Seizing the Moment: Strengthening Children’s Primary Care in New York
The United Hospital Fund is a health services research and philanthropic organization whose primary mission is to shape positive change in health care for the people of New York. We advance policies and support programs that promote high-quality, patient-centered health care services that are accessible to all. We undertake research and policy analysis to improve the financing and delivery of care in hospitals, health centers, nursing homes, and other care settings. We raise funds and give grants to examine emerging issues and stimulate innovative programs. And we work collaboratively with civic, professional, and volunteer leaders to identify and realize opportunities for change.
Seizing the Moment: Strengthening Children’s Primary Care in New York

Suzanne C. Brundage
Senior Health Policy Analyst

UNITED HOSPITAL FUND

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Foreword

At the United Hospital Fund, our goal is to improve the health care, and health, of all New Yorkers. One of the greatest opportunities to do so is to begin with our youngest residents, by ensuring that each contact a young child has with the health care system not only responds to his or her acute needs but also promotes the child’s full development—including physical, mental, emotional, cognitive, and oral health.

The report that follows reflects the opportune moment that New York’s health care reform environment presents—an ideal time to consider scaling and sustaining innovations that promote early childhood development in pediatric primary care. It identifies some of the barriers and opportunities to shaping this work and begins to outline a path forward on policy and implementation options. We know that health care can’t solve all the challenges of early childhood development, but as an important and nearly universal touchstone in young children’s lives it can contribute to improving long-term outcomes for them.

Publication of this report simultaneously marks a continuation and a new beginning. UHF has long invested significant resources in understanding and promoting strong primary care. Recognizing the differences between primary care for adults and for children, the report builds on our earlier work to help ensure that pediatric primary care gets the attention and focus it deserves.

It is also an early contribution in a major effort that we are launching to explore multiple approaches to improving child health. As New York’s health care system rapidly evolves—gaining experience in using data, value-based payment, and interdisciplinary teams—there must be a concerted focus on how policy and practice reforms account for the unique needs of children and their families, particularly the lowest-income New Yorkers.

We hope you will find this report a valuable introduction to some of the opportunities we are helping unfold to improve children’s health right from the start, and we welcome your comments on it.

JAMES R. TALLON, JR.
President
United Hospital Fund
Executive Summary

As New York moves forward with important health reform efforts, including a shift toward value-based payment, widespread delivery system transformation, and an increased focus on population health, it is important to think about what is next on the child health agenda. New York has a unique and momentous opportunity to improve the health and well-being of its youngest residents through a renewed focus on early childhood development in primary care. This opportunity builds on recent scientific advances in understanding how early experiences impact lifelong health and well-being; tremendous gains in health coverage and access for children; and a new recognition that many children’s health issues are developmental in nature. Whereas New York’s major child health initiatives—primarily Medicaid’s behavioral health managed care carve-in and the rollout of children’s Health Homes—place an important emphasis on a subset of children with diagnosed special health care needs, an initiative focused on early childhood development would address significant early risks to the health of all children—particularly low-income children.

A strategic approach to promoting childhood development should bring together policymakers, providers, and other stakeholders to develop consensus on the goals and types of interventions to pursue; agreement on appropriate ways to measure progress toward those goals; and shared understanding of the need for sustained investment and commitment.

Scientific Background and Rationale for Change

Cumulative knowledge across several scientific fields, including neuroscience and epigenetics, has led to fundamental insights about how early experiences shape brain development and can have long-term impact on physical, social, and behavioral outcomes. The foundation of lifelong health and learning is rooted in brain growth that occurs in the first five years of life.

In the presence of nurturing and caring relationships with adults and in safe non-toxic environments, a child’s brain grows rapidly. This early brain development serves as the permanent foundation upon which more complex skills—such as self-regulation and executive functions—are built. Early adversity (e.g., stress or nutritional deprivation) can disrupt these important developmental processes and result in long-term harm that can impede a child’s ability to develop strong social and emotional skills, and can lead to a higher risk of developing chronic disease later in life. Strong, supportive relationships with adults; protection from environmental toxins such as mold and lead; and adequate nutrition are therefore key to healthy early childhood development. The implications of the above findings are particularly salient for low-income children.

A New Generation of Interventions

While the science of brain development, particularly the risks that low-income children face, can be sobering, evidence from decades of program evaluations suggests that early
childhood interventions, including those based in health care settings, can improve the lives of at-risk children and can have significant long-term cost-benefit ratios.

Consequently, pediatric and family medicine providers have been expanding their role in promoting healthy early development. New issues they are addressing include intergenerational transmission of trauma; the quality of the parent-child relationship; parental health issues such as maternal depression; cognitive growth; and social determinants of health, such as poor housing conditions and food insecurity.

Several innovative New York City pediatric primary care providers are targeting these newly identified risks as part of routine pediatric practice, despite a notable absence of support mechanisms and sustained funding sources. This report looks at how these practices are addressing each of these areas, as well as approaches to more traditional elements of pediatric practice, such as screening for developmental delay.

**Mapping Out the Steps Ahead**

Though there are promising practices to promote healthy child development in health care settings, they are often isolated grant-funded efforts that struggle for sustainability. Turning them into standard practices used across pediatric settings for New York's children will be a considerable challenge. Together, New York's policymakers and health care community will need to think through the set of structures and activities every primary pediatric team should have in place to maximize children's chances for optimal development. They will need to take into account practice-level concerns as well as broader system-level ones.

Resolving four operational and policy issues is paramount:

1. **Defining an early childhood development framework for pediatric primary care.**
   Most fundamentally, a framework is needed to identify the essential functions and parameters of a pediatric practice that encourages healthy early childhood development using the latest available science and techniques—and to promulgate an agreed-upon set of outcomes and associated measures for identifying interventions' success. Such a framework, if broadly accepted, could begin to create consensus on what a comprehensive approach to promoting early childhood development in New York could look like.

2. **Determining how new value-based payment efforts can support effective early childhood development interventions in pediatric practices.**
   Under its Delivery System Reform Incentive Program waiver, New York's Medicaid program envisions transitioning 80 to 90 percent of all Medicaid managed care payments to a value-based payment system by 2020. Given this increased focus, it is critical that consensus is developed around the articulation of the “value” sought from pediatric primary care settings, so that efforts to promote early childhood development can comfortably fit within Medicaid's accepted value-based payment approaches.

