

this goal requires further clarification: Does the practice want to improve the ordering of lead screening tests or improve the documentation of the screening values in the charts? Each option requires a different approach and consequently a different PDSA cycle. Further information on these methods can be obtained from the Improvement Guide³ or online resources such as the Institute for Healthcare Improvement (<http://www.ihl.org>). Using quality improvement principles help practices to systematically examine how they deliver care and what aspects of that care might be amenable to change.

REFERENCES

See references on DVD.

CHAPTER 11

Child Development

MONITORING AND SUPPORTING EARLY CHILDHOOD DEVELOPMENT

Ilgi Ozturk Ertem

Two decades ago, the United Nations Convention on the Rights of the Child called for all countries that each child attains their utmost potential.¹ Despite the recognition that most causes of developmental difficulties in children are preventable with known interventions, up to 200 million children in developing countries are not achieving their optimal developmental potential.^{2,3} The Global Disease Control Priorities Project states that approximately 10% to 20% of individuals around the world have developmental difficulties.⁴ In the United States, 12% to 16% of young children have developmental and/or behavioral difficulties.^{5,6}

Primary health care encounters provide opportunities to support child development and optimize the development of all children by preventing avoidable developmental difficulties. This chapter provides information on the principles of monitoring and supporting early childhood development in the primary care setting and for promoting healthy socioemotional development and parent-child relationships.

Chapter 12 offers more in-depth information on developmental screening.

Optimal development refers to the health and emotional, cognitive, communicative, social, and motor functioning of a child who is reared in an environment free of known and preventable risks that are detrimental to development and scientifically and ethically known to be conducive to age-appropriate functioning and participation in life. This definition is based on the philosophy of the World Health Organization International Classification of Functioning, Disability, and Health and emphasizes functioning and participation in life.⁸ *Developmental difficulties* in this chapter are the problems that interfere with or prevent the optimal development of children (eg, hunger and social deprivation, neglect by a mother who is emotionally unavailable because of depression, disease such as cerebral palsy or autism). The term *monitoring child development* is adopted from the definition of developmental surveillance and requires regular evaluation of a spectrum of issues that impact upon a child's developmental function to assure early recognition of issues that may impact upon a child's optimal development. All aspects of normal physical development, as well as cognitive, language and motor function, caregiving environment, socioemotional function and ability to engage in age-appropriate activities need to be assessed.^{9,10}

In clinical practice, monitoring of development and promoting optimal social-emotional development and parent-child interactions is a seamless process.

KEY CONSTRUCTS ON CHILD DEVELOPMENT

BIOPSYCHOSOCIAL MODEL

The biopsychosocial model recognizes that much, if not all, human disease and disability is a function of the interaction among biologic processes and the environment. In contrast, the biomedical model that was applied in the past viewed ailments as the consequence of episodic, endogenous factors. Physical health and development are viewed as inseparable components of a child's well-being since the factors that cause poor health (eg, undernutrition) also affect child development. Similarly, factors that cause poor development (eg, unresponsive caring environments) also influence child health. The World Health Organization refers to this phenomenon as "a critical link" between physical health and psychosocial development.¹¹

BIOECOLOGICAL THEORY

The bioecological theory proposed by Bronfenbrenner emphasizes that human development takes place through processes of progressively more complex interactions among a "biopsychosocial" human being and the persons, objects, symbols, and systems in his or her proximal and distal environments.¹² The process of this interaction is dynamic, and the child plays an active role from birth onward. [Figure 11-1](#) offers a practical schema for this theory. The biological and genetic endowment of the child is represented by the cir-

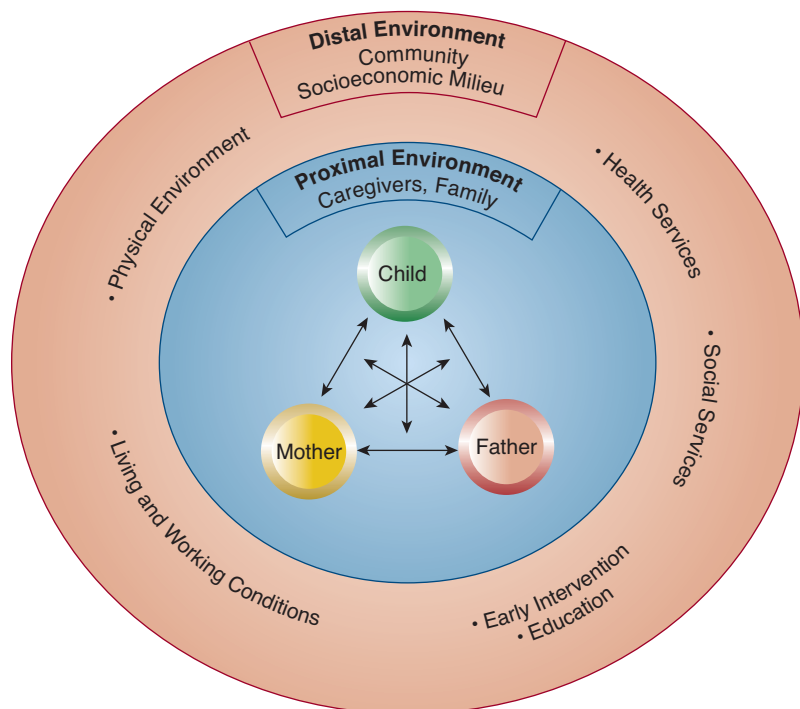


FIGURE 11-1. Schema of child development. (Schema developed by Kyle Pruett and Ilgi Ozturk Ertem.)

de labeled “child.” Within this endowment, concepts such as the physical health, temperament, personality, developmental abilities, strengths, coping skills, and vulnerabilities of the child are included. The two other circles, labeled “mother” and “father,” represent similar characteristics of each member of the child’s proximal caregiving environment—often the parents but also other key caregivers and siblings. The arrows between each member signify relationships and interactions between these members. The intersecting arrows symbolize how relationships between one dyad shape and influence others in the system. The proximal environment involves the child’s relationship with his or her primary caregivers and everyday interactions such as feeding, comforting, playing with, and talking to a baby. The proximal caregiving environment does not exist in a void. It is nested in a community of extended family, neighbors, friends, and a socioeconomic milieu including the workforce, wealth, and well-being of a country and the population’s health. Within this *distal environment*, living and working conditions of caregivers; educational, social, and health services; and the physical environment directly or indirectly influence the development of the child. For example, the child may be affected by a stressed mother or father whose workplaces do not accommodate their early parenting needs and desires. Bioecological theory informs clinicians that all components—the biological, psychological, and social functioning of the child and his or her dynamic interactions with the proximal and distal environments—must be addressed when supporting and monitoring child development in primary care.

