

HealthySteps: Transforming the Promise of Pediatric Care

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Summary

In this article, Trenna Valado, Jennifer Tracey, Jonathan Goldfinger, and Rahil Briggs highlight the potential to expand the promise of pediatric care to encompass the full array of child and family needs that can affect the long-term wellbeing of infants and toddlers.

Pediatric care is not stigmatized, nearly universally accessed, and oriented toward prevention. The American Academy of Pediatrics already urges pediatricians to screen for adverse childhood experiences, maternal depression, behavioral and developmental risk, and even the effects of poverty on children. Most pediatricians would like to extend their narrow health care mandate to broader social-emotional and behavioral care and education, but they're often constrained by issues of time, training, and reimbursement.

Valado and her colleagues offer a solution to those constraints: HealthySteps, a risk-stratified, population health model that integrates a skilled child development professional—called a HealthySteps specialist—into the pediatric care team. The model comprises eight core components that can be divided into three tiers of service, beginning with universal screening that allows practices to identify children and families at higher risk of negative outcomes. These families are then offered the more intensive service tiers, in which they receive customized support based on their needs.

The evidence supporting HealthySteps comes from a large multi-site evaluation conducted by Johns Hopkins University, which included a randomized controlled trial component, as well as several site-level research studies. Results from this research indicate that HealthySteps had an array of positive impacts on practices that adopted the program and clients they served, including increased physician and caregiver satisfaction, improved continuity of care, greater adherence to recommended well-child visits and vaccinations, and increased rates of developmental screening and other services. There were also positive impacts on children and parents over time, though many of these impacts were modest. The HealthySteps National Office is continuing to evaluate implementation, training, impact, and cost as the program spreads across the nation. Questions that remain to be answered include how such a model should be financed and how health insurance could pay for it.

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How might we, as a society, help parents and caregivers develop the secure, loving relationships with their babies and toddlers that foster healthy development and resilience? And how might we also help families who are facing adversity connect to community supports so they can protect their children from repeated, toxic exposures that can harm development? Whatever their social or economic circumstances, most new parents feel enormous societal pressure to be “perfect” at parenting, so the setting for such interventions would need to be trustworthy and nonstigmatizing. Parents must want to participate, and not be labeled or judged for doing so. The ideal setting would also be universal—a place where all parents and children already go, without facing significant cost, long wait times, or great distances. Finally, it would give families ongoing access to a range of professionals trained to assess and help with child and parent challenges that can impact a child’s development.

This ideal setting already exists: pediatric primary care. Pediatric care (including, as defined in this article, primary care provided to young children by family practitioners and nurse practitioners in other settings) is among the least stigmatizing and most universally accessed services in the United States.¹ According to 2016 national data, 89 percent of children five years old and younger had experienced a preventive visit in the past year.² (Compare that, for example, to the 7 percent of eligible children under three who access the federal Early Head Start program.³) In addition, given that the recommended schedule includes 13 well-child visits in the first three years of life, pediatric care provides an opportunity to interact with families repeatedly. Researchers

studying the intergenerational transmission of risk from mother to infant note that primary health care providers play a “pivotal role in facilitating access to support services” that can break vicious cycles of adversity.⁴ The leading professional association, the American Academy of Pediatrics (AAP), has recognized this promise; it urges pediatricians to address adverse childhood experiences and the effects of poverty on children.⁵ Pressure is also mounting throughout pediatrics to integrate professionals from different disciplines into a coordinated office team to help families cope with any challenges they face, whether social, emotional, behavioral, financial, physical, or environmental.⁶ But before pediatrics can fulfill this promise nationally, it must overcome several obstacles.

In this article we examine some of these obstacles, and we highlight a leading model of family-centered, relationship-based care, called HealthySteps, that transforms how pediatric and family practices support families with young children. By expanding the array of needs addressed in pediatric care, HealthySteps offers a sustainable model of relationship- and team-based primary care that has demonstrated positive impacts for children and their families.

Challenges in Pediatrics

For years the AAP has recommended that pediatricians routinely use validated screening tools to identify risks to development in every child as effectively and as early as possible. Despite this recommendation, US screening rates remain consistently low. Only 30 percent of parents responding to a national survey reported having completed a developmental screening tool when their child was between nine and 35 months of age.⁷ Surprisingly, that number

rises to only 37 percent for children whose primary care meets the AAP's definition of a "medical home," defined as care that's accessible, continuous, comprehensive, family-centered, coordinated, compassionate, and culturally effective.⁸

Even when pediatric practices screen for risks, families can't necessarily access important resources and services. Among families who need help arranging or coordinating their children's care among different doctors or services, only 16 percent say they receive that support.⁹ Families with children at moderate to high risk of developmental delays may actually receive less family-centered care, referrals, and care coordination, potentially indicating that a systemic bias exists or that providers can be overwhelmed by certain children's needs.¹⁰ Pediatricians acknowledge this limited coordination and its negative effect on families' ability to access services, attributing it primarily to lack of time and inadequate staffing.¹¹

Children's behavior, parent-child relationships, and family circumstances are underrepresented in curricula and training for physicians.

Another problem is that pediatric education traditionally focuses mostly on children's physical health. Children's behavior, parent-child relationships, and family circumstances are relatively newer topics that are underrepresented in curricula and training for physicians. To help children

overcome adversity and succeed in school and in life, pediatricians still need to get better at observing parents and children for concerning (and praiseworthy) behaviors and interactions and at fostering healthy relationships.¹²

Last, pediatricians have limited financial incentives to offer care that incorporates universal screening, counseling, care coordination, and including other types of professionals in their practices. Despite new federal and state efforts to pay for positive outcomes rather than paying fees for specific services, US insurers tend to focus on short-term cost savings tied to physical health, as opposed to longer-term cost savings and the positive outcomes tied to emotional wellbeing. Young children are typically healthy and incur relatively low health costs, which can make it difficult for insurers to justify investing in pediatric primary care innovations—particularly given their focus on older adults with chronic conditions, where cost savings are more immediate. Positive outcomes from services for young children and parents mostly occur later in life, so pediatrics is consistently challenged to make the case that insurers should pay for services that encourage relationship-based care early in life. Investing in children's physical and emotional wellbeing could not only generate health-related cost savings in the short term; more importantly, it could affect the long-term trajectory of children's health and wellbeing into adulthood, and bring long-term cost savings for health care, education, social services, criminal justice, and other sectors.