3. **Specifying the measures and outcomes public and private payers will accept for monitoring investments in early childhood development services.**
   It is important to understand which outcomes pediatric providers and payers will be willing to use and the timeframe in which those outcomes could be measured.
4. Identifying and resolving barriers that prevent pediatricians from using evidence-based approaches to promote healthy development. In giving pediatric providers greater latitude in responding to the needs of children and their families, key issues still need to be resolved, including how to pay for two-generational approaches, how to improve pediatric capacity to do that work, and how to engage other critical care providers, such as obstetricians, who can influence health outcomes for both child and parent.

Acknowledgments
A draft of this report was prepared for a September 2015 roundtable discussion, “Building on the Science: Enhancing the Role for Pediatric Primary Care in Supporting Early Childhood Development,” co-hosted by Jim Tallon of the United Hospital Fund and Commissioner Mary T. Bassett of the New York City Department of Health and Mental Hygiene. George L. Askew, Deborah L. Kaplan, Abigail M. Velikov, and Cheryllle Brown of the Department’s Division of Family and Child Health were essential contributors to that event. Their comments, and those of other roundtable participants, strengthened this report immensely. The author especially thanks Barry Zuckerman for his input and guidance.
Introduction

New York State has a proud history of advancing child health. Over a decade ago it made the bold choice to expand Child Health Plus eligibility to all uninsured children, including undocumented immigrants, a move that has brought the state close to reaching universal coverage for its youngest residents. New York also recently became the first state to enable pregnant women to sign up for health insurance through the State health exchange at any time, even after open enrollment ends—a critical step for ensuring adequate prenatal care. In New York City, decades of hard work have resulted in lower infant mortality and teen birth rates, expansion of supportive breastfeeding practices in maternity hospitals, and the emergence of the largest urban Nurse-Family Partnership program in the country. All of these efforts are promising steps in ensuring that New York’s children have a healthy start at life.

While taking stock of these achievements, it is critical to think about what is next on the child health agenda. The State’s current child health initiatives—primarily the behavioral health managed care carve-in and the rollout of children’s Health Homes—are predominantly focused on providing better care to a subset of children with diagnosed special health care needs. These are critically important efforts. This report posits that New York has a unique and historic opportunity to also improve the overall health and well-being of its youngest residents through a renewed focus on early childhood development in primary care. A strategic approach in this area—potentially part of a broader effort to universally strengthen and transform pediatric primary care—could help advance New York’s population health goals, promote improvements in educational outcomes, and provide a critical support for low-income families in particular.

Several factors contribute to this opportune timing:

**Recognition that the health-related challenges for children have changed.** Childhood morbidity and mortality have changed significantly in the last few decades. Thanks to numerous biomedical innovations, such as immunizations and neonatal intensive care, many traditional health challenges, such as infectious disease, pose less of a threat to children. As trends in acute illness have fallen, chronic illnesses have risen in prevalence. From 1980 to 2000, asthma prevalence rose from 3.7 percent to 12.7 percent, and obesity rates rose from 5.7 percent to 15.3 percent (Wise 2004). Similarly, there has been a notable and significant increase in behavioral health and developmental disorders.¹ A 2003 estimate suggests that more than 22 percent of adolescents nationwide are burdened by mental and behavioral health disorders—including learning disabilities, which are the most common diagnoses and top parental concern (Halfon, Wise, and Forrest 2014).

**Broad scientific consensus that early childhood experiences play a vital role in shaping long-term health, learning, and behavioral outcomes.** Several decades of advancement in scientific knowledge, particularly in the fields of neuroscience and

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¹ These changes are believed to indicate a real increase in these disorders and not an artifact of changes in diagnosis (Kelleher et al. 2000).
epigenetics, have led to new insights on the importance of experiences in the first five years of life. At the core of these findings is new understanding of how a young child’s brain continues to be shaped after birth by physical and social environments. The positive and negative interactions a child has, particularly with family members and other caregivers, can have a profound impact on lifelong health and well-being. Indeed, it has been posited that many new health threats are largely developmental in nature: preventable medical and behavioral health problems that are rooted in cumulative negative experiences and exposures in the early years of life. This makes early childhood a period of extraordinary opportunity and risk (Shonkoff 2010). It is important to not underestimate the enormous shift in understanding of these processes that has occurred over the last three decades. The rapid accumulation of new knowledge about early childhood development has been described as “staggering” (Shonkoff and Phillips 2000), leading some to hypothesize that addressing early childhood development is likely to have more impact on long-term population health than focusing on supporting healthy behaviors or access to health care in adulthood (Shonkoff, Boyce, and McEwen 2009).

**New evidence that well-designed interventions can positively influence early childhood development.** Paralleling scientific advances, mounting evidence has increased confidence that well-designed interventions can be effective in improving cognitive, social-emotional, and physical outcomes for young children. Evidence-based interventions range in setting, program model, and even target recipients. Most, however, focus on reducing direct threats to children and providing “protective factors” to at-risk children, including parent-child interaction coaching, nutritional and material resources for families, and early learning supports. Several evaluation studies have found learning, social, and physical health gains decades after the initial intervention, although more work needs to be done to increase the size of these effects and encourage new delivery models.

**Substantial innovation among New York’s pediatric leaders in using primary care settings to promote early childhood development.** Pediatric primary care providers are increasingly experimenting and redefining their role in promoting healthy development by incorporating lessons from brain science and adopting efficacious program interventions. This role has expanded to new service areas beyond diagnosis and management of developmental delays, the traditional province of pediatric primary care. Examples of early childhood approaches being tested in New York City include coaching parents in how to read to their children, screening for and treating maternal depression during well-child visits, applying motivational interviewing techniques to encourage pro-social parenting, and developing strong referral systems to community-based resources such as supplemental nutrition, lead abatement, and asthma remediation programs. However, many of these efforts are pilot programs in separate silos, without long-term strategies for sustainability or scale.

