



Policies to Promote Child Health

VOLUME 25 NUMBER 1 SPRING 2015

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The Future of Children promotes effective policies and programs for children by providing timely, objective information based on the best available research.

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The Future of Children

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Policies to Promote Child Health: Introducing the Issue

Janet Currie and Nancy Reichman

A large volume of high-quality research shows that unhealthy children grow up to be unhealthy adults, that poor health and low income go hand in hand, and that the consequences of both poverty and poor health make large demands on public coffers. Thus promoting children's health is essential for improving the population's health; policies to prevent children's health problems can be wise investments; and policy makers should implement carefully designed policies and programs to promote child health.

According to the World Health Organization, health is a state of complete physical, mental, and social wellbeing, and not merely the absence of disease or infirmity. We view health in this broad sense, encompassing both physical and mental health indicators. And because some children's health problems may go undiagnosed or take years to become apparent, we also consider conditions that predict poor child health (such as low birth weight) and behaviors that affect health (such as substance use).

We view policies in a broad sense as well. Because an array of physical and social factors—including unsafe housing, pollution, food insecurity, and maltreatment, all of which are related to poverty—can adversely affect health, many types of policies are important for child health. Thus we consider the effects of policies that don't specifically focus on health (such as cash or in-kind assistance, or parenting education programs) in addition to policies that focus on access to health care or the direct provision of medical services. Relevant policies come in many shapes and sizes, ranging from large federal programs such as Head Start and the Supplemental Nutrition Assistance Program (SNAP) to more modest local public health initiatives.

U.S. child health policy is thus a patchwork of efforts at the federal, state, and local levels. Many policies aim specifically to improve child health, while others have different goals but could indirectly affect the health of children. Some health-related policies target children directly, attempting to treat health problems once they occur or to prevent them

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from occurring, while others target women during or before pregnancy with the goal of improving the health of newborns. Some policies target low-income children, while others are more universal.

For this issue of *The Future of Children*, we commissioned a group of experts to review research on how effectively U.S. policies promote child health. The articles, based on the strongest evidence to date, assess how best to promote child health and, more specifically, what interventions and strategies work best at various stages of children's development.

In the lead article, Sara Rosenbaum and Robert Blum paint a portrait of child health in the United States today, setting it in its historical, national, and international context. Maya Rossin-Slater reviews programs to promote child health at birth and in the early childhood years. Craig Gundersen, Ingrid Gould Ellen and Sherry Glied, and Lindsey Leininger and Helen Levy review policies that provide food, housing, and access to health care, respectively, examining how those policies impact child health. Lawrence Berger and Sarah Font consider policies that focus on families, viewed through a child health lens. Alison Cuellar focuses on children's mental health and reviews policies in that important area. Finally, Clare Huntington and Elizabeth Scott provide important context vis-à-vis the legal framework that both shapes and constrains U.S. policies to promote child health.

Themes of the Issue

Five broad, overlapping themes emerge from this issue:

- A wide range of policies are important for promoting child health;

- Responsibility for promoting child health is fragmented, with a lack of consensus about government's appropriate role;
- We have a "crisis response" mentality that doesn't focus on prevention and often precludes implementing policies in ways that would let us thoughtfully evaluate their efficacy;
- Information about cost-effectiveness is severely lacking; and
- Poor and minority children typically face the greatest health risks.

A Wide Range of Policies

We can't think exclusively about health care when considering policies to promote child health. Access to preventive, curative, and palliative medical care is no doubt important, but many other types of policy matter as well. A century ago, as Rosenbaum and Blum show, infectious diseases posed the primary threat to children's health. As that threat has diminished, others have come to the fore. Many of the most important threats to child health today have to do with the social and physical environment, broadly defined. For example, injury is now the leading cause of death among children over one year old. Policies to prevent injury range from housing and traffic ordinances to family interventions to prevent child abuse. Suicide has become a major cause of death among adolescents. Policies that focus on children's mental health range from behavioral interventions in schools to rehabilitative mental health treatment in the juvenile justice system. Whether we are thinking of infectious disease or any other threats to child health, parental education and income are among the most important protective factors. Thus, a wide range of antipoverty programs may also improve children's health and help them reach their full potential.

Fragmented Responsibility

A serious obstacle to improving U.S. children's health is the fragmentation of responsibility between families and multiple layers of government. Huntington and Scott highlight a uniquely American tension between the idea that child health is primarily a family responsibility and the view that government has a responsibility to ensure the health of its most vulnerable citizens. In the United States, unlike in other developed countries, the government has no affirmative obligation to promote child health and, more often than not, steps in only after a severe health risk has been identified. Moreover, responsibility is fragmented at the federal, state, and local levels, and among entities that control different aspects of children's welfare, such as health care, education, and juvenile justice. The result is a largely uncoordinated jumble of resources and services that can be extremely difficult to navigate and within which children who live in different places or situations have very different access to resources.

Crisis Response Mentality

Parents' rights to raise their children as they see fit, along with the U.S. government's limited responsibility for promoting children's health and the fragmentation of services under federalism, has led by default to a system that tends to respond to crises rather than marshaling resources to promote child health. Many incipient children's health conditions, particularly mental health problems, are acknowledged or treated only after they produce serious adverse private or public consequences, such as academic failure, family disintegration, or school violence. This Band-Aid approach makes it hard to develop a coherent strategy for preventing children's health problems and for evaluating the effectiveness of efforts to do so.

Limited Data on Cost Effectiveness

Unfortunately, the fragmentation of children's health care services and resources in the United States, combined with a crisis-response approach to child health, has produced an inefficient system. Moreover, because this fragmentation results in a lack of data about the cost effectiveness of various interventions and policies, it's hard to make informed policy choices. We suspect that, for many dimensions of child health, an ounce of prevention would be worth a pound of cure, but it's difficult to prove this without hard evidence on the costs and benefits of different approaches.

Poor and Minority Children

Virtually all of the articles in this issue highlight the fact that poor and minority children face disproportionate threats to health. Rossin-Slater points out that health disadvantages start before birth and are reflected in socioeconomic and racial disparities in low birth weight and infant death. And the effects of socioeconomic disadvantage accumulate over time: Poor and minority children are more likely to experience conditions that can harm their health, such as poor nutrition, pollution, and substandard housing. Disadvantaged children are also more likely to be maltreated and more likely to become wards of the foster care system or end up in juvenile detention. Many of the policies covered in this issue focus on disadvantaged children and thus have the potential to reduce health disparities.

Findings of the Issue

Here we highlight key findings from the individual articles.

How Healthy Are Our Children?

Rosenbaum and Blum survey long-term trends in child health. In terms of mortality, child health in the United States has been improving steadily for a long time. This improvement no doubt reflects advances in medical care, such as neonatal care technology and immunizations for killer diseases such as measles and polio, as well as substantial improvements in living standards over the course of the twentieth century. But it also reflects the many policies implemented to ensure that children benefit from these advances, showing that policy has been, and can be, effective. That said, substantial racial and socioeconomic disparities in infant and child mortality persist, pointing to a continuing role for public policy. Finally, the overall increases in child survival have led to an increased focus on children's illnesses. Obesity, asthma, and mental health disorders (and disparities in many of these conditions) are among the key child health concerns today.

Rosenbaum and Blum also tackle the thorny issue of government spending on children's health relative to spending on other groups, particularly the elderly. They point out that spending on child health has increased over time, but that the largest share of the increased spending over the past century has been for health care, while spending on other determinants of child health, which may be as or more important, has not kept pace.

Promoting Health in Early Childhood

Many child health problems start early in life, in utero, or perhaps even before mothers conceive. Rossin-Slater discusses the evidence for, and provides an overview of, policies aimed at pregnancy and early childhood. She finds little evidence that

increasing the availability of prenatal care would produce large improvements in child health, perhaps because such care is already widely available. In contrast, other efforts show more promise, such as nurse home visiting programs and the Supplemental Nutrition Program for Women, Infants, and Children (WIC), both of which involve improved access to prenatal care but have broader scope. Rossin-Slater demonstrates that relatively subtle differences between programs (such as the type of visitor in a home visiting program) may have large impacts on their effectiveness, underscoring the need for attention and fidelity to program design and careful evaluation of the evidence.

Child Health and Access to Medical Care

One reason that we need to think beyond access to medical care is that even though public policy has improved such access for children over the past 20 to 30 years, children's health and health disparities remain significant concerns. Leininger and Levy show that Medicaid and the Child Health Insurance Program have been the primary vehicles for expanding health insurance coverage among disadvantaged populations and that these programs now cover millions of pregnant women and children. The Affordable Care Act may increase access to and reliance on private insurers through state health insurance exchanges, but may also complicate children's access to care. They conclude that a range of policies could further expand access. Some of these would affect families' use of the care available for their children, and others would affect providers' willingness to supply care to poor children. However, they conclude, the available evidence can't tell us which policies would have the most "bang for the buck,"

and we need more information about barriers to care among eligible children and the quality of care they receive.

Food Assistance Programs and Child Health

U.S. food and nutrition programs were developed in response to child hunger, but they now exist in a world where childhood obesity and related diseases are increasingly prevalent. Yet many children still suffer nutrient deficiencies and food insecurity.

Focusing on the largest nutrition programs, including SNAP and school meal programs, Gundersen presents abundant evidence that these programs reduce children's food insecurity, which is related to both poverty and health. However, many controversies remain, such as whether restricting what can be purchased through SNAP would be beneficial or harmful, and whether SNAP benefits are too low or, in some cases, too high.

Preventing and Treating Child Mental Health Problems

Mental health problems have surpassed physical health problems to become the most prevalent and disabling conditions facing children today. Cuellar discusses some of the most common and serious mental health conditions, including ADHD and autism. This article brings the issue of fragmentation of services to the fore. Though mental health conditions can be treated in a health care setting, for many families the first point of contact and the setting for intervention is their children's schools. For both legal and institutional reasons, cooperation between children's health care and education providers can be extremely difficult, and children who "age out" or drop out of school may find themselves with nowhere to go for services or guidance. That said, the fragmented system presents an opportunity for policy

makers to use existing resources to create a coordinated mental health care delivery system for children. Cuellar also highlights the dearth of good evidence about the costs and benefits of many treatment approaches. This lack of evidence means that parents find it extremely challenging to find solid information about whether an intervention is likely to be effective for their children, and policy makers find it hard to strategically invest in specific interventions to enhance children's mental health.

Housing, Neighborhoods, and Children's Health

Children's housing situations are associated with an array of factors that could potentially affect their health—for example, exposure to lead paint, air pollution, and dangerous physical structures, as well as proximity to resources such as health-care providers, child care facilities, and schools. Ellen and Glied review what's known about how children's residential living situations affect their physical and mental health and how programs and policies such as public housing, certificates and vouchers, and low-income housing tax credits play a role. They show that vouchers or subsidies to make housing more affordable for targeted families may drive up rents, meaning that as some families benefit, others fall behind—an unintended effect that can make it difficult to measure the effects of interventions.

The Role of the Family and Family-Centered Programs and Policies

Families play a crucial role as children's guardians and advocates and make decisions every day that affect their children's health. When things go wrong, families can also injure and even kill their children. Berger and Font review important policies and programs that affect the role of parents,

including the child welfare system and interventions to improve parenting practices. They conclude that Child Protective Services (CPS), in particular, is limited by its reactive nature; CPS generally does not become involved in a child's life until damage has already been done. They also review communitywide programs, such as the Durham Family Initiative and the Triple P—Positive Parenting Program, that aim to improve parenting and prevent maltreatment before it starts through comprehensive support to families at risk. Though the scope and expense of these programs unfortunately discourages their wide adoption, the evidence suggests that identifying and adopting their most successful elements could have beneficial effects. Berger and Font also argue that increasing parents' access to mental health services could be a promising strategy for promoting children's health.

Children's Health in a Legal Framework

Policy exists in a particular legal context. Huntington and Scott provide important perspective by describing our legal framework as it pertains to child health. In our system, which is based on parental rights, the state has the power to limit parental authority but has not created any affirmative legal obligation to assist parents in caring for their children's health needs. In fact, deference to parents may deter the state from acting and contributes to the tendency to react to crises rather than to adopt more proactive policies. The authors outline the parental rights doctrine under constitutional and statutory law and explore the limits of parental rights. They focus on examples in which parents' religious beliefs prevent them from seeking health care for their children, as well as on the more general topic of adolescent health policy—an area where

the law sometimes departs from the parental rights approach, particularly in matters such as reproductive health and services for delinquent youth. Although Huntington and Scott don't cover it in detail, refusing vaccines is an area in which parental rights are being challenged. Unlike withholding medical treatment for religious reasons, parents' refusals to allow children to receive recommended vaccines can affect the health of children other than their own, and have been blamed for recent outbreaks of measles and other contagious diseases that until recently had been all but eradicated in the United States.

Implications for Research and Policy

The five themes of this issue lead naturally to recommendations for researchers and policy makers. Most importantly, we must view health and health policy broadly, and consider policies beyond those that focus narrowly on access to health care. An important example is the increasing relative importance of mental health disorders. Health policy today should devote more resources to preventing, diagnosing, and managing these conditions to improve children's functioning and trajectories.

Second, the fragmented nature of responsibility for child health and health policy has produced a chronic lack of coordination among different actors and levels of government. This systemic disarray makes it more likely that children will fall through the cracks and predisposes us to take a crisis-oriented stance rather than a proactive approach to health policy. Businesses routinely track customer data for marketing purposes and planning, but governments have not made the same use of the "big

data” at their disposal to create an integrated portrait of child health or to target policies to those who have the most to gain from them. Systems that effectively increase coordination among the home, doctors’ offices, schools, and other institutions that touch children’s lives would tremendously benefit efforts to promote child health.

Third, although all levels of government have been implementing a wide array of policies, they have paid remarkably little attention to rigorous evaluation, or even to documenting exactly what elements the programs involve. While some major programs have been proven to promote child health, we have too little information to systematically compare different approaches. Thus it’s difficult to answer the most basic and obvious question facing policy makers: What are the most cost-effective ways to promote child health?

That said, this issue of *The Future of Children* points to numerous programs that work. And for some of them, well-designed evaluations have shown that their benefits exceed their costs. These include national programs such as WIC, state and local efforts such as home visiting programs, and very specific local programs such as mandating window guards on high-rise apartment buildings. The fact that we can’t compare all policies shouldn’t keep us from implementing or expanding those we know to be both effective and cost saving and from evaluating others that show promise. Also, while many policies and evaluations focus on young children, a number of interventions for adolescents have been shown to be effective—for example, programs that target

violence and teen pregnancy. Hence older children should not be overlooked in efforts to promote child health.

Fourth, given the disproportionate burden of ill health that they face, poor and minority children deserve special attention. We should consider the fact that the same policies may have different impacts on different groups. In some cases, such as housing subsidies that have the unintended effect of raising rents, the overall effect may actually be negative for the most disadvantaged groups (in this example, those who are not able to navigate the system and obtain the subsidies). The possibility that poor and minority children are in double jeopardy—both more likely to have health risks and more likely to be harmed by policies meant to assist them—merits more attention. Similarly, we should look further at whether expanding health insurance for higher-income children results in reducing access for the most disadvantaged children, or whether attempts to improve the nutritional content of programs like the National School Lunch Program might lead some children to stop participating altogether.

Finally, we should keep in mind that investments in child health have the potential to repay current expenditures many times over, both by allowing children to grow up to be productive citizens and by improving the circumstances of the next generation. The articles in this issue highlight many programs and policies—in the areas of health care, behavioral health, child development, nutrition, housing, income, and family functioning—that promise to pay such dividends.

How Healthy Are Our Children?

Sara Rosenbaum and Robert Blum

Summary

The past century has seen vast improvements in our children's health. The infectious diseases that once killed huge numbers of children have largely been conquered. Infant mortality has also fallen markedly, although the United States lags behind other industrialized nations in this and other measures of children's health. Accidents and injuries also kill fewer children than they once did.

Today, write Sara Rosenbaum and Robert Blum, the greatest threats to U.S. children's health are social and environmental conditions, such as stress and exposure to toxic substances, which are associated with noncommunicable illnesses, such as mental health problems and asthma. Unlike the communicable diseases of the past, these are not equal-opportunity hazards. They are far more likely to affect poor children and the children of racial and ethnic minorities. And they have long-lasting effects, both for individuals and for the nation. For example, people who experience unhealthy levels of stress as children grow up to become less healthy, less productive adults.

Rosenbaum and Blum also examine government spending on children's health. Though such spending has increased over time, the largest share of that increased spending has been for health care, while spending on other determinants of child health, which may be as or more important, has not kept pace. Investments in medical care alone can't overcome social and environmental threats to children's health that have their roots in historic levels of poverty and inequality. Rosenbaum and Blum argue that the best way to promote children's health today is to mitigate poverty, invest in education, and make our neighborhoods and communities healthier and safer.

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This article presents an overview of the health of America's children and examines the role and extent of government investments in child health. In brief, we find that despite major gains over the past century, children's health varies widely across population subgroups and lags well behind that of many other industrialized nations. Furthermore, although public health-care expenditures for children have grown steadily, this growth has come from expanded eligibility for publicly financed health insurance and substantial increases in the cost of health care. Rising health expenditures have coincided with the erosion of public investment in education, housing, and social services, all of which are thought to affect health, especially among the poorest children.

U.S. children's health today is best understood in the context of how child health has evolved over the past century. Evidence over time illuminates the social, behavioral, and economic factors that help explain both the nation's accomplishments and its existing and emerging challenges.

Where government investment in child health is concerned, we must explore a broad range of expenditure trends, since virtually all government policies can affect children's health. These include both tax expenditures and direct investments across the areas of income support, education, social services, housing, community development, national infrastructure, public health, and health care. One reason we must view government spending broadly is that direct investment in other populations can have spillover effects on children. For example, spending on the elderly, though frequently contrasted with

spending on children, could help children by easing their families' burden of caring for aging parents.

Health Status of Children and Adolescents

To understand how public expenditures affect children's health, we must first understand child health itself.

Measuring Child Health

There are no comprehensive, agreed-upon measures or indices as to what constitutes child health.¹ The National Research Council and Institute of Medicine conceive health across four domains: sociodemographic, psychological, behavioral, and contextual (community).² This domain-based approach leads them to focus on four bellwethers: health conditions (such as asthma and obesity); functional problems (for example, attention deficits and hearing, vision, and communication problems); health potential (for example, cognitive development); and birth-related characteristics such as low birth weight.

By contrast, the Annie E. Casey Foundation, in *Kids Count*, also incorporates mortality by age, as well as the use of certain marker health services, such as immunizations, dental care, and prenatal care.³ Child Trends, another widely cited source of child health measurement, uses yet other indicators.⁴

It is beyond the scope of this article to explore the characterization of child health in depth or to attempt to reconcile differences among measures. What we strive to do, however, is use marker conditions to indicate how U.S. children's health has changed over the past century. Our choices are largely dictated by the fact that most measures are not available over long periods of time.

The Evolution of Child Health

The past century has witnessed dramatic changes in child and adolescent mortality and illness. One hundred years ago, infectious diseases were the leading causes of childhood disease and death. Today, social and environmental factors are the principal drivers of child health. Noncommunicable diseases now pose the greatest threat to our children's health. Thus child health experts and advocates now focus on the precursors of noncommunicable diseases, as well as on how children's health affects development throughout childhood and adolescence.

