How Can We Support Children and Families With Information Gleaned From Developmental Screening?

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Approximately 16% to 18% of US children under the age of 18 have a developmental or behavioral disorder, and in 2016, ~4.5% of children were reported to have ever been diagnosed with a developmental delay other than autism or intellectual disability, up from 3.5% in 2014.[1] In 2006, the American Academy of Pediatrics released a policy statement and algorithm that recommended screening children for developmental disorders at the 9-, 18-, and 24- or 30-month well-child visits using standardized measures and conducting developmental surveillance at every pediatric visit.[2] After the statement was issued, the percentage of pediatricians who self-reported screening increased significantly, from 23% in 2002 to 47% in 2009 and 63% in 2016. Although this rate has nearly tripled over 14 years, 36% of pediatricians are currently not using standardized instruments to identify children with developmental delays.[3,4]

In an article in this month's edition of *Pediatrics*, entitled "Establishing New Norms for Developmental Milestones," Sheldrick et al[5] examined the findings of developmental screens using the Survey of Well-being of Young Children (SWYC) in 41 465 children aged 9 months to 5 years across 3 states: Massachusetts, Rhode Island, and Minnesota. The authors compared specific questions on the SWYC to those that overlapped with the milestone guidelines published by the Centers for Disease Control and Prevention[6,7] (CDC) and identified the relationship between behavioral problems and social determinants of health on development. The authors' findings illuminate the complexities of the unfolding of childhood development and underscore the pressing need to screen young children. They found that (1) children with co-occurring behavioral health problems and adverse social determinants of health had lower developmental status; (2) a high percentage of parents in this study stated that their children achieved developmental milestones on the SWYC at the age the CDC states "most children" do, and an even higher percentage stated they achieved milestones by the age the CDC recommends that parents "act early," which is an age when the CDC recommends that parents talk to their pediatricians if a milestone has not been reached; and (3) much of the variation in the reporting of milestone achievement between the SWYC and CDC findings was likely influenced by the parents' beliefs about child development and the way in which both parents and clinicians interpret whether a milestone has been attained.

It has always been tempting for pediatricians to think of developmental milestones in a binary way; either they have been achieved or they have not. This study and the rapidly emerging findings from neuroscience suggest that although the unfolding of development tends to occur in a predictable fashion under ideal circumstances and at the

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population level, the story at the individual level is different. Approximately 2% of the human genome is devoted to coding proteins, and understanding of the function of the remaining 98% continues to develop. What has become clear is that although human beings have a remarkable ability to adapt to changing environments, they are also vulnerable through epigenetic modifications of gene expression, which can result in potentially permanent changes that can be felt in future generations. For children, epigenetic changes that can turn off gene transcription can occur when they are exposed to significant early adverse events, environmental toxins, poor nutrition, etc.[8] Clearly, the most potent stressor that children face today is poverty: 17% of US children today live in poverty, with rates being significantly higher for minority children.[9] Furthermore, literature is emerging that supports a "differential susceptibility" to the environment that explains how children reared under similar circumstances, including those with a similar genetic code, such as siblings, may have entirely different outcomes and responses to that environment.[10] Differential susceptibility may be attributed to things such as allelic variation in genes (eg, those that control dopamine or serotonin production) and variability in biological stress reactivity due to variations in the neuroendocrine stress response systems. In the context of this information, it is no surprise that children with more adverse social determinants of health and greater behavior problems demonstrate poorer developmental achievements.

So, what should pediatricians do? First, we must administer developmental screening at regular intervals and link children whose development is threatened to early intervention. Second, we need to go further in understanding how parents estimate their children's skills, their expectations for their children, and the cultural practices and values in which children are being raised. Third, Sheldrick et al[5] have demonstrated that we need to consider individual variation and identify the types and intensities of stressors a child and family may be facing. These sources of adversity, such as substance abuse, violence, mental health problems, food insecurity, etc, need to be reduced so that parents can provide responsive and emotionally available caregiving in environments that are safe and promote play and learning. There is good news in all of this: when vulnerable and susceptible children are exposed to supportive and nurturing environments, epigenetic changes may be reversed, and they can thrive and respond favorably in ways that may even surpass their less vulnerable counterparts. And pediatricians can play a key role!

ABBREVIATIONS

CDC: Centers for Disease Control and Prevention
SWYC: Survey of Well-being of Young Children

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