

# Mitigating the Effects of Family Poverty on Early Child Development through Parenting Interventions in Primary Care

Carolyn Brockmeyer Cates, PhD; Adriana Weisleder, PhD; Alan L. Mendelsohn, MD

From the Division of Developmental-Behavioral Pediatrics, Department of Pediatrics, New York University School of Medicine and Bellevue Hospital Center, New York

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Address correspondence to Carolyn Brockmeyer Cates, PhD, Department of Pediatrics, 550 First Ave, OBV A527, New York, NY 10016 (e-mail: [Carolyn.cates@nyumc.org](mailto:Carolyn.cates@nyumc.org)).

## ABSTRACT

Poverty related disparities in early child development and school readiness are a major public health crisis, the prevention of which has emerged in recent years as a national priority. Interventions targeting parenting and the quality of the early home language environment are at the forefront of efforts to address these disparities. In this article we discuss the innovative use of the pediatric primary care platform as part of a comprehensive public health strategy to prevent adverse child development outcomes through the promotion of parenting. Models of interventions in the pediatric primary care setting are discussed with evidence of effectiveness reviewed. Taken together, a review of this significant body of

work shows the tremendous potential to deliver evidence-based preventive interventions to families at risk for poverty related disparities in child development and school readiness at the time of pediatric primary care visits. We also address considerations related to scaling and maximizing the effect of pediatric primary care parenting interventions and provide key policy recommendations.

**KEYWORDS:** disparities; parenting; poverty; primary prevention; school readiness

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**SOCIOECONOMIC DISPARITIES** IN child development and school readiness have been well documented. These disparities emerge as early as the first year of life and persist and worsen over time.<sup>1,2</sup> Importantly, such early disparities lead to reduced readiness to learn upon school entry, and contributing to long-term reductions in academic achievement, educational attainment, and overall well-being.<sup>3,4</sup> The etiology of the effects of poverty on early child development is multifaceted, with a combination of social and economic risk factors that affect the environments in which low socioeconomic status (SES) children are raised. Of particular detriment to families who live in poverty is the high incidence of toxic stress drawn from factors such as low levels of education, resources, and social support.<sup>5</sup> These factors have potential to also contribute to a home environment characterized by less frequent cognitive stimulation, parent responsivity, and lessened exposure to high-quality language interactions, essential for cognitive<sup>6</sup> and language development,<sup>7,8</sup> literacy acquisition,<sup>9</sup> and overall success in school.<sup>10</sup>

Because of the deleterious effects of poverty-related disparities in early development on long-term outcomes, they have been deemed a major public health crisis, the correction of which has emerged in recent years as a national priority.<sup>11</sup> At the forefront of efforts to address these disparities are interventions targeting parenting and the

early home language environment. Such interventions often are delivered either in center-based programs or in the family's home. Delivery of parenting intervention in the home has particularly burgeoned because of legislation in 2010, which apportioned funding for states to establish home visiting program models for at-risk pregnant women and children from birth to age 5.<sup>12</sup> Thus far, there have been 17 home-visiting models (typically addressing parenting issues through strategies such as counseling, modeling behaviors, videotaping interactions with feedback, provision of learning materials such as toys and books, and motivational interviewing) for which "evidence of effectiveness" has been shown on the basis of rigorous research evaluation under the direction of the US Department of Health and Human Services.<sup>13</sup> Despite the documented success of interventions delivered via center- and home-based platforms, cost-related barriers to delivering such interventions at scale suggest a need for complementary prevention strategies.

## PEDIATRIC PRIMARY CARE SETTING AND THE PEDIATRIC MEDICAL HOME

In addition to the work done in the spotlight of the home-visiting platform, and the continued efforts of more traditional models of early childhood intervention

