

# **From Neurons to Neighborhoods: Determinants of Child Wellness**

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During the past few decades, there has been an explosion of new evidence related to child health and development, and in many respects we now have the knowledge required to ensure that all children reach their full potential. But are we really doing all that we can do to ensure the health and well-being of children? Have we taken the necessary steps to ensure that the settings in which children grow and develop are health promoting rather than potentially harmful? In this presentation, I provide an overview of the health status of children in the US today, and discuss some of the remaining threats to their health and well-being. Moreover, I will discuss the importance of examining child health and development from a social ecological model, one that emphasizes the importance of the interaction that occurs between the child and his/her physical and social environments, and I provide an example of how the child's biological, physical, and social environments all collectively come to play to create childhood risk for obesity in Los Angeles. My presentation will draw heavily from two reports recently released by the Institute of Medicine and the National Research Council entitled, *From Neurons to Neighborhoods: the Science of Early Childhood Development* (2000) and *Children's Health, The Nation's Wealth* (2004).

## **Child Health in the US Today**

In the US, children are healthier today than perhaps ever before. Indeed, we have seen dramatic improvements in child health during the past several decades, with significant reductions in infant mortality, as well as mortality and morbidity associated with many infectious diseases and accidents. Moreover, there have been steady increases in the proportion of children who are fully immunized, and children who have some form of health insurance and hence the potential for increased access to care. Behaviors associated with increased risk for morbidity and mortality among adolescents have also decreased with time, resulting in lower rates of unintended pregnancy and illicit drug use. Thus, there are numerous reasons to be optimistic about the current and future health of our children.

And yet, some national indicators raise concern about the health of the nation's children and point to the need for continued progress (IOM/NRC, 2004). For example, according to some reports as much as 20% of children in the US have chronic health conditions (Newacheck, Hung, and Wright, 2002; Stein and Silver, 2002), and nationally, as much as 15% of school-aged children are overweight (National Center for Health Statistics, 2002). Moreover, 1 in 10 children have significant mental health conditions that cause some form of impairment (Satcher, 2001). This concern is even greater for children living in poverty and/or children from racial, ethnic minority groups, who experience far greater disparities in health outcomes. For example, blacks have higher infant mortality (CDC, 2002) and adolescent mortality rates, with the death rate for adolescent males increasing from 1985 to 2000 (125 to 130), while the rate for white adolescent males

decreased (105 to 86) (Federal Interagency Forum on Child and Family Statistics, 2003). Teenage pregnancy rates have fallen but blacks still have higher rates than other population groups (Venura et al., 2003). Hispanic children are more likely than both black children and white children to lack health insurance (IOM/NRC, 1998) and twice as likely to drop out of school (Martinez and Day, 1999). In many impoverished, inner-city communities, as much as 50% of children are overweight. Thus, despite this country's great wealth, many children are not faring well (IOM/NRC, 2004).

### **What is an Appropriate Definition of Child Health?**

A myriad of definitions have been crafted to define health, ranging from more narrow definitions, such as *the absence of disease or premature mortality* to the World Health Organization's very broad and seemingly unattainable definition that "Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity." To date, few efforts have sought to define child health, which by necessity must take into account the dynamic developmental changes that occur throughout childhood, children's dependence on families and other caretakers, and the influence that a variety of physical and social environments have on the health status and outcomes of children.

At the request of Congress, a Committee of the Institute of Medicine and the National Research Council recently crafted the following definition of child health that embraces both disease prevention and health promotion:

Children's health should be defined as the extent to which an individual child or groups of children are able or enabled to: a) develop and realize their potential; b) satisfy their needs; and c) develop the capacities that allow them to interact successfully with their biological, physical, and social environments (IOM/NRC, 2004).

Importantly, this definition emphasizes the importance of examining health within the context of the child's biological, physical, and social environments, an important fact because today's threats to childhood health result from complex interactions of influences in children's biological, behavioral, social, and physical environments. Rather than a simple cause-and-effect disease model, models of health need to consider a complex chain of interactions that persistently affect the child's health trajectory in both positive and negative directions throughout the lifespan. Health at each stage of development sets the stage for and affects later health and development. What happens to children early in their lives can have profound implications for later health and well-being during adulthood (Wadsworth, 1999). Experiences early in life establish a physical, psychological, and social foundation on which future development and adult health are based.