■ CONCEPTS OF DEVELOPMENTAL RISK, PROTECTIVE FACTORS, AND RESILIENCE

Developmental risk factors are factors that impinge on the child or the proximal and distal caregiving environments and that have a negative influence on child development. Biological and psychosocial risks often coincide. For example, children born with low birth weight (biological risk) may also be born to mothers with low education levels and live in poverty (psychosocial risks). This phenomenon is sometimes called a “double jeopardy.”¹³ The cumulative number, duration, and severity of risk factors and the adequacy of counterbalancing protective factors determine the ultimate impact on the child’s development.¹⁴ *Protective factors* are aspects of the child, the caregiving relationship, or the distal environment that provide a positive influence on the child’s development. Applying the bioecological theory, examples of protective factors are (1) the biopsychosocial health and well-being of the child (the child’s capacities to engage with his environment positively and to cope and develop despite adversity); (2) trusting, stable

relationships with nurturing, emotionally responsive, supportive, and stimulating caregivers in the proximal environment; and (3) access to quality health, childcare, educational, and social support systems in the more distal environment.¹⁴ *Resilience* is defined by Rutter as “an interactive concept that refers to a relative resistance to environmental risk experiences, or overcoming of stress or adversity.”¹⁵ Resilience differs from general concepts of risk and protective factors because it aims to incorporate differences in each individual that enable that individual to overcome adversity. Resilience is often regarded as innate qualities residing in individuals. Examples of these qualities are behavioral, emotional, and cognitive self-regulation capacities and optimistic attitudes toward life. Such qualities are shown to contribute to the mental health and achievement of children, although they are often not adequate to overcome persistent, multiple risk factors.¹⁴

A *life-cycle approach to risk factors* may facilitate viewing which risk factors need to be addressed within primary care at which time. Within the life-cycle framework, which is schematized in Figure 11-2, risk factors affect child development at the following levels: preconceptional, prenatal, natal and postnatal including the newborn period, infancy and early childhood, later childhood, adolescence, and young adulthood. The life cycle becomes intergenerational as young adults enter the preconceptional phase. Lifelong risks that may influence children at any time period during the life cycle are placed at the center of the figure. Ideally, the best starting point for these factors to be addressed is the preconceptional period before they affect the conceived child. Examples of risk factors during infancy and early childhood related to the child’s health are malnutrition, iron deficiency, chronic infectious diseases, chronic illness, and exposure to heavy metals and toxins. Examples of risks related to the child’s psychological endowment are difficult temperament, fragile regulatory functions leading to excessive crying, sleep and feeding problems, and difficulties in the child’s ability to relate to others and to learn. Risks during this period related to the proximal environment are inadequacies in the nurturing and stimulating qualities of the caregiving environment, such as problems in attachment, or lack of appropriate child care. Protective factors can influence all phases of the life cycle and can counterbalance risk factors. Supporting child development in primary care involves strengthening resilience and protective factors and decreasing the number, duration, and severity of risk factors.

■ ATTACHMENT THEORY

Attachment theory, developed by Bowlby, enables a closer look at the core component

of bioecological theory.¹⁶ Based on attachment theory, a stable, responsive, nurturing primary relationship enables the child to regulate his emotions and develop a secure base from which to explore and learn and form relationships with others. Research in developmental psychology shows that a secure attachment to a primary caregiver is associated with healthy emotional and cognitive functioning in later life.¹⁷ This theory implies that interventions in primary care must address the caregiver–child dyad and support parents in their role of helping their infants develop secure attachment processes. Later in this chapter, we further explore the importance of attachment.

■ THE MOTHERHOOD CONSTELLATION

How pediatricians and other primary health care providers can support the parenting role is informed by another theoretical construct related to the emotional needs of mothers, who are the primary caregivers in most societies. Stern, a pioneer in infant development, defines a specific era of maternal emotional development that occurs following the birth of a child.¹⁸ Pregnancy and birth of the baby alter the mental organization of the mother such that her primary preoccupation becomes the survival and nurturing of her baby. Caring for her baby enables attachment, with the baby becoming *her* baby, not just any baby. She also tries to create a supportive, psychologically “holding” environment that supports her mothering role. Stern calls this construct *the motherhood constellation*. This construct can help clinicians, who are in fact a component of this holding environment for the mother. Approaches that foster the mother’s sense of competence and that empower her will be effective; approaches that criticize her or make her feel inadequate will be counterproductive. A relationship-based, supportive, noncritical, non-didactic approach to help caregivers in their parenting is the hallmark of many successful interventions.

■ NEW RESEARCH IN DEVELOPMENTAL NEUROSCIENCE

Parallel to the development of new techniques to study brain architecture has been a surge in research in developmental neuroscience. This research supports conventional theories that highlight the role of the proximal and distal caregiving environments on child development.^{19,20} By showing how early experiences shape the architecture of the human brain, this new era of research has enabled an understanding of the crucial role of early experiences across the life span.