The HealthySteps Model

HealthySteps offers an approach that can help overcome many of these challenges. The eight core components of the HealthySteps

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model (see box 1) are designed to promote healthy child development by providing positive parenting guidance, connecting families to community resources to meet children's and parents' needs, and fostering parent-child relationships that nurture children and buffer them from the effects of toxic stress. To help deliver the core components, a skilled child development professional, known as a HealthySteps specialist, is integrated into the pediatric primary care team. Most HealthySteps specialists are social workers with master's degrees, followed by psychologists. HealthySteps specialists have the time and training to support both common and complex child and family problems, including (but not limited to) feeding, behavior, sleep, attachment, maternal depression, social needs, and adapting to life with a baby or young child. An emphasis on building healthy relationships—between parents and children, between families and health care providers, and among health care professionals—is one of HealthySteps' hallmarks. HealthySteps thus both borrows from and enhances the trust parents have in pediatricians, all within the nearly universally accessed, non-stigmatized setting described above.¹³

In a pediatric practice, HealthySteps services aim to help all children from birth to three years, as well as their families, by discussing children's development and behavior; identifying children's and parents' strengths, risks, challenges, and needs early; and helping meet those needs in a timely, tailored manner. To use resources efficiently, HealthySteps uses a three-tiered approach that stratifies risk. In the first tier, child and family screenings and access to a child development support line are offered universally. In the second, families with mild

Box 1. HealthySteps Core Components

1. *Child Developmental, Social-Emotional, and Behavioral Screenings:* All children from birth to three years old are routinely screened for physical, cognitive, language, social-emotional, and behavioral risks and needs, following a recommended screening schedule.
2. *Screenings for Family Needs:* All families with children from birth to three years are routinely screened for important risk factors and social determinants of health—including maternal depression, food insecurity, housing instability or homelessness, utility needs, transportation needs, interpersonal safety, substance misuse, and tobacco use—following a recommended screening schedule.
3. *Child Development Support Line:* All parents with children from birth to three years can communicate with a HealthySteps specialist between visits for nonurgent, nonmedical concerns.
4. *Child Development and Behavior Consults:* Families with children from birth to three years receive short-term support in the form of one to three consultations with a HealthySteps specialist to address specific, time-limited concerns.
5. *Ongoing, Preventive Team-Based Well-Child Visits:* Families identified as being most at risk meet with a HealthySteps specialist during routine well-child visits.
6. *Care Coordination and Systems Navigation:* HealthySteps specialists partner with parents, clinicians, and community-resource providers to coordinate and navigate systems that support child health and development and family needs.
7. *Positive Parenting Guidance and Information:* HealthySteps specialists provide guidance, education, information, and resources that help parents support their children through different stages of development.
8. *Early Learning Resources:* HealthySteps specialists share concrete strategies, activities, and tools designed to support children's early learning.

to moderate concerns receive short-term consultations on development or behavior, along with referrals to needed services, care coordination, positive parenting guidance, and early learning resources. In the third

tier, families with the greatest risk factors or needs receive a series of team-based well-child visits incorporating a HealthySteps specialist. The HealthySteps National Office has learned from its sites nationwide that—in alignment with AAP guidelines—the team can successfully provide some universal services using front-desk staff, medical assistants, residents and other trainees, and/or nurses, thus freeing HealthySteps specialists and doctors to offer tailored services. This approach allows practices to provide HealthySteps to approximately 2,000 children by adding just a single HealthySteps specialist.

Evidence for HealthySteps

Ever since HealthySteps began in the mid-1990s, evaluation has been an integral part of the model. Early on, the Johns Hopkins Bloomberg School of Public Health conducted a national evaluation across 15 HealthySteps sites that consistently implemented the model following standard protocols. In an affiliate evaluation, Johns Hopkins engaged nine additional sites that followed the same implementation protocols but used varied evaluation designs. These early evaluations laid the foundation for the model to grow in later years, with several sites investing in more research on their own. In addition, two national studies completed in 2010 and 2017 focused specifically on assessing model implementation across the entire HealthySteps network. In this section we review the evidence for HealthySteps and highlight topics where more research is needed.

National Evaluation

The most extensive evaluation, yielding the strongest evidence for the effectiveness of HealthySteps, was initiated by the Johns

Hopkins Bloomberg School of Public Health in 1996. Fifteen sites participated in the evaluation, divided into two groups using different evaluation designs.

Six of the sites conducted a *randomized controlled trial* (RCT), in which families at a single clinic were randomly assigned to receive either HealthySteps services (the intervention group) or care as usual (the control group). RCTs are considered the gold standard for generating evidence, because they allow researchers to more confidently attribute any observed effects to the program itself, instead of to other, unobserved factors. However, an RCT can pose challenges for a model like HealthySteps that's intended to have practice-wide effects. For example, even families in the control group might benefit from being in a HealthySteps practice, because the clinic's health care professionals have been trained in the HealthySteps model and could bring certain aspects of the HealthySteps approach to their interactions with those families. The possibility of such spillover effects for the control group was noted in the evaluation report, though the researchers strived to minimize these effects (importantly, the HealthySteps model as originally conceived and evaluated offered all model core components to all families in a practice).¹⁴ In addition, practices offering HealthySteps might have ethical concerns about withholding services from a subset of families for the purposes of research—especially when the model is implemented in a high-need community, as is often the case for HealthySteps.

The nine other sites participating in the 1996 evaluation used what researchers call a *quasi-experimental* (QE) design: families receiving HealthySteps services

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at a given clinic (the intervention group) were compared to families served by clinics that didn't offer HealthySteps (the control group). Researchers consider an RCT to produce stronger evidence than a QE design, since an RCT compares families in the same practice, thus avoiding the potentially confounding effect of differences between practices. But in a QE design, families receiving services were still compared to similar families not receiving those services. RCT and QE designs both contrast favorably with nonexperimental designs that lack a control or comparison group, as this limits researchers' ability to attribute positive results to the intervention being studied. (Nonexperimental research can still yield valuable insights and point to directions for future research, as shown in the discussion of site-level studies below.)

A total of 5,565 children and their parents were enrolled in the national evaluation—2,963 in the intervention group (1,133 in RCT sites, 1,830 in QE sites) and 2,602 in the control group (1,102 in RCT sites, 1,500 in QE sites). All sites followed the same implementation protocols and drew data from the same sources, including:

- newborn HealthySteps enrollment forms
- child medical records
- contact logs
- telephone interviews with mothers or other primary caregivers at three points in time (2–4 months, 30–33 months, and 5–5.5 years), and
- interviews and self-administered questionnaires with practice staff at two points in time (at the start of the

evaluation and 30 months later).

An observation study was also conducted at two of the RCT sites to assess the quality of the home environment, mother-child interactions, and child development among 432 families visited in their homes at 16–18 months and again at 34–37 months. The national evaluation found that HealthySteps had positive impacts on the participating practices, as well as on the children and families served.

Box 2. What Are Adjusted Odds Ratios?

Many results from the national evaluation are presented as adjusted odds ratios (AORs). An odds ratio is a way to measure the association between an intervention and a given outcome. As explained in the final report, “an odds ratio of greater than 1 indicates that subjects in the intervention group were more likely to report a given characteristic than were subjects in the control group; an odds ratio of less than 1 indicates that subjects in the intervention group were less likely to report a given characteristic than were subjects in the control group. An odds ratio of 1 indicates that there was no difference between intervention and control groups.” The larger the odds ratio, the bigger the difference between the groups. For example, an odds ratio of 10 means that, compared to the control group, the intervention group had 10 times the odds that a given outcome would be observed. An adjusted odds ratio accounts for other variables that could influence a given outcome (such as education level or income) and adjusts the odds accordingly.

Practice-Level Results

Physicians in both the RCT and QE sites reported that HealthySteps encouraged a team approach and increased their understanding of families' needs.¹⁵ After 30 months of HealthySteps, clinicians (including pediatricians and clinical specialists other than the HealthySteps specialist) were five times more likely to report being “very satisfied” with their staff's ability to meet the behavioral and

developmental needs of children in the intervention group. Both the RCT and QE sites showed increases in satisfaction over time within the intervention group: from 31 percent to 62 percent of clinicians saying they were “very satisfied” in RCT sites, and from 39 percent to 65 percent in QE sites.¹⁶ However, the difference in this effect between intervention and control groups was only statistically significant at the RCT sites, with an adjusted odds ratio, or AOR, of 10.67 (see box 2).