with center-based components (eg, Early Head Start), the pediatric primary care setting has been increasingly recognized as a powerful platform for addressing early poverty-related disparities in school readiness. The pediatric primary care setting is uniquely positioned to universally deliver preventive interventions at relatively low cost (Table 1). One of the reasons for this is the high number of preventive visits recommended by the American Academy of Pediatrics, which total 13 to 15 visits from birth to age 5 years.<sup>14</sup> Although there are differences in the adherence to recommended well-child visits among SES groups, families living at <100% the federal poverty line attend >50% of recommended visits on average<sup>15</sup>; additionally, preventive visits for medical problems (eg, obesity, asthma) are more common in low-SES populations.<sup>16</sup> This visit frequency allows the opportunity to deliver interventions with doses comparable with some of the most effective home-visiting models. Another attribute of this setting making it particularly apt for intervention is its access to at-risk populations, including families who live in poverty, who might otherwise be difficult to reach. This is, in part, because of expansions of insurance<sup>17</sup> together with vaccination requirements for school entry. Additionally, initiatives over the past several decades to transform preventive pediatric health care through the framework of the medical home model has significantly enhanced the opportunity to effectively work with parents through a multidisciplinary emphasis on family and psychosocial factors.<sup>18</sup> Delivering interventions to parents in the pediatric health care setting also carries the advantage of capitalizing on the existing relationship that parents have with providers; parents come to the pediatrician poised to focus on their child's development and behavior and prepared to take advice.

Importantly, by building on existing infrastructure and avoiding the need for staff travel (which is needed in home visitation programs) the health care setting offers a unique opportunity to deliver intervention at low cost. Low-cost intervention potential in this platform might be best exemplified by Reach Out and Read (ROR), a program targeting shared book-reading during well-child visits, which merely costs approximately \$25 per child per year,<sup>19</sup> a cost that is negligible compared with home visitation programs, which range in cost from approximately \$2000 to \$6000 per child per year,<sup>20</sup> and center-based programs, which cost approximately \$15,000 to \$20,000 per child per year.<sup>21</sup> Although this comparison of cost must be considered with regard to varying scope, intensity, and dose potential of early child development interventions in each of these settings, it remains clear that the pediatric primary care setting offers tremendous opportunity for low-cost preventive programs

to complement programs with similar goals in other more traditional intervention settings.

## MODELS OF INTERVENTION IN PEDIATRIC PRIMARY CARE

Interventions delivered in the pediatric primary care platform seeking to prevent developmental and behavioral problems in young children have typically used 1 of 3 models: 1) primary prevention via promotion of parenting; 2) secondary prevention for families with already identified challenges related to parent-child interactions or related to child development and behavior; or 3) some combination of primary and secondary prevention (Table 2). Although only some of these interventions target families who live in poverty specifically, all aim to prevent issues related to parenting and adverse child developmental outcomes that are commonly experienced in the context of toxic stress, and many document effects on low-income populations. Furthermore, although programs vary with respect to level of intensity and documentation of effect, taken together, evidence indicates the far-reaching potential of the pediatric primary care platform and also suggests policy considerations for future efforts to scale and disseminate such programs.

### MODEL 1: PRIMARY PREVENTION PARENTING PROGRAMS IN PEDIATRIC HEALTH CARE

Some of the first evidence documenting the potential to affect parenting behavior and child development in the context of this setting comes from studies that showed the success of ROR, a program in which pediatric health care professionals provide families with children's books, model shared reading activities, and provide guidance about the benefits of shared reading at well-child visits beginning in early infancy. ROR has been met with consistent effects on quantity of and attitudes about shared book-reading<sup>22,23</sup> and on child vocabulary development<sup>23,24</sup> despite its low intensity and cost.<sup>25</sup>

ROR has served as the flagship model of primary prevention of poverty-related disparities in pediatric primary care. A number of programs have since followed its example by either using adaptations of the ROR model in other countries or settings, or by developing intervention programs designed to complement ROR in the pediatric primary care setting. One example of a literacy promotion program in pediatric primary care modeled after ROR is Bookstart in the United Kingdom. This program, which delivers literacy packs (including a child's book, information about library resources, and information about the value of shared reading) to inner city families at health clinics and via health home visitors between child age 6 and 9 months, has been shown in some studies to enhance early book reading interactions as well as early child language and numeracy outcomes.<sup>26</sup>

Another example of a program modeled after ROR is the Let's Read program implemented in Australia. As part of Let's Read, nursing staff provide families universally with some counseling/modeling regarding shared