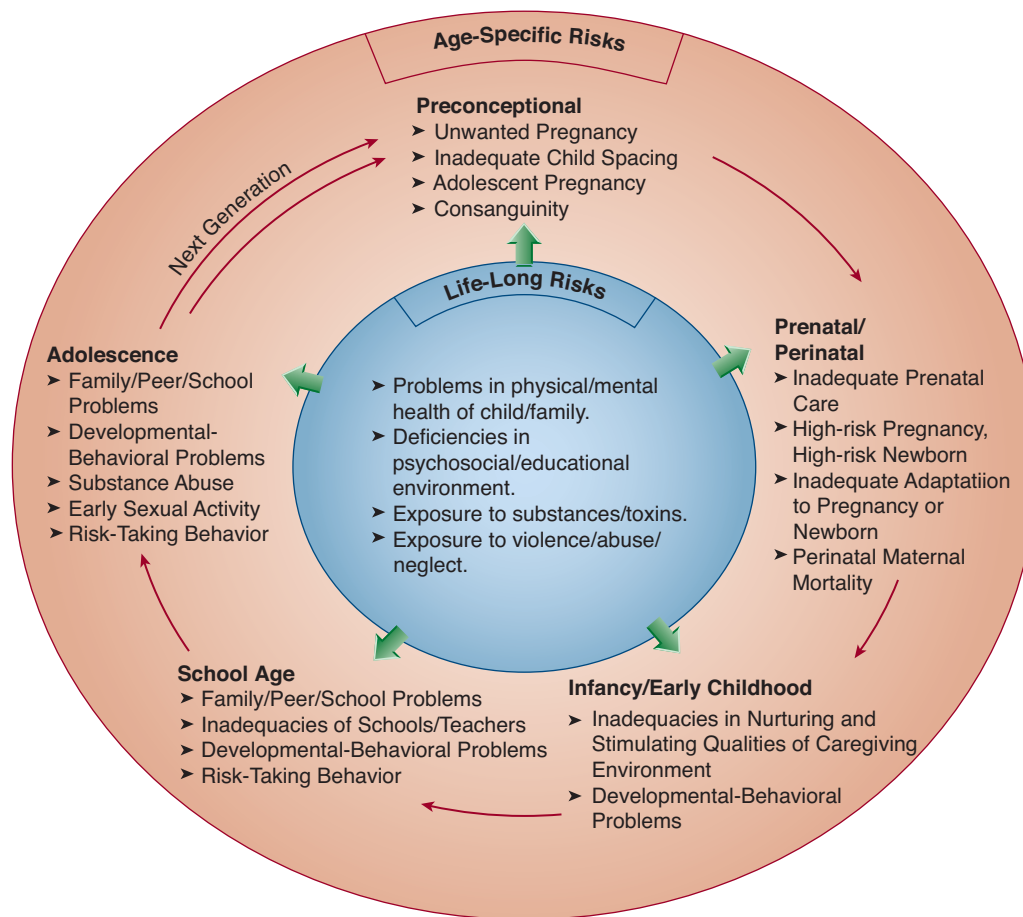



FIGURE 11-2. A life-cycle approach to developmental risks and protective factors.

MONITORING AND SUPPORTING CHILD DEVELOPMENT

Clinicians hold the responsibility to monitor and support the development of children so that optimal developmental progression is assured and risks or difficulties can be detected and addressed.^{20,21} Children and their caregivers benefit from developmental monitoring during health visits in multiple ways: (1) If the child is developing typically and there are no risks that could impinge on development, clinicians can provide reassurance, support parenting competence, and provide anticipatory guidance. (2) If the child has a developmental risk or difficulty, it can be detected early and addressed. (3) Caregivers in both situations can be empowered and informed about how to support their child's development.

When monitoring child development in primary care, it is important to consider the five key principles of the monitoring process: (1) The clinician conducting the monitoring should be knowledgeable about how child de-

velopment is currently conceptualized. (2) The monitoring process should be based on the principles of family-centered care, and the family should be active participants in the monitoring process rather than passive recipients; the clinician must build a continuous, trusting, supportive, and empowering relationship with the child and caregivers. (3) The monitoring should be comprehensive so that multiple aspects of the child's health and development and the family's functioning and needs are taken into consideration rather than just the results of a screening test based on developmental milestones. (4) Clinically appropriate, standardized, scientifically reliable, and valid instruments should be used to determine delays and difficulties in development. (5) The monitoring process should flow seamlessly with a process of working with the family to support child development and to enable access to specific services for children and families with special needs. 

Clinicians should comply with guidelines for the use of standardized instruments to monitor developmental milestones in all areas of development (as discussed in Chapter 82).²¹ Clinical instruments exist for screening many components of the child's development, including a

caregiver's concerns, developmental milestones, behavior, aspects of the caregiving environment such as a caregiver's depression or competence, adequacy of social support systems, and adequacy of stimulation provided in the home environment. It is important to note, however, that the use of standardized instruments cannot replace the core skills of individualized clinical practice, including clinical history taking, observations, and providing feedback. The key components of monitoring and supporting child development using these clinical skills are listed and summarized in [Table 11-1](#). At all times, clinicians should engage the caregivers in this process as active partners. It is important to orient the family as to what is implied by child development so that they can participate fully as informed partners in the monitoring process. Clinicians can then monitor and support the following aspects related to the child's development:

1. *Caregivers' concerns.* A large body of literature suggests that one of the key components of developmental monitoring is asking caregivers whether they have concerns about their child's development. Par-