Family-Level Results

Intervention families at both the RCT and QE sites were more likely than control group families to receive a wide array of benefits, including screening, connections to needed services, and anticipatory guidance (that is, helping parents or guardians understand and respond appropriately to their children’s expected growth and development).¹⁷

Intervention families were eight times more likely to receive a developmental assessment for their child (AOR = 7.11 for RCT sites, 8.81 for QE sites, and 8.00 combined) and four times more likely to receive information on community resources (AOR = 3.50 for RCT, 4.95 for QE, 4.23 combined). These families were also 2.4 times more likely to discuss five age-appropriate topics with someone at the practice by the time their children were two to four months old (AOR = 1.91 for RCT, 2.92 for QE, 2.41 combined) and 10 times more likely to discuss six or more age-appropriate topics by 30–33 months (AOR = 8.56 for RCT, 12.31 for QE, 10.36 combined). All the results were statistically significant, with a 95 percent confidence level, for both RCT and QE sites.

HealthySteps also had positive effects on adherence to the recommended schedule of

well-child visits and vaccinations, as well as continuity of care and parent satisfaction.¹⁸ Intervention families at both RCT and QE sites were 1.5 to 2.6 times more likely (depending on their child’s age) to have timely well-child visits; these results were statistically significant for seven of nine time points, with the exception of the nine-month and 15-month visits at RCT sites. In addition, intervention families were 1.4 to 1.6 times more likely to receive age-appropriate child vaccinations and 1.4 times more likely to be up to date on vaccinations by the time the children were two years old (AOR = 1.51 for RCT, 1.33 for QE, 1.41 combined), with all results statistically significant. Intervention children were also 1.7 times more likely to remain at the practice through at least 20 months of age (AOR = 1.87 for RCT, 1.53 for QE, 1.66 combined), and their families were 1.7 times more likely to be highly satisfied with the care they received.¹⁹

These findings were consistent across income groups, leading the researchers to conclude that “a universal practice-based intervention such as HealthySteps has the potential to reduce income disparities in the utilization of preventive services, timely well-child care, and satisfaction with care.”²⁰

Parent-Level Results

HealthySteps had a modest impact on several parenting practices. Parents in the intervention group were 24 percent less likely than those in the control group to place newborns on their stomachs to sleep (a position that increases the risk of sudden infant death syndrome), a finding that was statistically significant across both RCT and QE sites (AOR = 0.74 for RCT, 0.78 for QE, 0.76 combined). Other results were statistically significant only at QE sites. For

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example, when their children were two to four months old, intervention parents in the QE sites were 24 percent less likely to feed them water (AOR = 0.76) and 19 percent less likely to introduce solids too early (AOR = 0.81). They were also 33 percent less likely to report using severe forms of physical discipline (defined as slapping the child in the face or spanking with a belt or other object) at 30–33 months of age (AOR = 0.67).²¹

Similarly, intervention parents at the QE sites were 35 percent more likely to show their infants picture books every day at two to four months (AOR = 1.35) and 38 percent more likely to play with their infants every day (AOR = 1.38), though these effects weren't statistically significant when measured again at 30–33 months.²² Intervention group mothers in QE sites who were identified as being at risk for depression—which can detract from parents' ability to be responsive to a child—were more likely than control group mothers to discuss their sadness with someone at the practice (AOR = 2.83), though there were no significant impacts on the depressive symptoms themselves.²³ However, the observation study revealed that intervention mothers were more likely to interact sensitively and appropriately with their children at 34–37 months, even though this difference wasn't yet apparent at 16–18 months.²⁴

Child-Level Results

Most of the outcomes assessed at the child level were related to other outcomes discussed above, such as timely well-child visits and vaccinations and age-appropriate feeding. In addition, analysis of data from the embedded observation study showed that HealthySteps was associated with

greater attachment security and fewer child behavior problems.²⁵

Importantly, several of the results seen in the national evaluation persisted over time, though all effects were modest. At the 5.5-year follow-up, intervention families were less likely to report using severe physical discipline (AOR = 0.85 for RCT sites, 0.57 for QE sites, 0.68 combined) and more likely to report negotiating with their children instead (AOR = 1.25 for RCT, 1.16 for QE, 1.20 combined).²⁶ Intervention parents were also more likely to have remained at the practice (AOR = 1.10 for RCT, 1.19 for QE, 1.66 combined) and more likely to report that their child regularly looked at or read books (AOR = 1.07 for RCT, 1.22 for QE, 1.16 combined).

Although the national evaluation demonstrated that HealthySteps could promote positive outcomes, several areas weren't significantly affected: parents' knowledge of child development; parents' sense of competence; mothers' daily stress and depressive symptoms; breastfeeding initiation and duration; toddler safety practices; use of acute care or emergency departments; hospitalizations; and parents' reports of their children's language development at two years of age.²⁷ But it's important to note that the evaluation used an *intention to treat* principle in its analyses. As the authors wrote: "Application of the intention to treat principle means that all the subjects enrolled in the intervention group are treated in the analysis as if they had received the full intervention, even if some are known to have received less or to have dropped out."²⁸ Thus the results don't reveal whether families who received different levels of service benefited differently from participating in HealthySteps. In addition,

the families served by the RCT and QE sites differed from the families served by the sites that participated in the affiliate evaluation, in which mothers tended to be younger and less educated and were more likely to be Hispanic and receive Medicaid.²⁹

Affiliate Evaluation

Several original sites that didn't participate in the national evaluation instead took part in the affiliate evaluation, in which they followed the same implementation protocols but used varied evaluation designs. Three sites completed studies with sample sizes too small for their results to be generalized: a site in Kansas evaluated delivery of HealthySteps services via telemedicine to 38 adolescent parents in a large urban school district; and sites in Alabama and North Carolina assessed discipline practices among 182 parents of toddlers.³⁰

In the most rigorous affiliate evaluation, the University of Washington used an RCT design to compare the HealthySteps model, with or without a prenatal component, to usual care. This study randomly assigned 303 families to either HealthySteps only or HealthySteps with a prenatal component, and 136 families to receive the usual care at other practices. Data collection included a telephone survey at one and three months after birth and follow-up telephone interviews with 78 percent of the original 439 families at 30 months. As in the national evaluation, both groups of intervention families received more services than comparison group families, and intervention children were more likely to receive timely well-child visits and vaccinations.³¹ Several other positive outcomes were associated with participation in HealthySteps, including greater parent knowledge of

infant development; higher rates of parental satisfaction in their role as parents; greater likelihood to report feeling supported to breastfeed and to continue breastfeeding past six months; more use of appropriate discipline strategies; higher scores on a child injury control index; greater satisfaction with care; and lower rates of health plan disenrollment.³² Intervention mothers were less likely to report depressive symptoms at three months, though they reported more depressive symptoms at 30 months (there was no difference between groups in clinically significant depression). Results were mostly similar for both intervention groups, but children exposed to HealthySteps with a prenatal component had larger expressive vocabularies at 24 months. The researchers concluded that the prenatal component had little added benefit.