**Table 1.** Key Characteristics of Pediatric Primary Care Platform

- Population level access
- High frequency of visits from birth to school entry
- Potential for low cost through utilization of existing infrastructure and reduced staff travel
- Opportunity to build on existing relationships within patient-centered medical home

**Table 2.** Characteristics of Programs Providing Primary or Secondary Prevention Related to School Readiness in Health Care

Program	Setting(s)	Age	Frequency* (Approximate Contact Duration)†	Core Components
<b>Programs providing primary prevention related to school readiness in health care</b>				
Reach Out and Read	Primary care	Birth to 5 years	1 to 6 visits per year (approximately 1–2 minutes per visit provider time)	<ul style="list-style-type: none"> <li>• Provision of children’s books at each well-child visit</li> <li>• Waiting room program modeling reading aloud</li> <li>• Anticipatory guidance by health care provider</li> <li>• Includes an adaptation focused on Hispanic/Latino families called <i>Leyendo Juntos</i></li> </ul>
Bookstart	Primary care, home visitors	Birth to 12 months	Once through health care	<ul style="list-style-type: none"> <li>• Delivery of literacy packs (child’s book, information about library resources, and information about the value of shared reading) to inner city families</li> </ul>
Let’s Read	Primary care	4 Months to 3.5 years	Once per year (2–10 minutes per visit)	<ul style="list-style-type: none"> <li>• Counseling/modeling regarding shared book-reading techniques</li> <li>• Provision of age-appropriate book and other literacy promotion materials (eg, suggestions for interactive book-reading activities and lists of age-appropriate books)</li> </ul>
Little by Little	WIC	Prenatal to 5 years	4 Visits per year	<ul style="list-style-type: none"> <li>• Brief counseling by WIC staff regarding child development tailored to child’s age</li> <li>• Informational handout about child development and positive parenting practices</li> <li>• Provision of books or developmentally appropriate toys for families to take home</li> </ul>
Video Interaction Project	Primary care	Birth to 5 years	4 to 6 Visits per year (25–30 minutes per visit)	<ul style="list-style-type: none"> <li>• Videotaping with feedback to reinforce strengths in interaction</li> <li>• Relationship with facilitator/coach</li> <li>• Provision of books and toys</li> <li>• Parent-completed written materials for observation and planning</li> </ul>
City’s First Readers (New York City Council Initiative)	Primary care linked to community, library, home, preschool	Birth to 5 years	4 to 6 Visits per year (duration varies according to program)	<ul style="list-style-type: none"> <li>• Alignment of messages about reading aloud across multiple platforms, including health care (including Reach Out and Read and the Video Interaction Project), community, library, home and preschool</li> <li>• Linkages across platforms</li> </ul>
Bright Beginnings/Bright by Three	Primary care linked to community resources	2 to 3 Years	Once per year	<ul style="list-style-type: none"> <li>• Provision of picture book along with written materials describing activities that promote language and social development</li> <li>• Modeling of reading aloud</li> </ul>
<b>Programs providing secondary prevention related to school readiness in health care</b>				
Incredible Years	Primary care adaptation	2 to 5 Years	10 Visits (2 hours per visit)	<ul style="list-style-type: none"> <li>• Training for parents of young children with identified behavioral problems</li> <li>• Training uses group discussion, videotaped modeling, role play, and home tasks focused around proactive and nurturing parenting</li> </ul>
Triple P Level 2 and 3	Primary care used for levels 2 and 3	Birth to 16 years	3 to 4 Visits (2.5 hours per visit)	<ul style="list-style-type: none"> <li>• Overall program leverages multiple platforms simultaneously (including media, home, health care) to promote positive parenting strategies and child development</li> <li>• Primary care component provides one-on-one consultations to parents of children with identified behavioral concerns</li> </ul>
Video Interaction Guidance	Primary care, neonatal intensive care unit	Children of any age	3 to 5 Visits	<ul style="list-style-type: none"> <li>• Videotaping with feedback in context of parent child interactions</li> <li>• Used primarily for families with identified challenges</li> </ul>
Help Me Grow	Primary care linked to community	Birth to 8 years	1 to 6 Contacts per year (up to 30–60 minutes per visit)	<ul style="list-style-type: none"> <li>• Early detection of children at risk for developmental and behavioral problems</li> <li>• Provides a centralized call center as a single point of entry for community-based programs and services</li> <li>• Links children and their families with appropriate resources</li> </ul>