Changing Trends over the Past Century

When we look at the changes in child survival in the United States over the twentieth century, the improvements are nothing short of breathtaking. In 1910, the infant mortality rate was 127.6 per 1,000 live births; by 2012, the rate had dropped to 6 deaths per 1,000 live births.⁵ The same improvement is evident in the case of mortality involving children under five years of age. In 1910, mortality among young children stood at 403.6 deaths per 100,000 children; by 2012, this figure had fallen to 7.1.⁶ One hundred years ago, diarrheal disease and pneumonia were major killers of infants and young children, as they still are in many low- and middle-income countries, along with prematurity. Today, congenital anomalies, sudden infant death, and prematurity are the leading causes of infant mortality. Given the reductions in infectious disease, injury and homicide have joined congenital abnormalities as the top three causes of mortality among children under age five.⁷

The past decade has seen a significant decline in childhood deaths from unintentional injuries, from 15.5 to 11.0 deaths per

100,000 children, a reduction of 29 percent. Over this period, childhood vehicular deaths experienced an even more dramatic 41 percent decline as a result of passive restraints, child passenger laws, graduated driver licenses for adolescents, and safer vehicles, indicating that nonmedical technologies can also play an important role in improving child health. At the same time, however, the rate of unintentional injury deaths among children under age one rose from 23.1 to 27.7 per 100,000.⁸

The same trends hold true for older children and adolescents. In 1910, diphtheria, croup, and scarlet fever were among the top three causes of death for children ages five to nine years, while tuberculosis and typhoid fever joined injuries as the leading causes of death in adolescence. One hundred years later, these infectious diseases are all but unknown as causes of death. Today, injury, suicide, and homicide account for three-quarters of all deaths in the second decade of life.⁹ This is not so much because deaths from these causes have increased, but because other deaths have declined precipitously.¹⁰ Table 1 shows the century-long shift in the causes of child deaths.

We've seen similar improvements in maternal mortality, which, though not a direct indicator of child health, is widely considered a sentinel marker of health for both mothers and children. In 1912, an estimated 650 women died for every 100,000 live births. By 2010, the maternal mortality rate had fallen to 21.¹¹

Many factors underlie the shifts in child survival rates. Vaccines against preventable diseases; antibiotics and management of infectious diseases; advances in the management of pregnancy and childbirth; methods

Table 1. Causes of Mortality in Children and Adolescents: A Century of Change

| Age | 1910–12 | 2010–12 |
|------------------|--|---|
| Less than 1 Year | Diarrhea and Enteritis Prematurity “Congenital Debility” | Congenital Anomalies Prematurity SIDS |
| 1–4 Years | Diarrhea and Enteritis Prematurity Pneumonia | Unintentional Injury Congenital Anomalies Homicide Cancer Heart Disease |
| 5–9 Years | Diphtheria and Croup Scarlet Fever Injuries | Unintentional Injury Cancer Congenital Anomalies Suicide Homicide |
| 10+ Years | Tuberculosis Injuries Typhoid Fever | Unintentional Injury Homicide Suicide Cancer Heart Disease |

Note: Conditions are listed in order of prevalence; row 4 reports data for 10- to 19-year-olds in 1910–12 and 10- to 14-year-olds in 2010–12.

Sources: Centers for Disease Control and Prevention, “10 Leading Causes of Death by Age Group, United States—2010”; Child Health USA, “Child Mortality”; U.S. Census Bureau, *Mortality Statistics: 1910*; and Melonie Heron, “Deaths: Leading Causes for 2009.”

for promoting early detection, treatment, and mitigation of conditions that once would have caused early death; and other technological advances no doubt played important roles. Access to sanitation, education, and food and nutrition also dramatically improved, as did the overall standard of living.

At the same time, the nation and its families have changed dramatically. Over the past century, America has become more urbanized. Since 1910, the proportion of the population living in cities has risen from 45.8 percent to 80.7 percent.¹² Urbanization has brought major new economic and social opportunities, including access to health care. But it has also brought new health risks, such as pollution, human congestion, social stress and, in many cities, a

deteriorating infrastructure, especially in inner cities. Today, while nearly 60 percent of children live in two-parent biologic or adoptive homes, the remainder live in a wide range of alternative family structures (for example, blended, single parent, grandparents, etc.).¹³ As the Annie E. Casey Foundation has shown, children who grow up in other than dual-parent families tend to be disadvantaged socially and economically.¹⁴ Parental work and allocation of child care responsibilities have also changed dramatically over the past half-century. In 1965 U.S. mothers worked an average of eight hours per week for pay. Today the average is 21 hours, and in approximately 60 percent of two-parent families, both parents work outside the home. The amount of time both fathers and mothers report spending with

their children has increased since 1965, but so has parental stress.¹⁵

Despite the substantial reductions in infant and child mortality over the past century, the U.S. ranks poorly compared to other industrialized nations in this regard. For Europe as a whole, infant mortality is 4.2 per 1,000, compared with 6.2 in the United States, and few European nations have infant mortality rates in excess of 5 per 1,000. (Despite some differences in reporting requirements, the United States' poor ranking cannot be explained by differences in the reporting of live births.¹⁶) Among industrialized countries, adolescent mortality averages 45 per 100,000. In the United States, the rates are 58 per 100,000 for white and Hispanic youth and 86 per 100,000 for black teenagers.

In the U.S. as in other nations, not all children have shared equally in the fruits of national growth. Low-income children and members of racial and ethnic minority groups continue to die in infancy at rates far higher than those experienced by white and

higher-income children (a notable exception is the lower mortality risk of Hispanic infants, children, and mothers). The success of many of the programs discussed elsewhere in this issue by Maya Rossin-Slater suggests that many of these excess deaths are preventable. These health inequalities are concentrated in the most economically vulnerable populations facing the highest social risks.¹⁷

As diagnostic tools have improved, and as the nation has become more vigilant in monitoring for certain health conditions, the 21st century has also seen progress for children's health, although this progress has not been equally shared. For example, asthma hospitalizations for children fell from 21.1 per 10,000 person years in 2000 to 18.4 in 2010 (a 13 percent decrease).¹⁸ However, at a community level, the prevalence of asthma increased nationally, with a growing black-white disparity.¹⁹ Generalized patterns of health inequalities are reflected in mortality rate differentials for every age group in childhood, as shown in table 2.

Table 2: U.S. Infant and Child Mortality 2010, by Race/Ethnicity and Age (per 100,000 live births)

| | Non-Hispanic White | Non-Hispanic Black | Hispanic (all races) | American Indian | Asian/Pacific Islander |
|---|--------------------|--------------------|----------------------|-----------------|------------------------|
| Infant Mortality | 528 | 1,051 | 458 | 378 | 445 |
| Early Child Mortality, Ages 1–4 | 24 | 38 | 24 | 14 | 27 |
| Child/Early Adolescent Mortality, Ages 5–14 | 13 | 18 | 11 | 9 | 12 |
| Adolescent Mortality, Ages 15–19 | 58.0 | 85.7 | 57.9 | 97.1 | – |

Sources: Child Trends, "Infant, Child and Teen Mortality," <http://www.childtrends.org/?indicators=infant-child-and-teen-mortality>; KIDS COUNT, "Child Deaths By Race," <http://datacenter.kidscount.org/data/tables/23-child-deaths-by-race>; Child Health USA, "Adolescent Mortality," <http://mchb.hrsa.gov/chusa12/hs/hsa/pages/am.html>; Centers for Disease Control and Prevention (CDC), "Vital signs: Unintentional Injury Deaths among Persons aged 0–19 years—United States, 2000–2009," *Morbidity and Mortality Weekly Report* 61 (2012): 270–76.

The Health Pathway from Childhood to Adulthood

As childhood mortality has changed over the past century, so, too, has our understanding of disease causes and pathways. At the turn of the twentieth century, the notion of miasmas as the basis of illness had only recently given way to a microbial-based understanding of disease. Louis Pasteur, who identified microbes as the underlying agents of anthrax, had only recently died. And only a quarter-century before, at the Philadelphia Centennial Exhibit in 1876, Joseph Lister was roundly criticized by leading American surgeons for advocating aseptic surgical techniques.

By the early 1900s, germ theory had become well entrenched, and a single-agent concept of disease prevailed.²⁰ The quest for invading organisms drove research and medicine and led to dramatic advances in antibiotics and vaccines in the first half of the twentieth century. Advocates also considered the social context for health, but they tended to focus on issues such as sanitation, access to clean water, and safe milk and food supplies.²¹ This began to change after World War II, as noncommunicable conditions became major public health concerns, particularly cardiovascular disease, lung cancer, and peptic ulcers.

Investigators were unable to identify a single microbe causing these or many other conditions. Consequently, they began to explore behavioral and environmental factors. The case-control studies showing an association between lung cancer and cigarette smoking were a watershed that, among other things, compelled rethinking of the dominant construct of illness. The behavioral lens has widened to encompass the link between diet

and serum cholesterol control on one hand and cardiovascular disease on the other, as well as numerous other relationships among social conditions, behaviors, and disease. No longer was disease seen as the consequence of a single invading organism; rather, people began talking about a “web of causation.”²²

Today, we have a profoundly different understanding of disease causes and pathways. Specifically, we have come to understand that many disease conditions—and especially noncommunicable conditions—result from interactions between individuals and their environments. Today, we understand that environmental toxins are not only physical and chemical in nature but can be social as well. And we know that risk exposures in fetal life and even before conception can drive chronic conditions across the life course.

Researchers have examined the interaction between children and their environments, including the families in which they live and the conditions that affect families’ lives and wellbeing, highlighting the effects of socially toxic environments.²³ In the Adverse Childhood Experiences Study (ACES), researchers showed an association between child abuse and being reared in dysfunctional households, on the one hand, and later adult health, on the other. Since then, research has documented strong associations between adverse childhood experiences and adult cancers, sexually transmitted infections, ischemic heart disease, and hepatitis.²⁴ In fact, children who have adverse childhood experiences show a risk of subsequent disease approximately two to four times as high as children who did not have such experiences. Researchers define adverse childhood experiences to include psychological/ physical/ sexual abuse, exposure to substance abuse,

mental illness, exposure to maternal violence, and exposure to parental criminal behavior. In their research sample, drawn from a large HMO in Southern California, ACES researchers found that one in four adults reported two or more such experiences, while 11 percent of those 50 years of age or older reported four or more. For adults of any income level, early adverse childhood experiences have profound effects. Poverty not only increases the risk of having such experiences, but also reduces the availability of protective factors (for example, nurturing adults) that can buffer the impact of exposure.²⁵

Exposure to social toxins in childhood alters the developing brain and can have adult consequences. Today we understand that brain development extends well into the third decade. Exposure to toxic environments—what researchers call *toxic stress*—alters brain architecture in developing children by chronically increasing cortisol, a stress hormone; this, in turn, reduces brain development, producing a less complex brain scaffolding. The result is reduced capacity for reasoning, stress reactivity, decision making, and learning.²⁶

The ACES findings added weight to what was already an emerging ecological model of child health. This model, first advanced by Urie Bronfenbrenner, a leading figure in child development research, pointed to an association between a host of environmental factors and children's health.²⁷ So, too, evidence has begun to show that many adult diseases have their origins in infancy or before birth. The fetal origins hypothesis, championed by David Barker, has led to research demonstrating that birth weight is strongly associated with adult disease risk. One reason may be that under-nutrition in developing fetuses in turn elevates the

risk of chronic diseases in adults and the elderly.²⁸ Subsequent research has validated this association with hypertension, cardiovascular disease, type 2 diabetes, and metabolic syndrome.²⁹

We now also understand that the interaction between genetics and the environment is a major factor in health. When they first described the DNA double helix in 1953, James Watson and Francis Crick ushered in an era in which researchers concluded that the key to disease was locked in the gene. Sixty years later, the human genome has been mapped, and with that mapping has come the promise of altering genes known to cause disease, especially noncommunicable diseases. Advances in genetics have led to a better understanding of the gene/environment interaction, and we now know that genes per se account for a relatively small fraction of human disease at any age. Research shows that what you eat and the environment in which you live play significant roles in turning genes on or off in undesirable ways that may lead, for example, to cancer.³⁰

At the same time that landmark genetic research was occurring, epidemiologic research began to raise fundamental questions about what drives health. Why, for example, did babies born to women of the Confederacy in the American Civil War have a significantly higher incidence of stroke as adults than those born to women in the North?³¹ Why did children born in a three-month period in certain communities of the Netherlands in 1945 have a significantly higher prevalence of schizophrenia as adolescents than those born in other communities at the same time or even in the same community at other times?³² Why did smoking patterns of a paternal grandfather

affect his grandson's body mass index but not his granddaughter's—even when the grandfather and grandson had never met?³³ Today we understand some of how the environment can get under the skin. We understand, for example that diet, alcohol consumption, environmental pollutants, and stress can turn genes on or off by altering epigenetic regulators, thereby allowing certain conditions such as cancer or obesity to be expressed.³⁴

As our understanding of what drives health has evolved, we have moved from focusing strictly on gene/environment interactions to an “upstream” conceptual model in which infant and child health is also important for understanding adult disease. Promoting children's health is no longer only a crucial goal in its own right; child health emerges as an essential precondition to improving health over the lifespan, reducing the burden of disease, and lowering health-care expenditures. “By shifting the timing of our focus from clinical disease to preclinical precursors,” Guoying Wang and colleagues have written, “we will be able to move toward the ultimate goal of twenty-first century medicine—preventing and intervening before the onset of clinical disease. By doing so, we hope to improve child and adolescent health, population health and quality of life, and at the same time, reduce health care costs.”³⁵

Child Health Concerns

Today, the primary health problems that children and youth face are noncommunicable conditions that not only adversely affect health and development but also act as precursors of noncommunicable disease in adults. These conditions arise from both lifestyle behaviors and the social environments in which our most vulnerable children live. In some cases, they may also be the result

of medical successes: premature infants who survive or pediatric cancer patients who are cured but who nevertheless experience future health problems stemming from either their initial conditions or their medical care.

The neighborhood in which a child is born and grows up can have an important impact on the risk of illness or death, as well as life expectancy. Neighborhoods are highly correlated with both family income and a host of environmental exposures (for example, violence, unsanitary conditions, environmental and social toxins). One important factor is residential segregation, which continues to be pervasive in American life.³⁶

The neighborhood in which a child is born and grows up can have an important impact on the risk of illness or death, as well as life expectancy.

A great deal of evidence suggests that family characteristics affect children's health. Elsewhere in this issue, Maya Rossin-Slater demonstrates substantial disparities in birth outcomes by maternal education, which is a commonly used measure of socioeconomic status. Using data from the 2012 National Health Interview Survey (NHIS) to look at marker childhood health conditions associated with lower income and adverse community health conditions, we can also see an association between the incidence of poorer health and populations at heightened risk of poverty and deprivation, including members of racial and ethnic minorities—particularly non-Hispanic blacks.

For example, in 2012, 14 percent of children under the age of 18 had ever been diagnosed with asthma, and 9 percent had persistent asthma.³⁷ Among non-Hispanic black children, however, the incidence of asthma rose to 22 percent, and 14 percent had persistent asthma. In the NHIS, 82.9 percent of schoolchildren ages 5–11 reported their overall health as good to excellent. The remaining 17 percent (those not in good-to-excellent health) were five times as likely to have asthma. There was a strong and positive correlation between parental income and children’s positive assessment of their health; while nearly 90 percent of children at the highest income levels reported excellent health, only 46 percent of those living in poverty did so. The NHIS also showed that while one-third of America’s children had missed no school due to illness or injury in the previous 12 months (2011–12), 4 percent missed 11 or more days, with a significant impact on their educational achievement.³⁸ Children living in households headed by a single mother were twice as likely as their peers (6 percent vs. 3 percent) to miss 11 or more days.

The NHIS also revealed other child health disparities. In 2012, 6 percent of children had unmet dental needs because their parents couldn’t pay for care; unmet need was highest among uninsured children and children living in households headed by a single mother. That same year, 4.9 percent of children were reported to have learning or attention disabilities, which have become the dominant sources of child disability in the U.S.³⁹ (See also the article in this issue by Alison Cuellar, which focuses on children’s mental health.) Both learning and attention disabilities were strongly associated with poverty and disadvantage.⁴⁰

Two researchers recently presented nationally representative statistics from the National Health and Nutrition Examination Survey that connect indicators of poor child health to household income.⁴¹ Obesity, hypertension, diabetes, low high-density lipoprotein cholesterol (HDL, known as “good cholesterol”), and high cholesterol ratio were measured through physical examinations and/or laboratory reports. Their figures indicate clear income gradients in children’s health across all measures other than diabetes.

As table 2 shows, the United States has experienced substantial decreases in infant and child mortality. But disparities persist, not only by income but also by racial/ethnic status. One study based on NHIS data clustered 17 measures of child health into four domains: health status, disability, consequences of illness, and specific conditions.⁴² Overall, from 1998 to 2009, the authors found no narrowing of the racial/ethnic gap. Black children consistently had lower self-assessed health status than did non-Hispanic white children as well as higher prevalence rates of the specific illnesses analyzed. In fact, for 11 of the 17 marker conditions there was no narrowing of the gap in black-white odds ratios, while others (for example, autism) saw improvement.

Taken together, these data bolster the idea that, in both direct and indirect ways, the social contexts in which children live and develop are prominent determinants of child health. Poor health is disproportionately associated with poverty, as well as with minority status and residence in single-parent households, the same households that are most likely to face deep and entrenched poverty. And we see uneven progress in closing the gaps, at least for a number of

important child health indicators. That said, all groups have benefited, though not equally so, as key markers of child health, such as infant mortality, have improved over time.

The Nation's Investment in Children

Turning to the question of public sector investments in support of U.S. children's health, we need to consider a series of questions. How should investing in children be defined? What is a fair and accurate measurement of child health spending? What national expenditures should count as expenditures on children? In the United States, after all, much of the national investment capital is privately held, with government playing a role in specific areas of social policy. Where have governmental investments historically made their presence felt, and what types of government investments should count in measuring governmental involvement? How have patterns of governmental investments changed over time, and how does the U.S. investment picture measure up to those of other nations with comparable political and economic characteristics?

Defining Governmental Investment in Children

Society invests in children in numerous ways. In a nation such as the United States, in which capital and investment decision making lie so prominently in private hands, should the question of investment be viewed through both a private and a public lens? Simply put, private sector behaviors matter deeply to children's wellbeing. These include the decisions of families, who are on the front line of child wellbeing; decisions by private developers and banks, for example, to finance a community development project in an aging waterfront city; the decisions of entrepreneurs and businesses about where

to use their resources, time, and energy; employment policies, ranging from wages to other forms of nonwage compensation such as health insurance, paid and unpaid family leave, flexible work hours, child care, and other policies that support families with children; banks' lending practices; private philanthropy; and how settled communities react to and embrace newcomers. All of these decisions have economic dimensions, and all bear on children's health and welfare.

In this article, we use the concept of investment more narrowly. We focus on governmental investments, that is, expenditures that follow from policy decisions by federal, state, and local governments. And we consider not only direct outlays of public funds, but also investments in the form of tax revenues that are forgone to promote a public good, such as permitting families to deduct home mortgage payments from personal taxes, thereby encouraging home ownership, which may ultimately affect community stability. An examination of government spending would be incomplete without considering both types of investments.