Lastly, six sites collected a limited array of data on 1,103 families served by HealthySteps, without collecting similar data on a comparison group. These sites served a higher-risk population (the mothers tended to be younger, less educated, poorer, less likely to be married, and more ethnically diverse than those in the national evaluation), but families still received a wide range of preventive care services and were highly satisfied with care. Thus, as the authors noted, the affiliate evaluation's "invaluable contribution" was "that it demonstrated that HealthySteps could be successfully implemented with a low-income, high-risk population as well as in a high-income population."³³

Site-Level Studies

After the national evaluation, sites had more flexibility in how to implement HealthySteps. Many added additional programs to meet

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clients' needs, hired HealthySteps specialists with specific credentials (such as clinical psychologists), and/or had HealthySteps specialists obtain additional certifications (for example, by becoming certified lactation consultants). As HealthySteps was implemented in new locations, some sites pursued their own research. In Colorado, the medical records of 40 HealthySteps children were retrospectively compared to those of 36 demographically matched control children, and the results again demonstrated that HealthySteps children had timelier well-child visits and vaccinations. The study also found that HealthySteps families had more frequent discussions of child development (including social skills, sleep, and temperament) and family needs (such as adjusting to a new baby, social support, and postpartum depression). However, it found no difference in sick visits or emergency department visits.³⁴ Although the small sample size and retrospective design limit this study's generalizability, the results were similar to key findings from the national evaluation.

The most extensive site-specific research on HealthySteps was conducted in 2005–10 in a large urban health system in New York City, Montefiore Medical Group. One study tracked two groups of children identified as being at risk of social-emotional delays at six months. The goal was to assess whether families who accepted a HealthySteps intervention (the intervention group) showed a change in their child's social-emotional risk at 36 months when compared to those who declined HealthySteps (the control group).³⁵ Of the 711 children identified as at risk at six months, 170 were screened again at 36 months. Compared to the control group children, intervention group children had more typical scores on the Ages & Stages

Questionnaire: Social-Emotional (ASQ:SE).³⁶ But because the parents who accepted HealthySteps might be more engaged in their child's development in other ways, using that as the criterion for assigning families to the intervention or control group limits our ability to generalize the results to other populations. A second QE study found that children of mothers who'd experienced childhood trauma (as measured by the Family Psychosocial Screen) had a higher risk of social-emotional delay (as measured by their likelihood of having at-risk ASQ:SE scores) at 36 months, compared to children of mothers without childhood trauma.³⁷ However, enrollment in HealthySteps seemed to moderate this relationship. Among children enrolled in HealthySteps whose mothers had experienced childhood trauma, ASQ:SE scores were well below the cutoff for clinical concern—and, on average, closer to the scores of children whose mothers hadn't experienced childhood trauma. A third study reviewed the medical charts of children born in 2004–06 and conducted interviews with their mothers to compare obesity at five years of age among three groups: children identified via the ASQ:SE as at risk for social-emotional problems who received HealthySteps; children identified as at risk but whose parents declined HealthySteps; and children with typical social-emotional development who did not receive HealthySteps.³⁸ A total of 336 mothers were identified for inclusion in the study, which consisted of chart reviews and telephone interviews. The study found that at-risk children who didn't receive HealthySteps were significantly more likely to be obese at five years than were at-risk HealthySteps children. Furthermore, the weight status of at-risk children who received HealthySteps was similar to that of children who weren't at risk. Again, the relatively

small sample sizes and specific contexts of these studies limit our ability to generalize the results. But the studies do suggest promising areas for more research.

Implementation Studies

In 2015, the HealthySteps National Office transferred to ZERO TO THREE, a global nonprofit that aims to ensure babies and toddlers benefit from the early connections critical to their wellbeing and development. Given the flexibility in implementation that arose after the original national evaluation, the National Office sought to explore the extent to which sites continued to offer the original core components. It commissioned an external firm (James Bell Associates, in collaboration with MDRC) to conduct a national implementation study of 62 sites.³⁹ The results were consistent with another national implementation study that was completed with 50 sites in 2010.⁴⁰ The 2015 study found that more than 90 percent of sites offered child and family screenings, team-based well-child visits, links to community resources, and written materials for parents. But only about 80 percent of the sites maintained a child development information line, and fewer than half offered parent groups. Although most sites provided home visits, they indicated that the practice was difficult to sustain and limited their services to fewer families. They also reported that parent groups were logistically difficult, and parent attendance was low. Both the 2010 and 2015 studies found that HealthySteps sites were serving a high percentage of low-income families, a notable departure from the early national evaluation.

The HealthySteps National Office took the 2015 findings into consideration when updating the model to better reflect

the realities of implementation, as well as developments in pediatrics and the broader early childhood field since the mid-1990s. This raised the question of whether outcomes demonstrated in past evaluations could still be considered valid for the updated model. To answer this, James Bell Associates comprehensively reviewed research on the model's updated core components, examining evidence from other programs that offer similar services. The researchers concluded that the evidence “demonstrates wide-ranging support for the components that HealthySteps offers, and each component has been linked to several positive outcomes.”⁴¹

It's not enough to show that HealthySteps sites identify problems and connect families to resources. We also need to assess whether doing so yields positive outcomes for children and families.

Future Research

As the National Office begins to scale HealthySteps beyond its current 136 practices (in 20 states, the District of Columbia, and Puerto Rico), it must ensure that sites adhere closely to the model. Fortunately, the 2015 implementation study found that most sites were delivering the core components of the model as designed. In addition, aggregate data collected from 85 HealthySteps sites in late 2016 showed that most sites were regularly screening for a wide array of child and family problems. By the time children were 12 months old,

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98 percent of sites had screened for child development, which focuses on established milestones for communication, gross and fine motor skills, problem solving, and self-help needs; and 69 percent (increasing to 90 percent by 24 months) had screened for social-emotional development, which focuses on the ability to understand others' feelings, control one's own feelings and behaviors, get along with other children, and build relationships with adults. By 24 months, 86 percent of sites had screened for autism. Ninety percent had screened for maternal depression by six months after giving birth; and more than 50 percent had screened for key family problems such as intimate partner violence, substance misuse, smoking, food insecurity, housing insecurity, and parental stress. By comparison, only 30 percent of parents nationally reported completing a child developmental screening tool when their child was between nine and 35 months of age.⁴² And given that other screenings—for social-emotional development, maternal depression, and social needs—are newer AAP recommendations, it's reasonable to assume similarly low or even lower rates for these screenings at non-HealthySteps practices across the country.

But it's not enough to show that HealthySteps sites identify problems and connect families to resources. We also need to assess whether doing so yields positive outcomes for children and families. Answering this question poses a challenge for pediatric primary care. For one, there are ethical concerns about withholding services from certain families to establish a control group that would allow researchers to confidently attribute to HealthySteps any positive outcomes they observe. As we noted earlier, this issue may be particularly pronounced in high-need communities,

where many HealthySteps practices are found. Researchers can try to overcome this concern by randomizing at the practice level rather than the individual level (so patients served by practices that aren't offering HealthySteps are used as a control group) or by randomizing at the individual level but excluding families with the highest need from the pool of possible research participants (so those families still receive HealthySteps services). But these approaches have significant limitations, so researchers need to explore other ways to study HealthySteps that minimize ethical concerns.

Another challenge for research on HealthySteps is related to the quality and accessibility of data. Ideally, research data could be drawn from electronic medical records to reduce the burden of data collection on both practice staff and families. However, the National Office has found that electronic medical records don't contain all the data needed for a comprehensive evaluation of HealthySteps. Moreover, the data they do contain are often inadequate for research, due to problems like the formatting of data fields (for example, use of open-ended text fields or simply attaching PDFs of screening results to the record). One way to overcome this problem might involve using administrative data already collected by the sites.