Table 11-1. Key Steps for Monitoring and Supporting Early Childhood Development

Monitor	Ask	Observe	Strengthen, Support, Plan
Explain context and what you mean by development.	"Just as it is important for us to follow your child's physical health, it is also important to follow her development. By development I mean learning, understanding, communicating, speaking, how she forms relationships, her behavior, play, moving around with her body and legs, using her fingers and hands."	Supply toys conducive to observation: rattle, blocks, crayons and paper, doll and spoon, car on string, book.	Explain the importance of early brain development, including learning, socioemotional development, and language.
Caregiver concerns	"Do you have concerns about your child's development in any of these areas?"	Explore concern area closely.	Imply to caregiver that you will take every concern seriously.
Relating	"Tell me how your child is forming relationships. What does she do to engage others? Give me examples of how she interacts with you, people she knows, and with strangers."	Watch how child initiates and sustains eye contact, reciprocal interactions, and engagement with caregiver, you, toys and objects.	Praise responsive interactions that promote relationships. Explain core importance of relationships for children.
Expressive and receptive language	"Give me examples of her sounds, gestures, words, and how she lets you know what she wants." "Give me an example of how she understands when you talk to her. How does she respond when you tell her you will bring her food or take her out?"	Observe communicative intent, sounds, words, gestures, child's response to language and commands.	Praise efforts to stimulate language. Give examples of language-rich, language-responsive environments.
Regulation	"Tell me how she soothes herself when she is distressed, upset, irritable, excited, or anxious." "What kinds of things do you do to help her when she is like this?"	Observe what happens when child is distressed.	Comment on importance of child's capacity to regulate states and emotions and on how caregiver is helping regulation.
Play, activities, participation	"How does your child play?" "How do you play with her?" "How often does she play outdoors or with other children?"	Observe child's engagement with toys and objects, comfort in participating in the visit.	Praise opportunities for play and participation. Suggest other age-appropriate activities.
Movement	"Tell me how she uses her hands and fingers and how she moves her body around, such as sitting, walking, running, climbing."	Observe fine and gross motor movement.	Explain importance of opportunities for movement.
Protective factors	"What kinds of things do you and other people in her life do to support your child's development?" "What are some of the key things that have worked to help her develop?" "What do you plan to do to support her development by her next check-up?"	Observe caregiver-child interactions and caregiver affect when talking about child, risk, and protective factors.	Explain importance of supportive, stimulating environment. Provide anticipatory guidance.
Risk factors	"Sometimes there are conditions that may pose difficulties for a child's development. For example, the family may be under stress, parents may be depressed, there may be upcoming stressful life events like the father going in the army, a change in caregivers. Are there any such conditions for your family?"		Respond with empathy. Explain importance of minimizing effect of risks.
Strategies and solutions	"How would you and your family plan to minimize the effect of these difficulties on your child? For example, what could you do so that she gets enough time for interactive play?"	Observe caregiver reflection on finding strategies and solutions.	Support positive caregiver strategies. Help caregiver find other solutions. Refer for additional services.
Follow-up	"What do you think of the plans we've made to support her development until the next visit? How about these referrals to additional services? When could you come back to tell me about the progress?"	Observe for nonverbal indicators of caregiver's comfort with plans and compliance with recommendations.	Revise plans when necessary. Plan an effective follow-up with family's input.

ents do know their children best, and the clinician will obtain invaluable information if parental concerns are fully explored. Furthermore, knowing about caregivers' concerns is a crucial step in giving feedback for what needs to be done to support the child's development. Standardized, reliable, and valid instruments exist to help clinicians in obtaining information about caregivers' concerns.²⁴

2. *Capacity for relating.* A child's capacity for relating to her primary caregiver and others in her immediate family, as well as how she responds to strangers, is a key component of emotional development and should be explored in full. Observations should

include the child's eye contact, affect, and reciprocal interactions and engagement with the caregiver, the clinician, as well as toys and objects during the visit. The caregiver can be praised for specific responsive interactions observed during the visit. Clinicians can explain to the caregivers the core importance for young children of forming trusting, secure relationships and provide information about how this can be accomplished.

3. *Expressive and receptive language.* The child's communicative intent and acquisition of expressive and receptive skills are key parts of development, and delays in these domains are often the most common and earliest signs of developmental difficulties. The clinician,


through history taking, should obtain examples of communicative gestures, sounds, and language that the child uses to assess the progress in this area. The child's communicative intent, sounds, words, gestures, and responses to being talked to and to caregiver demands should be observed. Efforts to stimulate language should be commended, and examples of an environment that is rich in and responsive to language should be provided.

4. *Capacity for regulating emotional states.* A child's capacity to regulate his emotional states, particularly when he is distressed, overwhelmed, or excited, is an important marker for later mental and cognitive

development. The clinician can ask about how this component of development is evolving and how caregivers are supporting it. The health visit provides many opportunities for clinicians to observe the capacity of the child to regulate his emotions and the caregiver's support to this process. Clinicians can note and comment on such positive accomplishments and interactions and talk about the importance of regulation that can be found in the next section by Dr. Carol Cohen Weitzman.

5. *Play activities and participation.* Activities and participation are crucial components of the well-being of individuals beginning from early in life.⁸ Play is the most important activity for young children. How children play provides information about almost all components (emotional, social, cognitive, communication, relationships, and movement) of developmental functioning. The clinician should learn about and support and expand on, if necessary, the opportunities a child receives to play inside the home and outdoors in nature or playgrounds and to interact with peers and other members of the community.
6. *Movement.* Assessment of the child's movement is a part of the neurological examination that should be conducted at regular well-child visits for each child. Functional movement of trunk, all 4 limbs, and fine motor movement including finger functions and eye-hand coordination should be ascertained. Opportunities for movement should be explored, supported, and expanded on when needed.
7. *Protective factors.* To help caregivers in supporting a child's development, the clinician should gain an understanding of protective factors that are already present within the child's immediate and more distal environments. This information can be obtained by (a) directly observing caregiver-child interactions, the caregiver's affect, nonverbal clues about caregiver's competence, and the caregiver's perceptions of the child; and (b) by asking the caregiver about how other people influence the child's development. The clinician can commend all positive efforts by the caregiver and other family members to help support the child. The clinician should also ask what the family plans to do to support and promote the child's development up to the next visit. As explained in Chapter 10, "Well-Child Care: Health Supervision and Maintenance Visits," anticipatory guidance can be provided.
8. *Risks factors.* Relying on a trusting relationship between the clinician and the family and on a supportive, nonjudgmental, noncritical approach, the clinician can inquire

about risk factors that may be detrimental to the child's development. The clinician should specifically ask about parental stress, illness and mental health problems including depression and/or substance abuse, and ongoing or upcoming stressful life events. Inadequate quality time spent with the child may be in itself a risk factor. The clinician can respond to a caregiver by listening with empathy and emphasizing the need to minimize the effect of risk factors on the child.

9. *Family's strategies to minimize risk factors, the need for additional services.* All risk factors cannot be addressed by the clinician. In the case of child abuse and/or neglect, the clinician must take immediate, active action and involve child protective sources outside of the family. In other cases, however, it is important to work with the family to help them find effective strategies to address risk factors. The clinician should be knowledgeable about community resources that can be helpful to the family and child and make referrals when necessary.
10. *Follow-up plan.* Once a plan for supporting the child's development is established, it is important to assure follow-up so that the outcome of the plan and need for additional support can be monitored. 

