2.06	—	0.10	—	-0.09, 0.29
Child Care							
Proportion using non-parental child care	—	61.83	—	56.68	—	0.79	0.53, 1.20
Out-of-home child care quality rating (n=46)	4.67	—	4.74	—	0.22	—	-0.11, 0.54

Note: All models include Infant Birth Risk, Infant Age, Infant Gender, Mother Medicaid Status at Birth, Family Minority Race / Ethnicity, and Mother Marital Status as covariates.

[†] $p < 0.10$, * $p < 0.05$, ** $p < 0.01$.

Table 6.

Regression Models Testing Impact of Family Connects, Northeast on Mother and Infant Health and Well-Being: Pre-Intervention vs. Intervention-Eligible Families (n = 517 families; n=528 infants).

Variable	Pre-Intervention		Intervention-Eligible		Model		
	M	%	M	%	b	OR	95% CI
Infant Emergency Healthcare – Parent Report							
Number of ER and urgent care visits	1.31	—	0.99	—	-0.31**	—	-0.49, -0.13
Number of overnights in hospital	0.16	—	0.11	—	-0.25	—	-0.79, 0.29
Number of total emergency care episodes	1.46	—	1.10	—	-0.31**	—	-0.48, -0.13
Infant Health & Healthcare							
Infant sleeps on back	—	66.92	—	72.98	—	1.35	0.87, 2.10
Infant currently breastfeeding	—	22.31	—	31.23	—	1.37	0.82, 2.30
Infant exposed to household smoking	—	8.46	—	5.04	—	0.70	0.31, 1.54
Infant immunizations up-to-date	—	93.08	—	91.69	—	0.75	0.35, 1.65
Mother Emergency Healthcare – Parent Report							
Number of ER and urgent care visits	0.52	—	0.71	—	0.30*	—	0.03, 0.57
Number of overnights in hospital	0.13	—	0.03	—	-1.20**	—	-2.00, -0.40
Number of total emergency care episodes	0.64	—	0.74	—	0.13	—	-0.11, 0.38
Mother Health & Healthcare							
Mother received 6-week postpartum check-up	—	94.40	—	93.33	—	0.81	0.33, 1.96
Mother (or partner) currently using contraception	—	94.92	—	80.16	—	0.23**	0.09, 0.53
Mother Mental Health & Social Support							
Mother possible clinical depression	—	11.20	—	9.21	—	0.80	0.41, 1.56
Mother possible clinical anxiety	—	28.80	—	24.30	—	0.79	0.50, 1.25
Mother social support	3.37	—	3.48	—	0.08†	—	-0.01, 0.17

Note: All models include Infant Birth Risk, Infant Age, Infant Gender, Mother Medicaid Status at Birth, Family Minority Race / Ethnicity, and Mother Marital Status as covariates.

† $p < 0.10$, * $p < 0.05$, ** $p < 0.01$.

Table 7.

Regression Models Testing Impact of Family Connects, Northeast on Infant Health and Well-Being for Families with Infants Younger than Age 6 Months: Pre-Intervention vs. Intervention-Eligible Families (n=344 infants).

Variable	Pre-Intervention		Intervention-Eligible		b	Model	
	M	%	M	%		OR	95% CI
Infant Health & Healthcare							
Infant sleeps on back	—	65.38	—	75.00	—	1.73 [†]	0.96, 3.11
Infant currently breastfeeding	—	25.64	—	35.47	—	1.63	0.82, 3.21

Note: All models include Infant Birth Risk, Infant Age, Infant Gender, Mother Medicaid Status at Birth, Family Minority Race / Ethnicity, and Mother Marital Status as covariates.

[†] $p < 0.10$, * $p < 0.05$, ** $p < 0.01$.

Nurse: _____ Client Initials _____ Baby Initials _____

Date of home visit _____

APPENDIX A

Family Connects Home Visit Fidelity Checklist

Y/N/NA	Activity	Comments
INTRODUCTION (7)		
	Introduce self by name and call parent(s) and baby by name.	
	Describe rationale for FC visit, including <ul style="list-style-type: none"> • Celebrate the new arrival. • Acknowledge that caring for a newborn can be a joyful and also difficult job. 	
	We can help with access to local services, when needed <ul style="list-style-type: none"> • Our community has multiple services and resources that a parent may not know about or may not know how to contact. • Link family to resources that can support this period of new parenting. 	
	Describe structure for FC visit <ul style="list-style-type: none"> • Mom postpartum assessment and Newborn assessment • Discussion of family wellbeing and needs • Addressing any questions about infant or postpartum care • Recommendations and referrals as needed 	
	Explain and obtain consent for visit and letters to doctors	
	Using computer, verify demographic information	
	Explain privacy policy	
SUPPORT for HEALTH CARE (Parent, Infant Health; Health Care Plans) (14)		
	Maternal health and prenatal care	
	Postpartum assessment	
	Blood pressure and other vital signs as needed	
	Family planning / Abstinence for 6 weeks	
	Immunizations	
	Medications	
	Confirm or assist in making postpartum appointment	
	Newborn health post-delivery	
	Newborn physical assessment: Weigh and measure	
	Feeding	
	Oral care	
	Plans for mother and infant health care	
<i>Supportive Guidance</i>		
	<i>Important to have a good relationship with baby's health provider</i>	
	<i>Importance of a medical home</i>	
SUPPORT for CARING FOR INFANT (Child Care, Mother-Child Relationship, Infant Crying) (9)		
	Plans for child care: incl. work day, respite, emergency	
	Relationship between mother and infant: Discussion and observations	
	Response to baby's cues	
	Appropriate stimulation for baby (tummy time, reading)	
	How is infant crying handled	
<i>Supportive Guidance</i>		