Measuring Expenditures

In a 2000 report that compared federal spending on the elderly and children, the Congressional Budget Office devised a methodology that has essentially been followed in later studies—an expenditure is counted as one for children if the object of the expenditure is a child or if the expenditure involves benefits that households receive as a result of having a child (defined by the CBO as up to age 18) in the household.⁴³

This methodology omits numerous types of government expenditures critical to children. For example, the CBO does not count unemployment benefits, which are obviously

important to children in unemployed families but don't vary by family size. Nor does it include such community investments as the special Medicare and Medicaid payments received by hospitals that treat a disproportionate percentage of low-income patients, a key form of social investment in low-income communities that lack access to an adequate supply of health-care providers. The CBO's methodology also excludes community-level spending, such as grants to develop and operate community health centers or to deploy National Health Service Corps physicians in medically underserved urban and rural communities. These expenditures obviously aid children (indeed, children comprise 32 percent of health center patients).⁴⁴ But because these investments are at the community level and are not conditioned on the presence of children, the CBO methodology doesn't count them.

Where transfer payments are concerned, the CBO methodology prorates benefits that flow to all members of a household, such as food stamps. In the case of certain entitlements, such as Medicaid, Social Security, and the Earned Income Tax Credit (EITC), the CBO methodology distributes benefits on two bases: payments made directly on behalf of a child (or an elderly person in the case of coverage of the elderly), and benefits given to adults by virtue of their relationship to one or more children.

Private Research

The Urban Institute, whose *Kids Share* study is the most important analysis to date on measuring expenditures on children, notes one limitation that arises in attempting to measure investment levels—the inability to “directly compare spending amounts to levels of need or to quantify the amount of unmet need that may exist.”⁴⁵ Thus, whether

the government underspends on children or overspends on the elderly, for example, has meaning only in relation to their need, making meaningful comparisons difficult and suggesting that perhaps the conceptual and policy framework on which spending rests is more important than the amount spent. For example, if spending on children is more likely to flow through means-tested programs, while spending for the elderly tends to reflect an underlying framework of universal legal entitlement, the structural distinction may be more meaningful than the dollar value of the actual transfers because of the political, economic, and social implications of different investment structures.

With these limits in mind, Urban Institute researchers have built on the CBO methodology, seeking to answer certain broad questions such as when childhood begins and ends, what exactly constitutes spending on children and their parents versus the general population, and whether spending encompasses both tax expenditures (that is, revenue forgone) as well as direct program outlays. The Urban Institute's approach includes expenditures devoted entirely to children (for example, child care, foster care, or elementary and secondary education), as well as entitlements that directly benefit children (for example, Medicaid and Supplemental Security Income). Like the CBO model, the Urban Institute's model also includes family benefits that increase when children are present, such as food stamps (known as the Supplemental Nutrition Assistance Program, or SNAP) and low-cost public housing. The Urban Institute methodology includes expenditures for which children are necessary to qualify for benefits, such as Temporary Aid to Needy Families (TANF), as well as

tax expenditures such as the EITC and tax benefits that are nonrefundable (for example, the Child Tax Credit).

As with the CBO's methodology, the Urban Institute's approach excludes many forms of government spending that benefit families and communities but that are not directly linked to the presence or number of children. As with the CBO, this limitation excludes investments that either replace income for families or target broad indicators of family and community health, such as unemployment compensation, the home mortgage tax deduction, roads, job training programs, national parks, and environmental protection. All of these investments benefit all members of society, underscoring the shortcomings of any measurement system that is directed at a subpopulation defined by age.

In sum, measuring governmental investments in children is a highly imperfect exercise. Researchers have attempted to answer three basic questions. First, what is the extent of direct government investment aimed at offsetting income inequality? Second, what is the extent of investments aimed at mitigating the effects of low income in areas such as housing, health care, and nutrition? And third, what is the extent of government investments that promote children's human capital? Many investments, of course, do not fit neatly into one of these boxes. An investment in nutrition, for example, is also an investment in human capital.

Here, we treat all types of government expenditures — whether in medical care or in the social conditions of health, and whether direct outlays or tax expenditures — as investments in child health. Medical care

is enormously important to children, especially those with serious health care needs, but, given the role of social and environmental factors, it is only one of the keys to promoting child health. As children develop, their health is shaped by the familial, social, and economic supports they receive. Indeed, the foregoing discussion of child health compels a far broader definition of health expenditures, since the consequences of these expenditures directly affect both children's health in the near term and the population's health in the long term.

Spending on Children

Given the U.S. political structure, governmental investments must be measured at both the federal and state levels. Different levels of government emphasize different investments. As the CBO has pointed out, the federal government has taken the lead in supporting the elderly; by contrast, states have assumed leadership in spending on children and families through education and social programs. That said, the CBO points out that federal spending on the elderly surpasses overall state spending on children. The CBO's figures illustrate the dominance of federal programs in the lives of the elderly, compared to those of children. According to the CBO study, in fiscal year 1995, state governments spent \$4,000 per child, on average, compared with \$700 for each elderly person, principally because federal spending for the elderly dwarfs state and local spending on children. Although the numbers are somewhat dated, the same exponential difference undoubtedly holds true today, as state expenditures have eroded even as federal spending on the elderly has continued to climb.

Although the CBO has not updated its study, later data from the Urban Institute study

show a persistent difference in spending on children versus spending on the elderly. In 2008, total federal and state spending on children for health care, education, income security and tax credits, and other services surpassed \$11,800 per child; of this amount, about one-third came from the federal government. By contrast, total government spending on the elderly that year for health, income security and tax credits, and other investments surpassed \$26,300, 97 percent of which was federal.

The Urban Institute spending comparison further shows that health and income security represent the largest comparable differences. Both can be explained, of course; dramatic differences in per capita health-care expenditures would be expected, because the elderly consume vastly more health care. Large differences in income security can be explained by the presence of Social Security for the elderly, which is structured to replace income in retirement as opposed to supplementing income for families still in their earning years. Nonetheless, these figures suggest the comparatively modest role that income supplementation policies play in the lives of children. And the differences have become more pronounced, considering the stagnation in wages among families with children over the past four decades.

The disparities in spending for children have in all likelihood grown since 2008, given numerous economic and political factors: the most serious recession since the Great Depression; reductions in federal spending on children's programs following the short-lived stimulus package enacted by Congress in 2009 as the American Recovery and Reinvestment Act; and a general lack of political support for an expansion of domestic discretionary spending

programs that favor children and their families, including spending on education.

Regardless of whether we use the CBO's or the Urban Institute's methodology, the federal government makes a relatively modest investment in children's health. Indeed, modest is the hallmark of the day, whether the investment is described in terms of size in relation to the federal budget, spending as a percentage of the GDP, or spending in relation to expenditures on the elderly.

The CBO estimates covered the period from 1971 through 2000, and the study made projections to 2010. These estimates show that in 2000, the federal government spent an estimated \$148 billion on children, one-third of that in the form of domestic discretionary programs. Not surprisingly, given the cost of health care, Medicaid dominated federal spending on children that year, representing about one out of every six dollars spent on federal children's investments (\$23 billion out of \$148 billion). In 2000, spending on children comprised 8.4 percent of the federal budget and 1.5 percent of the national GDP. The CBO projected in 2000 that children's spending would remain at 1.5 percent of GDP by 2010 while rising to 9.4 percent of the federal budget.

Spending on the elderly presents a different picture under the CBO analysis. In the case of the elderly, the CBO analysis constructs a profile beginning in 1971; that year, the federal government spent \$45 billion on the elderly, with discretionary spending amounting to approximately 2 percent of the total (\$1 billion versus \$44 billion). By 2000, mandatory spending on the elderly had increased exponentially to \$597 billion, while discretionary spending had risen to

\$18 billion, approximately 3 percent of total federal spending.

In contrast to spending on children, mandatory spending on individual entitlements accounts for the overwhelming majority of federal spending on the elderly, through programs such as Social Security, federal civilian and military retiree benefits, Medicare and Medicaid, veterans' compensation and pensions, food stamps, and others. Because of rapid growth in the elderly population, as well as the strong connection between elderly expenditures and individual entitlements, the proportion of the federal budget and the GDP going to the elderly is high and rising rapidly. By 2000, spending on the elderly consumed 34.8 percent of the federal budget and 6.4 percent of the nation's GDP; the CBO projected that year that by 2010, spending on the elderly would rise to nearly 43 percent of the federal budget, or nearly five times the expenditures for children, and 7.1 percent of the GDP. Because the nation has failed to either introduce cost efficiencies in health-care entitlements or generate sufficient revenue to support necessary social expenditures in discretionary spending programs that do not rise automatically with inflation, investments that are structured under law to depend on discretionary investments have fallen behind. It is children who disproportionately depend on these types of discretionary investments.

Interstate Variation in Child Spending

Where state investments are concerned, the aggregate figure tells only part of the story, of course. Underlying economic and social factors cause extreme interstate variation in the level of childhood poverty, revealing a far more serious picture for children

in some states than in others. The Annie E. Casey Foundation's *Kids Count* data project reported that in 2012, 23 percent of American children lived in poverty, an increase of nearly one-third from the 2008 figure of 18 percent.⁴⁶ The overall figure masks dramatic state-level differences in poverty levels, ranging from 13 percent in North Dakota to 35 percent in Mississippi. Furthermore, interstate variation shows up in more than just the child poverty statistics. *Kids Count* also reported that southern and southwestern states, which tend to have higher childhood poverty generally, showed far higher proportions of children living in areas with a high concentration of poverty (that is, areas where 30 percent or more of the population is poor), a condition that is especially related to elevated risks to health and wellbeing. Nationally, from 2007 to 2011, 12 percent of U.S. children lived in high-poverty areas; among the 14 states and the District of Columbia whose figures surpassed this level, three were in the Northeast (four if we include the District of Columbia).

State investment in children varies significantly, *Kids Count* shows. Although some federal programs use a funding formula that takes state poverty into account, not all do so. As a result, although federal expenditures might mitigate the impact of low spending in states, by no means does federal spending alone equalize opportunity across states.

Education offers a powerful example of the phenomenon. In 2008, when school expenditures across the country averaged slightly more than \$7,100 per pupil, the federal government paid only \$537 per pupil, or 7 percent of each dollar spent, according to Urban Institute estimates. In a per-pupil spending arrangement, the actual number of

poor children might dictate the total federal investment, but the level of investment per child does not rise in a way that offsets a low state spending baseline. Adjusting for regional cost differences, the Urban Institute documented a more than twofold difference in state per-pupil educational spending in 2010, and the 2008 recession made these interstate divisions deeper. By fiscal year 2014, 13 states, some of which had very high childhood poverty levels, were spending more than 10 percent less on elementary and secondary education than they had spent in 2008.⁴⁷

In sum, children derive much of their support from state expenditures, and state expenditures matter a great deal. But state expenditures are significantly less generous than those made by the federal government, especially in certain areas, such as income security, tax credits, housing, and nutrition. The states' tendency not to spend on direct family economic supports, coupled with a structural emphasis on universal entitlement spending on the elderly under federal policies, helps explain why per capita spending on the elderly is much higher than per capita child spending. Furthermore, the level of state support varies deeply, with children in the poorest states with the most entrenched childhood poverty facing a far greater risk of low investment, thereby increasing the likelihood of perpetuating poverty and furthering the disparities of health, education, and opportunity.

Federal Spending Patterns

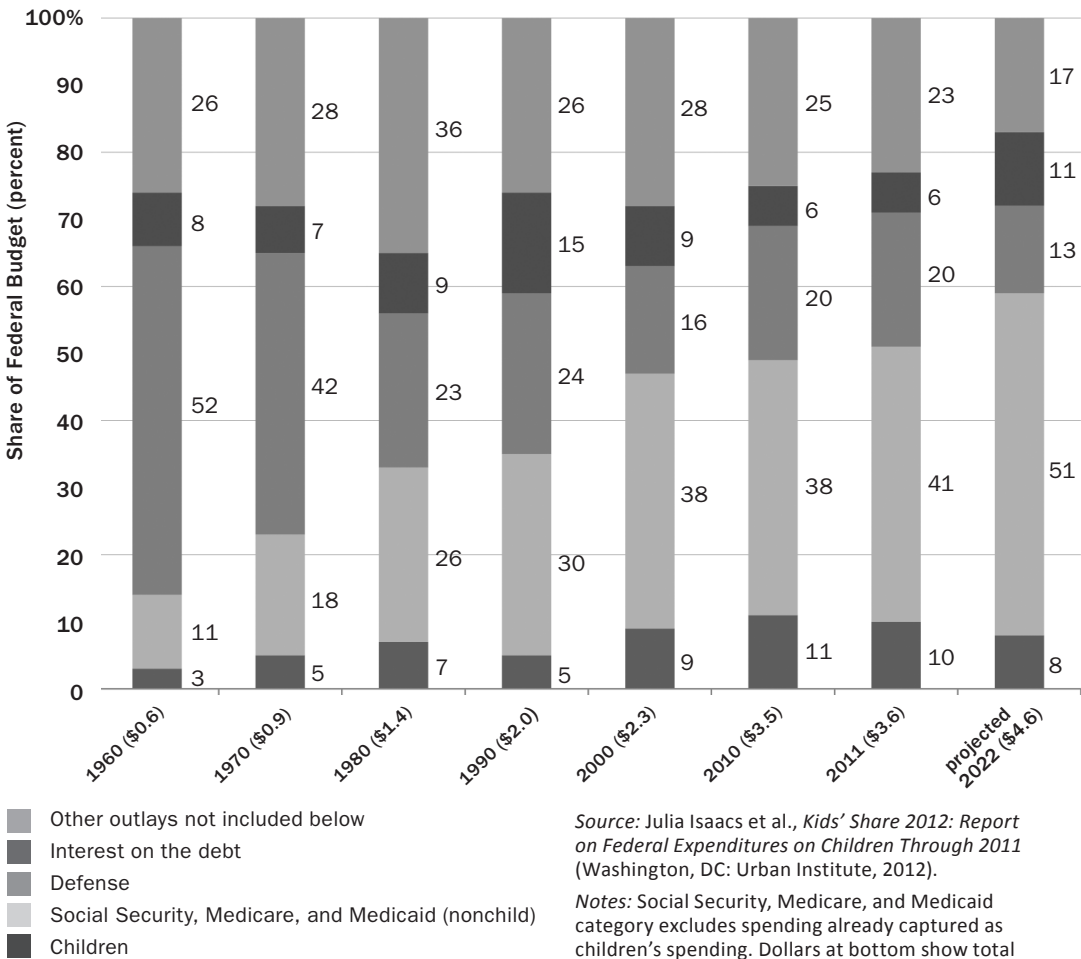
Because federal spending dominates in many key areas, such as income support, medical care, housing, and nutrition assistance, federal spending patterns merit particular attention.

The Urban Institute's *Kids Share* historical analysis of federal spending patterns on children from 1960 to 2011 shows that the decline in the proportion of children living in poverty was accompanied by an increase in the proportion of federal budget outlays spent on children, rising from 3 percent in 1960 to 10 percent by 2011. But because spending on children disproportionately takes the form of discretionary spending (which does not rise automatically with inflation), periods of economic retrenchment have caused federal spending on children to contract. This decline has become more pronounced in recent years, as a consequence of budget legislation that has significantly shrunk the level of permissible federal discretionary spending in coming years. As a result, the Urban Institute projects that by 2022, spending on children will fall to 8 percent of the total federal budget. Figure 1 presents the results of the institute's analysis.

These estimates, as the Urban Institute researchers note, don't include federal tax expenditures over time, which take the form of exemptions and deductions. In a separate analysis, the researchers examined the share of the domestic federal budget spent on children between 1960 and 2011 and projected such expenditures for 2022. Once federal tax expenditures are included, the results are even more startling. In 1960, investments in children consumed 20 percent of the domestic federal budget, which included tax expenditures such as the value of the dependent exemption. By 2011, this figure had fallen by one-quarter to 15 percent of the domestic budget, chiefly because of the declining value of the dependent exemption.

As we've said, the fact that expenditures for children reached the levels they did in 2011 stems primarily from Medicaid

Figure 1. Share of Federal Budget Outlays Spent on Children and Other Items, Selected Years, 1960–2022



Source: Julia Isaacs et al., *Kids' Share 2012: Report on Federal Expenditures on Children Through 2011* (Washington, DC: Urban Institute, 2012).

Notes: Social Security, Medicare, and Medicaid category excludes spending already captured as children's spending. Dollars at bottom show total federal outlays in trillions of 2011 dollars.

expansions for children over the 1980s and the enactment of the Children's Insurance Program (CHIP) in 1997, and the value of the employee health-benefit tax exclusion for children (estimated by the Urban Institute at more than \$19 billion in 2011), as well as medical cost inflation. In other words, investments in housing, income, nutrition, education, child welfare, and other programs and services that relate to children's overall health have stalled, even as medical spending has risen.

Children's Spending as a Percentage of GDP

The Urban Institute also examined spending on children as a share of the GDP over time. In 1960, spending on children stood at 2 percent of GDP and was dominated by the dependent exemption under the Internal Revenue Code. By 2010, children's spending was approaching 3.5 percent of GDP (a figure markedly higher than that projected by the CBO in 2000). But by then, mandatory spending had come to dominate growth:

direct outlays on children's health-care programs, the employee health-benefit tax exclusion, and the refundable children's tax credit. The dependent exemption, which was not indexed to inflation, had shrunk deeply, and discretionary programs remained flat.

The Affordable Care Act

Can the Affordable Care Act (ACA) be expected to alter this picture? The answer is no. Though it advances U.S. policy, the ACA is all about medical care. The refundable premium tax credits that the ACA establishes for low- and moderate-income families (those with incomes between 100 percent and 400 percent of the federal poverty level) will help families secure affordable coverage. But these expenditures will, of course, be medical. In effect, the ACA fills in the affordability gap left by Medicaid and CHIP, which were already in place, by adding insurance premium tax credits for families whose children qualify for neither existing program (see the article in this issue by Lindsey Leininger and Helen Levy for more information about the ACA and children).

Arguably, the greatest stride for children under the ACA is not that it expands subsidized coverage (although simplified enrollment procedures are expected to help close the gap between children eligible for insurance and those who enroll), but that it extends affordable coverage to parents and adult caretakers. The ACA's potential for parents to gain insurance coverage has been seriously complicated by the Supreme Court's 2012 decision permitting states to opt out of the Medicaid expansion.⁴⁸ To date, approximately 5 million poor adults, disproportionately residents of the South and African American, have been affected by the fallout from the decision.⁴⁹ For the time being, these adults still have

no pathway to affordable coverage; their incomes are too low to qualify for premium tax credits in the health insurance exchange, whose threshold for financial assistance is set at 100 percent of the federal poverty level. This gap leaves children in the poorest families in the opt-out states continually vulnerable to the profound effects that untreated illness and disability on the part of their parents or caretakers can have on their own health and wellbeing.

To be sure, the ACA also makes broader, community-level investments that will affect children's health. The law calls for major improvements in the quality of care, payment reform to improve the efficiency of health care, and investments in a health-care workforce that can better meet the demands of a modern health system (Congress ultimately appropriated no funding for workforce improvements).