PROMOTING HEALTHY SOCIOEMOTIONAL DEVELOPMENT AND PARENT-CHILD RELATIONS

Carol Cohen Weitzman

Emerging information from neuroscience about brain development is altering our understanding of early childhood development. Pediatricians are in an optimal position to incorporate this new information into practice and to play a vital role, along with parents, in supporting children's healthy socioemotional development. The clinicians' role is important because of the frequent contact that families have with the pediatrician, particularly in the child's early years, and the intimate bond that can develop between parent and clinician over time through a shared interest in the child. Although children's behavior and development are expected to unfold along certain lines, the pacing of development and the emergence of specific skills are unique to each child. Socio-

emotional growth and development continues to evolve and unfold over time. Pediatricians often describe stages of development in terms of milestones, but such a model of discrete milestones works better for some domains of development, such as motor development where there are discrete, observable phenomenon, than for others. In placing socioemotional development into a milestone model, physicians may be led to believe that it follows a linear pathway, when in fact, it is characterized more by periods of developmental bursts, regressions, and consolidations. Trying to fit socioemotional development into a milestone framework may lead physicians to examine only whether a particular milestone has been attained or not attained rather than appreciating the multiple influences that impact a child's socioemotional development and the nuances that exist within and between typically developing children.

ATTACHMENT

The foundation of children's socioemotional development lays in the capacity to form a secure attachment and intimate relationship with a caregiver. This capability is highly undeveloped at birth and unfolds over the first years of life. Although the drive to form a secure attachment with another may be innate, its success is not guaranteed. Bowlby elucidated a theory of biological drive by which infants are motivated to develop intimacy with another for the purposes of attaining internally felt security, particularly during times of stress.¹⁶ At birth, intentional bids for social engagement are not present. By 2 months of age, however, this has begun to change. The emergence of the social smile indicates that the baby is able to read a range of affective states of the parent and respond to these states in a way that promotes ongoing connection. During periods of pleasurable exchange and the baby's expression of positive affect, parents amplify and reinforce the baby's actions and signals. When a 2-month-old baby smiles at a parent for the first time, the parent's joy and excitement are communicated to the baby through voice, affect, and signals, and these actions invite the baby to repeat this behavior. In an environment of predictable parent-child interactions, babies come to recognize a pattern of responses and develop a stable impression of how their responses will be received.

Inevitably, there are times of "mismatch" between the infant and the parent. Parents' attention may be focused elsewhere, and they may miss the baby's bid for engagement. A parent may misinterpret an infant's fledgling signals. These mismatches, or "misattune-

ments,” are inevitable and often lead to the infant experiencing some measure of frustration and stress. When these experiences, however, are embedded within a well-functioning dyad where a parent is sensitive often and reliably enough to the needs of the infant, these stressful experiences are a component of early development that allow the baby to make use of the parent as an external organizer of his state until a state of homeostasis is regained and the baby is once again ready to engage. Emotionally available parents are able to respond to the distress of the baby by adjusting their responses in a way that promotes comforting of the baby. These responses may require a shift in demeanor, such as quieting one’s voice, decreasing one’s movements, or using a gentle touch, all of which are dependent on the infant’s unique temperamental style and needs.

Through thousands of these cycles of engagement and disengagement with restoration of homeostasis, the baby can tolerate increasing states of arousal without becoming overwhelmed and can sustain longer periods of interaction. Parents and infants continue to fine-tune their signals in an effort to maintain attunement with one another. Infants begin to develop a confident expectation that they can affect their world and exert some measure of control over their environment. It is through these repeated, consistent, predictable, and responsive “everyday moments” that children come to develop secure attachments and carry within themselves a sense of safety and security about their world.

The key features of parenting believed to be necessary to promote secure attachment are (1) parental sensitivity; (2) emotional availability; (3) the ability of parents to manage their own state of arousal, particularly negative emotional states; and (4) an appreciation of the infant’s needs as independent of their own.²⁷ Parents may face multiple challenges, such as chronic stress that often accompanies living in poverty or amidst violence, or their own mental illness, such as depression and substance abuse, and these factors can interfere with the parents’ ability to develop sensitivity and emotional availability to their children. Parents who themselves were raised in depriving environments where they may have experienced neglect or abuse may have their own difficulties with managing intense affect, anger, and stress. This may interfere with their abilities to promote secure attachment relationships.

In comparison with securely attached children, insecurely attached children may respond to environmental stressors, such as separations from and subsequent reunions with a parent, with anxiety, avoidance, excessive clinginess, or disorganization that inter-

fere with a rapid return to homeostasis and behavioral reorganization. Approximately 55% to 65% of children are considered securely attached. Children who are not securely attached may feel more uncertain about the quality of their relationships, and these children may be more uncertain about their ability to obtain help during challenging moments. Early attachment relationships are highly predictive of later functioning of children and adults.²⁸ Securely attached children have better prosocial skills and empathy toward their peers,²⁹ whereas insecurely attached children demonstrate more aggression and higher rates of psychopathology.^{30,31}

SOCIOEMOTIONAL DEVELOPMENT

The quality of the parent-child relationship underpins the unfolding of children’s socioemotional development and the way children learn to adapt and respond to their environment. The primary socioemotional achievements in the early years that continue to exert an influence throughout all of childhood include autonomy and mastery, separation and individuation, and self-regulation.³²

■ AUTONOMY AND MASTERY

Autonomy refers to the achievement of behavioral independence, and *mastery* describes the child’s quest for ever-increasing competence. These processes can be seen exerting an effect on young infants and children. Consider the 9-month-old who is learning to pull to stand and will do so over and over again until the action is achieved. Children experience internal satisfaction when they master new skills and accomplishments that energize them to take on the next discovery and challenge. Encouraging autonomy and mastery allows children to feel effective and competent and imbues them with a sense that they can manage life’s daily challenges and exert some control over their world. As children mature, their powerful drive for autonomy and mastery may conflict with parental limit setting and the maintenance of a safe environment. Further, the internal struggles that toddlers often experience due to the simultaneous desire to master a task and the frustration in failing to do so may culminate in tantrums and behavioral disorganization. Over time, as children are better able to express frustration in more adaptive ways and regulate their behaviors and emotions, the drive for autonomy and mastery can be channeled into (1) tackling new challenges, (2) developing focused skills and achievements, (3) developing social competence, and (4) increasing enduring feelings of self-worth. Al-

though the drive for autonomy and mastery is believed to be an internal motivating force, it is also dependent on input from caregivers who can reinforce this drive by (1) recognizing and reinforcing children’s efforts, (2) helping just enough to reduce overwhelming frustration but not so much as to thwart problem solving and mastery, (3) providing children with choices and opportunity for independence, and (4) establishing clear and consistent limits and boundaries.