(Continued)

**Table 2.** Continued

Program	Setting(s)	Age	Frequency* (Approximate Contact Duration)†	Core Components
Assuring Better Child Health and Development	Primary care linked to community	Birth to 3 years	5 Visits	<ul style="list-style-type: none"> <li>• Early detection of children at risk for developmental and behavioral problems</li> <li>• Links children and their families with appropriate resources</li> <li>• Provides framework for coordinating screening, referral and follow-up</li> </ul>
<b>Programs linking primary and secondary prevention related to school readiness in health care</b>				
Healthy Steps	Primary care and home visiting, linkages to resources in health care and community	Birth to 3 years	2 to 6 Visits per year (approximately 15–30 minutes in addition to well visit)	<ul style="list-style-type: none"> <li>• Development specialist integrated within practice team</li> <li>• Guidance regarding promotion of parenting and child development during health care visits, phone calls, and home visits</li> <li>• Integrated Reach Out and Read</li> <li>• Integrated screening with referral for services as needed (in some cases provided by developmental specialist)</li> </ul>
Project Linking Actions for Unmet Needs in Children's Health	Model linking primary care to early child education, home, and community	Birth to 8 years	Varies according to grantee and program	<ul style="list-style-type: none"> <li>• Screening and assessment in a variety of child-serving settings</li> <li>• Enhanced home visiting focusing on socioemotional well-being</li> <li>• Mental health consultation in early child care and education</li> <li>• Family strengthening and parent skills training</li> <li>• Integration of behavioral health into primary care settings</li> </ul>
Building Blocks	Primary care link to home through mailing	Birth to 3 years	4 to 6 Contacts per year (approximately 30 minutes with mailed materials)	<ul style="list-style-type: none"> <li>• Mailed parenting pamphlets and learning materials</li> <li>• Identification of early developmental delays through mailed parent-completed developmental screens</li> </ul>

WIC indicates Women, Infants and Children.

\*Frequency for health care component only; additional contacts take place for many programs outside of health care.

†Duration listed for programs where applicable and where length of health care component has been documented.

book reading techniques as well as a take-home package including an age-appropriate book and other literacy promotion materials (eg, suggestions for interactive book reading activities and lists of age-appropriate books) at 4 well-child visits between 4 months and 3.5 years of age. Despite being well received and positively regarded by parents and Let's Read staff alike, studies thus far have not found measurable effects on parenting literacy activity or on child language outcomes, even for the most disadvantaged families participating.<sup>27</sup> Although these null results might cast doubt on the effectiveness of literacy promotion in primary care, interpretation of effect must be made with respect to the relatively low intervention dose as well as the relatively low level of risk experienced by families in the population being targeted (nearly 75% of caregivers were high school graduates and only one-fifth were classified as low-income).<sup>28</sup>

Another program modeled after ROR with evidence of effective literacy promotion is the Little by Little (LBL) program, based in the Special Supplemental Nutrition Program for Women, Infants, and Children. LBL begins prenatally and continues through age 5 years, with families receiving an average of 4 visits a year. These visits consist of: 1) brief counseling by Women, Infants, and Children

staff regarding child development tailored to child's age; 2) informational handout about child development and positive parenting practices; and 3) provision of books or developmentally appropriate toys. The LBL program has been shown to enhance literacy activities and resources in the home, as well as child school readiness for Spanish-speaking intervention participants.<sup>29</sup>