The National Office plans to build more evidence for HealthySteps in the years ahead, both by enlisting sites in small-scale, rapid-cycle studies focused on key outcomes, and by exploring opportunities for more-comprehensive, long-term evaluations. Simultaneously, the National Office will identify ways to help sites

increase their capacity for collecting and reporting high-quality data, and for using data to guide their work with families. This initiative has already begun. The office is partnering with selected sites to use continuous quality improvement to enhance data collection, service delivery, and outcomes in six areas: breastfeeding, child social-emotional development, early childhood obesity, maternal depression, family social needs, and parent-child relationships. A key priority in this work is to understand how well HealthySteps works for different types of families and how the model can be further strengthened to better meet the diverse needs of the populations served in pediatric care.

HealthySteps Financing and Cost Savings

As HealthySteps expands to reach more families with young children, we seek to learn more about the program's costs and sustainability. The primary ongoing cost is the specialist's salary and fringe benefits, which can vary based on licensure and credentialing as well as local market demands. Other costs include optional program materials and supplies for families, as well as general technology costs associated with phones, computers, and printers for HealthySteps specialists. Many sites take advantage of the HealthySteps specialist's capacity to add enhancements like home visits or early learning programs, which may entail additional costs.

The typical cost to deliver the most comprehensive HealthySteps services to children with the most concerning risk factors or needs ranges from \$450 to \$900 per child annually. Many factors can affect the cost, including the total

number of children served, HealthySteps specialists' salaries, local enhancements, and funder-specific reporting or caseload requirements. When sites use a tiered approach that matches service intensity to each family's level of need, the cost per child may be lower for families receiving less-comprehensive services. The National Office officially introduced this tiered approach to the entire network in mid-2018, although several large sites have used a risk-stratified approach for years. In the years ahead, the National Office will explore variation in costs per child across the different levels of service intensity.

To support their operations, HealthySteps sites can seek funding from a multitude of sources. The ideal approach to sustaining HealthySteps is to braid together various funding mechanisms. However, some sites finance their programs with a single source of one-time funding, often in the form of time-limited grants from government agencies, philanthropic organizations, or local entities. While grant funding is an excellent way to start a HealthySteps program or expand capacity, it doesn't guarantee long-term sustainability. Across 114 sites that provided information on funding in 2018, 40 percent indicated that they receive money from multiple sources; grants, foundations, and health systems were the most common. Other funding sources include individual departmental funds (for example, graduate medical education funds to include HealthySteps topics in resident training programs); municipal, county, state, and federal funds; the Department of Defense and the Indian Health Service; and philanthropy.

Because HealthySteps is based in pediatric and family medicine practices, sites

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could potentially bill payers for services provided to children and families, and use the payments they receive to fund operations and expand the model. The model provides services beyond those typically offered by a pediatrician's office, including child and family screening, help with positive parenting, and referrals and support for families who need additional services beyond the primary care office. HealthySteps sites can pursue reimbursement by billing public and private insurers for specific services delivered to children and families. Opportunities for reimbursement vary greatly from state to state; they also depend on the type of payer and the licensure of the HealthySteps specialist.

Sites may also seek out innovative payment options for HealthySteps services. These might include value-based purchasing, direct contracting with insurers, and capitated service arrangements (that is, a guaranteed payment to a clinician or group of clinicians for a given set of services) beyond traditional fee-for-service reimbursement. Across the 114 sites that provided information on reimbursement sources for HealthySteps services in 2018, 27 percent reported receiving reimbursement from Medicaid or the Children's Health Insurance Program (CHIP), 25 percent reported reimbursement from commercial or private insurers, and four percent reported reimbursement from Tricare (a program that provides health benefits to uniformed service members, both active and retired, as well as their families and dependents). The National Office provides resources and support to help sites seek payment from insurers for HealthySteps services.

Innovative payment options for HealthySteps services might include value-based purchasing, direct contracting with insurers, and capitated service arrangements.

The National Office has also collaborated with Manatt Health, a dedicated practice division within the law firm of Manatt, Phelps & Phillips, LLP, to quantify short-term cost savings to state Medicaid agencies associated with key HealthySteps services. Short-term savings that accrue to state Medicaid agencies within a year are linked to specific HealthySteps interventions. Among children, savings were found in rates of well-child visits and immunizations, oral health, and inappropriate use of care for ambulatory-care sensitive conditions (conditions such as earaches, asthma, and respiratory infections for which hospital admission could have been prevented by interventions in primary care). Among adults, savings were found in the areas of breastfeeding, postpartum maternal depression, intimate partner violence, smoking cessation, and unhealthy birth spacing (less than 18 months between a birth and the mother's next pregnancy).

A single-state analysis conducted in 2017 by the National Office and Manatt, Phelps & Phillips demonstrated yearly savings to Medicaid of up to \$1,150 per family, for an annual return on investment of 83 percent, based on the interventions outlined above (excluding smoking cessation). The National

Office is currently customizing this analysis for other HealthySteps sites and state Medicaid agencies.

Synergy with Other Models

Because HealthySteps expands the capacity of pediatric practices by adding a new professional to the care team, HealthySteps sites have consistently noted that the model is an excellent platform for additional innovations. Examples of programs that can be layered onto well-child care include Reach Out and Read (ROR), Video Interaction Project (VIP), Family Information & Navigation Desk (FIND), Health Leads, Safe Environment for Every Kid (SEEK), Kids' Health Insurance by Educating Lots of Parents (Kids' HELP), and Well Child Care, Evaluation, Community Resources, Advocacy, Referral, Education (WE CARE). Research has shown that these and similar programs have a range of positive impacts on children and families:

- ROR gives families books in the pediatric office and encourages them to read with their children. ROR has been shown to increase the frequency with which parents read to their children and report reading with their children as a favorite activity.⁴³ It also leads to enhanced language development in preschool children.⁴⁴
- VIP builds on ROR's approach to promoting cognitive, language, and social-emotional development. This program adds a new team member, a child development interventionist, who helps parents identify goals for their child's development. It also provides developmentally appropriate toys and reading materials, and suggests

activities for parents to do with their child at home. The interventionist videotapes parent-child interactions in the office and watches the video with the parents, reinforcing positive parenting and identifying opportunities for improvement. Parents take home a copy of the video to help them carry out the activities and to share as a learning resource for other family members. VIP children are more likely to experience typical cognitive development and less likely to experience developmental delays, and VIP parents experience less parenting stress.⁴⁵

- FIND trains college students, community members, medical residents, care coordinators, and community health workers to screen for social needs in pediatrics and to connect children and families with appropriate community resources. Not only did FIND significantly improve social needs among families screened and connected through a pediatric practice, but an RCT also showed improvements in children's health according to their caregivers.⁴⁶
- Health Leads focuses on helping health care providers tackle unmet social needs—such as food, housing, and employment—that can harm child health and development. Trained student volunteers work with physicians to identify family needs and refer families to the appropriate program. The volunteers then follow up with referred families and give them information on community-based resources. The program has demonstrated success in both

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identifying needs and connecting families to needed supports.⁴⁷

- SEEK focuses on children's exposure to parents' mental and behavioral health problems. The program trains child health care professionals to screen for and address four adverse childhood experiences (ACEs) in parents: depression, stress, substance misuse, and intimate partner violence. SEEK pediatric providers reported feeling more comfortable and competent helping with mental health and social needs.⁴⁸ They also reported fewer referrals to child protective services, fewer documented instances of possible medical neglect, a reduction in delayed immunizations, and fewer severe physical assaults.⁴⁹
- By using trained parent mentors, Kids' HELP produced improvements in child insurance coverage, parent satisfaction with doctors, access to a primary care provider and specialty care, and preventive and dental care needs. It also reduced out-of-pocket costs.⁵⁰
- WE CARE trains pediatric providers to use a 10-item screening tool to assess families' psychosocial needs, and then offers a tailored community resource guide for related referrals. Compared to families who didn't participate in the program, WE CARE families were more likely to access employment, childcare, and fuel assistance, and less likely to remain homeless.⁵¹

Despite these positive results, programs that tackle children's and families' varied needs in a pediatrics setting face two challenges when it comes to financial sustainability. First, health insurers rarely recognize

volunteers, peers, or other "navigators" as professionals whose services should be reimbursed. Second, meeting families' social needs requires a broad array of community organizations and agencies, necessitating costly community engagement and alignment work to develop detailed, accurate resource listings and databases, as well as formal information sharing agreements.