Other aspects of the ACA emphasize building healthy communities. For example, Congress included a special community health center development fund to help establish accessible and comprehensive primary health care in medically underserved communities. The ACA's health center investment, coupled with health center funding made available under the 2009 economic stimulus law, has helped boost health center capacity nationally, raising the number of people served from slightly more than 18.7 million to over 21.1 million by 2012.⁵⁰ In addition, the ACA established a Prevention and Public Health Fund, through which Community Transformation Grants are awarded to improve community and population health. In the end, however, the ACA is about expanding access to health insurance coverage and, by extension, health care, and does not directly speak to underlying issues of individual, family, and community health.

In sum, the story of investments in children over the past 50 years has been a move away from general family support (in the form of the dependent exemption) and toward more targeted support through spending tied to need (for example, Medicaid, CHIP, the EITC, and SNAP). These programs have grown, lifting total spending on children as a proportion of the federal budget and as a percentage of GDP. Spending on children, however, remains far lower than spending on the elderly. More importantly, perhaps, with so much government spending on children driven by discretionary expenditure decisions, is that as discretionary spending has retrenched, investments in children have also declined as a proportion of total government spending.

International Comparisons of Spending on Children

As we've seen, the U.S. stacks up relatively poorly on critical measures of child health. Similarly, the U.S. compares unfavorably to other nations on indicators of governmental investment in children and their families. Indeed, the picture that emerges is one of a powerful and immensely wealthy nation that, compared to other nations, has made a startlingly modest investment in its children.

Assessing how nations invest in children is challenging in view of the vast differences in the structure of governmental programs and activities, which in turn makes direct comparison difficult. At the same time, however, researchers have developed methods for comparing public investment by examining the steps governments take to advance children's human capital while ameliorating the impact of poverty.

Crowded and environmentally unsound living conditions introduce health and social

risks that children who live in clean and safe environments don't face. In a cross-national comparison of public spending for children, Julia Isaacs found that the United States compared poorly on a number of investment measures. Building on previous research showing elevated child poverty in nations that spend less on cash benefits, services, and tax breaks for families with children, Isaacs concluded that within the Organisation for Economic Co-operation and Development (OECD), a gulf separates the United States from other nations because of its "tight-fisted" policies toward children and their families.⁵¹ Even when Isaacs used a test that considered a broader array of governmental investments, including tax expenditures through the Earned Income Tax Credit, she concluded that spending on children in the United States still lagged behind that of nine other OECD nations. When the measure was expanded further to include a range of expenditures spanning cash benefits, family services, and education, Isaacs found that the United States lagged behind 10 other nations. Only when health-care spending was included did the United States rise to the top of the range. As we've pointed out, this fact may tell us more about how costly health care is in the United States rather than how well the United States invests in children.

Where spending on the elderly is concerned, all OECD nations demonstrate what Isaacs calls an "age bias" in public expenditures. The per capita expenditure disparity ranges from 1.2 times as much in Scandinavian countries to 35 times as much in Spain.⁵² The United States shows an age bias of 2.5; this bias climbs higher once education spending is removed. Overall, this age bias among OECD nations helps explain why, in high-GDP countries, the proportion of elderly people living in poverty has

declined significantly, while the decline in poverty among children has remained so much more modest.

Conclusions

The evidence we've presented supports several conclusions and carries important implications.

First, the classic indicators of health that have guided the clinical medical response to children, as well as the organization and financing of health care, have shown dramatic improvement. At the same time, much work remains, especially for children who live in low-income households or are members of racial and ethnic minority groups and thus at risk for poor health and inadequate health care. The triumph over death that has characterized the nation's century-long health-care effort on behalf of its children has led not only to better health, but also to the survival of infants and children who previously might have died and whose full participation in life may depend on continuous and enhanced medical services and supports. The role that medical technology plays in the survival of infants and children with serious medical conditions has been profound. That said, the disparities in child health across the child age spectrum demand that we think beyond clinical services to the contextual factors that put children at risk and that reduce health inequalities. The ACA makes enormous strides in moving the nation toward greater health care equity, but, obviously, it does not address the underlying conditions of child health.

Second, even as child mortality data show significant improvements, the evidence we've presented demonstrates continuing

and ongoing exposure to health risks, both physical and mental. To tackle these risks, we need solutions that lie beyond the furthest reaches of the medical care system working by itself. Access to medical care is of bedrock importance for all children. But medical care is not structured—nor should it be—to address the underlying causes of poor health in children and adolescents. These causes can be found in historic levels of poverty and inequality—themselves the result of a vast array of economic, political, and social factors—that take an inevitable toll on families and produce enormous deprivation and stress. If we want to improve children's health at the population level, then the nation will need health commitments that extend well beyond medical care.

For these underlying causes of poor child health, we need a different type of treatment, one that emphasizes human capital investment in education; in policies that promote community and neighborhood health, security and safety; and in policies, services, programs, and supports that mitigate the effects of poverty for individual families and help overcome the effects of too-limited family income. Failure to make these investments not only harms children but, given the evidence of the relationship between child development and later health in adults, consigns the nation to a future of diminished strength, laboring under the weight of unsustainable medical costs.

When it comes to these investments, the federal government will play an outsize role for children, just as it does for the elderly. In this regard, the absence of universal legal entitlements for children and families (see the article in this issue by Clare Huntington and Elizabeth Scott), coupled with an erosion in funding for programs that rely on

annual discretionary appropriations, has left American children uniquely vulnerable and lagging far behind children in other wealthy nations. Rather than acting on what we know, the nation is squeezing out of the federal budget the very programs that might make the biggest difference in child health, even as it spends more generally on medical care. We need to change national budgeting priorities to ensure children's place as a central focus of national investment. The government's investment in child health has failed to keep pace with the evolving understanding of the factors that help determine children's health.

Remedying this significant shortcoming will take time and resources. It will require expanding the range of interventions classified as health care and developing a new approach to training health-care professionals to help them more effectively integrate health care with upstream investments. It will also involve changing the outlook of public and private insurers to take a broader view where child health financing is

concerned. One example might be insurance coverage of clinical care services in schools and community settings, an expenditure recognized by Medicaid but frequently excluded by private insurance. Another example would be to recognize certain environmental interventions as legitimate health-care spending, even though treatments such as the elimination of asthma triggers from a child's apartment might not entail diagnostic and treatment services by a licensed medical or health professional.

Finally, it goes without saying that none of these new directions in child health policy can gain traction without a basic shift in the social and political context in which they are made. We Americans value our freedom as individuals; what we seem to lack at the moment is recognition that embracing children and families through social investment not only doesn't diminish this core value but actually promotes it, by building the human capital that in turn will help the nation move confidently into the future.

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Promoting Health in Early Childhood

Maya Rossin-Slater

Summary

Children who are healthy early in life—from conception to age five—not only grow up to be healthier adults, they are also better educated, earn more, and contribute more to the economy. The United States lags behind other advanced countries in early childhood health, threatening both the health of future generations and the nation's long-term economic viability.

Moreover, unhealthy childhoods are not evenly distributed. An accounting of early childhood health in the United States reveals stark inequalities along racial/ethnic and socioeconomic lines. Because of the strong connection between early health and adult outcomes, early childhood offers a critical window to improve disadvantaged children's life chances through evidence-based interventions and thereby to reduce inequality. Restricting her review to studies that can plausibly show causation, Maya Rossin-Slater examines the evidence behind a variety of programs and policies that target any of three groups: women at risk of getting pregnant, pregnant women, or children through age five.

She finds that some programs and policies have failed to show consistent results. But the good news is that others are quite effective at improving early childhood health. The most successful include the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC), universal immunization, and high-quality, center-based early childhood care and education. Economic analyses reveal that these programs' benefits outweigh their costs, suggesting that public spending to support them is more than justified.

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Though it's among the wealthiest countries in the world, the United States fares relatively poorly by standard indicators of early childhood health. For example, according to the U.S. Centers for Disease Control and Prevention (CDC), the U.S. infant mortality rate was ranked 32nd among the 34 countries of the Organization for Economic Cooperation and Development in 2010.¹ Similarly, the World Health Organization reports that the U.S. preterm birth rate (defined as birth at less than 37 weeks of gestation) ranks 130th out of 184 countries.²

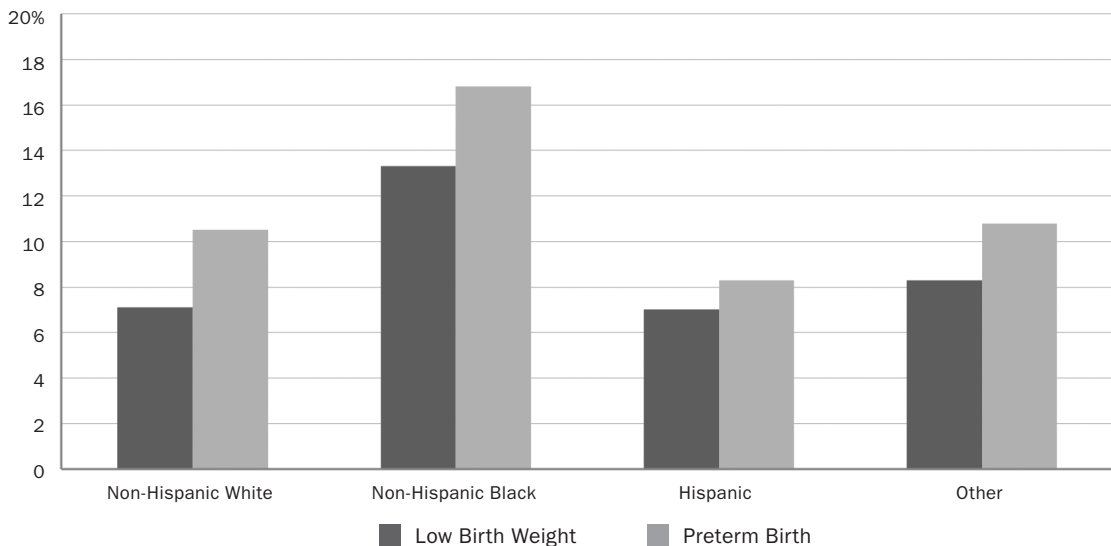
One important reason is the United States' higher cross-group inequality relative to similarly wealthy countries. For instance, figure 1 shows that relative to other races and ethnicities, non-Hispanic white mothers exhibit the lowest rates of low birth weight (defined as less than 2,500 grams) and preterm birth: 7.1 and 10.5 percent, respectively. In contrast, among non-Hispanic African-American mothers, 13.3 percent of

children are born with low birth weight and 16.8 percent are born preterm (90 and 70 percent higher than non-Hispanic whites, respectively). Figure 2 shows the relationship between infant health and other markers of socioeconomic status—unmarried mothers with low education levels experience higher rates of adverse birth outcomes relative to their married, more educated counterparts.

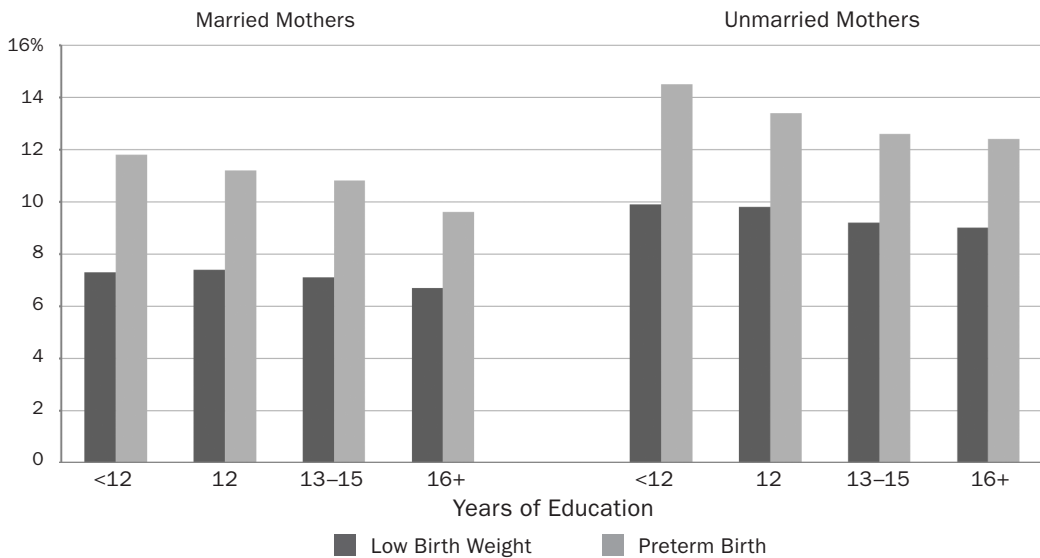
These facts, together with growing evidence that early childhood health affects well-being throughout life, suggest that the U.S. disadvantage in early-life health may have profound consequences not only for our well-being, but also for our economic growth and competitiveness.³ Policies that target early-life conditions, especially among vulnerable populations, could help reverse this trend and reduce inequality.⁴

The United States has many policies to improve early-life conditions and health. These include preconception care and family planning, prenatal care, the Special Supplemental Program for Women, Infants,

Figure 1. Disparities in Birth Outcomes by Mothers' Race/Ethnicity, 2011



Source: Author's calculations using National Center for Health Statistics natality records on all 2011 births.

Figure 2. Disparities in Birth Outcomes by Mothers' Years of Education and Marital Status, 2011

Source: Author's calculations using National Center for Health Statistics natality records on all 2011 births.

and Children (WIC), family leave, universal vaccination programs, early childhood programs such as Head Start, and public education campaigns. These programs vary in structure and scope—for example, WIC targets the nutrition of pregnant women and young children by distributing vouchers to buy healthy foods, while early childhood education programs provide center-based care with curricula designed to develop cognitive and noncognitive skills among preschool children.

How effective are these programs, and how might they impact people throughout the life cycle? To answer these questions, I first discuss research on the link between early-life health and lifelong outcomes. Next, I review the effectiveness of interventions that target the early-life environment.

Because research on early-life wellbeing is extensive, I had to carefully choose what to cover. First, I focus on human development

from conception to age five. Throughout this article, the terms “early life” and “early childhood” refer to this period and are used interchangeably.

Second, I discuss only programs that directly target any of three groups: women at risk of becoming pregnant, pregnant women, and children through age five. I don't review the many policies that don't explicitly target early-life conditions but can nevertheless affect them. For example, I don't discuss the Supplemental Nutrition Assistance Program (SNAP, commonly known as food stamps) or Temporary Assistance for Needy Families (TANF). Similarly, I don't review how environmental regulation impacts early-life circumstances, though many researchers have shown a link between environmental conditions such as air pollution and early-life health.

Third, I don't cover some policies that target early-life health but are reviewed in detail

elsewhere in this issue. For example, Lindsey Leininger and Helen Levy discuss health insurance, and Lonnie Berger and Sarah Font discuss programs that promote parenting skills, such as nurse home visiting initiatives, as well as income assistance and cash transfer programs.

Fourth, I constrain my review of the link between early-life health and adult outcomes to studies that use empirical designs that can plausibly show causation. Similarly, I describe only programs and policies that have been evaluated with such designs. This issue is particularly important for evaluating programs and policies because program participants (or individuals covered by a particular policy) are usually not randomly selected. For example, pregnant women receiving WIC benefits have lower incomes and lower education levels, on average, than other pregnant women. A naïve comparison of the birth outcomes of WIC participants and non-participants can't isolate WIC's causal effects from those of the women's other background characteristics that might also affect infant wellbeing. Therefore, I limit the discussion to interventions that have either had randomized evaluations or been studied using empirical methods that attempt to control for nonrandom selection. I briefly describe some of these empirical methods below.

Fifth, I restrict my review to articles and reports published since 1994, as well as working papers that have not yet been published.

This article delivers three key takeaways. The first is that the relationship between early-life conditions and wellbeing throughout the life course is strong. Many studies have documented a causal link between early-life health and adult outcomes,

including health, educational attainment, employment, and socioeconomic status more broadly. This relationship is economically meaningful. For instance, one of the most comprehensive studies, using birth weight as a marker of early-life health, found that increasing a child's birth weight from 2,500 grams (the cutoff for low birth weight) to the U.S. national average of 3,300 grams would lead to a 3 percent increase in adult full-time earnings.⁵

The fact that early-life health has such far-reaching consequences points to the potential value of policies that can improve early-life conditions. However, the second takeaway of this article is that the success of current U.S. policies varies. Some of the most effective programs are WIC, universal immunization programs, and high-quality, center-based early childhood care and education. In contrast, other policies, such as prenatal care and family leave, have shown less consistent results.

The third takeaway is that, among policies that affect early-life health, the benefits tend to outweigh the costs. For instance, my calculations suggest that a lower bound on the benefit-cost ratio of WIC based on its impacts on birth weight alone is between 0.2 and 2.2, implying that the true ratio is likely to be greater than one. Early-life medical interventions are even more cost-effective—for example, U.S. childhood immunizations are estimated to have a benefit-cost ratio greater than 10. Finally, many intensive center-based early childhood care programs are estimated to have benefit-cost ratios of 2 or 3 to 1.

This article proceeds as follows. First I discuss conceptual models of how early-life factors can affect outcomes throughout life.

Next, I briefly describe some of the common approaches used to analyze the data. Then I review the empirical evidence on the long-term impacts of early-life health. The next section discusses studies on the effectiveness of some existing programs that target in utero and early childhood health and circumstances. Finally, I conclude with a discussion of cost-benefit comparisons across policies.

Conceptual Models

The idea that early-life conditions can have lasting consequences on lifelong human welfare was most famously put forth by David J. Barker, a British physician and epidemiologist, who coined the phrase “fetal origins hypothesis.” Barker argued that adverse in utero conditions can “program” a fetus to have metabolic characteristics that are associated with future disease.⁶ The hypothesis suggests that the health consequences of fetal conditions are both persistent and possibly latent—individuals may not experience any adverse effects (such as heart conditions) until middle age.

This idea has been a catalyst for researchers in many disciplines to adopt a “life course” approach to human development. The “life course” framework highlights how biological, behavioral, and psychosocial processes that operate throughout an individual’s life can accumulate to influence health and disease risk at older ages.⁷ Exposures and shocks during gestation and in early childhood are central components of this approach.

James Heckman and co-authors have formalized this perspective using a human capital model, with several stages of childhood.⁸ The model’s key idea is that skills produced at one stage raise the productivity of investments in later stages—that is, skills beget skills. The

model predicts that returns to investments in early childhood are higher than returns to investments later in life. Furthermore, the return to later investments may depend on the earlier investments.

Early-life investments may be especially important for at-risk children in low-income families. These children often experience substantial chronic stress, in the womb and after birth. Exposure to stress can alter children’s neurodevelopment, affecting their ability to concentrate, remember things, or focus their thinking. All of these skills are essential to wellbeing throughout life. Thus early-life investments that can undo some of the neurobiological damage caused by chronic stress may be critical for improving poor children’s life chances.⁹

Early-life investments may be especially important for at-risk children in low-income families.

In sum, researchers across a wide range of disciplines believe that early-life health helps determine lifelong wellbeing. Below, I discuss the empirical evidence on this relationship and describe evaluations of existing policies targeting early-life conditions. First, however, I discuss issues related to inferring causality in these analyses.