Other programs have been designed to complement ROR in the pediatric primary care setting through the addition of elements aimed to more intensely target parent-child interactions, and also have documented evidence of success. The Video Interaction Project (VIP) is the most widely researched program to date designed to complement ROR in pediatric primary care. VIP is a relationship-based intervention, delivered starting at birth, which involves face-to-face interaction with a child development specialist at the time of well-child visits. These sessions include the provision of toys and books, and use guided discussion and videotaped review of parent-child interactions to promote self-reflection about parenting, and allows for the reinforcement of positive parenting behaviors. In a randomized controlled trial (RCT), VIP was reported to promote parenting and cognitive stimulation in the home through age 33 months,<sup>30,31</sup> including enhanced parent verbal responsiveness, reading and teaching behaviors, and availability of learning materials assessed

using the StimQ.<sup>32,33</sup> Participation in VIP was also associated with enhancements in child cognitive and language development through first grade.<sup>30,31,34</sup> In a subsequent RCT, these findings have been replicated and extended, showing continued effects on parenting and cognitive stimulation,<sup>35</sup> including enhancements in observed parent verbal input in the context of shared book reading,<sup>36</sup> reduced electronic media exposure,<sup>37</sup> and reductions in harsh discipline,<sup>38</sup> as well as enhancements in child socioemotional development<sup>39</sup> and some reductions in referral to Early Intervention Services. Additionally, effects of VIP have also been shown on a number of psychosocial factors known to affect quality of parent–child interactions such as maternal depressive symptoms<sup>40</sup> and parenting stress.<sup>41</sup> Notably, there are current efforts in New York City through the City’s First Readers initiative<sup>42</sup> to integrate VIP with ROR, and link these interventions with other community-based programs with similar goals.

Another lower-intensity program, designed to be complementary to ROR, is the Bright Beginnings program. In Bright Beginnings, low-income families are identified and referred from primary care clinics to meet with a trained community volunteer, either in the clinic, at a group visit in a community center, or at a home visit. During these visits, which occur once during the second and third year of life, parents receive a picture book along with written materials about and verbal demonstration of activities that promote language and social development. Bright Beginnings is yet to show robust effects on child developmental outcomes, potentially because of its low dose; however, it has found to have positive associations with increased reported literacy activities in the home and some observed parenting book reading techniques,<sup>43,44</sup> suggesting its potential to enhance parent–child interactions and child developmental outcomes.

## **MODEL 2: SECONDARY PREVENTION PARENTING PROGRAMS IN PEDIATRIC HEALTH CARE**

A number of programs have also been designed for secondary prevention of child development issues in the pediatric primary care setting. One example is the Incredible Years program, which provides parenting training (2 hours per week for 10 weeks) for parents of young children with identified behavioral problems. Parenting training groups are delivered by primary leaders (clinical psychologists or social workers with previous experience running group interventions) and coleaders (other members of pediatric staff such as nurses, nurse practitioners, or pediatricians). Training uses group discussion, videotaped modeling, role play, and home tasks focused around proactive and nurturing parenting (eg, limit setting, positive discipline strategies). In an RCT, the Incredible Years program in the primary care setting was effective in affecting parent-reported parenting as well as parent-reported child disruptive behavior.<sup>45</sup>

Although not studied in primary care independently, one of the most extensively researched parenting programs, of which some components use the pediatric health care

platform is the Triple P: Positive Parenting Program.<sup>46,47</sup> Triple P is a universal prevention program (targeting all parents regardless of SES), which leverages multiple platforms simultaneously (including media, home, health care) to promote positive parenting strategies and enhance child development. Although Triple P engages in primary prevention in some settings, it engages in secondary prevention of behavioral and developmental problems in the primary care setting; specifically, it entails provision of 3 to 4 one-on-one consultations (15–30 minutes each) by health care practitioners to parents of children with identified behavioral concerns at the time of routine health visits focused on management of behavioral issues and skill development issues.<sup>48</sup> Similarly, Video Interaction Guidance, a program that provides feedback after videotaping primarily for families identified to have challenges present in the context of parent–child interactions, has been used in the health care setting.<sup>49</sup>

Although not a program delivering intervention directly to families, the Help Me Grow (HMG) program has designed an innovative strategy that uses the pediatric primary care platform for providing secondary prevention of developmental and behavioral problems to families at risk. The HMG program promotes the early detection of children at risk for developmental and behavioral problems, provides a centralized call center as a single point of entry for community-based programs and services, and links children and their families with the appropriate resources quickly and effectively. Research on HMG suggests significant enhancements to protective factors (eg, parent knowledge about child development, parent social support, access to resources) related to child developmental outcomes.<sup>50</sup> Another example of a program with similar goals is Assuring Better Child Health and Development, which has also been effective in heightening early screening of developmental delay in primary care.<sup>51</sup>