All the enhancements discussed above may be implemented more efficiently through HealthySteps, benefiting from the time and expertise of HealthySteps specialists and from the family-centered culture at HealthySteps sites. Another plus is the fact that HealthySteps specialists' education and licensure are already known to payers, which may increase the chance of reimbursement for additional services in the clinical setting. Several HealthySteps sites have also found that their pediatric practice and/or HealthySteps specialist became a locus for community resource alignment and change, building on relationships developed with community professionals to reduce barriers that prevent families from accessing needed resources.

Beyond the programs mentioned above, other models aim to redesign well-child visits in novel ways. Three examples of this are Parent-Focused Redesign for Encounters, Newborns to Toddlers (PARENT), Project DULCE (Developmental Understanding and Legal Collaboration for Everyone), and group well-child care. PARENT embeds a trained, master's-level parent coach (similar to many HealthySteps specialists) in the primary care team. The coach offers families most of the developmental guidance that usually comes from pediatricians in typical well-child care. This allows doctors to provide more brief, focused interventions for child

and family needs, especially around physical health, growth, and development. PARENT also uses web-based tools to customize the visit, ensure pre-visit screenings, and send text-based health messages to families. In an RCT that enrolled mostly families living on very low incomes, parents who received the program reported more preventive services (such as anticipatory guidance, developmental screening, psychosocial assessment, and opportunities to respond to parents' developmental or behavioral concerns), more family-centered care, and fewer emergency room visits.⁵²

DULCE offers services similar to the core components of HealthySteps—including an integrated family specialist—and adds a medical-legal partnership offering legal services and regular, collaborative, educational meetings of health care and legal professionals to discuss families' cases. Unlike HealthySteps' three years of intervention, DULCE serves families for the first six months of a child's life. An evaluation has shown that outcomes from DULCE include more vaccinations and well-child visits, improved access to concrete resources, and fewer emergency room visits. But the researchers noted that “for many outcomes, the effect size diminished by six months [after the program ended—that is, when the child was 12 months old] to the point that it was not significant.” That drop-off may be related to DULCE's relatively brief intervention time frame.⁵³

Finally, in group well-child care, often referred to as “centering,” families share the well-child visit experience with other families and professionals in a single room—an approach shown to be both feasible and acceptable to parents.⁵⁴ Group well-child care goes a step further than AAP

recommendations to include parents as team members: it uses parents' voices and experiences to support one another. Visits are thus both led by professionals and enhanced by peers; in studies, parents consistently find this approach valuable. However, group well-visits haven't become a norm in pediatrics. One problem is that studies show children in group well-child care may be less likely to receive recommended vaccines, and providers may be less likely to identify unique risks in their home environment.⁵⁵ Parents have also expressed concern about not having enough private time with the provider.⁵⁶ In addition, the sessions are difficult to schedule, given the need to coordinate multiple families and care team members.

The three models described above could benefit from the integration and potential for sustainability offered by HealthySteps. In fact, some HealthySteps sites have already pursued such integration, a process that they should complete while still adhering to HealthySteps' implementation guidelines.

The Future of Relationship-Based Primary Care

Our comparison of enhanced primary care models yields several important lessons. First, by integrating trained team members into pediatric primary care to address child development, parenting, mental health, insurance coverage, and access to health care and social services, practices can consistently transform families' experiences and improve a wide range of child and family outcomes. Second, both parents and providers appreciate and benefit from changes to traditional well-child care, but it's paramount to ensure that innovations don't lead to neglect of other risks and needs (such as child safety and vaccination). Third,

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it appears that innovative interventions in child development, parenting, mental health, and social needs can be more effectively incubated and implemented in pediatrics by adding a dedicated team member, as in HealthySteps, VIP, PARENT, FIND, and Kids' HELP. Without team-based care, it's likely that lack of time and burnout will continue to limit sustainable improvement. A recent article emphasized that burnout "imperils the Triple Aim" of health care ("enhancing patient experience, improving population health, and reducing cost"); it recommended adding another goal for a "Quadruple Aim" that encompasses improvement in the work life of health care providers.⁵⁷ Clearly, we need more research into how team-based care encourages innovation. Such research will be a focus of the HealthySteps National Office work described above, exploring how HealthySteps sites across the network might best deal with breastfeeding, child social-emotional development, childhood obesity, maternal depression, family social needs, and parent-child relationships.

An open-minded, collaborative approach would show funders and payers where synergy truly exists.

One challenge acknowledged by the HealthySteps National Office is that providers, philanthropy, payers, and policymakers may not always recognize the subtle programmatic differences that can alter how much an intervention costs, how many children and families can be reached, which outcomes are plausible and how long they might persist, and the likelihood of

achieving sustainability. We encourage all models and interventions that seek to enhance primary care in early childhood to share what works best, to use the same measurements, and to consider conducting studies that compare models one-on-one and in conjunction—as health care trailblazers have done for treatments that address blood pressure, diabetes, and cancer. Sometimes two models yield better results than one, and sometimes not. Such an open-minded, collaborative approach would show funders and payers where synergy truly exists, and help them make an impact when taking programs to scale.

In this spirit, the HealthySteps National Office has embarked on two place-based partnerships. In Guilford County, NC, the partnership is starting from the model up, piloting the integration of HealthySteps with both the Family Connects model developed at Duke University and the Nurse-Family Partnership model, with support from the Duke Endowment. Family Connects is a universal model that identifies child and family needs in the birth hospital and during later home visits, and then connects families to services. (For more about Family Connects, see the article in this issue by Kenneth A. Dodge and W. Benjamin Goodman.) In Tulsa, OK, the partnership stems from metrics and data, and involves developing integrated care coordination, data systems, and measurement across several models and initiatives. This program is being implemented in partnership with the Birth to Eight Strategy Tulsa of the George Kaiser Family Foundation, which is designed to engage families during pregnancy and follow them through the early years of children's lives. In addition to these two place-based initiatives, the

National Office is exploring opportunities to coordinate HealthySteps with other models, such as VIP and Help Me Grow.

This work raises important questions. Where does one model end and another begin? How do we establish the criteria for adherence to integrated models? Can we still rely on research into each individual model when discussing what integrated models might achieve? And how about the additive effects that could lead to new outcomes not previously shown or assessed? Even with two proven models, administrators can spend months ironing out where services should and shouldn't overlap (for example, which child and family needs benefit from redundancy and which do not) and how to navigate different populations, priorities, measurements, and data systems. Hopefully, the lessons from Guilford, Tulsa, and other communities will help identify ways to do these things quickly and effectively.

Meanwhile, the HealthySteps National Office is confident that momentum is building for relationship-based, team-based primary care to become a norm in the United States. With generous support from Blue Meridian Partners, the National Office at ZERO TO THREE is planning to scale the model over the coming years so that HealthySteps is present in all 50 states and serving one million children per year by 2032.