Empirical Approaches

The studies I describe below try to answer questions such as “How does early-life health affect adult earnings?” and “How does Head Start affect measures of children’s cognitive

ability?” To answer questions like these, we would like to understand causal relationships between two or more factors or variables. A causal relationship is especially useful for making predictions about what will happen if circumstances or policies are changed—something that policy makers must know to make well-informed decisions.

One of the biggest challenges is distinguishing causation from correlation. For example, suppose we would like to estimate the causal effect of some measure of early-life health on an adult outcome such as annual full-time earnings at age 30. We collect longitudinal data (that is, data that follow people over time), which combine information on some markers of early-life health (such as birth weight) and individual full-time earnings at age 30. Suppose that in this data, we see that individuals who had better early-life health also have higher age-30 earnings, on average. Can we conclude that better early-life health *causes* higher adult earnings?

The answer is no, because other factors may be correlated with both better early-life health and higher age-30 earnings. For instance, people born in richer families may have more resources at their disposal (such as access to high-quality medical care, good schools, networks, and connections) that can lead to both better early-life health and higher earnings than do people born in poorer families. In other words, early-life health is not randomly assigned, and people with different levels of early-life health are also different in other ways. An analysis that doesn't account for these other distinctions is subject to something called “omitted variables bias.” Such an analysis can't separate the causal effects of early-life health from the effects of other factors.

Researchers have many ways to overcome omitted variables bias. A randomized experiment is one of the most convincing. If an intervention assigns people to treatment and control groups at random, there should be no systematic differences between the groups, and any differences in outcomes should be attributable only to the causal effects of the intervention. For example, an experiment might randomly assign some pregnant women to receive a treatment that increases their children's birth weight (and alters nothing else in their lives) and other pregnant women to a control group. Any differences in age-30 earnings of the children of these two groups of women should then be driven only by the randomly manipulated differences in their birth weights.

However, randomized experiments are often infeasible, for either financial or ethical reasons, and researchers must use other methods to find causal relationships. One is to simply include all relevant observable characteristics in what's called a regression analysis. For the example above, a regression might include family background variables (such as family income and parental education level) as controls. This analysis would estimate the relationship between birth weight and adult earnings, holding constant all observable characteristics of the individuals in the data. Although this approach mitigates the omitted variables problem to some extent, it can't do so completely, because unobserved omitted variables are likely also important.

One way to partially tackle the problem of unobserved variables is to compare siblings born to the same parents. In the above example, we could test whether differences in siblings' birth weights are correlated with differences in their age-30 earnings. This approach can control for both observable

and unobservable time-invariant family characteristics. Put differently, this method holds constant any factors that are the same across siblings (such as parents' education). But it can't control for factors that might be different across siblings. For instance, a household's financial situation might change over time, and this change might lead to differences in early-life health markers of siblings born in different years. If household financial circumstances in early childhood also impact children's long-term outcomes through other channels, then sibling comparisons may still omit these time-varying variables.

A third approach uses "natural experiments" to approximate randomized experiments. These analyses exploit real events—for example, disease outbreaks, natural disasters, or staggered policy rollouts—that can assign treatment to individuals almost randomly. For example, as I describe below, the WIC program was implemented at different times in different counties. The rollout's timing was governed by administrative and budgetary factors, and not by any observable determinants of early-life health. As a result, researchers can use the variation to identify WIC's causal impacts by comparing people who had early-life access to WIC to those who did not.

Thus researchers can use a variety of empirical methods to identify causal relationships. In the next two sections, I refer to these methods and discuss the degree to which causal inference is plausible.

Empirical Evidence

Empirical evidence on the relationship between early-life health and wellbeing throughout life is abundant.

Some early studies used the 1944 Dutch famine as a natural experiment in malnutrition. Researchers followed groups of people who were exposed to the famine in utero and compared them with groups who were in utero in other years, finding that famine-exposed people had a higher risk of obesity, heart disease, and mental illness even 50–70 years later.¹⁰

To study less-acute health shocks, researchers use longitudinal data that combines information on individual markers of early-life health with adult outcomes. Much of this work uses birth weight as a marker of early-life health. Low birth weight is strongly associated with both infant mortality and later illness.¹¹

Though birth weight captures information about prenatal health, health after birth and in early childhood is harder to quantify. Many researchers use adult height as an indicator of early childhood health after birth. Through age three, growth is more rapid than at any other stage of life, so health and nutrition during this period are critical to adult height.¹² Some researchers also use information on chronic health conditions in early childhood, which may capture some of the most severe health deficiencies.

One of the first studies using this approach analyzed data from the 1958 National Child Development Survey, which followed a group of Britons from birth until middle age and collected information on their birth weight, chronic health conditions at ages 7 and 16, and height at age 16, as well as a variety of adult outcomes such as health, labor market behavior, education, and socioeconomic standing. The study found that people with low birth weight were 25 to 44 percent less likely to pass English and math exams at

age 16, and 9 to 16 percent less likely to be employed in their 20s and 30s, even after controlling for a large number of individual and family background characteristics.¹³

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Another landmark study used the same data to find that all of the available early-life health indicators—birth weight, the presence of chronic conditions, and height—were correlated with adult health, employment, and socioeconomic status.¹⁴ Other research shows that early-life health has impacts throughout the life cycle. For example, two researchers used data from the U.S. Health and Retirement Study, a longitudinal survey, funded by the National Institute on Aging and the Social Security Administration, that queries a representative sample of more than 26,000 Americans over the age of 50 every two years. They found that height affects cognitive function into old age—a one-inch increase in adult height was associated with small but statistically significant increases in cognitive skills.¹⁵

Although these analyses control for a large number of demographic and family background characteristics, people with worse early-life health may have unobservable characteristics that independently affect their life outcomes. For instance, mothers

of low-birth-weight children, who are more likely to be poor, may have lower parenting skills and fewer resources than their wealthier counterparts.

One way to tackle this problem is to exploit differences in childhood health between siblings or twins and see how they correlate with long-run outcomes. One of the largest studies following this approach used administrative data from Norway on over 30,000 twins born between 1967 and 1997. It found that a 10 percent increase in birth weight reduced mortality in the first year of life by 13 percent, increased the probability of high school completion by 1 percent, and increased adult full-time earnings (at 25 and above) by 1 percent.¹⁶ To put these effects in context, consider that in 2011, the U.S. average birth weight was 3,266 grams. The Norway study implies that a 30 percent increase in birth weight from 2,500 grams (the cutoff for a low-birth-weight designation) to the national average should raise adult earnings by 3 percent.

Similar sibling and twin studies have been conducted with data from other countries. These studies provide relatively strong evidence that early-life health indicators—birth weight, height, and various physical and mental health conditions—are associated with long-run outcomes including school test scores, educational attainment, and adult employment, income, public assistance take-up, crime, and self-reported health.¹⁷ However, findings from twin studies may not apply to a broader population. And it isn't clear whether the long-term outcomes represent biological effects of early-life health, or whether they are mediated by social factors. For example, a parent might decide to invest more in a child with poor health at birth than in a twin or sibling,

Indeed, some evidence suggests that parents tend to compensate for poor health at birth, so sibling comparisons may understate the long-term effects of early-life health.¹⁸

Other research has used variation in the early-life environment caused by natural disasters and epidemics to identify the causal effects of early childhood health. For example, one study examined the long-run consequences of prenatal exposure to the 1918 influenza epidemic on a broad range of adult outcomes, using U.S. Census data. Comparing people who were in utero during the epidemic to those who were in utero either shortly before or after, the study found that exposed people with infected mothers were 13 to 15 percent less likely to complete high school and scored 2 to 7 percent lower on a socioeconomic status index. Prenatally exposed males had adult incomes that were 5 to 9 percent lower, and they were 3 to 6 percent more likely to have a work-limiting disability, while prenatally exposed females received 12 percent more income from welfare benefits in adulthood.¹⁹ A related study on the 1918 influenza epidemic found that prenatally exposed people were more likely to have poor self-reported health and to experience trouble hearing, speaking, lifting, and walking in adulthood.²⁰ Other research has found lasting adverse effects of fetal exposure to other disease outbreaks, such as malaria outbreaks in the early twentieth century U.S. and the Asian influenza pandemic of 1957 in Britain.²¹

Researchers have looked beyond disease outbreaks to identify long-term consequences of early-life events, finding that prenatal and early childhood exposure to other adverse conditions harms later wellbeing. One study found that Swedish children prenatally exposed to radiation from Chernobyl fallout

were about 4 percent less likely to qualify for high school based on performance in the final year of compulsory school.²² Even low-dose exposure to radiation can have lasting consequences. Using Norwegian data, researchers estimated that small increases in prenatal exposure to radiation had small but measurable effects on outcomes such as educational attainment, age-18 IQ scores, and age-35 earnings.²³

Early-life air pollution exposure also exerts long-run impacts. A 10 percent increase in exposure to total suspended particulates in an individual's year of birth reduces high school test scores by about 4 percent and lowers age-30 earnings by 1 percent.²⁴ And early-life exposure to lead impacts adult socioeconomic status and criminal activity.²⁵

Finally, evidence suggests that early-life economic conditions can have lasting effects. For example, one study compared people born during the Netherlands' economic boom of 1872–76 with people born during the country's 1877–81 recession. People born in prosperous years had life expectancies about 1.6 years longer than those born during the downturn.²⁶ Another study exploited regional variation in phylloxera attacks that greatly reduced wine production in French vineyards between 1863 and 1890; people from wine-growing families born during a year that their region was affected by phylloxera were 3 to 5 percent shorter at age 20 than were counterparts who were not exposed to this income shock in early life.²⁷

There is also evidence that early-life income shocks have played an important role in the U.S. more recently. Using variation in the timing of the Food Stamp program's introduction in the 1960s and 1970s across counties, one study found that having access

to the program between conception and age five reduced adult metabolic syndrome (which captures the presence of health conditions including obesity, diabetes, and high blood pressure), and, for women, increased economic self-sufficiency.²⁸

Interventions Targeting Early-Life Health and Wellbeing

On the whole, the evidence on the links between early-life conditions and development and wellbeing throughout life is remarkably strong. How effective, then, are U.S. policies and programs that target early-life conditions?

Preconception Care and Family Planning

Mothers' health significantly affects their infants' health. Thus promoting women's health and wellbeing even before pregnancy is a natural way to improve their children's early-life health. In fact, in 2006, the CDC issued recommendations to "Improve Preconception Health and Care."²⁹ Preconception care's main goal is to provide health screenings as well as educational and medical interventions that might reduce risk factors in women's future pregnancies. However, evidence of its effectiveness in improving early-life health is limited. Only a few randomized trials have been conducted on selected populations (such as women with diabetes), and they yielded mixed results.³⁰ Nonrandomized studies have also been inconclusive and have often suffered from the omitted variables bias problem described above.³¹

Much more research has been conducted on family planning policies. These policies play an important role in preconception care, since planning and preparing for pregnancy may help women achieve their optimal

physical and mental health at the time of conception. Moreover, because unintended pregnancy rates are highest among economically disadvantaged groups, these efforts may be particularly valuable for low-income populations.³²

Many researchers have studied the consequences of access to family planning, through either the advent of birth control pills or the legalization of abortion in the 1960s, '70s, and '80s. A lot of these studies use natural-experiment variation stemming from differences in timing across states. The evidence suggests that these reproductive health policies led to declines in fertility and changes to birth timing among women.³³ Family planning programs targeting lower-income women (such as federal Title X programs and Medicaid family planning waivers) have also been shown to reduce birth rates and possibly even change children's economic circumstances.³⁴ Similarly, abortion policies may lead to improved circumstances for children at birth—for example, people born after legalized abortion are less likely to live in single-parent families, live in poverty, receive welfare, and die as infants.³⁵

However, there is practically no evidence of direct relationships between these policies and maternal health during pregnancy or infant health at birth. Some studies show that unintended pregnancies are correlated with worse birth outcomes, suggesting that family planning and abortion initiatives may improve early-life health.³⁶ However, as women who have unintended pregnancies are different in many ways from those who do not, it's difficult to isolate the effect of "unintendedness" from the influence of other characteristics and circumstances.

In sum, a wealth of research shows that U.S. family planning policies have impacted women's fertility behaviors, both in the whole population and among disadvantaged groups. This research also points to improvements in children's economic circumstances, suggesting that giving women more control over their reproductive health may help the next generation. Yet although these findings suggest that family planning interventions may have favorable effects on early-life health, there is not enough evidence. We need more research on the early-life health effects of family planning programs and preconception health initiatives more broadly.

Prenatal Care

Once a woman becomes pregnant, much of her contact with the health-care system occurs through prenatal care, one of the most commonly used health services in the United States. According to the National Center for Health Statistics, 95 percent of women who gave birth in 2011 reported having at least one prenatal care visit. This near-universal contact with the health-care system during pregnancy is due in part to large expansions in the Medicaid program throughout the 1980s and '90s, and is likely to continue under the Affordable Care Act. Thus prenatal care could impact the health of nearly the entire population of mothers-to-be.

The American College of Obstetricians and Gynecologists recommends that, on average, women have 11 prenatal care visits during pregnancy. Much research has examined whether the number of routine visits affects infant health. Several randomized trials have compared women who had a standard number of prenatal care visits with women who had fewer. The largest such study, based in Britain, compared women who

had 13 visits with women who had either six or seven visits.³⁷ The women with fewer visits were less satisfied with their care and more worried about their unborn child's wellbeing, but they experienced no more pregnancy complications or adverse birth outcomes than the other women did. Similar randomized trials have found little evidence that additional prenatal care visits had any impact on infant health.³⁸ However, many of these trials were conducted on small numbers of low-risk women, and thus can't tell us whether prenatal care might help higher-risk women who have chronic health conditions or engage in behaviors such as drinking or smoking during pregnancy.

Nonrandomized studies present more evidence on prenatal care. For example, one study used data on all sibling births in Arizona and Washington over 1992–2002, comparing the outcomes of children born to the same mother to identify effects when mothers had different numbers of prenatal care visits across pregnancies.³⁹ The results showed that an additional prenatal care visit increased birth weight by about 12 to 20 grams, with somewhat larger effects at the bottom of the birth weight distribution. However, unobserved time-varying factors (such as maternal employment and marital status) might determine how much prenatal care a mother gets and also affect birth outcomes, thereby biasing the estimates.

Another study used a natural experiment: a large bus strike in Pennsylvania that reduced the number of prenatal care visits that low-income women were able to attend. The study found that women with more prenatal care reported less smoking during pregnancy but saw no improvements in birth outcomes.⁴⁰ However, two cautions are in order. First, the bus strike only lasted 28 days and

thus couldn't have substantially reduced the number of prenatal visits that women were able to get—African American women living in the inner-city, who were most likely to be impacted, experienced a reduction of 0.45 visits, on average. Second, the bus strike may have affected other aspects of women's lives, such as their ability to get to work, and these unobserved factors may skew the estimates of prenatal care's effects.

Overall, the evidence on how prenatal care affects early-life health is relatively limited. However, prenatal care may influence maternal health-related parenting behaviors and the use of pediatric care, which may ultimately contribute to children's health and wellbeing later in life. For instance, one study shows that beginning prenatal care in the first trimester may decrease maternal postpartum smoking, increase well-baby visits, and increase breastfeeding.⁴¹ Prenatal care may also impact maternal health—timely and adequate care has been shown to reduce obesity and hospitalization rates among new mothers.⁴²

It may also be that the quantity of prenatal care is not the relevant dimension to study. Instead, quality may be more important. However, almost no research has examined the impacts of prenatal care's quality, in part due to a lack of data on quality measures. A recent Institute of Medicine report, which focuses on preterm birth as a marker of poor early-life health, calls for greater emphasis on research about the quality of prenatal care.⁴³ Finally, prenatal care may be an important way to offer mothers-to-be medical services that are not necessarily limited to pregnant women. For instance, exposure to the influenza virus has been linked to preterm delivery, and prenatal care visits may help ensure that pregnant women receive flu vaccinations.⁴⁴

On the whole, evidence that the quantity of prenatal care affects birth weight and other markers of early-life health has been elusive. However, women may need high-quality care to see such impacts, and research on the quality as opposed to the quantity of care is much more limited. Moreover, prenatal care may improve mothers' health-related investments in their children and serve as a conduit for other medical or social interventions that support early childhood health.

WIC

Prenatal care policies broadly target the health of pregnant women. WIC, on the other hand, is one of the largest U.S. policies specifically targeting a single aspect of early-life health—namely, nutrition. Established in 1974, the program serves low-income pregnant and postpartum women, infants, and young children under age five. Participants must live in households with incomes below 185 percent of the poverty line and be “at nutritional risk” (most people who satisfy the income requirement are assessed to be at nutritional risk). Participants get monthly benefits to buy nutritious foods. WIC participants also learn about nutrition, health, and breastfeeding, and get referrals to social service agencies.

Research on how WIC affects early-life health dates back several decades.⁴⁵ Almost all of it has focused on WIC's effects on pregnant women; there is very little causal evidence of WIC's impacts among young children. Thus I focus on the early-life impacts of prenatal access to WIC.

Early studies found a positive association between WIC and birth weight.⁴⁶ The sizes of the estimated effects were quite substantial—participation in the program was associated with a 10 to 43 percent reduction

in the likelihood of low birth weight, for example.⁴⁷ However, the early WIC studies may be subject to omitted variables bias. In particular, if WIC participants tend to have characteristics associated with better birth outcomes that women who aren't on WIC don't have (for example, healthier behaviors, better knowledge of public programs, or stronger family support networks), then the benefits of WIC could be overstated.

To tackle this problem, researchers have looked for comparison groups that are similar to WIC participants. One study compared women receiving WIC benefits to women on Medicaid who were eligible for WIC but didn't take up benefits, and found that the children of WIC participants weighed 64 to 78 grams more at birth, were 30 percent less likely to have low birth weight or be premature, and were 10 percent less likely to be admitted to intensive care.⁴⁸ Importantly, this study shows that, compared to other women on Medicaid, WIC participants on average have observable characteristics that are associated with worse rather than better birth outcomes, suggesting that at least some of the earlier studies on WIC may have underestimated the program's benefits. Other studies, using similar methods and considering a variety of groups of women, found somewhat smaller effects on birth weight—7 to 40 gram increases in average birth weight, and about a 9 percent reduction in the likelihood of low birth weight.⁴⁹

Other researchers have used sibling comparisons to control for time-invariant family background characteristics that could be correlated with both WIC take-up and early-life health. Comparing children born to women who participated in WIC during one pregnancy and not during another, researchers have found that the WIC-exposed children

are more likely to be breastfed and less likely to experience anemia, failure to thrive, and nutritional deficiencies.⁵⁰

Three recent studies found that WIC has notable benefits for infant health. One study linked Florida birth records to information on the infants' older siblings who were enrolled in elementary school. Since the household income eligibility threshold for reduced-price lunches is the same as for WIC, the researchers assumed that if a child received reduced-price lunch in any given year, then his infant sibling also received WIC benefits in that year. The analysis compared outcomes of infants whose older siblings were receiving reduced-price lunches to those who were not receiving such lunches but received them in either the previous or following year. The results suggested that WIC participation resulted in a 13 percentage point reduction in the probability of low birth weight.⁵¹

Another study examined WIC's rollout in the 1970s, using variation in access to the program by county and year to identify its effects. The authors show that the rollout was not correlated with other observable determinants of birth outcomes, such as local labor market conditions. They found that initial access to the WIC program led to 18- to 29-gram increases in average birth weight and an 8 percent reduction in the likelihood of low birth weight.⁵²

To examine WIC's effects in more recent years, a third study used variation in WIC clinic openings and closings in Texas and compares siblings born to the same mother over 2005–09. The idea was to compare women who had a WIC clinic in their ZIP code of residence during one pregnancy and not another. Thus the variation in mothers'

WIC access came only from WIC clinic openings and closings, rather than from other, likely unobservable factors that might influence whether a woman receives WIC services during one pregnancy and not another. The results suggested that access to WIC increased take-up of food benefits, weight gain during pregnancy, birth weight, and the probability that women would start breastfeeding upon hospital discharge. The effects were larger than those in the study on WIC's rollout. Specifically, among mothers with a high school education or less (who are most likely to be eligible for WIC), WIC access was associated with a 32-gram increase in average birth weight and a 14 percent decrease in the likelihood of low birth weight.⁵³

Recent work that carefully attempts to identify WIC's causal effects points to relatively large benefits.