**Frequent visits by nearly all young children and their families to primary care settings.** Expansions in insurance coverage for parents and children mean that child health providers now have far greater access to young children—both an achievement and an opportunity. Nationally, over 95 percent of young children routinely see a pediatrician, often several times in the first two years of life (CDC 2012; Talmi, Stafford, and Buchholz 2009). While the centrality of the health care system tends to diminish as a child ages, it is often
the only formal system to reach children and their families in the first few years of life. A child’s health provider may also have a privileged relationship with parents, and is frequently sought out for information on child development (Talmi, Stafford, and Buchholz 2009). This is not to say the health care system should be the sole—or even central—provider of early childhood development supports. Calibrating the scope of primary care-based programs so they are part of a multi-sector approach to early childhood development and supportive of community- and home-based interventions is key.

**The potential to advance policy agendas at the city and state level.** Finally, there is a unique opportunity to use policy and program levers in New York City and in New York State.

New York City has prioritized universal prekindergarten (UPK) education for all four-year-olds and, as part of the *Thrive NYC: Mental Health Roadmap for All*, has prioritized early investments in social, emotional, and mental well-being of young children. This focus on the early years of life extends across city agencies and includes the New York City Department of Health and Mental Hygiene, which recently established the Division of Family and Child Health to lead and coordinate a renewed commitment to young children. Enhancing the primary care role in early childhood development could contribute to the success of the UPK program by ensuring that all children are physically, mentally, and emotionally ready for school.

At the state level, the Department of Health has put a remarkable focus on transforming and improving primary care through delivery system reforms that emphasize team-based care, population health approaches, and paying for value rather than volume of service. These efforts have primarily focused on the chronically ill adults who drive the majority of health costs in the state, but they also hold important lessons for how pediatric practices could be similarly transformed. The Social Determinants of Health and Community-Based Organizations Subcommittee, reporting to the Value-Based Payment Workgroup convened as part of the state’s Medicaid reform process, has highlighted the need for a taskforce on children and adolescents to specifically focus on how greater attention to developmental and other unique needs of children can be accomplished through value-based payment strategies.

These opportunities at the City and State policy levels create unique opportunities for New York to become a leader in transforming pediatric care. Doing so will require learning from child health innovators about the opportunities and challenges they face in doing this work, coming to consensus on the promising commonalities among models and programs that could be spread more broadly, and engaging in a policy process to ensure that an expanded role for pediatric primary care can be scaled and sustained.

**Organization of This Report**

This report focuses on pediatric primary care as a setting in which early childhood development interventions can be delivered. It is primarily concerned with preventive interventions; it does not address ongoing treatment or management of children with diagnosed developmental or mental health conditions, including trauma-based therapies,
though such efforts are integral to pediatric primary care. Nor does it discuss complementary multi-sector strategies that are also critical for promoting early childhood development in New York. Health care services offered outside of primary care settings, such as prenatal and home visiting programs, are also not discussed.

The report is organized into three parts:

(1) Overview of the scientific evidence from a variety of disciplines related to early childhood development;

(2) Discussion of different approaches currently being used to promote healthy development in pediatric settings in New York and beyond;

(3) Key considerations and challenges for scaling and sustaining these innovations to have broad impact on the lives of young children in New York.

Overview of the Science

Since the 2000 breakthrough IOM report, *From Neurons to Neighborhoods*, there has been increased awareness and acceptance among policymakers, payers, and child health and other service providers that early childhood experiences play a critical role in influencing a person’s long-term learning, social, and health outcomes. The years since have seen broader understanding about how risk factors—particularly neighborhood and family stressors, exposure to environmental toxins, and nutritional deprivation—can harm healthy development by altering the neurological and other biological systems of young children. This new knowledge base has been complemented by a close examination of early childhood interventions that aim to limit exposure to harm in the first years of life and increase the “protective factors” around a child that can buffer against the potential long-term negative effects of adversity (Shonkoff and Fisher 2013).

The Long-Term Effects of Early Childhood Experiences

In the last three decades, numerous bodies of evidence have revealed the depth to which adult health and well-being is rooted in childhood conditions and experiences. It is now increasingly accepted that adult chronic disease can be rooted in childhood illness\(^2\).

Beyond childhood health conditions, the quality of one’s childhood—particularly the presence or absence of negative childhood experiences—has also been closely linked with long-term physical, mental health, and learning outcomes. In 1998 the landmark Adverse Childhood Experiences (ACEs) study surveyed over 13,000 adult Kaiser-Permanente users in California for seven types of abuse or household dysfunction and compared them to the

\(^2\) Cardiovascular disease, for instance, has been linked to prenatal malnutrition, and adulthood pulmonary disease is frequently associated with respiratory illness in childhood (Shonkoff, Boyce, and McEwen 2009).
study participants’ health conditions. The study found a strong and consistent relationship between childhood exposure to harmful stressors and significant chronic disease. There was also a strong relationship with harmful health behaviors in adolescence, such as smoking before age 14. Numerous other studies have substantiated these findings, including studies that have shown that children who experience neglect, abuse, or malnutrition are “more likely to have heart disease as adults” (Shonkoff 2012). Other studies have found a strong link between early adversity and a variety of behavioral and mental health conditions in the adolescent and adult years, including substance abuse, depression, and anxiety disorders (Shonkoff, Richter, van der Gaag, and Bhutta 2012).

Early adversity can also impede a child’s ability to learn and to develop strong social and emotional skills. The same conditions that can result in physiological adaptations associated with disease later in life can also hinder a child’s ability to take full advantage of learning and social opportunities. The consequences for an individual can be enormous. For example, disrupted development of the prefrontal cortex, which can be caused by even subtle adverse experiences, can result in poor development of executive function and self-regulatory skills, emotional problems, compromised working memory, shortened attention spans, and weak inhibitory control (Kold et al. 2012). In contrast, when these self-organization capabilities are well developed they can help children (and adults) manage adversity better—perhaps leading to greater resiliency (Shonkoff 2012).

The Science of Early Childhood Development
Cumulative knowledge across several scientific fields, including neuroscience and epigenetics, has led to fundamental insights about how early experiences shape brain development and can have long-term impact on physical, social, and behavioral outcomes. These findings have been described in detail in other publications, particularly by Jack Shonkoff at Harvard University’s Center for the Developing Child, and are only briefly summarized below.