## **MODEL 3: LINKING PRIMARY AND SECONDARY PREVENTION STRATEGIES**

Healthy Steps for Young Children (HS) is a practice-based intervention that has innovatively combined primary and secondary prevention of adverse child developmental and behavioral outcomes in primary care. HS involves a developmental specialist as part of the practice team who spends time at well-child visits from birth through age 3 years dedicated to providing guidance regarding promotion of parenting and child development as specified by Bright Futures Guidelines and recommendations of the American Academy of Pediatrics. Additionally, HS specialists work with families outside of well-child visits to provide guidance specifically related to developmental and behavioral concerns during home visits and phone calls, and play a significant role in linking families with community resources and support groups. Although direct effects of HS on child outcomes have been less robust, there is significant evidence of HS effects on parent adherence to doctor visits and medical recommendations, parenting behaviors (eg, reduced harsh discipline), and increased parent

monitoring of child behavior problems.<sup>52,53</sup> HS has also been associated with some observed improvements in child behavior, particularly for children at greatest risk.<sup>54</sup>

Project Linking Actions for Unmet Needs in Children's Health<sup>55</sup> is a model designed to improve coordination across child-serving systems (ie, health care, early childhood education, community, and home), build infrastructure, and increase access to high-quality prevention and wellness promotion services for children and their families. Although program specifics vary according to locale, grantees subscribing to the Project Linking Actions for Unmet Needs in Children's Health model participate in coordinated screening and assessment of child development, enhanced home visiting with focus on socioemotional development, mental health consultation in educational programs, parent skills training, and promotion of behavioral health in well child care. This model serves to integrate primary and secondary prevention and in some cases subsumes some of the other prevention programs reviewed herein (eg, HMG and Incredible Years).

A lower-intensity program that links public health entities (eg, Early Intervention Child Find programs) to pediatric health care for primary and secondary prevention is Building Blocks (BB). In BB, primary prevention is achieved through distribution of mailed parenting pamphlets and learning materials (either through pediatric primary care or through public health entities). Additionally, secondary prevention is achieved through mailed, parent-completed Ages and Stages Questionnaires<sup>56</sup> screening, with results made available to primary care providers to coordinate referrals as needed for Early Intervention services. Research has shown effects of BB on parent-child interactions and cognitive stimulation in the home.<sup>35</sup>

## IMPLICATIONS FOR POLICY

This review of intervention programs is not exhaustive and is limited to programs that focus on parenting and parent-child interactions to promote school readiness, but does not include other programs that focus more specifically and intensively on mental health and child abuse prevention (eg, Safe Environment for Every Kid<sup>57</sup>), which certainly also affect children's early environment and developmental outcomes. Nevertheless, it is clear from the evidence considered in this review that the pediatric primary care platform offers great promise for programs aiming to promote parenting and school readiness. However, there remain significant research and policy questions related to capacity for scaling and optimization of intervention effects (Table 3).

## SCALING

A substantial amount of scaling has already taken place within the primary care setting. ROR is particularly illustrative of the far-reaching potential of the primary health care platform, with an established network of more than 5,000 sites across the United States serving approximately 4,400,000 young children each year, nearly three-quarters of whom live in at-risk, low-income and/or ethnically

**Table 3.** Key Policy Recommendations

Policies to enhance scaling	<ul style="list-style-type: none"> <li>• Provide stable funding for programs using pediatric primary care setting for prevention of poverty-related disparities in school readiness</li> <li>• Support for development of organizational infrastructure for program dissemination</li> <li>• Development of processes for integration of interventions within health care system</li> <li>• Requirement that preventive services recommended by American Academy of Pediatrics and Bright Futures be funded as basic component of pediatric primary care</li> </ul>
Policies to maximize effects	<ul style="list-style-type: none"> <li>• Fund research to develop, pilot, and study effect of preventive programs using primary care platform</li> <li>• Support for study of optimal dose and intensity across heterogeneous populations</li> <li>• Support for strategies linking health care platform to community, preschool, and home</li> <li>• Enhanced support for national collaborative cross-disciplinary research networks</li> </ul>