Nurse: _____ Client Initials _____ Baby Initials _____

Date of home visit _____

	<i>Baby behavior has meaning, but babies are not mean. They communicate what they need by crying, movements, being still and calm when content...Young babies just don't have the mental ability to do things intentionally or "on purpose" to get at you, be mad at you...</i>	
	<i>How have you learned to read your baby's cues?</i>	
	<i>Some babies cry about 5 hours per day, sometimes inconsolably. Crying seems to peak around 6 weeks. Crying can be very frustrating, and this is normal. Have you seen the Purple Crying video? Or alternatively, have you heard of shaken baby syndrome?</i>	
	<i>Discuss worries about spoiling.</i>	
SUPPORT for a SAFE HOME (Household/Material Needs, Family/Community Safety, Parenting History) (14)		
	Assess adequacy of household/material supplies for caring for infant, e.g.: <i>Where does your baby sleep?</i>	
	How has relationship between parents been affected by having a new baby?	
	Are financial resources adequate?	
	Is transportation available?	
	Ask about smoke and CO detector in home.	
	Ask: "Have you ever felt unsafe in home or neighborhood?"	
	1. <i>Have you ever felt unsafe with your partner?</i> 2. <i>Has your partner or anyone else ever physically hurt you or threatened you verbally?</i> 4. <i>Has your partner or anyone else ever made you do something sexual against your will?</i> If "yes" to any of the above, assess current safety and resources.	
	Discuss parents' childhoods and any history of maltreatment.	
	Ask about this mother's history with DSS (n/a if first time mother).	
Supportive Guidance		
	<i>Babies are affected by their physical and emotional environment.</i>	
	<i>Parenting is made easier or more difficult by our own childhood experiences or by the experiences we have had with our other children.</i>	
	<i>Cautions about tobacco smoking around infant</i>	
	<i>Safe sleep</i>	
	<i>It is important to keep all firearms locked and ammunition locked in a separate area in the home and to be aware if firearms are present anywhere your child plays.</i>	
SUPPORT for PARENTS (Emotional Well Being, Substance Abuse, Social-Emotional Support) (7)		
	Query parents' emotional status: "Have you been tearful or felt blue? / Down, depressed, hopeless?" (Note that fathers can get postpartum blues as well as mothers.)	
	Any history of depression?	
	Any issues with anxiety?	
	Drug and alcohol use in family / home: Is this a problem?	
	Who provides the parent(s) support?	
Supportive Guidance		
	<i>All parents feel overwhelmed some of the time</i>	
	<i>All parents need support. It is very important to have someone to talk to when things get rough. Help parent identify support person(s).</i>	
WRITTEN SCREENERS (2)		
	Open screener for mother and explain how she should enter her answers.	
	Score screeners; as necessary, review responses with mother for further clarification.	

Nurse: _____ Client Initials _____ Baby Initials _____

Date of home visit _____

PLANNING (9)		
	Discuss what is going well for mother baby, family.	
	Discuss perceived needs and prioritize them	
	Review handouts in parent bag as needed	
	Ask about anything nurse and parents forgot to talk about.	
	Confirm family's access to nurse visitor after visit, as needed.	
	Discuss the best referrals for the family. Record referrals and teaching. (may be rated n/a)	
	Make general recommendations as needed. (may be rated n/a)	
	Make plan for next visit, (If plan to make a F/U visit or call, record on the planning screen). (may be rated n/a)	
	Obtain consents to release information to other providers, if needed (may be rated n/a.)	

Total adherence score: y + n/a = ____/ 62

Overall comments:

Quality Assurance Ratings for the Matrix and Fidelity Checklist

Nurse: _____

Date of Visit: _____

QA Rater: _____

Time of Visit: _____

Matrix Differences

Matrix Item	Nurse	QA Rater	Difference	Difference >1
Maternal Health	Response Range = 0-4	Response Range = 0-4	= 1 if "Nurse" ≠ "QA Rater"; Else = 0	= 1 if Abs. Value of "Nurse" - "QA Rater" > 1; Else = 0
Infant Health				
Health Care Plans				
Child Care Plans				
Parent-Child Relationship				
Management of Infant Crying				
Household Safety and Material Supports				
Family and Community Safety				
History with Parenting Difficulties				
Parent Well-Being				
Substance Abuse				
Parent Emotional Support				
General Impression				
Totals			= Sum of all "Difference" scores above	= Sum of all "Difference >1" scores above
Goals			<5	0

Fidelity Percentages

Nurse: _____

Date of Visit: _____

QA Rater: _____

Time of Visit: _____

The first column lists the different sections of the fidelity checklist. The number in parentheses is the number of items in that section. Due to circumstances in the home, it may not be possible to complete the checklist. For example, if the computer screener is not working then the screener ‘Number of Possible Items’ would be set to 0 instead of 4. Calculations are then completed based on what was possible in the actual home visit. Also, some items are N/A. These should be added to the number of completed items, as they are not actually incomplete.

Checklist Section	Number of Possible Items	Number of Items Completed	Percent Completed
Introduction (4)			
Support for Health Care (17)			
Support for Caring for Infant (8)			
Support for Safe Home (15)			
Support for Parents (8)			
Written Screeners (2)			
Planning (8)			
Total (62)			
Goal			75%

Best part of the visit: _____

Area for improvement: _____