Brains continue to be built after birth, primarily through interactions with family members and other important adults in a child’s life. While the field of child development used to be dominated by debates of “nature versus nurture,” it is now commonly accepted by the scientific community that individuals are shaped through a dynamic interplay between their genetic makeup and the environments in which they live. This theory of gene-environment interaction has been described as “nature dancing with nurture” (Sameroff 2010). Genes create a blueprint for brain development by determining which and when brain circuits are formed. Family members and other adults in a child’s life then play a critical role in refining those neural circuits by interacting with the child. This is done through a process called “mutuality and reciprocity” in which adults respond to a

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3 The seven categories of adverse experience were psychological abuse, physical abuse, sexual abuse, substance abuse by a household member, mental illness by a household member, the presence of domestic violence in the home, and incarceration of a household member.

4 This section is influenced primarily by the work of Jack Shonkoff and the Center for the Developing Child at Harvard University. Extensive reviews of the scientific basis can be found at http://developingchild.harvard.edu/
child’s natural cues to stimulation such as babbling and making facial expressions. This back-and-forth interaction is considered crucial in building young brains (NSCDC 2007).

**Strong brain development in the early years of life is essential for establishing a foundation for lifelong health and learning.** The brain is the central organ for the formation and regulation of cognitive, social, and emotional capabilities. These closely connected functions are built over time, with simple circuits (such as those that process basic information) forming first, followed by higher-level circuits responsible for processing more advanced information and regulating increasingly complex skills and emotions. This sequential process means it is harder for higher-level circuits to form properly if earlier circuits are not well developed. The ability to build these basic functions declines with age (NSCDC 2007). In practical terms, this means that children who experience sub-optimal development of early brain circuits will have great difficulty in “closing the gap” with their peers who have received adequate stimulation early in life (NSCDC 2007).

**Early adversity can disrupt developmental processes, resulting in long-term harm.** Early adversity can lead to physiological damage in at least two ways. The first pathway is through the accumulation of damage over time, in which an over-activated stress response system results in an increase of allostatic load (“wear and tear” on the body), a process akin to premature aging. The second process is through exposure to adversity during highly sensitive periods of development. In these instances biological systems may adapt to a hostile or austere environment for short-term survival but experience long-term ill effects from that adaptation (Shonkoff 2011). For example, undernourished fetuses may adapt to conditions of scarcity in the womb and hoard calories, which may improve immediate chances of survival, but that adaptation may later prove damaging if the child grows in an environment with an abundance of nutrient-deficient, high-calorie foods (Shonkoff 2012).

**Different levels of stress have different effects.** While a maturing brain is sensitive to multiple environmental stressors, including toxic chemicals like lead and inadequate nutrition, there is new appreciation for the harmful role stress can play in developmental processes. Leading experts have developed a three-part taxonomy to emphasize that not all stress affects the body equally.

“Positive stress” occurs when a child experiences a brief, moderate elevation in the stress response system. In these situations a child will experience short-lived physiological responses (e.g., mild elevations in cortisol) that are quickly returned to baseline through the help of stable, supportive relationships. This kind of stress may occur when meeting new people or going to child care for the first time and is viewed as playing an important role in helping a child develop mastery and self-control (NSCDC 2007).

“Tolerable stress” triggers physiological reactions that could be large enough to disrupt brain architecture but occur in a context of supportive and stable relationships, which can lessen physiological responses and eventually help them return to baseline. Experiencing a natural disaster or the death of a loved one, for example, are two stressors that could be a detriment to healthy development but—within the right environment—can be managed to limit the consequences for a young child.
“Toxic stress,” on the other hand, is a reference to the “strong and prolonged activation of the body's stress response system” (NSCDC 2007). Such stress can occur when a child experiences frequent or significant adversity in the absence of supportive relationships with adults that can buffer them from the harms of stress. Sources of toxic stress include child neglect, exposure to violence, severe maternal depression, and prolonged economic hardship. The impact on a child's physical and mental health can be deep and extensive. Direct neurological impact includes changes in the structure and connectivity of critical brain areas associated with memory recall, executive functions such as self-regulation, and mediation of fear and aggression (Shonkoff, Richter, van der Gaag, and Bhutta 2012). Large amounts of stress can also alter immune function and increase inflammatory markers known to be associated with numerous health conditions, including cardiovascular disease, chronic obstructive pulmonary disease, liver cancer, and depression (Shonkoff 2012). Adults who experienced toxic stress as young children are therefore at increased risk of developing a wide range of chronic conditions even if they do not engage in unhealthy behaviors like smoking, overeating, or being physically inactive.

The foundations for healthy development are becoming increasingly clear. The above findings have led to preliminary conclusions about the essential building blocks for healthy development. First is the presence of nurturing and caring relationships. Positive interactions during childhood, such as having good parental relationships, receiving affection, and receiving positive verbal affirmations, have been found to offset the harm of adverse experiences (Chung et al. 2008). These positive relationships can be promoted by focusing on caregiver capacities, including helping caregivers manage their time, providing adequate financial and social supports for parents, and ensuring caregivers have the skills and knowledge to promote healthy development (Shonkoff and Garner 2010). Second is non-toxic environments. Recreational drugs such as alcohol and cocaine, and environmental toxins such as lead paint, are particularly disruptive to a developing brain. Finally, adequate nutrition for expecting mothers and children is essential (Center on the Developing Child 2007).
It is important to note that this body of knowledge, like many dynamic areas of research, is still being developed. There are many unknowns. For example, scientists do not understand the precise mechanisms that support healthy brain development as well as they understand the direct threats to brain development. Additionally, it is not understood why some children seem to be predisposed to being harmed by early experiences; there might be underlying causes of vulnerability to environmental signals (Shonkoff, Boyce, and McEwen 2009).

**Poverty and Early Childhood Development**

The implications of the above findings are particularly salient for low-income children. The strains of poverty often mean that low-income children are exposed to more sources of stress than their more advantaged peers. Nearly 67 percent of children living below the federal poverty line reportedly have had an adverse childhood experience, compared to 27 percent of children with family incomes at 400 percent the poverty line (Halfon, Wise, and Forrest 2014). This means children living below the poverty line are nearly 2.5 times more likely to be exposed to trauma than peers not in poverty. And while in the early years of life children from high and low socioeconomic status recover equally well from singular stressful events, studies suggest that it is the exposure to more stressors over time that results in children with low socioeconomic status having, on average, poorer health outcomes by their adolescent years (Keating and Hertzman 1999). Low-income children as a group are also less frequently exposed to positive experiences, such as being read to by an adult, which can
promote brain development and mitigate the effects of stressful events (Shonkoff, Boyce, and McEwen 2009). Thus efforts to enhance child development by attempting to decrease exposure to adverse experiences and increase exposure to positive ones may have the greatest impact on children living in poverty.