and linguistically diverse homes. As such, ROR reaches approximately 20% to 25% of 0- to 5-year-old children in the United States today who are living in households <200% of the federal poverty level.<sup>28</sup> HS has also undergone significant dissemination, with sites in 15 states.<sup>58</sup> The dissemination of HS is a particularly illustrative example of how the continued development and expansion of the family centered pediatric medical home, which allows for coordination and communication among colocated services and thus more wholly targets well-being, provides a supportive context for such scaling.<sup>59</sup> Despite this impressive experience, there are many challenges and barriers to full-scale dissemination, including funding and successful implementation with fidelity.

Although there have been some large-scale efforts to fund dissemination (eg, Commonwealth Fund initiative to disseminate Healthy Steps, previous federal funding for ROR), much of the funding for scaling has been obtained through more modest awards to individual programs. Furthermore, despite the potential to enhance educational achievement through early preventive intervention in health care, there have been barriers to utilization of funds allocated for education to support health care-based programs. These funding issues are a key impediment to implementation of primary prevention of developmental disparities in the context of primary care.

Replication with fidelity has represented a significant challenge to preventive interventions regardless of setting. In pediatric primary care, a study of ROR implementation revealed the importance of quality improvement efforts for optimizing key elements, including provision of books and anticipatory guidance.<sup>60</sup> Adherence to evidence-based models can be facilitated through implementation science frameworks that directly seek to understand barriers, address identified barriers through engagement with key stakeholders, and develop new processes to optimize integration into existing clinic processes (eg, clinic flow, electronic medical records).<sup>61</sup>

Policies to support scaling should facilitate provision of stable programmatic funding to allow for ongoing program

delivery and staff retention. These policies should also provide support for development of infrastructure needed for program dissemination as well as for development of processes necessary for full integration of preventive interventions into the health care system. Recommendations by the American Academy of Pediatrics and Bright Futures for provision of preventive services related to school readiness disparities<sup>62</sup> should be supported through policies that require that such services be funded as a basic component of pediatric primary care.

## MAXIMIZATION OF PREVENTIVE INTERVENTION

There are many remaining questions regarding how best to maximize the effect of preventive intervention in the pediatric primary care setting. Research of existing programs suggests variation in effect in relation to dose and content and in association with population heterogeneity, as well as potential for synergies across platforms. Heterogeneity in risk suggests the potential for multilevel approaches that provide primary prevention universally (eg, ROR) for low-income families while offering additional services is potentially beyond the scope of pediatric primary care for those at greatest risk. An initiative through Healthy Steps has sought to provide infant mental health services for families with identified psychosocial risks while providing the baseline program for all families regardless of risk.<sup>63</sup> The NICHD -funded Smart Beginnings program is a new initiative investigating the addition of a home visiting program (Family Check Up) to universal primary prevention through VIP, building on ROR.<sup>64</sup> Both of these initiatives represent strong efforts to include linkages across platforms. Additional examples that have underscored the potential for synergy through such linkages include Durham Connects, which links families to services in the community and in health care through home visiting,<sup>65</sup> and City's First Readers, mentioned previously, which is a New York City Council citywide program that links pediatric primary care programs (ROR, VIP) to other platforms including the library system, home visiting, pre-schools, and other community-based early child literacy services such as Literacy Inc.<sup>42,66</sup> A key policy implication of the initiatives performed to date is the need for funding to develop, pilot, and test the effects of multilevel and integrated strategies, with attention to dose and intensity across heterogeneous populations. The Department of Health and Human Services-funded Bridging the Word Gap Research Network<sup>67</sup> represents an important step toward setting a national agenda for achieving this goal.

## CONCLUSION

In summary, a significant body of work has shown the tremendous potential to deliver evidence-based preventive interventions to families at risk for poverty-related disparities in child development and school readiness at the time of pediatric primary care visits. Collaborations across academic disciplines, health professionals, and policymakers will be needed to identify mechanisms for stable funding,

to facilitate population-level implementation of programs shown to be effective, and to engage in ongoing development and refinement of strategies to optimize effects.

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