Overall, research presents a range of estimates of the relationship between WIC and early-life health. Though some earlier studies may be subject to biases that could overstate WIC's benefits, more recent work that carefully attempts to identify WIC's causal effects nevertheless points to relatively large benefits.

No formal cost-benefit analysis of the WIC program has been conducted (in part because no studies have examined the program's long-term causal effects). But a quick calculation can shed light on the benefit-cost ratio. According to the U.S. Department of Agriculture, the program cost about \$6.5 billion in 2013. With 8.7 million participants, this

is about \$745 per participant per year. The evidence suggests that WIC increases birth weight by 7 to 80 grams, which should yield savings in average hospital costs for delivery and initial care of \$41 to \$471.⁵⁴ Moreover, based on the link between birth weight and earnings, WIC should increase average annual adult earnings by 0.02 to 0.3 percent. Assuming the percentage gain in earnings remains constant over the life cycle, and making the standard assumption of a 3 percent real discount rate (which measures the rate at which society is willing to trade future benefits for current benefits), the mean present value of WIC in terms of lifetime earnings is calculated to be between \$94.10 to \$1,176 per participant in 2014 dollars.⁵⁵ Together, these estimates translate to benefit-cost ratios of 0.18 to 2.2, based on higher birth weights alone. As the program may also improve other aspects of child and maternal wellbeing, these estimates probably represent lower bounds, suggesting that the true benefit-cost ratio is likely to be greater than one.

Family Leave

The policies described thus far target early-life health directly. Family leave is a broader program that targets the needs of working parents. Because most mothers work—over 60 percent of mothers with children under age three are in the labor force—these policies can have important consequences not only for women's employment and careers, but also for early-life health.⁵⁶

Family leave programs provide time off from work so that mothers can prepare for and recover from childbirth and parents can care for their newborns. Guaranteed leave (especially if it is job-protected) may reduce maternal stress, which has been shown to harm infant and child health.⁵⁷ There may be further health impacts after birth, because

family leave can influence the quantity and quality of time newborn children spend with their parents. For example, a mother on leave may have more time to take care of a sick child, breastfeed, or seek prompt medical care. Leave policies that provide health insurance coverage can also increase access to regular medical care. And leave policies may affect family income depending on whether they are paid or unpaid, and therefore influence the family's material resources for child rearing.

Before 1993, 25 states and the District of Columbia had enacted some type of family leave provisions, mostly unpaid and without job protection, that varied in length from six to 16 weeks.⁵⁸ In that year, the federal Family and Medical Leave Act (FMLA) was enacted. It mandated 12 weeks of unpaid, job-protected family leave with continued coverage by the employer's health insurance (if such coverage was already offered at the job). However, because of firm size and work history requirements, only about half of private sector workers were eligible. Currently, although five states (California, Hawaii, New Jersey, New York, and Rhode Island) provide paid family leave, the vast majority of working parents are covered only by a relatively short and unpaid leave policy, if at all.⁵⁹ In contrast, most other countries have national paid family leave policies.⁶⁰

Yet research suggests that most countries' family leave policies have little impact on early-life health. A few studies show that European countries with longer leave policies have lower mortality rates from birth to age five.⁶¹ However, it's hard to draw causal conclusions from international comparisons, as other factors may be correlated with both leave provision and infant health. For

example, Scandinavian countries, which have some of the longest family leaves, also have a variety of other social safety net supports, such as low-cost public child care.

More recent work has focused on individual countries and examined what happens when existing leave policies are expanded or new ones are introduced. These natural experiments can more credibly identify causal effects by comparing children who were born under more generous family leave regimes to similar children born when leave was less generous. Several such studies have found that expansions in family leave have little effect on child wellbeing. For example, in Canada, expanding paid maternity leave from six months to a year had no statistically significant impacts on early childhood development indicators for children up to 29 months old.⁶² A German study considered three family leave reforms: an increase from two to six months of paid leave in 1979, an increase from six to 10 months of paid leave in 1986, and an increase from 18 to 36 months of unpaid leave in 1986. None of them had detectable effects on any long-run child outcomes, including grade retention, selective high school attendance, adult wages, and employment.⁶³ Similarly, a Swedish expansion in paid leave from 12 to 15 months had no significant impacts on a variety of child health measures or on academic performance at age 16.⁶⁴

These studies offer credible evidence that extensions in paid family leave longer than two months may not play a large role in child wellbeing in Canada and Europe, but they don't tell us what to expect from introducing paid or unpaid leave for the first time. Moreover, the institutional setting where a family leave policy is enacted likely matters. A reform that expands paid leave from 12

to 15 months in a setting with subsidized child care and universal health insurance (as in Sweden) is quite different from one that provides family leave for the first time on a national level in a setting such as the U.S. where neither child care nor health insurance is guaranteed. In fact, a recent study on the 1977 introduction of a four-month paid leave in Norway, where the preceding policy provided only three months of unpaid leave, contrasts with the findings from other countries. The Norwegian policy had lasting beneficial impacts on children's educational attainment, and especially helped children from disadvantaged backgrounds whose mothers were least likely to have been able to take unpaid leave.⁶⁵

In the United States, recent evidence suggests that even the 12 weeks of unpaid leave guaranteed by the FMLA can affect early-life health. One study used a natural-experiment analysis, exploiting variation across states in pre-FMLA leave policies and across counties in average firm size. The results show that FMLA led to a 6-gram increase in average birth weight and a fairly large reduction in the infant mortality rate of about 10 percent. However, these benefits accrued only to children of highly educated and married women, who were most likely to be eligible for FMLA and able to afford unpaid time off.⁶⁶

We have little evidence on the effects of the few state-level paid leave policies. Some work suggests that California's paid family leave program, which was introduced in 2004 and has very few eligibility restrictions, increased leave-taking among less-educated, unmarried, and minority mothers who previously took an average of less than two weeks of leave.⁶⁷ Moreover, the policy appears to have substantially increased breastfeeding rates.⁶⁸

These findings show that paid leave might offer early-life health benefits to disadvantaged children in the U.S.

In sum, research suggests that expanding already generous paid leave programs in Canada and Western Europe has had little effect on children's early-life health or on measures of welfare throughout childhood and early adulthood. However, shorter unpaid and paid leave measures may help children of mothers who can make use of them.

Universal Immunization Programs

The policies discussed so far primarily impact early-life health through altering the choices and constraints faced by women who are at risk of being pregnant, pregnant women, and new mothers. But a number of widespread medical interventions, such as universal immunization programs, target the early-life health of infants and children directly.

The routine childhood vaccination schedule shows dramatic health benefits and substantial cost-effectiveness.

The routine U.S. childhood immunization schedule (from birth through age six) consists of vaccines for hepatitis B, diphtheria/tetanus/pertussis (DTap), rotavirus (RV), *Haemophilus influenzae* type b (Hib), pneumococcus (PCV), polio virus (IPV), measles/mumps/rubella (MMR), varicella (chickenpox), and hepatitis A. A number of studies have evaluated how these vaccinations affect child health, as measured by hospitalizations and mortality. For example, a study of PCV, which was introduced in the immunization

schedule in 2000, found that among children from birth to age two, pneumonia-related hospitalizations fell over 52 percent, from 115 per 10,000 in 1997–99 to 55 per 10,000 in 2004. Ambulatory visits for pneumonia fell 41 percent, from 993 per 10,000 to 585 per 10,000. Moreover, the vaccine lowered direct medical expenditures for pneumonia from an annual average of \$688.2 million to \$376.7 million, representing \$310 million savings in 2004 dollars (about \$375 million in 2014 dollars).⁶⁹

Another study examines the varicella vaccine against chickenpox, recommended for universal childhood immunization in 1995. Afterward, the varicella-related hospitalization rate fell from 0.5 hospitalizations per 10,000 in 1993–95 to 0.13 per 10,000 by 2001. The decline was driven by hospitalizations among children from birth to age four. At the same time, varicella-related hospital charges declined from \$161.1 million in 1993 to \$66.3 million in 2001, saving \$94.8 million in 2001 dollars (about \$120 million in 2014 dollars).⁷⁰

Overall, the routine childhood vaccination schedule shows dramatic health benefits and substantial cost-effectiveness—for example, one study showed that routine childhood immunization of children born in 2009 should prevent over 40,000 early deaths and 20 million cases of disease, implying a societal benefit-cost ratio of about 10.1.⁷¹ And there is no evidence that vaccines are unsafe, despite the widely popularized claim that vaccines cause autism.⁷²

Public Education Campaigns and Regulations

Several public education campaigns and regulations seek to change parental behaviors and thus improve early-life health.

Breastfeeding education campaigns are an example. The American Academy of Pediatrics (AAP) recommends breastfeeding exclusively for the first six months of a baby's life, followed by breastfeeding in combination with some solid foods until at least 12 months. Many outreach efforts promote breastfeeding. For instance, in 2011, the U.S. surgeon general issued a "Call to Action," describing steps that individuals and organizations can take to support breastfeeding mothers. These include teaching fathers and grandmothers about the benefits of breastfeeding; making breastfeeding support a standard of care among midwives, obstetricians, nurse practitioners, family physicians, and pediatricians; encouraging support programs at work; and community peer counseling programs.⁷³ A recent review of the evidence on how breastfeeding impacts infant and child health suggests that if these efforts are successful, they are likely to be beneficial. Breastfeeding is associated with a lower risk of a variety of childhood diseases and conditions such as ear infections, severe lower respiratory tract infections, eczema, asthma, obesity, type 1 and 2 diabetes, childhood leukemia, and Sudden Infant Death Syndrome (SIDS).⁷⁴ Breastfeeding rates have increased substantially over the past few decades—breastfeeding initiation rose from 27 percent in 1970 to 77 percent in 2013—but there is substantial room for progress in ensuring that mothers continue breastfeeding through a child's first year of life. Only 49 percent of mothers report breastfeeding at 6 months after birth, and 27 percent report breastfeeding at 12 months.⁷⁵ Research suggests that successful breastfeeding campaigns must be multifaceted. For example, one breastfeeding campaign, which increased breastfeeding rates among new mothers by 18 percentage points, lobbied to change hospital policies and used

new language (for example, “breast milk substitute” instead of “baby formula”). It also trained health professionals and conducted targeted media outreach.⁷⁶

Several public health campaigns and regulations are designed to prevent child injury and death. These include campaigns and regulations regarding car seats, bicycle helmets, flame-retardant materials, and the like.⁷⁷ The evidence suggests that large-scale educational strategies, such as distributing brochures or isolated public service announcements, have been largely ineffective at changing behaviors or preventing child injuries and deaths. In contrast, targeted interventions in clinical settings (for example, in a pediatrician’s office or at a public health clinic) have had more success. Clinical interventions that combine counseling with visual information and free or low-cost safety devices have affected behaviors such as using car seats, ensuring that hot tap water is at a safe temperature, and owning smoke detectors. These behaviors have in turn been shown to reduce injuries. But the benefits are relatively small, don’t last long, and thus usually don’t outweigh the programs’ costs.

Community-based interventions have been the most effective at fostering long-term safety behaviors. These programs are often guided by an “accepted health behavior” framework, which targets factors that link to a desired behavior change. For example, such an intervention can first use education and advertising to change attitudes and increase knowledge. Next, the program can offer safety products at lower cost. Finally, the message can be reinforced in multiple settings, such as in physicians’ offices, on television, at churches, and in schools. One successful program of this type is

the Seattle Bike Helmet campaign, which increased bicycle helmet use among children from 2 to 60 percent in 10 years.⁷⁸

A public education campaign that is especially relevant for early-life health is the “Safe to Sleep” campaign (formerly known as “Back to Sleep”). This large-scale public education program teaches caregivers how to reduce the risk of SIDS—the sudden, unexplained death of an infant under one year old. Most of these deaths occur before the infant reaches six months. SIDS usually occurs when a baby is sleeping, and is therefore also commonly known as “crib death.”

After years of research into the causes of SIDS, the AAP recommended in 1992 that infants be placed on their backs to sleep. In 1994, the U.S. surgeon general backed the recommendation, and the National Institutes of Health launched the “Back to Sleep” campaign in collaboration with the AAP, the Public Health Service, and other organizations. Initially, the campaign consisted of mailings to AAP members, the American College of Obstetricians and Gynecologists, WIC providers, and all hospitals with newborn nurseries. Also, thousands of radio and television stations made public service announcements.

The campaign has since enlisted private partners such as Gerber, Procter & Gamble, and Johnson & Johnson, which now include messages with their products. The campaign has also periodically updated its message to target other sleep-related problems, such as soft bedding and bed-sharing. Moreover, specific campaigns target child-care centers, nurses who care for newborns, and African Americans and Native Americans (who have higher rates of SIDS than the national average). In 2011,

the AAP updated its recommendations to include a wider array of safe sleeping measures, and in 2012, the National Institutes of Health launched an updated campaign called “Safe to Sleep” that incorporated these recommendations.

To collect data on infant sleeping practices, the government also launched the National Infant Sleep Position study, which conducted phone surveys with 1,000 mothers per year from 1992 to 2010. The Pregnancy Risk Assessment Monitoring Study, which surveys large samples of new mothers in participating states, also includes questions about infant sleeping positions.

Given the length and scope of this campaign, it is perhaps surprising that we know little about the effectiveness of its key elements. Between 1992 and 2001, SIDS rates fell from 120 to 56 deaths per 100,000 live births; over the same period, the incidence of back sleeping increased from 13 to 72 percent. Both rates have been relatively flat since 2001.⁷⁹ However, such numbers imply only a correlation, and not necessarily a causal relationship.

Evaluations of more targeted parts of “Safe to Sleep” have produced somewhat mixed results. For example, a nonrandomized evaluation of an education campaign in African American neighborhoods showed some decreases in the numbers of mothers who said that they put their infants to sleep on adult beds or sofas, though these declines were not statistically significant.⁸⁰ A randomized study of a training program for workers in child-care centers yielded more promising results. The trainers conducted an initial evaluation of sleep practices, then randomized some centers to the training program and others to the control group. Three

months later, back sleeping among infants increased from 51 to 62 percent in the treatment centers, but only from 51 to 57 percent in the control centers.⁸¹

These studies suggest that large-scale public education campaigns like “Back to Sleep” may be effective, but conclusive causal evidence is limited. Such campaigns seem to help most when they are targeted as training or counseling programs at agencies such as child-care centers.

Early Childhood Care and Education Programs

The final interventions I describe are center-based programs that provide care and education to children at young ages. In addition to targeting early-life health, these policies seek to improve cognitive and noncognitive skills among young children.

Head Start

Head Start is a federal program designed to promote school readiness among preschool-age children, implemented in 1965 as part of the War on Poverty with a goal of enhancing low-income children’s “cognitive, social, and emotional development.”⁸² Head Start includes preschool education; medical, dental, and mental health care; nutrition services; and efforts to promote healthy relationships between parents and children. All Head Start programs serve preschool-age children and their families. Many also offer Early Head Start, which expands the services to cover infants, toddlers, and pregnant women. Families are eligible if they have incomes below the federal poverty level, if they are homeless, or if they receive either TANF or Social Security Income benefits. Foster children are eligible regardless of the foster family’s income level. Head Start is funded through federal grants; public and

private agencies compete for these grants to provide local Head Start services.

Much research has examined Head Start's effectiveness. Most studies of the program's effects on children's cognitive test scores show temporary improvements followed by "fade-out" at later ages. For example, the federally mandated Head Start Impact Study, in which children were randomly assigned either to Head Start centers or to a control group with no Head Start exposure, assessed the effects of Head Start using a sample of nearly 5,000 children. The treatment children had higher cognitive test scores at the end of their time in Head Start, but these positive effects generally didn't last—there were few statistically significant differences between the treatment and control groups at the end of first grade.⁸³

However, two important caveats should be noted. First, control-group children were allowed to attend other center-based care programs. Thus the experiment measured the effect of Head Start relative to other pre-school programs, and can't answer whether Head Start might improve outcomes if the alternative were no program at all. Second, the study didn't measure noncognitive skills, which may be especially important in the long term for building human capital and economic success.⁸⁴

In fact, research that compares siblings, where one child attended Head Start and the other did not, shows that despite the evidence of test score "fade-out," long-term benefits persist. Children who attended Head Start are more likely to graduate from high school, attend college, and have higher earnings in their 20s, and less likely to be booked or charged with a crime, than are siblings who didn't attend Head Start.⁸⁵ One

study shows a measurable and economically meaningful increase in a summary index of adult outcomes consisting of high school graduation, college attendance, "idleness" (having no job and not being in school), crime, teen parenthood, and health.⁸⁶

Children who attended Head Start are more likely to graduate from high school, attend college, and have higher earnings in their 20s, and less likely to be booked or charged with a crime, than are siblings who didn't attend Head Start.

Other studies have examined how Head Start affects health, exploiting natural experiments due to changes in policy rules. They suggest that Head Start reduces the likelihood of child obesity and mortality, as well as smoking rates in adulthood.⁸⁷ Finally, two recent studies using data from the Head Start Impact study show effects on outcomes the original study didn't analyze. One found that when children participate in Head Start, their parents are more involved with them, as measured by time spent reading or practicing math, and days spent with fathers who don't live with their children.⁸⁸ Another study found that the children whose cognitive skills are lowest when they enter Head Start are the ones who show the greatest test score gains.⁸⁹

Thus despite cognitive test score "fade-out," studies suggest that Head Start has

long-term benefits for socioeconomic well-being and health. This discrepancy may highlight the fact that noncognitive skills, which Head Start may be particularly well-suited to develop, help shape adult well-being. Moreover, several cost-benefit analyses of Head Start suggest that the program's benefit-cost ratio exceeds one. When taking into account only the program's short- and medium-term effects for families in terms of improved child health and nutrition, child-care provision, reductions in special education enrollment, and reductions in grade repetition, Head Start's benefits are estimated to offset 40 to 60 percent of the costs.⁹⁰ Analyses that account for long-term impacts on education and earnings suggest benefit-cost ratios of 1.7 to 1.8.⁹¹

Randomized Early Childhood Education Interventions

In addition to Head Start, much smaller and more expensive early childhood education interventions have been implemented as randomized experiments. The HighScope Perry Preschool study was one of the first. It identified 123 low-income African American children ages three and four in Ypsilanti, Michigan, in the early 1960s and randomly assigned 58 of them to a treatment group. Treatment lasted for two years and consisted of a 2.5-hour preschool program on weekdays during the school year as well as weekly home visits by teachers. The curriculum involved "active learning," where children were encouraged to plan, carry out, and reflect on their own activities through a "plan-do-review" process. The children were also urged to make choices and solve problems. The teachers emphasized reflective and open-ended questions instead of strictly organized lesson plans. Once the intervention ended, the treatment and control groups were followed through age 40.