Food insecurity also disproportionately affects low-income children and their families. Such children lack reliable access to nutritionally adequate foods, leading to nutritional deprivation and additional stress, and overconsumption of cheap energy-dense and nutrient-poor foods. Food insecurity is a factor in high obesity rates: nearly half of all low-income children are overweight or obese in their adolescence.

Any discussion of the linkages between poverty and childhood stress warrants two important clarifications. First, while the literature can occasionally seem insensitive to this point, the association between poverty and childhood stress does not suggest that low-income parents are to blame as mediators of poverty's effects on children. The literature is better understood to show that the circumstances of economic disadvantage—poor housing conditions, neighborhood violence, the toll of scarcity on a parent’s ability to give individualized attention to a child, etc.—give rise to additional stressful experiences that, in turn, can affect a child’s development. Second, there can be a temptation to assume that, because of the strong focus on low-income children, these concerns are only relevant for a small subset of children. Yet nearly half of the 555,756 children under five in New York City—and nearly 40 percent of children of all ages in New York State—live in poverty or near poverty (Citizens’ Committee for Children of New York 2015; De Masi et al. 2011). And as Figure 3 demonstrates, even one out of four children living at the top-income bracket is exposed to adverse childhood experiences.

**Figure 2. New York City Children (Under 5) by Poverty Level, 2013**

![Pie chart showing poverty levels in New York City children under 5](image)


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5 “Near poverty” is defined as a family income between 100 percent and 199 percent of the Federal Poverty Line.
Growing Evidence that Interventions, Including Those Based in Pediatric Practices, Can Promote Healthy Development

While the science of brain development, particularly the risks that low-income children face, can be sobering, evidence from decades of program evaluations suggest there is good reason to be hopeful. Sufficient evidence shows that early childhood interventions can improve the lives of at-risk children and can have significant long-term cost-benefit ratios (Shonkoff 2012).

The roots of this work go back 50 years to the Perry Preschool Project of the 1960s and the Abecedarian Project of the 1970s. Long-term follow-up studies of those efforts have found that providing young impoverished children with stable, supportive environments can bring about broad educational and social gains, including improved high school and college graduation rates, improved overall academic performance, and reduced rates of arrest for violent crime (Shonkoff and Fisher 2013).

One of the most thorough reviews of early childhood interventions—a 2005 meta-analysis by RAND of 20 programs with rigorous evidence bases—found that more than two-thirds of the programs had statistically significant favorable impacts on the outcome areas they were targeting (Karoly, Kilburn, and Cannon 2005). These areas included cognitive and academic achievement; behavioral and emotional competency; educational progression and attainment; child maltreatment; health, delinquency, and crime; and labor market success.6

6 By far the greatest effects were found for children’s cognitive, behavioral, and emotional development, with all but one program positively affecting these areas (Karoly, Kilburn, and Cannon 2005). Cost-benefit ratios for these programs

Figure 3. U.S. Children’s Health Outcomes and Risks, by Income Gradient, 2011–2012

Most interventions analyzed by RAND were delivered in child care, preschool, or home settings, but two programs—Reach Out and Read and the Newborn Individualized Developmental Care and Assessment Program—were based in health care settings. These programs are part of a small but growing group of evidence-based early childhood interventions based in medical settings.

The U.S. Substance Abuse and Mental Health Services Agency (SAMHSA) includes two outpatient programs on its list of evidence-based interventions for healthy early childhood development: Incredible Years, a parenting skills class, and Family Check-Up for Children, which uses motivational interviewing skills to improve parenting techniques.7 The Maternal and Child Health Bureau of the U.S. Department of Health and Human Services has also endorsed the evidence behind the Healthy Steps for Young Children program, in which child developmental specialists are integrated into the pediatric office in order to expand the child development services that can be offered to families. A national evaluation of the program found that, even five years after children and their families were enrolled in the program, Healthy Steps families were less likely to use harsh discipline against their child, more likely to read to their child, more likely to report developmental concerns to a pediatrician, and more likely to stay at the practice that provided Healthy Steps (Minkovitz et al. 2007).

Where does the sum of the literature leave us? Overall, the evidence base on early childhood development interventions can be interpreted as solid and still growing. It is clear that well-designed preventive interventions—including those in pediatric settings—can play a positive role in promoting the healthy development of at-risk kids. At the same time, some have noted that publication bias—that is, a tendency to publish program results only if they are favorable—might make the evidence base for early childhood programs look stronger than it is. And new approaches are needed to expand program reach and produce larger effect sizes (Shonkoff and Fisher 2013).

7 A full list of such interventions can be found at SAMHSA’s National Registry of Evidence-based Programs and Practices. For instance, enter the search terms “early childhood, outpatient facility, effective” at http://nrepp.samhsa.gov/AdvancedSearch.aspx for a list of recently reviewed programs. See also:

Family Check Up: http://legacy.nreppadmin.net/ViewIntervention.aspx?id=403
Incredible Years: http://legacy.nreppadmin.net/ViewIntervention.aspx?id=311
In light of this growing body of evidence, pediatric and family medicine providers are increasingly adopting an expanded role in promoting healthy early development. In October 2015 the American Academy of Pediatrics called on pediatric providers to screen universally for food insecurity (AAP 2015). It has also stated that child health providers must now “complement the early identification of developmental concerns with a greater focus on those interventions and community investments that reduce external threats to healthy brain growth” (AAP 2012). Others have similarly called for a “brain protection” strategy in primary care that combines primary prevention with treatment and management of mental health and developmental challenges in young children (Shonkoff 2012).

While these calls include support for increased community-based services for early child development, they also include a new conceptualization of the kinds of issues and challenges that pediatric providers should be addressing. These new issues include intergenerational transmission of trauma; the quality of the parent-child relationship; parental health concerns that might directly affect a child; cognitive growth; and social determinants of health. Expanding the boundaries of pediatric care without disrupting high-quality routine practice is challenging work. And yet in New York City and beyond there is substantial experimentation underway, despite a notable absence of support mechanisms and sustained funding sources. While innovators may take different approaches to responding to the “new” drivers of child health, below is one attempt to identify the dominant approaches that are emerging in New York. It should be noted that the borders between these categories are often porous, and specific program models often address several developmental areas at once.