Two converging trends are creating significant support for system-wide change that will make it possible to scale HealthySteps, and conceivably other forms of enhanced primary care as well. The first is mounting public recognition, based on ever-increasing scientific evidence, that a child's earliest years and relationships strongly affect lifelong wellbeing. Understanding that these

early years and their relationships with their child are critically important, new parents are likely to demand better services to guide them in parenting and to meet their families' needs.⁵⁸

The second trend is the unsustainable rise in health care costs, which is leading public and private payers—including the recent collaboration of massive employers Amazon, JP Morgan Chase and Berkshire Hathaway—to focus on paying for quality preventive care and outcomes rather than paying fees for specific services. Previous value-based purchasing efforts (that is, linking payments to improved clinical outcomes) have focused on adults. But now payers and policymakers are increasingly recognizing that shifting the focus to the early years could generate long-term cost savings and help contain the rise in health care spending—while simultaneously improving long-term health and wellness. Although young children are typically healthy and incur minimal health costs, recent federal efforts in Medicaid and CHIP have shifted to an increased emphasis on pediatric care. The federal government is funding a Medicaid Innovation Accelerator Program to bolster pediatric value-based purchasing efforts for children's preventive oral health services as well as maternal and infant health, including pediatric medical homes and breastfeeding. And in April 2017, the federal Centers for Medicare and Medicaid Services Innovation Center solicited comments on the design of alternative payment models to improve the health of children covered by Medicaid and CHIP.⁵⁹ This is the first effort at the federal level to explore innovative payment approaches in pediatrics, including extending accountable care organizations (a network of clinicians who share financial responsibility to deliver and coordinate care for a given set of individuals, with the goal of improving

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clinical outcomes and reducing associated costs) to pediatric populations. States are also working closely with the federal government on these innovative initiatives, aiming to transform pediatric practice among local providers.

Transforming the Promise

As primary care faces increasingly complex demands, pediatrics must take on the challenges and nuances of team-based care, relationship building, family mental health and social needs, and changes in financing. Still, relationships remain a profound context for learning and positive change, as HealthySteps has proven over the past 20-plus years.

To realize cost savings, all enhanced primary care models would be wise to monitor trends not only in health care financing and the use

of technology to make care more accessible and affordable, but also in developing and integrating innovative models. At the same time, innovation should proceed cautiously and thoughtfully, given that the relationship between staff and patient is at the center of health care. Innovations that both streamline routine activities and foster this growing relationship are the gold standard for future investment.

The birth of a child is an opportunity, and the relationships that support new families offer a critical path for change, with the power to shift generational patterns and improve outcomes for both parents and children. HealthySteps has shown that it can help transform the promise of pediatric care by responding to a wider array of child and family needs that can affect children's health and wellbeing.

Endnotes

1. Laurel K. Leslie et al., "Primary Health Care: Potential Home for Family-Focused Preventive Interventions," *American Journal of Preventive Medicine* 51 (2016): S106–18, <https://doi.org/10.1016/j.amepre.2016.05.014>.
2. Data Resource Center for Adolescent and Child Health, "2016 National Survey of Children's Health," accessed August 11, 2018, <http://www.childhealthdata.org>.
3. National Head Start Association, "National Head Start Fact Sheet: Head Start by the Numbers," accessed August 11, 2018, <https://www.nhsa.org/national-head-start-fact-sheets>.
4. Sheri Madigan et al., "Maternal Adverse Childhood Experience and Infant Health: Biomedical and Psychosocial Risks as Intermediary Mechanisms," *Journal of Pediatrics* 187 (2017): 282–9, <https://doi.org/10.1016/j.jpeds.2017.04.052>.
5. American Academy of Pediatrics, *Addressing Adverse Childhood Experiences and Other Types of Trauma in the Primary Care Setting* (2014), https://www.aap.org/en-us/Documents/ttb_addressing_aces.pdf; Council on Community Pediatrics, "Poverty and Child Health in the United States," *Pediatrics* 137 (2016): e2016033, <https://doi.org/10.1542/peds.2016-0339>.
6. Julie P. Katkin et al., "Guiding Principles for Team-Based Pediatric Care," *Pediatrics* 140 (2017): e20171489, <https://doi.org/10.1542/peds.2017-1489>.
7. Data Resource Center for Adolescent and Child Health, "2016 National Survey."
8. Ibid.; Medical Home Initiatives for Children with Special Needs Project Advisory Committee, "The Medical Home," *Pediatrics* 110 (2002): 184–6, <https://doi.org/10.1542/peds.110.1.184>.
9. Data Resource Center for Adolescent and Child Health, "2016 National Survey."
10. Tumaini R. Coker et al., "Parent-Reported Quality of Preventive Care for Children At-Risk for Developmental Delay," *Academic Pediatrics* 12 (2012): 384–90, <https://doi.org/10.1016/j.acap.2012.05.003>.
11. Vidya Bhushan Gupta et al., "Care Coordination Services in Pediatric Practices," *Pediatrics* 113 (2004): 1517–21.
12. R. Christopher Sheldrick and Ellen C. Perrin, "Evidence-Based Milestones for Surveillance of Cognitive, Language, and Motor Development," *Academic Pediatrics* 13 (2013): 577–86, <https://doi.org/10.1016/j.acap.2013.07.001>.
13. ZERO TO THREE and Bezos Family Foundation, *Tuning In: Parents of Young Children Speak Up about What They Think, Know, and Need* (Washington, DC: ZERO TO THREE, 2016).
14. Bernard Guyer et al., *Healthy Steps: The First Three Years: The Healthy Steps for Young Children Program National Evaluation* (Baltimore: Johns Hopkins Bloomberg School of Public Health, 2003).
15. Ibid.
16. Ibid.; Kathryn Taaffe McLearn et al., "Developmental Services in Primary Care for Low-Income Children: Clinicians' Perceptions of the Healthy Steps for Young Children Program," *Journal of Urban Health* 81 (2004): 206–21, <https://doi.org/10.1093/urban/jth108>.
17. Guyer et al., *Healthy Steps*.
18. Cynthia S. Minkovitz et al., "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 (2003): 3081–91, <https://doi.org/10.1001/jama.290.23.3081>.
19. Cynthia Minkovitz et al., "Early Effects of the Healthy Steps for Young Children Program," *Archives of Pediatrics and Adolescent Medicine* 155 (2001): 470–9, <https://doi.org/10.1001/archpedi.155.4.470>.