### **An Ecological Model for Understanding Child Health and Development**

The developmental research of the 1970s and 1980s initially explored discrete aspects of development, including physiological, cognitive, social, and moral development. Moreover, there was a search to identify universal markers of development. However, it has become increasingly clear through the work of Bronfenbrenner (1977, 1986), Bandura (1970), Harter (1987), and others that development does not occur

independent of environment. Rather, it represents the adaptation of the individual to the environments in which he or she lives. Within such an interactive model, not only does the individual adapt to the environment, but also the environment positively and adversely impacts development (Sameroff and Chandler, 1975). So, too, organic damage (e.g., brain trauma, severe, chronic illness) can impede the physiologic “self-righting” tendency (Sameroff and Chandler, 1975). Thus, a social ecological framework for understanding development has emerged, with an emphasis and focus on several spheres of influence:

- Child
- Family/caretakers
- School/peers
- Community
- Society

Child health and development is shaped by a highly complex and continuous interaction between biology (nature) and experience (nurture). The influence of nurture consists of the multiple nested contexts in which children are reared, which include their home, extended family, child care settings, community, and society, each of which is embedded in the values, beliefs, and practices of a given culture (IOM/NRC, 2000). The influence of nature is deeply affected by these environments and, in turn, shapes how children respond to their experiences. Thus, it is the interaction of a myriad of different sources of influence, reflecting complex processes that directly or indirectly affect health and developmental outcomes. These different sources of influence may include:

- Biological (e.g., genetic expression, prenatal influences, perinatal and postnatal events);
- Physical environment (e.g., natural and man-made environmental factors, such as infectious agents, toxins, play areas, resources available to the family);
- Behavioral influences and outcomes (e.g., impulsive, aggressive, risky behaviors such as alcohol and illicit drug use, early sexual behavior, health promoting behaviors, such as balanced diet and exercise);
- Social environments (peer relationships, family, community, interactions with other caregivers, discrimination, racism);
- Cultural and family influences and differences (e.g., cultural values, beliefs, expectations);
- Services (e.g., availability and quality of services); and
- Policy (e.g., universal pre-K to support school readiness).

### **The Importance of Early Childhood Experiences**

Recent advances in neuroscience and the behavioral and social sciences have shed new light on early development and what kids need to thrive. As discussed in the National Research Council’s *Neurons to Neighborhoods*, recent scientific gains have generated a much deeper appreciation of the importance of early life experiences, as well as the inseparable and highly interactive influences of genetics and environment, on the development of the brain and on human behavior. Research has also helped to clarify the central role that early relationships play. Early relationships are especially critical, while cultural values and practices provide the context for these bonds.

Children who lack at least one loving and consistent caregiver, such as a parent or attentive child-care provider, may suffer from severe and long-lasting developmental problems. While there has been considerable attention and efforts to promote academic success and achievement among children, social and emotional development is just as important.

From birth to age 5, children rapidly develop a range of capabilities from which subsequent development is derived. In addition to dramatic linguistic and cognitive gains, young children also exhibit remarkable progress in their emotional, social, regulatory, and moral capacities. All of these critical dimensions of early development are intertwined, and each requires focused attention.

### **But the Adolescent Years are Just as Important**

Adolescence is also a pivotal time – it represents the period between childhood and adulthood, when youth need to acquire the attitudes, competencies, values, and social skills that will carry them forward to successful adulthood. Adolescents face a daunting array of developmental challenges. Beginning as early as age 9, young people experience significant physical changes as they go through puberty. Adolescents also experience emotional changes as they seek greater independence from their parents, search for acceptance by peers, and begin to navigate new adult-like roles in society. For most teenagers, these changes are accompanied by the negotiation of new and conflicting demands and pressure, the exploration of novel ideas and risky behaviors, engagement in more complex intellectual task, and the formation of distinct identities. At the same time, adolescence is also a time of tremendous opportunity, when parents and their teenage children can forge new, meaningful relationships and when young people can begin to serve as a resource to their communities. Throughout their development, adolescents are shaped by experiences with other individuals and in a variety of contexts and settings, including families, schools, peers, neighborhoods, community-based organizations, health care organizations, and child welfare and juvenile justice systems, the media, and others.

While adolescents are one of the healthiest periods in the life span – characterized by relatively low incidence of disabling or chronic illness, low rates of morbidity and mortality associated with illness or diseases, fewer short-term hospital stays, and fewer days away from school because of illness – adolescence is a time when young people are at high risk for engaging in behaviors that can result in poor health outcomes. The CDC has noted that six categories of behavior are responsible for 70 percent of adolescent mortality and morbidity: unintentional and intentional injuries, drug and alcohol abuse, sexually transmitted diseases and unintended pregnancies, diseases associated with tobacco use, illnesses resulting from inadequate physical activity, and health problems due to inadequate dietary patterns.

Adolescence is characterized by exploration and experimentation, behaviors that to some extent are developmentally appropriate and socially adaptive, even if they involve a certain amount of risk-taking. Risk-taking involves, among other things, exploration, imagination, developing new and more intimate relationships with peers, testing new levels of independence, establishing a new identity, developing values, unleashing creativity, trying on different hats to see what fits. Carried to extremes, however, risky behaviors may impair mental and physical health. And health risks, such as pregnancy

and substance abuse, may be problems not just when they happen; the consequences of these acts can reach far into the future, and their antecedents are very likely to emerge even before adolescence. But just as adolescence is a time when damaging patterns of behavior can begin to take hold, it also represents an excellent opportunity for formation of healthful practices.

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