Table 1 maps out the potential roles of expanded pediatric primary care in addressing early development issues; the section following describes programs currently tackling these problems in New York.
Table 1. Overview of Current Approaches to Health and Development Issues

<table>
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<th>“New” Child Health and Development Issue</th>
<th>Potential Role of Pediatric Primary Care</th>
<th>Sample Approaches</th>
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| Intergenerational transmission of trauma | Identifying children who have an elevated risk of experiencing trauma and providing or referring to high-intensity preventive services for the child and family. | • Automatically providing higher-intensity preventive services to a child based on the parent’s Adverse Childhood Experiences score  
• Referral to nurse home visitation programs |
| Parent-child interactions | Educating and coaching parents on how to interact with their child to promote optimal development. | • Modeling positive parenting techniques during reading sessions with child  
• Providing group “well baby visits” for interactive peer-to-peer learning on positive and responsive parenting techniques |
| Two-generational health challenges | Screening for and addressing (through direct treatment or closely followed referral) parental health issues with significant impact on child health and development: depression, substance use disorders, smoking, and unmet reproductive health needs. | • Screening and providing in pediatric setting brief treatment for maternal depression  
• Screening for drug, alcohol, and tobacco use as part of the Survey of Wellbeing of Young Children assessment tool |
| Cognitive growth | Encouraging parents to verbally engage with their children through reading, speaking, and song. | • Coaching parents on how to read to their children and providing books through the Reach Out and Read program |
| Social determinants of health | Connecting families to high-quality community services, such as nutritional support services or legal aid. | • Partnering with Health Leads, a non-profit organization that uses a volunteer workforce to assist patients with resource connections  
• Referring families to a multi-sector centralized referral service for all early childhood development needs, including social needs |
| Developmental screenings and surveillance* | Continuously monitoring for developmental delay and using standardized screening measures to detect developmental delay; referring to Early Intervention services when delays are detected. | • Conducting quality improvement activities to improve the consistency of developmental screening or referral success  
• Incorporating social-emotional screening into developmental screening |

*While not necessarily a “new” expectation of pediatric primary care, screening for developmental delay remains an essential and core component of primary care-based early childhood development services. Several well-known quality improvement initiatives are underway to ensure developmental screening is universally taking place and children and their families are successfully referred to Early Intervention services.
Reducing intergenerational transmission of trauma. Some pediatric providers are expanding their screening routine beyond the currently recommended developmental screens (at 9, 18, 24, and 36 months) to include screening for whether children are at risk of experiencing early adversity and trauma. Montefiore Health System, for example, is expanding an effort across its pediatric primary care practices to detect whether young children need high-intensity developmental services based on their parents’ or caregivers’ adverse childhood experiences. This approach systematically asks caregivers to fill out a modified version of the 1998 ACEs questionnaire during a well-child visit. Depending on the age of the child, the child’s own ACEs score may also be reported. Either score can be used to triage a child into Montefiore’s chapter of the national Healthy Steps program.

Coaching parents on positive parent-child interactions. Another emerging area of work is the incorporation of programs that strengthen families by educating and coaching parents on how to positively interact with their child to promote optimal development. A well-known example of this kind of intervention is the Triple P—Positive Parenting Program®, which uses a range of communication techniques, “light touch” interventions, and more intensive consultations with primary care providers to prevent and treat social and behavioral difficulties in children up to age 12. The program can be implemented in a range of settings, including pediatric primary care. One trial found it resulted in a large reduction of substantiated cases of child abuse, out-of-home placements of kids, and abuse injuries (Prinz et al. 2009). Newer programs are also being used in New York City, including the Video Interaction Project and Family Check Up programs at Bellevue and Woodhull Hospitals. Parent coaching programs are also emerging to help parents encourage children to brush teeth twice daily—an important step toward improving oral health. In an innovative departure from one-on-one didactic visits, the Center of Child Health and Resiliency, a program of Montefiore and The Children’s Health Fund, has been conducting group primary care, also called “Well Baby Group,” for the past eight years. In this model, a cohort of mother/infant dyads receive group primary care from birth until 18 months of life. The groups are run by a pediatrician with participation of a nutritionist and mental health providers. This model relies on in-depth anticipatory guidance, and interactive peer participation with a focus on positive and responsive parenting (Machuca et al. 2014).

Addressing two-generational health challenges. Pediatric providers may be uniquely situated to identify specific parental health conditions and behaviors that can affect a child’s development and can be addressed by evidence-based interventions. Most commonly the focus is on maternal depression, which has potentially serious consequences for a women’s well-being and functioning, as well as for the quality of her relationship with her child. Children of depressed mothers are more likely to experience early cognitive and linguistic delays, poor academic performance, and social emotional problems. Maternal depression puts children at risk for child maltreatment and neglect, and may also indirectly lead to increased risk for infant hospitalization and asthma morbidity. An estimated 15 million children across the country live with a depressed mother (Sontag-Padilla et al. 2013). It is believed that 85 percent of these mothers do not seek treatment for their condition (Center

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8 Preliminary outcomes of the “Well Baby Group” include overweight and obesity primary prevention in 2-year-olds and improvement on social-emotional developmental scores.
on the Developing Child 2009), a dynamic that could improve in New York with the state’s 2014 passage of a new law to promote increased education, screening, and referral for maternal depression (New York State Office of the Governor 2014), and New York City’s goal to screen and treat all pregnant women and new mothers for depression. Increasingly, pediatric primary care providers are attempting to incorporate into their practice routine screening and referral for maternal depression. Gouverneur Health Services, in collaboration with the New York University Center for Implementation-Dissemination of Evidence-Based Practices among States (IDEAS), is going one step further and piloting a program that offers treatment to depressed mothers within the pediatric setting (Olin et al. 2015).

Some providers have called for expanding this approach to other parental health conditions with direct consequences on early childhood development, including substance abuse, smoking, intimate partner violence, and unintended pregnancy (Zuckerman 1998; Zuckerman, Nathan, and Mate 2014). For example, given that adequate child spacing is crucial for healthy development, pediatricians could play a larger role in connecting mothers of newborns to effective forms of contraception. The rationale is that pediatricians often have better access to new parents than other health care professionals. One study from Maryland suggests that only half of all women make a postpartum appointment with their own health care provider within a year of giving birth (Bennett et al. 2014).