Trenna Valado, Jennifer Tracey, Jonathan Goldfinger, and Rahil Briggs

20. Kathryn Taaffe McLearn et al., “Narrowing the Income Gaps in Preventive Care for Young Children: Families in Healthy Steps,” *Journal of Urban Health* 81 (2004): 556–67, <https://doi.org/10.1093/jurban/jth140>.
21. Barry Zuckerman et al. “Healthy Steps: A Case Study of Innovation in Pediatric Practice,” *Pediatrics* 114 (2004): 820–6, <https://doi.org/10.1542/peds.2003-0999-L>.
22. Guyer et al., *Healthy Steps*.
23. Ibid.
24. Margaret O’Brien Caughy et al., “The Effects of the Healthy Steps for Young Children Program: Results from Observations of Parenting and Child Development,” *Early Childhood Research Quarterly* 19 (2004), 611–30, <https://doi.org/10.1016/j.ecresq.2004.10.004>.
25. Ibid.
26. Cynthia S. Minkovitz et al., “Healthy Steps for Young Children: Sustained Results at 5.5 Years,” *Pediatrics* 120 (2007): e658–68, <https://doi.org/10.1542/peds.2006-1205>.
27. Guyer et al., *Healthy Steps*.
28. Ibid.
29. Tess Miller et al., *Healthy Steps: The Affiliate Evaluation Report* (Baltimore, MD: Johns Hopkins Bloomberg School of Public Health, 2003).
30. Eve-Lynn Nelson et al., “Reshaping Health Care Delivery for Adolescent Parents: Healthy Steps and Telemedicine,” *Telemedicine Journal and E-Health* 9 (2003): 387–92; Rebecca R. S. Socolar et al., “Factors that Affect Parental Disciplinary Practices of Children Aged 12 to 19 Months,” *Southern Medical Journal* 98 (2005): 1181–91, <https://doi.org/10.1097/01.smj.0000190177.12387.07>.
31. Colleen E. Huebner et al., “Expanding Developmental and Behavioral Services for Newborns in Primary Care: Program Design, Delivery, and Evaluation Framework,” *American Journal of Preventive Medicine* 26 (2004): 344–55, <https://doi.org/10.1016/j.amepre.2004.01.003>; Brian D. Johnston et al., “Healthy Steps in an Integrated Delivery System: Child and Parent Outcomes at 30 Months,” *Archives of Pediatrics and Adolescent Medicine* 160 (2006), 793–800.
32. Johnston et al., “Healthy Steps.”
33. Miller et al., *Affiliate Evaluation Report*.
34. Melissa Buchholz and Ayelet Talmi, “What We Talked About at the Pediatrician’s Office: Exploring Differences between Healthy Steps and Traditional Pediatric Primary Care Visits,” *Infant Mental Health Journal* 33 (2012): 430–6, <https://doi.org/10.1002/imhj.21319>.
35. Rahil D. Briggs et al., “Social-Emotional Screening for Infants and Toddlers in Primary Care,” *Pediatrics* 129 (2012): e377–84, <https://doi.org/10.1542/peds.2010-2211>.
36. Jane Squires et al., *Ages and Stages Questionnaire: Social-Emotional (ASQ:SE)* (Baltimore, MD: Paul H. Brookes Publishing, 2002).
37. Kathi J. Kemper and K. J. Kelleher, “Family Psychosocial Screening: Instruments and Techniques,” *Ambulatory Child Health* 1 (1996): 325–39; Rahil D. Briggs et al., “Healthy Steps as a Moderator: The Impact of Maternal Trauma on Child Social-Emotional Development,” *Clinical Practice in Pediatric Psychology* 2 (2014): 166–75, <https://doi.org/10.1037/cpp0000060>.
38. Rachel S. Gross et al., “Early Child Social-Emotional Problems and Child Obesity: Exploring the Protective Role of a Primary Care-Based General Parenting Intervention,” *Journal of Developmental and Behavioral Pediatrics* 36 (2015): 594–604.

39. Lance Till et al., *HealthySteps Implementation and Outcome Study Evaluation Report* (Washington, DC: ZERO TO THREE, 2017).
40. Michael C. Barth, *Healthy Steps at 15: The Past and Future of an Innovative Preventive Care Model for Young Children* (New York: The Commonwealth Fund, 2010).
41. Till et al., *Evaluation Report*.
42. Data Resource Center for Adolescent and Child Health, “2016 National Survey.”
43. Natalia Golova et al., “Literacy Promotion for Hispanic Families in a Primary Care Setting: A Randomized, Controlled Trial,” *Pediatrics* 103 (1999): 993–7, <https://doi.org/10.1542/peds.103.5.993>.
44. Alan L. Mendelsohn et al., “The Impact of a Clinic-Based Literacy Intervention on Language Development in Inner-City Preschool Children,” *Pediatrics* 107 (2001): 130–4, <https://doi.org/10.1542/peds.107.1.130>; Iman Sharif et al., “Exposure to Reach Out and Read and Vocabulary Outcomes in Inner City Preschools,” *Journal of the National Medical Association* 94 (2002): 171–7.
45. Alan L. Mendelsohn et al., “Use of Videotaped Interactions during Pediatric Well-Child Care: Impact at 33 Months on Parenting and on Child Development,” *Journal of Developmental & Behavioral Pediatrics* 28 (2007): 206–12, <https://doi.org/10.1097/DBP.0b013e3180324d87>.
46. Laura M. Gottlieb et al., “Effects of Social Needs Screening and In-Person Service Navigation on Child Health: A Randomized Clinical Trial,” *JAMA Pediatrics* 170 (2016): e162521, <https://doi.org/10.1001/jamapediatrics.2016.2521>.
47. Arvin Garg et al., “Addressing Families’ Unmet Social Needs within Pediatric Primary Care: The Health Leads Model,” *Clinical Pediatrics* 51 (2012): 1191–3, <https://doi.org/10.1177/0009922812437930>.
48. Howard Dubowitz et al., “The Safe Environment for Every Kid Model: Impact on Pediatric Primary Care Professionals,” *Pediatrics* 127 (2011): e962–70, <https://doi.org/10.1542/peds.2010-1845>.
49. Howard Dubowitz, “The Safe Environment for Every Kid (SEEK) Model: Helping Promote Children’s Health, Development, and Safety,” *Child Abuse & Neglect* 38 (2014): 1725–33, <https://doi.org/10.1016/j.chiabu.2014.07.011>.
50. Glenn Flores et al., “Parent Mentors and Insuring Uninsured Children: A Randomized Controlled Trial,” *Pediatrics* 137 (2016): e20153519, <https://doi.org/10.1542/peds.2015-3519>.
51. Arvin Garg et al., “Addressing Social Determinants of Health at Well Child Care Visits: A Cluster RCT,” *Pediatrics* 135 (2015): e296–304, <https://doi.org/10.1542/peds.2014-2888>.
52. Tumaini R. Coker et al., “A Parent Coach Model for Well-Child Care among Low-Income Children: A Randomized Controlled Trial,” *Pediatrics* 137 (2016): e20153013, <https://doi.org/10.1542/peds.2015-3013>.
53. Robert Sege et al., “Medical-Legal Strategies to Improve Infant Health Care: A Randomized Trial,” *Pediatrics* 136 (2015): 97–106, <https://doi.org/10.1542/peds.2014-2955>.
54. Cristen Page et al., “WellBabies: Mothers’ Perspectives on an Innovative Model of Group Well-Child Care,” *Family Medicine* 42 (2010): 202–7.
55. James A. Taylor et al., “Health Care Utilization and Health Status in High-Risk Children Randomized to Receive Group or Individual Well Child Care,” *Pediatrics* 100 (1997): e1; James A. Taylor et al., “A Randomized Controlled Trial of Group Versus Individual Well Child Care for High-Risk Children: Maternal-Child Interaction and Developmental Outcomes,” *Pediatrics* 99 (1997): e9.
56. Page et al., “WellBabies.”

Trenna Valado, Jennifer Tracey, Jonathan Goldfinger, and Rahil Briggs

57. Thomas Bodenheimer and Christine Sinsky, “From Triple to Quadruple Aim: Care of the Patient Requires Care of the Provider,” *Annals of Family Medicine* 12 (2014): 573–6.
58. ZERO TO THREE and Bezos Family Foundation, *Tuning In*.
59. Centers for Medicare & Medicaid Services, “Pediatric Alternative Payment Model Opportunities: General Information,” accessed August 11, 2018, <https://innovation.cms.gov/initiatives/pediatric-apm>.