■ SEPARATION AND INDIVIDUATION

Mahler described a developmental theory to explain the processes and stages that facilitate the development of a child’s unique identity as one that is separate and distinct from, yet highly influenced by, the parent.³³ These stages require that the infant shift from a “symbiotic” early relationship with a caregiver to one in which the young child is exploring the world while continuing to receive feedback from the parents. Ultimately, in normative circumstances, children learn to “hold the parent in mind” and carry the thoughts, ideas, and images of the parents with them as they venture forth to create their own identity and develop independent thinking. Much of childhood is devoted to negotiating separation and individuation, and the struggles toward this goal are bidirectional as parents, too, need to negotiate and adapt to a child’s growing interest in and need for independence. Pediatricians frequently address issues of separation, such as negotiating a baby sleeping in her own crib, entering childcare or preschool, attending sleepover camp or other activities away from home, and eventually leaving home. Routine anticipatory guidance includes discussions of separation awareness or protest, when an infant may transiently experience discomfort upon brief separations from a parent. When children experience separations that are tolerable and predictable, these separations can promote psychological adaptation and healthy identity formation. As children continue to individuate, their social worlds expand beyond their parents and begin to incorporate relationships with peers and other adults. Young children who develop social competence and an ability to maintain positive relationships with others are more likely to have better self-esteem and mental health functioning.³⁴

■ SELF-REGULATION

Self-regulation is the ability of an individual to respond to his or her own emotions in a way that allows for a reduction in negative feelings without becoming overwhelmed or experiencing severe, unmanageable psychological

distress, or internal instability.³⁵ Self-regulation involves the capacity to regulate and direct behaviors, emotions, and attention through effortful control so that the individual might pause and reflect upon his or her own mental states and the mental states of others. This capacity allows a person to consider how to respond, to inhibit undesirable responses, and to refrain from responding impulsively. As children mature, self-regulation is evident when they can (1) express emotional states, such as saying “I am angry” rather than having a tantrum; (2) substitute words for an aggressive response, such as asking for a toy rather than simply grabbing it or hitting the child who has it; and (3) connect feelings and ideas, such as expressing a feeling of frustration because they must wait their turn.³⁶ Children who display a greater capacity for self-regulation have greater academic achievement and competence in school.³⁷ Further, lack of regulatory capacities predicts higher frequencies of internalizing and externalizing behavior problems, lower levels of social competence, and poor school readiness.^{37,38} The emergence of self-regulation is directly related to the quality of the parent–child relationship. Initially, parents exclusively provide the scaffolding to help infants regulate their state. Over time and through consistent and nurturing interactions, a child’s capacity for self-regulation and recruiting help when needed develops.

CORRELATIONS WITH EARLY BRAIN DEVELOPMENT

The advent of neuroimaging opened a window into brain functioning that has allowed researchers to identify more clearly key early childhood experiences and the effect of the quality of the caregiving environment on structural brain development. The right hemisphere undergoes a critical period of maturation long before the left hemisphere undergoes its growth spurt. Studies show that the right hemisphere is the dominant hemisphere in the young infant with the left hemisphere not becoming dominant until the third year of life.³⁹ Although the entirety of the brain undergoes rapid growth in the first years of life with all major fiber tracts identified by 3 years of age, right hemispheric volume exceeds that of the left in infancy. The right brain is responsible for decoding emotional meaning that is conveyed through emotional tone of voice, gestures, and images. The capacity to process information from faces is a right hemispheric function, and the right hemisphere is believed to be responsible for maintaining a coherent sense of self and recognizing familiar members of a species. Throughout life, the right brain is responsible for the conscious and nonconscious reception,

expression, and regulation of emotions. In the early years, therefore, key learning lies in decoding and processing nonverbal, affective communications and emotional experiences, and it is not until approximately the third year of life that the more “cognitive” skills of the left brain begin to play a more dominant role.

The other major structural system in the brain undergoing rapid maturation in the early years is the limbic system. Schore elucidates a sequence of brain maturation that highlights the impact of relationships on brain structure.^{39,40} Initially, the infant is born with a functioning amygdala, a primitive structure deep within the limbic system that allows the infant to process information about external stimuli and produce autonomic and arousal responses. Clearly, when faced with perceived threats to their welfare, newborns need this ability to react and draw attention to themselves. By 8 weeks, however, the limbic system is already beginning to mature with higher structures such as the anterior cingulate coming on line. Greater sophistication emerges in the ability to process more complex emotions and facial expressions, and greater modulation of the autonomic nervous system begins to occur. These structural changes correlate with the increasing sophistication that emerges in parent–child interactions in the sharing of emotions, facial expressions, and gestures. By the end of the first year of life until the middle of the second year, under reasonable circumstances, the right orbitofrontal cortex of the right hemisphere matures. This region of the brain is the most developed structure of the limbic system, and it exerts a regulating effect on material processed through the amygdala. The orbitofrontal cortex allows humans to manage emotional responses with greater complexity and to respond thoughtfully. It is responsible for the organization of experiences and exerts an influence on behavior by inhibiting strong urges, such as aggressive and sexual feelings that emanate from deeper limbic structures, when they are not socially appropriate or may be maladaptive to overall functioning. By the end of the first 2 years of life, brain systems are maturing in such a way that enables children to begin to regulate their responses to their environment and to interact with their environment with greater flexibility and complexity.

Neuroimaging studies have shown that early stressful social relationships lead to significant decreases in adult right prefrontal volumes.⁴⁰ Imaging studies of children with a history of maltreatment have shown changes in the volume of the right hippocampus.⁴¹ Chugani concluded that “social intelligence” depends on critical interpersonal experiences between 6 and 18 months of age. Positive relational experiences promote synaptic connections with-

in the orbitofrontal cortex, whereas chronic stress has the long-term effect of damaging the development of the limbic system.⁴² Thus, relationship-specific experiences appear to have far-reaching and potentially long-lasting consequences for the later functioning of a child into adulthood.