**Directly promoting early learning and literacy.** Given the vital importance of reading aloud to a child in increasing school readiness and overall brain development, some pediatric providers are playing an increased role in encouraging parents to verbally engage with their children. The best known of these programs, Reach Out and Read, is a national effort in which doctors and nurses routinely incorporate early literacy guidance into well-child visits. Providers educate parents on the importance of reading aloud to children, model age-appropriate reading, and “prescribe” age-appropriate books to high need families. Reach Out and Read has been found to increase parental reading in the home, improve preschool language scores, and reduce the proportion of children with language delays (Child & Family Policy Center 2010). The program operates in 295 sites and serves over 340,000 children across New York State. It is the foundational program on which the Video Interaction Project, mentioned above, was built.

**Connecting to more intensive services and community resources to address social determinants of health.** New programs and systems are also being developed to help pediatric primary care providers connect children and their families to high quality community services. Examples of such programs include Health Leads, located in several NYC Health and Hospitals Corporation outpatient clinics, which connects families to resources to address needs such as heating or nutritional assistance; Volunteers of Legal Services, which provides pro-bono legal services to families seen in hospital outpatient departments; and Help Me Grow, a national program being piloted in Western New York that attempts to systematize help for families through centralized referrals to support services. Linkages to environmental health programs that remove hazards in the home, including lead abatement and asthma remediation services, are another potential area of impact.
Identifying developmental delay. While neither a form of primary prevention nor a necessarily “new” expectation of pediatric primary care, developmental surveillance and screening is another core service, as it enables primary care providers to refer a young child to New York State’s Early Intervention (EI) Program. The program provides a range of therapeutic and supportive services capable of preventing further loss of function and improving overall outcomes for a child. Although developmental surveillance and routine screening are already recommended by the American Academy of Pediatrics, and have been the focus of several high-profile quality improvement initiatives including the Commonwealth Fund’s ABCD Initiative, more can be done to ensure that pediatric providers consistently and accurately identify developmental delays. Likewise, there is an equal focus on ensuring appropriate referral and delivery of Early Intervention services. As part of this latter effort, the New York State Department of Health opened for bidding in July 2015 a new contract for monitoring and improving the quality of EI in New York, in which improving referrals and transitions are cited as priority areas.

Focusing on an Early Childhood Development Strategy

Though there are promising practices to promote healthy child development in health care settings, they are often isolated grant-funded efforts that struggle for sustainability. Turning them into standard practices used across pediatric settings for New York’s children will be a considerable challenge. Together, New York’s policymakers and health care community will need to think through the set of structures and activities every primary pediatric team should have in place to maximize children’s chances for optimal development. Several considerations need to be taken into account.

Practice-Level Challenges

Primary care practice constraints. Pediatric practices, many of which are small private practices in New York, have numerous constraints that currently limit their ability to play an enhanced role in early childhood development. The economics of running a pediatric practice are challenging. Providers often need to see a high volume of patients to stay financially viable, resulting in relatively short visits between pediatricians and patients. It is also challenging for pediatric practices to integrate new preventive early childhood development services into their clinic work without a clear benefit requirement or payment mechanism encouraging them to do so. In Medicaid—the largest payer for children in New York, particularly for at risk children—the Early and Periodic Screening, Diagnosis, and Treatment benefit (EPSDT, also known in New York as the Child/Teen Health Program) is an important childhood benefit, particularly for supporting periodic visits and screenings, but it does not specifically address or require many of the evidence-based early childhood development interventions described in this report, even though they would arguably be allowable under federal guidelines. The state and its Medicaid managed care plans may want to re-examine EPSDT guidance and consider adjusting payment to encourage adoption of these evidence-based practices. And while costs associated with implementing early childhood development interventions need not be high, equipping practices to expand their
role in early childhood would require additional financial and technical resources (Minkovitz et al. 2007). These resources are needed to support new personnel, cover the costs of additional services and the adoption of health information technology that enables care management of at-risk kids, and create work flows that systematize early childhood efforts.

**Provider training and comfort.** Some providers may need additional training and education on the importance of early childhood development and the specific methods through which they can support a child’s social, emotional, and cognitive growth. Child health care providers may not feel equipped to address parental health problems and may require additional medical education in those areas. Cultural sensitivity, particularly when addressing diverse parenting techniques, may present additional challenges.

**Referrals.** Providers will require reliable systems to connect children and their families to additional clinical and community-based services. The mere existence of referral sources will not be enough; providers will need assurance that referral sources are high-quality and have sufficient capacity to meet their patients’ needs. Confidence in a strong referral system will likely be a prerequisite for convincing providers to screen for parental health or social needs.

### System-Level Challenges

**Absence of a clear framework or set of standards that providers can widely embrace and implement.** New York is currently flush with early childhood innovations that child health providers could choose to adopt in their practices. These approaches vary in their evidence base and suitability for practices of different sizes and structures. However, there is no generally accepted framework or standard—akin to the Wagner Chronic Care Model—that identifies the essential functions of a pediatric practice that encourages healthy early childhood development using the latest available science and techniques. Such a framework is essential for orienting practices to the kinds of activities they could be providing, and for helping practices identify evidence-based approaches for fulfilling those functions. Any such framework would have to take into account the suitability of different evidence-based approaches for primary care practices of different sizes and organizational needs.

**Practice transformation capacity.** As noted above, some primary care providers could need significant assistance in incorporating an early childhood approach into their practice. Demand for such assistance would need to be met by an organized supply of practice transformation services that could help providers develop new skills and capacities. Such practice transformation capacity exists for helping (primarily adult) primary care providers reach medical home status or meet quality improvement targets, but an analogous New York capacity to assist with early childhood development functions in pediatric primary care has not been created. The Vermont Child Health Improvement Program might hold important lessons for how such a support system could be developed, structured, and sustained (Duncan et al. 2012).