The Perry program showed remarkable lasting effects. Treatment children performed better on achievement tests and were more likely to graduate from high school. They were also more likely to be employed, less likely to be receiving social assistance, and less likely to be involved in crime or interact with the criminal justice system throughout adulthood. These impacts are economically meaningful: treatment individuals had lifetime earnings that were from 11 to 36 percent higher than those of the control group, depending on the assumptions used to estimate lifetime earnings.⁹² Researchers estimate that the Perry program had meaningful social rates of return (7–10 percent) that imply a benefit-cost ratio between 2.2 and 3.2.⁹³

A similar but longer-lasting intervention, the Abecedarian Project, took place in the 1970s. The program selected 112 mostly African American children, who were considered at risk for delayed cognitive development based on factors such as household income, parents' education, and parents' IQ. The children were randomly assigned to treatment and control groups. The treatment children entered the program when they were between 6 and 12 weeks old and stayed through age five. The program was entirely center-based, with teacher/child ratios of 1 to 3 for infants and toddlers and 1 to 6 for older children. The curriculum was based on language development and tailored to the children's individual needs. The participants have been followed through their mid-30s thus far.

Like the Perry program, Abecedarian had long-term benefits. By age 21, relative to the control group, treatment group children were 48 percent less likely to have repeated a grade, 37 percent less likely to have been in special education, 33 percent less likely

to have dropped out of high school, and more than 170 percent more likely to have attended college. Measuring only these benefits, the program's cost-effectiveness is already notable: in 2002 dollars, the program cost \$34,599 per participant and led to an average \$72,591 benefit, implying a benefit-cost ratio above two.⁹⁴ Recent work has found lasting health benefits as well. Treatment group members were significantly less likely to have risk factors for cardiovascular and metabolic diseases; for example, they saw a 12 percent reduction in mean systolic blood pressure.⁹⁵

Another randomized intervention, the Infant Health and Development Project (IHDP), was conducted at eight sites from 1985 to 1988. Unlike Perry Preschool and Abecedarian, IHDP did not restrict eligibility based on family income or demographics, but instead targeted children who had low birth weight or were born preterm. In addition to center-based care, the IHDP treatment group also received home visits. Home visits began shortly after birth, and center-based care began at age one and lasted through age three. The 377 treatment and 608 control group children were followed through age 18. The program had large positive effects on children's cognitive ability in both childhood (ages 3–8) and young adulthood (age 18), with larger impacts for children from lower-income backgrounds.⁹⁶ One study estimated that if such a program were offered to low-income children throughout the U.S., it would eliminate the income-based gap in cognitive ability at age three, and close one-third to three-quarters of the gap at ages five and eight.⁹⁷

In sum, targeted intensive early childhood center-based education programs improve both cognitive and noncognitive

development throughout life. These interventions are costly (for example, the Abecedarian program would cost \$43,748 per child in 2014 dollars), but their benefits are substantial, with benefit-cost ratios consistently much larger than one.

Universal Pre-Kindergarten

All the early childhood center-based programs described so far target low-income or otherwise disadvantaged children. However, government-funded early childhood programs might instead be offered universally in the belief that they can benefit all children and generate more political support. How effective, then, are existing universal pre-kindergarten (pre-K) programs?

As of 2012, 40 U.S. states and the District of Columbia had some kind of pre-K program. Access to the programs varies substantially—for example, only 1 percent of Rhode Island four-year-olds are enrolled in a pre-K program, compared with nearly 80 percent of Florida four-year-olds. These programs are funded, directed, and controlled by the states, and must serve preschool-age children (younger children may be served as well, but programs serving only infants and toddlers are not considered pre-K). The initiatives focus on center-based early childhood education and must offer a group learning experience to children at least two days per week.⁹⁸

Because these programs are meant to be nearly universal, they are not randomized like those described in the previous section. Thus most of the evidence comes from natural-experiment analyses that compare children with birthdays near the state's eligibility cut-off date. Most states require that children must turn a certain age (three or four years old) by a particular date (such as September 1) to enroll in pre-K. Thus,

in any given year, children who were born just before that date will have completed a year of pre-K, while slightly younger children born just after that date will not yet have begun the program. Comparing these children can shed light on the program's short-term effects. Such analyses show that pre-K programs in Michigan, New Jersey, New Mexico, Oklahoma, and South Carolina have had some positive effects on a variety of measures of children's cognitive ability, at least in the short run.⁹⁹

Despite these apparent benefits, evidence from other countries suggests some caution. For example, one study analyzes the introduction of universal, highly subsidized child care for preschool children in Quebec and finds adverse effects on children's behavior and health.¹⁰⁰ The detrimental effects likely resulted from the fact that the program offered lower-quality care than the children would have obtained elsewhere.

In sum, though U.S. universal pre-K programs show some promising short-term benefits, research from other settings suggests that the quality of center-based care plays an important role. Additionally, we don't know whether these programs have long-term impacts, so full cost-benefit analyses are not yet feasible.

Conclusions

If early-life conditions have lasting effects on human capital formation and adult economic success, the United States' disadvantage in infant health relative to other wealthy countries could have far-reaching implications. Drawing on research from a variety of

disciplines, including economics and epidemiology, this article reviewed the evidence on the link between early-life conditions and outcomes throughout the life course. Studies on this topic vary substantially in empirical methods, data, and context. Despite this variation, the research provides overwhelming evidence that early-life conditions affect the population's wellbeing, measured by health, educational attainment, adult earnings, and other indicators throughout life.

This article also reviewed the effectiveness of interventions targeting the early-life environment. WIC, medical interventions such as vaccinations, and center-based early childhood care and education programs have all been shown to improve early-life conditions. Moreover, these programs are quite cost-effective, with benefit-cost ratios generally exceeding one. Of course, an important caveat is that cost-benefit analyses rely on many assumptions (for example, they must generally assume a discount rate) and don't take into account some costs and benefits that are difficult to put a price on. Nevertheless, the calculations suggest that public spending on these programs is more than justified by their benefits.

The research thus points to a critical window of opportunity for improving children's life chances through evidence-based early-life interventions. However, all is not lost if we don't successfully intervene in early childhood. Indeed, many policies that impact children's health and development later in life are described in other articles in this issue.

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Child Health and Access to Medical Care

Lindsey Leininger and Helen Levy

Summary

It might seem strange to ask whether increasing access to medical care can improve children's health. Yet Lindsey Leininger and Helen Levy begin by pointing out that access to care plays a smaller role than we might think, and that many other factors, such as those discussed elsewhere in this issue, strongly influence children's health.

Nonetheless, they find that, on the whole, policies to improve access indeed improve children's health, with the caveat that context plays a big role—medical care “matters more at some times, or for some children, than others.” Focusing on studies that can plausibly show a causal effect between policies to increase access and better health for children, and starting from an economic framework, they consider both the demand for and the supply of health care. On the demand side, they examine what happens when the government expands public insurance programs (such as Medicaid), or when parents are offered financial incentives to take their children to preventive appointments. On the supply side, they look at what happens when public insurance programs increase the payments that they offer to health-care providers, or when health-care providers are placed directly in schools where children spend their days. They also examine how the Affordable Care Act is likely to affect children's access to medical care.

Leininger and Levy reach three main conclusions. First, despite tremendous progress in recent decades, not all children have insurance coverage, and immigrant children are especially vulnerable. Second, insurance coverage alone doesn't guarantee access to care, and insured children may still face barriers to getting the care they need. Finally, as this issue of *Future of Children* demonstrates, access to care is only one of the factors that policy makers should consider as they seek to make the nation's children healthier.

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What role does access to medical care play in protecting and promoting children's health? Although it might seem self-evident that medical care improves children's health, evidence for the population as a whole suggests that medical care is less important than we might have thought. One widely cited study estimates that lack of access to medical care explains only about 10 percent of early mortality in the population as a whole; the remainder is attributed to genetics (30 percent), social circumstances (15 percent), environmental exposure (5 percent), and behavioral factors (40 percent).¹ Compared with its effect on overall mortality, medical care may be more or less important as a determinant of children's health. Medical care's role also depends on time, place, and context; for example, screening children for exposure to lead may be much more valuable in an environment with older housing stock. Similarly, access to medical care is critically important during infectious disease outbreaks. Nonetheless, the fact that, on average, medical care may matter less than we think is a useful starting point as we consider how access to care affects children's health.

In this article, we review what is known about how policies that promote access to medical care affect children's health. We consider a range of such policies, including government-provided insurance coverage, increased payments to health-care providers who care for publicly insured children, cash payments to parents who take their children to get care, and the placement of health-care providers in schools. We organize our discussion using an economic framework, categorizing policies to promote access according to whether they affect primarily the demand

side of the market (children and their families) or the supply side (doctors, hospitals, clinics, and other providers of medical care). The aspect that we care about—actual use of services, or what sociologist Ronald Andersen calls “realized access”—is, of course, the result of the interaction between supply and demand.² But policies to promote access tend to focus on one side of the market or the other, and so we structure our discussion accordingly.

Ultimately, we conclude that access to medical care does affect children's health, and that an array of policies to improve access—expanding coverage, increasing reimbursement to providers, placing nurses or counselors in schools—can improve children's health. We can't say which of these policies yields the most bang for the buck in terms of improved health, nor can we say whether they are more effective than policies that focus on domains beyond access to medical care, such as those discussed in other articles in this issue. At the same time, we can say with some certainty that access to care is not the whole reason some kids are healthier than others, a point that is reinforced by the fact that socioeconomic disparities in child health exist in countries like Canada that have more equal access to health care.³ Nonmedical inputs into children's health, like those discussed elsewhere in this issue, as well as the quality of medical care, are important pieces of the puzzle.

Finally, we close by discussing how the Affordable Care Act is likely to affect children's access to care, the policy questions that may arise as this landmark legislation is implemented against an already complex backdrop of public insurance programs for children, and the challenges that will remain to ensure children's access to care.

Standards for Inclusion in This Review

At the outset, we need to acknowledge that it's hard to identify true causation when it comes to how access to medical care affects health. Simply comparing people with and without insurance, for example, or those who have public versus private coverage, tells us little about how insurance affects health.⁴ We can't necessarily solve this problem by using statistical models that control for observed differences between the two groups; such an analysis might even yield the paradoxical result that Medicaid appears to make health worse, when in fact the worse health of Medicaid enrollees may be driven by other dimensions of disadvantage that are not necessarily measured in the data.⁵ Evaluating the experience over time of new enrollees in public programs may also be misleading, since the decision to enroll in the program may have been driven by declining health—a phenomenon first identified in the context of job training programs, where those who enroll are more likely to have experienced a dip in earnings beforehand.⁶

With these considerations in mind, we focus on studies that have an effective strategy for dealing with such problems. In practice, this means we favor studies that rely either on randomized trials—relatively rare, but not unknown, in social policy—or on “natural experiment” methods that rely on changes in policy that are close to random (such as a federally imposed requirement that all states expand their Medicaid programs for children—more on this later) and therefore can teach us something about how the policy in question affects the outcomes we want to study. The trade-off associated with relying on randomized trials or

natural experiments is that they give us good information about a relatively narrow range of situations. For example, most of our evidence on the impact of health insurance on children's health relates to low-income children who are on the margin of Medicaid eligibility, with much less information about those who are privately insured, even though, judging by the 2012 American Community Survey, the privately insured represent 55 percent of all children.

In terms of what outcomes to look for, we focus on studies that measure either health or the use of preventive services; use of preventive services includes whether a child makes any visit to a doctor during the year, since the American Academy of Pediatrics recommends that all children have at least one visit per year, even if it is only a well-child visit. We don't consider studies that review only how policy affects, for example, the total amount of medical care that children use (which would include sick visits and hospitalizations). Our rationale for singling out preventive services is that health benefits from prevention may occur far down the road; a necessary although not sufficient step for policy to improve health through preventing illness would be to increase the use of preventive services.

Finally, this article does not consider two special groups, not because they are unimportant but because they are discussed elsewhere. In this issue of *Future of Children*, Maya Rossin-Slater discusses how access to prenatal care affects infants' health. And health insurance for children with disabilities—how it affects their access to care and their health outcomes—was reviewed by Peter Szilagyi in a recent issue of the journal.⁷

Demand-Side Policies

The primary demand-side policy to promote children’s access to medical care is providing free or subsidized health insurance. The past 25 years have seen dramatic expansions of Medicaid, as well as the creation of the State Children’s Health Insurance Program (formerly known as SCHIP and now as CHIP) in 1997. Table 1 describes selected milestones in the history of public health insurance coverage for U.S. children, and figure 1 shows how enrollment in these programs has grown. In 1988, approximately 16 percent of all children were covered by Medicaid; in 2010, Medicaid and CHIP together covered half of all children under age 19 for at least some part of the year, as well as 45 percent of all births.⁸ This growth both increases the importance of public insurance as a way of promoting access to care and provides an opportunity to evaluate how public coverage affects the health of infants and children. In this section, we review the evidence on the effects of these large expansions in public health insurance. In addition to considering the consequences of whether children have coverage at all, we consider the continuity, type, and generosity

of coverage for those who have it. We examine how insurance “churning”—moving in and out of coverage—may affect children’s health, and we look at the relatively limited evidence on how HMO or high-deductible plans affect health compared with more traditional insurance coverage. Finally, we discuss two studies that evaluate what happens to children’s health when parents receive direct financial incentives to obtain preventive care for their children.

How Insurance Affects Child Health

With a few exceptions, most of the evidence on how health insurance—and the improvement in access to care that it affords—affects children’s health and use of preventive services comes from expansions of Medicaid in the late 1980s and early 1990s and the establishment of SCHIP in 1997. One of the important exceptions is the RAND Health Insurance Experiment (HIE), conducted between 1971 and 1986.

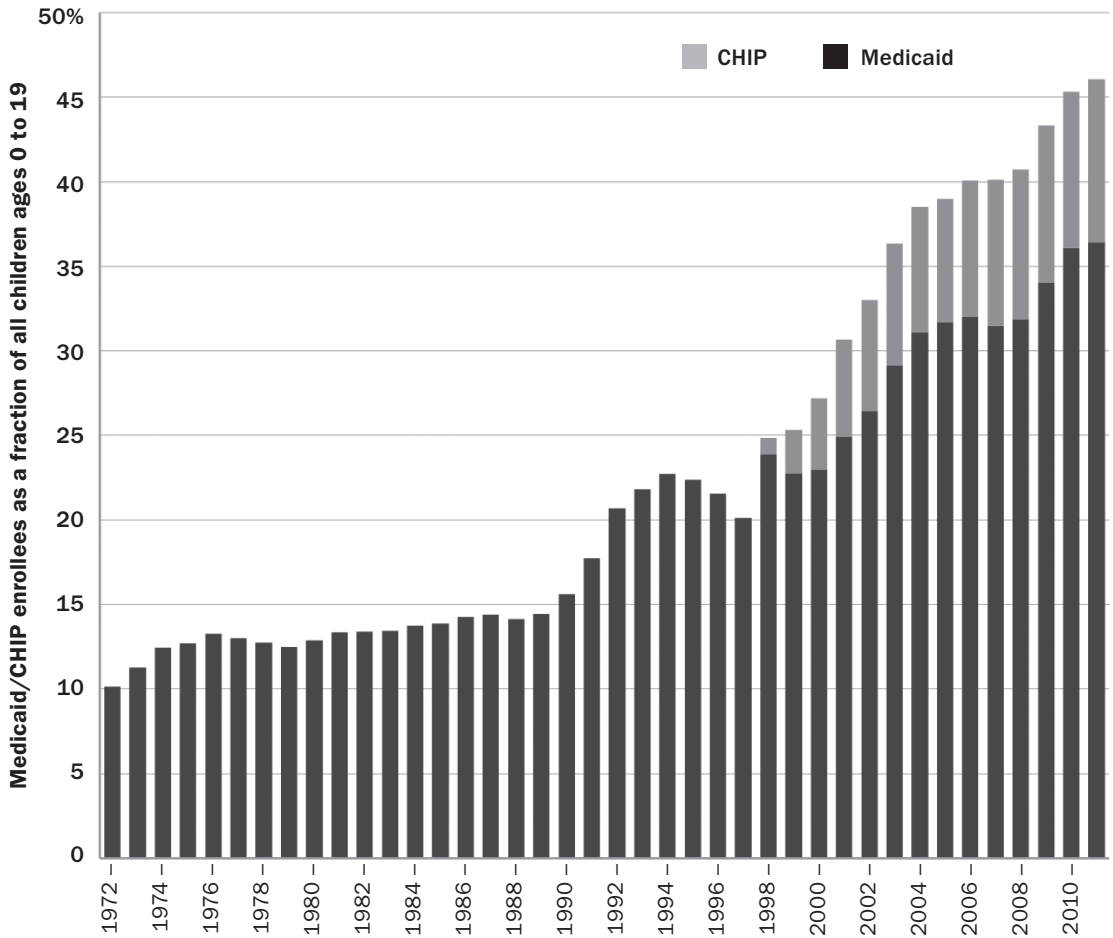
The RAND Health Insurance Experiment

The RAND HIE has been extensively described elsewhere.⁹ In a nutshell, the

Table 1. Milestones in Public Health Insurance Programs for Children

| | |
|----------------|---|
| 1965 | Medicaid is established to provide health insurance coverage to children in families receiving welfare. |
| 1986–90 | Congress requires gradual increases in income eligibility threshold for Medicaid until all children living below the poverty level are covered by Medicaid. |
| 1997 | Congress enacts the State Children’s Health Insurance Program (SCHIP) , providing funds for states to expand insurance coverage to low-income children above the poverty level, either through their existing Medicaid programs or through new state-sponsored programs. |
| 2009 | Congress reauthorizes the State Children’s Health Insurance Program and changes its acronym from SCHIP to CHIP. |
| 2010 | Affordable Care Act (ACA) becomes law. |
| 2014 | Major coverage provisions of the ACA take effect: health insurance expansions, premium tax credits, individual coverage mandate, and Medicaid expansions for adults in some states. |

Figure 1. Children Enrolled in Medicaid or CHIP, 1972–2011



Sources: MACPAC June 2014 Report to Congress (Medicaid enrollment 1975–2011); 1998 Green Book (Medicaid enrollment 1972–1975); Marilyn Ellwood, Angela Merrill, and Wendy Conroy, “SCHIP’s Steady Enrollment Growth Continues,” Mathematica Policy Research, Final Report to the Centers for Medicare & Medicaid Services, May 2003 (CHIP enrollment 1998–2001); *Statistical Abstract of the United States* for years 2004–11 (CHIP enrollment 2003–09); CHIPRA Annual Reports to Congress for 2010 and 2011 (CHIP enrollment 2010 and 2011); *Economic Report of the President 2012* (estimates of the population ages 0 to 19, all years).

experimenters randomly assigned approximately 6,000 people to insurance plans with different levels of cost sharing. At one extreme was a plan in which all care was free; at the other, a plan in which participants had to pay 95 percent of the cost of their care, up to an out-of-pocket maximum of \$1,000, at which point care was free. Note that because of inflation, \$1,000 in 1971 would be almost \$6,000 in today’s dollars, so

the RAND participants with the least generous coverage had what we now think of as a high-deductible health plan. After tracking the participants for three to five years, the researchers compared their health-care use and health status. The results for adults have been well publicized; on average, the RAND HIE found no difference in health among adults across the different insurance plans, despite large differences in health-care use.¹⁰

Low-income adults who received free care experienced some measurable improvements in health; in particular, the researchers found improvements in corrected vision and, for those who began the study with hypertension, significant reductions in blood pressure.¹¹

The results of the RAND HIE for the approximately 1,000 children who completed the study are similar. There were no differences across insurance plans, on average, in physiologic measures of health such as anemia and hearing or vision problems, or in parental assessments of children's overall health—again, despite large differences in the use of medical care.¹² Among children, anemia (for low-income children) and dental care (for all children) seemed to be exceptions. Eight percent of low-income children in the free care group had anemia at the end of the study, compared with 22 percent in cost-sharing plans, although the relatively small number of low-income children in the study makes it hard to say with confidence that this difference did not occur by chance. For children between the ages of six and 17, although the overall rate of decayed, missing, and filled teeth did not vary by insurance plan, children on the free care plan were more likely than those in the cost-sharing plans to have filled teeth rather than decayed or missing ones (on average, a difference of about one tooth).¹³ Among children ages three to five, those in the free care plan were less likely than those in the cost-sharing plans to have decayed teeth. Both of these effects were largest for children in low-income families; in fact, for preschoolers in high-income families, the number of decayed teeth did not vary significantly for those covered by cost-sharing plans (0.44 teeth) versus the free plan (0.19 teeth).¹⁴

The chief criticisms of the RAND results related to the health of children center on the fact that there were relatively few low-income children in the study—possibly too few to detect important effects of coverage on health; the fact that the study excluded infants; and the relatively high proportion of children who left during the course of the study.¹⁵ For our purposes, an additional consideration is that RAND didn't compare insured versus uninsured people but rather estimated the effect of the generosity of coinsurance in an insured population. Notwithstanding these caveats, the RAND results for children—like those for adults—suggest that in the population as a whole, the generosity of insurance coverage does not significantly determine overall health. For high-risk children, however, which in this case means low-income children, the RAND experiment suggests that the generosity of coverage does affect health (again, mirroring the results for adults).