RETHINKING THE WELL-CHILD VISIT AND CONCEPTUALIZATION OF DEVELOPMENT


In light of these new data, pediatricians must be adept at understanding and discussing with parents the promotion of secure parent-child relationships, normative child behavior, and socioemotional development during well-child visits.

If pediatricians are confined to a narrowly conceptualized view of child behavior and socioemotional development, discussions with parents will be limited to considerations of whether or not a child has met a particular milestone, and opportunities that present themselves during well-child visits to strengthen or explore the relationship between a parent and child will be lost. With only a milestone paradigm presented, parents may mistakenly conclude that development unfolds in a preprogrammed way, potentially leading them to minimize the critical role that they play in their child’s socioemotional health, well-being, and brain development. Parents also may not understand *what* aspects of their role as a parent are critical or *what* they can do from a relational standpoint to enhance their child’s development.

PROMOTING HEALTHY SOCIOEMOTIONAL DEVELOPMENT AND PARENT-CHILD RELATIONSHIPS

Schor suggests that it may be necessary to rethink both the content and process of well-child care in an effort to promote greater discussion of child development.⁴³ **Relationship-based developmental pediatrics**^{44,44a} is a paradigm for pediatrics that uses the well-child visit as an opportunity to support and promote healthy child behavior and development through the strengthening of the parent-child relationship. Strategies to promote relationship-based developmental pediatrics include (1) using screening instruments, (2) using additional personnel during the well-child visit to provide enhanced developmental services, (3) implementing novel methods to deliver well-child care, and (4) using specific strategies by pediatricians.

■ SCREENING INSTRUMENTS

A number of screening instruments appropriate for use within primary care settings are specifically designed to screen for socioemotional development and behavior (see Chapter 82). Screening tools are most effective if they allow parents to disclose sensitive information in confidential ways and provide them the opportunity to reflect upon their child's experiences and their concerns. Screening tools often yield a standard score, which can be useful in comparing one child to another of a similar age, but they are also useful as a means to initiate a dialog between the physicians and parents. Negative screens are as valuable as positive ones in creating opportunities to promote healthy parenting and secure attachment. Even the parents of children displaying healthy socioemotional development may have questions and concerns regarding specific aspects of behavior or development, and these may be elucidated in efficient ways through the use of screens. Many barriers to screening exist including limited training for physician, limited time, poor reimbursement, lack of disclosure by a parent, reluctance of the pediatrician to "label" a child, limited access to mental health services, and limited knowledge of community resources. Strategies to integrate screening into well-child visits (using practice change strategies described in Chapter 5) are detailed in eTable 11.1. 

■ ADDITIONAL PERSONNEL

There is a growing interest in examining whether placing additional personnel in pediatric practices can enhance the promotion of child behavior and development and positive parent-child interactions. One such model of care is the Healthy Steps for Young Children program.^{46,47} The premise of this program is to incorporate a developmental specialist into a pediatric practice who will complement the work of the pediatrician without modifying the practice. Incorporating this specialist is theorized to increase the capacity, effectiveness, and efficiency of the practice. All families are eligible to receive these enhanced developmental services, and the developmental specialist can come from many disciplines, such as early childhood education or psychology. During office visits, developmental specialists meet with parents and children and look for opportunities to address parents' questions and concerns about child development and behavior using "teachable moments." Their goal is to promote positive parent-child interactions based on observed behavior during the visit and on reported behaviors. An evaluation of this program demonstrated that parents expressed greater satisfaction with care; reported

enhanced parenting practices related to sleep position, feeding, and infant development; discussed more anticipatory guidance topics; and remained in the particular practice for a longer period of time. These same families were less likely to use harsh or severe discipline than were families who had not received the Healthy Steps model, and mothers at risk for depression were more likely to discuss their mood with someone in the practice. Despite these gains, sustainability remains a challenge because of the difficulty in obtaining insurance reimbursement for these activities. This model, however, suggests that there are creative and innovative ways to address child behavior and socioemotional development in well-child care.

Another model of care that emerged over the past 2 decades to promote healthy parent-child interactions and socioemotional development is group well-child care. The concept of group well-child care is to see children of a similar age with their parents in a group setting to allow providers and families to have more time to talk about a range of topics in a more effective and efficient way. Physical examinations are done individually, and parents are encouraged to schedule individual appointments if they wish to discuss confidential issues. Group well-child care potentially allows for a greater opportunity to observe and discuss parent-child interaction and child behavior and development. In middle-class, white families, group care is associated with increased knowledge of child care and child development.⁴⁸ In inner-city, impoverished families, however, the effects of group well-child care on parent-child interaction, the nurturing environment within the home, child health status, and maternal social support have not been demonstrated.⁴⁸ In fact, there may even be less compliance with group care visits, and this may relate to the lack of flexibility in scheduling group sessions. Pediatricians report greater parent and physician satisfaction with this type of care.⁴⁹ Group care holds the potential to offer enhanced social support for new parents and extended time to explore topics of interest to the group, but the method of implementation, selected population, and setting require further examination.

■ SPECIFIC STRATEGIES BY PEDIATRICIANS

To effectively implement relationship-based developmental pediatrics, pediatricians must learn some new strategies. One model, **PARENTS**, was developed and stands for (1) Pay attention, (2) Ask and Reflect, (3) Elaborate, (4) Narrate, (5) Tell, and (6) Strengthen. This mnemonic was named PARENTS to emphasize that at the center of healthy children are

healthy parents and healthy parent-child relationships. Using the techniques described in PARENTS allows parents to talk about their challenges and struggles as parents, and as importantly, allows the pediatrician the opportunity to understand a parent's concern with a clearer understanding of the true nature of the problem.