**A need for sustained investment and commitment.** Early childhood programs have two distinct investment challenges. First, future savings associated with reduced prevalence of physical and behavioral health challenges are only likely to emerge after multiple years. This
is different from many investments in adult primary care, which are predicated on achieving savings within a year of implementation, as in the Medicare Shared Savings Program. Second, when returns do materialize, the savings are often spread across multiple systems, including education, child welfare, and health. The dominant payers for pediatric primary care are public programs—Medicaid and Child Health Plus—that will have to adopt a long-term investment approach and concede that, in the interest of improving the outcomes for a future generation, savings will likely accrue to public systems beyond health care.

**Measurement.** As a whole, the development of strong, universal quality indicators for child health has lagged behind adult indicators. Assessment and measurement of early childhood development outcomes is even more complex. Pediatric providers working in this field target a wide range of outcomes, and use a variety of approaches to measure whether they have been successful in their efforts. Some use social-emotional screening tools as a proxy for functional outcomes. Others use process measures that assess high fidelity to interventions that are closely aligned with outcomes. And some are optimistic that biomarkers of toxic stress and overall development (e.g., stress hormone levels) may become available in the near future. Regardless of which approach is taken, an agreed-upon set of outcomes and their associated measures will be needed to advance the field.

**Next Steps for Programs and Policy**

While the above challenges to expanding early childhood supports across New York may seem daunting, drawing upon the lessons of other transformation efforts in health care can provide a path forward. Policymakers and those working on the program side can work in parallel to further develop this idea. Below we lay out four steps that can help New York seize its present opportunity for an organized approach to strengthening pediatric primary care. The first step—developing a much-needed framework—is intended for those on the operational side: providers, researchers, and others working in pediatric medicine. The second, third, and fourth steps are directed toward policymakers. Here, a critical dimension will be engaging New York’s major health care reform initiatives that are underway, particularly Medicaid’s transition to value-based payment and the State’s effort to define and make financially sustainable “Advanced Primary Care.” With quick action, both of these efforts could potentially be leveraged to encourage greater innovation in supporting early childhood development. At a minimum, policymakers could be engaged to ensure upcoming reforms do not create disincentives for pediatric practices working in this space. Resolving these four operational and policy issues is paramount.

1. **Defining an early childhood development framework for pediatric primary care.** On the operational side, learning collaboratives and demonstration projects have proven to be instructive in informing the development of new care delivery models. The learning collaborative approach relies on the participation of a group of providers willing to test new approaches in their practices and share lessons across sites. A similar approach can be taken in the early childhood development space, developing a framework that brings together the
various innovations occurring in pediatric sites across New York and categorizes them according to the goals or outcomes most associated with those approaches. If broadly accepted, such a framework could begin to create consensus on what a comprehensive approach to promoting early childhood development in New York could look like. It would:

1. Describe the basic elements and parameters of a pediatric-based early childhood development approach (all or a subset of the primary care functions identified on pages 9 and 10 of this report might serve as a starting point);
2. Define the population of children that would receive those services and how they would be identified by pediatric practices; and
3. Identify some of the measures that could be used to assess, particularly by payers, how the practice is doing in implementing the framework.

Developing a framework would also require the participation of private foundations, government, and payers to give the collaborative structure, provide supplemental resources to practices such as planning grants or salary support, and ensure that the lessons emerging from the group are documented and shared broadly. Follow-on work would also include:

1. Defining the characteristics of practices that are able to adopt the framework approach in their practice;
2. Identifying methods for helping practices incorporate the model into their practice;
3. Identifying the short- and long-term costs associated with implementing the model in practices of different size and organization, and how those costs would best be paid for; and
4. Tracking the short- and long-term outcomes associated with the model.

2. Determining how promoting early childhood development—with a multi-year financial payoff and diffuse returns across public sectors—fits within Medicaid’s value-based payment definition. Under its Delivery System Reform Incentive Program waiver, New York’s Medicaid program currently envisions transitioning 80 to 90 percent of all Medicaid managed care payments to providers to value-based payment by 2020. Given this increased focus, it is critical that some consensus is developed around the articulation of the “value” sought from pediatric primary care settings, so that efforts to promote early childhood development can comfortably fit within Medicaid’s accepted value-based payment approaches. A child-centered value-based payment definition may be distinct from “value” in adult primary care, which is often defined by quality care that results in near-term savings from reduced hospitalizations. While reducing preventable childhood hospitalizations is an important and worthy goal, the impact of that work only extends to a relatively small share of the overall child population, and results in far fewer savings than reducing adult hospitalizations. In child health, the aim is to not just reduce hospitalizations, but also to promote as much health as possible.
3. **Specifying the measures and outcomes public and private payers will be willing to use to monitor investments in early childhood development services.** Any potential increased investment in pediatric primary care for early childhood development services needs to be twinned with a process for ensuring those services are high-quality and producing good outcomes in children. More work needs to be done to understand how payers have approached this challenge in New York and other parts of the country. In particular, given that pediatric offices can only contribute to some desired early childhood development outcomes—but not have full responsibility for them—it is important to understand which outcomes pediatric offices can be held accountable for and the timeframe in which those outcomes could be measured.

4. **Identifying and resolving barriers that prevent pediatricians from using evidence-based approaches to promote healthy development.** For many of the innovations discussed in this report to be sustained and made more widely available, pediatric providers must have greater latitude to take on new care approaches that address the very real needs of at-risk children and their families. Paramount is enabling pediatric providers to respond to the physical and mental health needs of parents and caregivers as much as the needs of the child. Key questions remain about how to pay for two-generational approaches; how to improve pediatric capacity to do that work; and how to engage other critical care providers, such as obstetricians, who can influence health outcomes for both child and parent. A challenge of equal importance is reducing barriers to using health care resources, including care coordinators, to screen for social determinants of health as a part of routine pediatric practice and reliably connecting those families to services and programs that can assist them.

**Conclusion**

Achieving universal access to pediatric primary care has long been an essential policy goal for New York. Now that substantial progress has been made, the focus for policymakers and providers can begin to shift to the work of expanding what it is that children will have access to. This moment in New York is ideal for considering what new contributions pediatric primary care can make to a child’s life, in keeping with advanced knowledge about early childhood development and the evolved health needs of today’s youth. Seizing such an opportunity could make New York a leader among states in strengthening pediatric primary care and improving child well-being. Central to any discussion will be careful consideration of what changes are desired and feasible within pediatric practice and how to provide the right combination of policy, financial, and technical supports to turn that vision into reality.
References