1. *Pay attention.* The well-child visit is an excellent laboratory to collect data about children's development, parent-child relationships, and the social environments in which the family lives. By paying attention to what occurs during the visit, clinicians can begin to understand the dynamics of each unique family. It is critical to determine which behaviors and activities to pay attention to; there are 3 key types of activities the pediatrician can observe: the child's behaviors, the parents' behaviors, and the parent-child interactions; all of these are potentially rich sources of information. Shah notes that by observing patterns of parent-child interactions during the well-child visit, including the child's responses to stress, strangers, and novel settings and the parents' responses to the child, a pediatrician can develop a picture of the strengths and vulnerabilities within the parent-child relationship.⁵⁰ The pediatrician can begin to gather information about how well children are able to use their parents during moments of upset and stress and how responsive and attuned parents are to their child's signals. Zuckerman reports that observations of a child's behaviors and emotional states in the office can create a "teachable moment" or a trigger for greater discussion and exploration that are of immediate importance to parents.⁴⁹ For example, the pediatrician may observe how a mother responds to her 2 year old who tries to open an examination table drawer or has a tantrum.
2. *Ask and reflect.* When pediatricians first meet families, it is important to ask parents about each of them, their child, and the family; for example, what kind of baby is he, and of whom does he remind the parents? These types of questions let parents reflect for a moment and also allow the clinician to begin to understand the cultural and familial context in which the child is to be raised. At various visits, pediatricians can continue to ask these types of questions that allow for opportunities for parents and pediatricians to reflect together on the parenting goals, impressions, and values held by the family. For example, one might pose questions such as, "What are the biggest challenges and rewards you find

in your relationship with your child?” or “What is the hardest thing about taking care of your one-year-old?” Based on the observations of how the mother described earlier responded to the curious 2 year old, the pediatrician might inquire about the challenges of raising a toddler.

3. *Elaborate.* Once pediatricians have begun to pay closer attention to the events that occur during the visit and have asked parents about their impressions of their child, it is useful to elaborate further in order to obtain additional information and to engage the family. A few focused open-ended questions can help to expand the discussion. For example, if a pediatrician observed a child having a tantrum in the examination room and an exasperated and angry parent, the clinician might ask, “How are you managing these types of tantrums at home?” and “Are these strategies working for your family?” By tying these questions to salient moments in the visit, these questions become highly relevant for parents and offer opportunities to allow them to describe in greater detail their experiences and those of their child. It is important to recognize that employing this strategy may shift the agenda of the session and invite discussion that requires additional time. Therefore, using this model requires a flexible approach to well-child care.
4. *Narrate.* Choosing what to narrate to parents requires an ability to integrate the information gathered in the first 3 steps and to have a rationale for what is narrated. The findings of early brain research make it critical that pediatricians reflect back specific information gathered during the visit that highlights the nature of the parent-child relationship. Narrations to parents need to be embedded in a *relationship-based pediatric model*, transforming them from traditional milestone-based narratives to relationship-based narratives. For example, the clinician might say of the 2 month old, “Your baby is tracking things so nicely” (milestone-based) or “Your baby is watching you so intently and follows your face wherever you go” (relationship-based). Pediatricians are often reluctant to comment on uncomfortable moments observed during well-child visits, such as a parent yelling at her child or a child’s intense tantrum, because of their own discomfort or their fear of embarrassing parents by drawing additional attention to the situation. These events, however, present opportunities to establish empathic alliances with parents and children, reframe these experiences for parents, and learn more about the patterns of parent-child relationships. A

reflection during an uncomfortable moment might be, “That seemed to be a difficult moment for you when Johnny wanted your attention and you were trying to talk with me.”

5. *Tell.* Clinicians often inform parents about many aspects of pediatric care. It is important to inform parents of emerging neuroscience information in ways that are understandable so that parents feel empowered and encouraged to build a healthy relationship with their children. Providing information about early brain research can reinforce for parents the significance of their relationship with their child in helping to shape the child’s behavior and development and brain structure and function. For example, the pediatrician could tell parents of research results showing that strong parent-child connections have an important role in helping children develop healthy brains and influences their later development.
6. *Strengthen.* Well-child visits can provide critical opportunities to strengthen and affirm parents’ efforts. Pediatricians like to offer parents positive feedback, but it often tends to be more global, with comments such as “You’re doing a great job.” This global feedback lacks specificity, does not reinforce particular behaviors, and thus can leave parents bewildered as to what they are doing well. Targeted strengthening statements might include “It’s lovely to see how well you are able to tune in to your child and to respond so effectively to her signals” or “You were so effective in comforting her just now when she was so upset.” Targeted strengthening may also lead to a higher likelihood that a parent will repeat this behavior.⁴⁴

■ CHALLENGES

Some families face enormous challenges that can interfere with their ability to reflect with the pediatrician upon their parenting behaviors and experiences and thus limit the influence of these strategies. These challenges may be related to a parent’s own upbringing, mental health, or substance abuse issues or to external stressors such as living in poverty or a violent community. It is important to recognize that pediatric settings are not the only place to reach families, and for troubled families, the pediatric settings are not enough. Pediatricians must collaborate with other providers and systems of care, such as childcare settings, mental health providers, and social services, to help struggling families.

REFERENCES

See references on DVD.

CHAPTER 12

Screening

Ada M. Fenick

PRINCIPLES OF SCREENING

Much of the history and physical examination obtained at each health supervision visit is directed toward the identification of undetected problems or their risk factors in an effort at secondary prevention of undesirable outcomes. Screening for these conditions implies the presumptive identification of disease in an asymptomatic individual before it becomes clinically evident. Screening is not diagnostic; a patient with a positive screening test must undergo further evaluation for definitive diagnosis.¹ Pediatricians must be aware not only of current recommendations regarding screening and the specific tests available but also of the basic principles and concepts behind screening in order to evaluate whether a given program does more good than harm for their particular patients and community.

Screening assumes that identified persons will undergo definitive diagnostic testing and will subsequently benefit by earlier implementation of treatment or prevention programs. In deciding what conditions are worth screening for, the clinician must consider the following:

- Is the disease common in the population and serious enough to warrant screening?
- Is there an acceptable treatment for the patients who have the condition?
- Will early diagnosis favorably influence the outcome?
- Is there a good screening test available?²

The effectiveness of a given screening program can be demonstrated by performing a randomized clinical trial in which all pertinent outcomes are evaluated. Unfortunately, such data are often lacking or difficult to obtain. In the absence of such studies, the value of a given screening program must be defined in relation to the characteristics of the condition being screened for, the test being used, the population being evaluated, and the larger social context in which decisions regarding the value of detection and the allocation of resources are being made.

Identification of conditions for which no treatment exists or for which the benefit of existing therapy is unproven, is of questionable value, or is potentially harmful. Even if an effective intervention exists, the clinician must weigh the potential risks and benefits of the treatment itself with that of the identified condition and consider the impact of public accep-