Medicaid

Next, we consider how Medicaid affects children's health. Two recent studies analyzed Medicaid's impact after its inception in 1965. Both found positive health effects. One study used variation across states in both the timing of Medicaid adoption and the fraction of children receiving welfare (who were automatically eligible for Medicaid) to identify how coverage affected infant and child mortality.¹⁶ It found that, in the year after implementation, mortality fell among nonwhite infants (although not among white infants), and that this effect persisted for at least 10 years. The second study exploited variation across states in the timing of Medicaid adoption to estimate how exposure to Medicaid in childhood affected health in adulthood.¹⁷ It found that among children from low-income families, those who

experienced more years of Medicaid eligibility were in better health, measured using an index of chronic conditions, than were those with less exposure to Medicaid. This finding supports the rationale we offered above for focusing on the use of preventive services in addition to health outcomes; the effects of investments in health may take a while to reveal themselves.

More recently, the expansions of Medicaid eligibility in the late 1980s and early 1990s have proved to be a powerful natural experiment shedding light on how coverage affects infants' and children's health. Several influential studies have documented significant positive effects. One pair of researchers used mortality data, combined with a measure of the generosity of coverage expansions, and concluded that expanding eligibility significantly decreased child mortality.¹⁸ Using a similar strategy, the same researchers focused on expansions of eligibility among pregnant women; they found that these expansions significantly increased women's use of prenatal care and reduced the incidence of low birth weight and infant mortality.¹⁹ Another set of researchers used data from the National Hospital Discharge Survey to document that eligibility expansions led to increased hospitalization among children. These researchers also looked at why the children were hospitalized, to see whether improved access to care might have succeeded in reducing hospitalizations for conditions like asthma that should ideally be managed with adequate primary care, while increasing hospitalizations for truly serious conditions. On the contrary, they found no decline in hospitalizations for conditions like asthma, suggesting, somewhat surprisingly, that the expansion in coverage did not improve children's access to primary care.²⁰ And a third set of researchers used data

from the National Health Interview Survey to show that expansions of Medicaid eligibility increased use of preventive care. Though there was no immediate effect on children's health, their health improved later in childhood, further bolstering the case for focusing on use of preventive services.²¹

Exploiting the fact that an expansion of coverage meant that many more children born after September 30, 1983, were eligible for Medicaid than were children born before that date, another study measured how coverage affected adolescents.²² It found significant reductions in mortality for black children ages 15 to 18 but no reduction for whites (echoing the results for infants after Medicaid's 1965 inception). However, using the differences across states in the income level at which children are eligible for Medicaid, another study analyzed data from the Panel Study of Income Dynamics—Child Development Supplement, and found that Medicaid eligibility had no significant effect on three aspects of children's health: the probability of being in excellent health, obesity, and school days missed because of illness.²³

The Medicaid studies we've discussed so far focus primarily on the impact of expanding eligibility, rather than on actual enrollment. In contrast, one researcher exploited California's variation in the placement of outreach centers for Medicaid enrollment to estimate the effect of actual enrollment on child health.²⁴ She found that increases in enrollment led to significant decreases in hospital admissions for conditions that could, in theory, be well-managed in a primary care setting and should not result in hospitalization if children's access to primary care is adequate.

Taken as a whole, the evidence from studies of Medicaid expansion—and, in one case, actual enrollment—suggest that coverage has large and significant impacts on children’s physical health. To this firm conclusion, however, we would add several more nuanced observations. First, although the preponderance of evidence supports the view that access is important for children’s health, not all studies find this to be so. This reinforces a point we made earlier: the importance of medical care depends on context. It matters more at some times, or for some children, than others. Access may matter more, for example, for the typical low-income child made newly eligible for Medicaid coverage than for the average child in the RAND experiment gaining access to more rather than less generous private coverage. Second, some programs—such as those that offer access to preventive services—may not yield any effect for months or even years, meaning that the available data, typically measured at one point in time, may understate their effects on children’s health in the long run. Third, researchers have paid relatively little attention to how coverage affects children’s mental health, even though some of coverage’s most striking effects on low-income adults are in the domain of mental health.²⁵

How Continuity and Type of Coverage Affect Health

Insurance coverage among low-income children is strikingly dynamic; such children frequently move between having public insurance, being uninsured, and having private insurance. For example, one nationally representative study took a snapshot of child enrollees in Medicaid and tracked their enrollment one year later. Over one-quarter had left the Medicaid program; among those who left, approximately half had become uninsured.²⁶ State-specific

studies have found similarly high Medicaid dropout rates and have also found that many dropouts reenter the program in fairly short order, a phenomenon known as “churn.”²⁷ Unfortunately, this pattern is likely to continue in the post-ACA era; low-income families’ incomes and employment trajectories are quite volatile, and this volatility is projected to mean that children’s eligibility for coverage will frequently churn between Medicaid, subsidized coverage from health insurance marketplaces, and employer-based coverage.²⁸ And although the ACA’s individual mandate now imposes a fine on families if their children are uninsured, a grace period allows a lapse in coverage of up to three months in any given year. Moreover, children in families under the tax filing threshold (\$20,000 for a married couple in 2013) are not subject to the mandate and consequently could face longer coverage gaps.²⁹

Insurance volatility is especially likely for children in families with income that is just above or below the Medicaid eligibility threshold. For families with income just below the threshold, an increase in income may mean that they have to begin making a premium contribution even for public insurance; this has repeatedly been shown to increase the likelihood that they will lose coverage and experience uninsured spells.³⁰ Additionally, this group of children is the one most likely to experience across-year and even within-year shifts in eligibility for public coverage versus publicly subsidized exchange coverage.

Two studies use data that track children’s insurance coverage and health-care use over time to demonstrate compellingly that coverage gaps, even those of short duration, reduce children’s access to and use of care.

One of the authors of this article, Lindsey Leininger, examined how the number of months children spent uninsured affected the likelihood that they would experience any doctor's visit and any well-child visit in a given year.³¹ She found that each additional month without coverage was associated with a small, statistically significant decline in the probability of both outcomes; four months without insurance—the typical length of an uninsured spell for this group—was associated with a 4 percent decrease in the likelihood of any visit to a doctor and a 9 percent decrease in the likelihood of a well-child visit. The study found that one reason even short gaps in coverage reduced doctor visits is that interruptions in coverage may lead children to lose their usual source of care.

A recent study expanded on Leininger's work, exploring how the types of coverage held over the course of a year (that is, public versus private), in addition to the duration of coverage, affected the likelihood of any visit to a doctor.³² Interestingly, it was not the type of coverage children held over the year—public, private, or a mix of public and private—that affected their use of health care, but solely the total amount of time for which the children had coverage. These findings offer some reassurance that children who churn among different types of insurance coverage are likely to retain sufficient access to care, as long as the transitions are not punctuated by spells without insurance. Accordingly, we need policies that make such seamless transitions possible.

A related question is whether the structure of children's insurance—whether they're in fee-for-service or managed-care programs—affects their health. Several studies have examined whether Medicaid managed care for pregnant women affects

their infants' health, with varying results. One study used data on Medicaid beneficiaries in California from 1993 to 1999 to evaluate the impact of that state's switch to managed-care contracts for its Medicaid program.³³ It found that this switch had no impact on infants' health. Using a more reliable design, however, another study found that the switch to managed care in California led to increases in low birth weight, prematurity, and neonatal death; the authors noted that the managed-care plans they studied had no incentive to improve the health of newborns because expensive neonatal care was "carved out" of their contracts in the sense that expenses for those babies were reimbursed separately, rather than being included in the lump-sum payments the plan received for providing routine newborn care.³⁴ Earlier research on the transition to managed care in Tennessee's Medicaid program between 1993 and 1995 suggested that managed care led to lower Apgar scores and an increase in birth abnormalities, compared with births among Medicaid enrollees in a neighboring state (North Carolina) that did not transition to managed care for its Medicaid program.³⁵ (The Apgar test, performed minutes after birth, is a summary assessment of newborn health.)

Finally, there has been some concern that the cost-sharing in high-deductible health plans might discourage children's use of preventive services. A recent study examined this question.³⁶ Using data from a single health plan, the researchers analyzed the experience of 1,598 children whose parents' employer switched their families from a standard insurance plan to a high-deductible plan. Although the fraction of these children who received well-child visits over the course of a year decreased slightly (from

84.6 percent to 84.1 percent), this decrease was no larger than that of a control group of 10,093 children who remained in traditional insurance plans throughout the study period (from 86.1 percent to 85.5 percent). For this population, at least, there is no evidence that the increase in cost-sharing associated with the switch to a high-deductible health plan reduced children's use of preventive services. Because the switch to a high-deductible plan was made by the employer on behalf of all employees, the study avoided potential concerns that families might have chosen a high-deductible plan precisely because they don't place much value on preventive services.

Financial Incentives for Use of Preventive Services

Medicaid agencies have recently begun adopting financial incentive programs to promote healthy behaviors and use of preventive care among members.³⁷ Most of these programs, including a series of demonstration projects created and funded as part of the ACA, focus on promoting healthy behaviors such as quitting smoking among adults, but a few have focused on well-child visits. Encouragingly, the results from the well-child visit pilot programs are the most positive among all of the burgeoning Medicaid incentive programs.

The best-studied program that focuses on children is Idaho's Preventive Health Assistance (PHA). Launched in 2007, PHA aimed to increase compliance with recommendations for well-child visits among children in the state's CHIP program. The effort was motivated by low compliance rates among the state's Medicaid and CHIP child enrollees, ranging from a high of 40 percent among children ages 0–6 to less than 19 percent for children ages 7–18.³⁸ Though both Medicaid and CHIP had similarly low compliance rates,

PHA was limited to CHIP enrollees, largely because of financial and administrative constraints in Medicaid.³⁹ Under the PHA program, all CHIP enrollees were eligible to receive up to 10 points per month (equivalent to \$10) to be used for the program premium's payments, as long as the enrollee stayed up to date with the age-appropriate well-child visit schedule. This \$10 credit was equal to the monthly premium required of CHIP enrollees with family incomes between 139 percent and 149 percent of the federal poverty line, and it was two-thirds of the \$15 monthly premium required of CHIP enrollees with family incomes between 150 percent and 185 percent of the federal poverty line.

Two studies found that PHA had large positive impacts on CHIP enrollees' well-child visits. One study compared PHA participants to a control group of Medicaid-enrolled children. It found that after the PHA's introduction, well-child visits as much as doubled among some age and income subgroups of CHIP-enrolled children relative to their Medicaid-enrolled comparison groups. The largest increases occurred among older CHIP enrollees whose families had relatively higher incomes.⁴⁰ Another study used the same design to explore how the PHA affected well-child compliance rates across various subgroups.⁴¹ This study found that children who required only one well-child visit per year to meet compliance standards for their age experienced greater improvements from the program than did their peers who required two or more visits.

A financial incentive program launched by a Medicaid managed-care insurer in Minnesota has also been positively associated with well-child visits. In October 2000, the insurer, Medica Health Plans, introduced a \$10 Target gift card as an incentive for member

children. The incentive was implemented via a voucher program—network physicians gave vouchers to parents during well-child visits that could be redeemed by mailing them back to the insurer. No control group was available, so a study of the program exploited differences in distance from the children’s homes to the nearest Target store to estimate the program’s impact.⁴² The study found that children who lived within the sample’s median distance to a Target store (2.5 miles) saw a 6 percent relative increase in the likelihood of having a well-child visit, compared with children who lived further away (before the study began, 37 percent of children in the near-to-Target group were receiving well-child visits, compared with 28 percent in the distant-from-Target group). Unfortunately, there is no easy way to use this “distance-to-Target” effect to estimate the incentive program’s actual impact, so it’s hard to compare these findings to those from Idaho. Importantly, however, the Idaho and Minnesota programs both showed positive impacts, albeit within opposite contexts: during the study period in Idaho, rates of well-child visits among Medicaid-enrolled comparison-group children were generally rising, while during the Minnesota study they were falling.

We must also note a counterexample to these positive findings. A randomized controlled trial evaluating New York City’s conditional cash transfer program (Opportunity NYC) found no meaningful differences between treatment and comparison group children in the likelihood of having a well-child visit, which is perhaps surprising given that the program offered a relatively rich financial incentive of \$200 per child per year.⁴³ The reason is likely that before the study began, rates of well-child visits among the participants were atypically high. Even the

comparison group children (that is, those who weren’t offered an incentive), in every age group, had well-child visit rates in the mid-90-percent range. More promisingly, the study found that an incentive for dental visits of \$100 per child per visit (with a one-visit annual maximum for ages one to five and a two-visit annual maximum for ages six and above) had large impacts on whether middle and high school children received dental care. Two years after the randomized trial began, treatment-group high school students were more likely than comparison-group high school students to have had at least two dental visits in the prior year, by 13 percentage points (70 percent for treatment group, 57 percent for comparison group); treatment-group middle school students were more likely to have had two dental visits by 10 percentage points (70 percent for treatment group; 60 percent for comparison group). Importantly, these effects persisted (and indeed increased somewhat) at another follow-up two years later.⁴⁴

The four studies we’ve just discussed consistently demonstrated that financial incentive programs can appreciably increase use of preventive care, including dental care, among low-income children. This finding mirrors similar work on adults, which has found that financial incentives are more effective when they target use of preventive care than when they aim to bring about more sustained health behavior changes, such as quitting smoking and exercising.⁴⁵

The programs’ effectiveness was also greatly influenced by administrative difficulties associated with the system for redeeming the rewards; the success of Idaho’s PHA has been attributed to the fact that it automatically credited earned rewards to families’ premiums.⁴⁶ In contrast, the complex

Opportunity NYC reward system, which initially involved 22 categories of rewards, has been cited as a serious deterrent to the program's effectiveness.⁴⁷ Encouragingly, two recently implemented replications of the Opportunity NYC model have adopted considerably simpler financial reward systems.⁴⁸

Supply-Side Policies

Turning now to the supply side, we review what is known about how provider reimbursement from Medicaid affects children's health, since low payments to providers are one of the reasons that some providers simply do not see Medicaid patients. We also review evidence on policies that focus on providing care directly, including Federally Qualified Health Centers, the Vaccines for Children program, and school-based health centers. These policies have received less research attention than has public insurance, but they could nonetheless be important for improving children's health.

How Medicaid Reimbursement Rates Affect Child Health

Compared to Medicare or private insurers, Medicaid has historically paid lower rates to doctors and other clinicians. A recent survey found that on average, Medicaid pays physicians approximately two-thirds of what Medicare would pay them, with considerable variation across states, from a low of 37 percent in Rhode Island to a high of 134 percent in North Dakota.⁴⁹ Researchers and policy analysts have long been concerned that low Medicaid reimbursement rates may translate into diminished access to care for Medicaid patients.⁵⁰ Three studies have examined the effects of Medicaid reimbursement levels on child-specific health outcomes; all of them found that higher reimbursement levels mean better health.

An important early study, now somewhat dated, assessed the relationship between Medicaid's physician fees and infant health.⁵¹ This study examined changes in individual states' fee levels over time to assess how the ratio of Medicaid fees to private fees for obstetricians and gynecologists affected infant mortality rates. Its findings indicate that when the Medicaid-to-private fee ratio doubled (the ratio ranged from 0.45 to 0.60 over the study period, according to the working paper version of the manuscript), infant mortality fell by 0.56 deaths per 1,000 live births (mean infant mortality rate in the study was 9 deaths per 1,000 births). Weighing the costs of increased reimbursement rates against the benefit of better health, the authors concluded that it cost about \$260,000 (in 1986 dollars, or about \$560,000 in 2014 dollars) in increased Medicaid fees to save one additional infant's life. An important limitation of this study is that, unlike the others we review in this article, it analyzed state-level aggregate data as opposed to using person-level observations. Accordingly, we can't know for which groups of women the changes in Medicaid fee ratios affected infant mortality.

Two recent national studies convincingly demonstrate that Medicaid fee levels for dental services are positively related to the likelihood that publicly insured children receive dental care.⁵² Using changes in states' Medicaid fees from 2000 to 2009 for a preventive dental visit for children, and employing a comparison group of privately insured children, one study found that increasing payments to providers from \$20 to \$30 increased publicly insured children's use of dental services enough to close the gap between them and their privately insured peers.⁵³ The original payment level of \$20 was relatively stingy—less than the fees paid

to dentists for comparable work in 75 percent of cases—while the increased payment of \$30 was relatively generous, less than only about 25 percent of such fees. To help put these findings in context, the most recent round of the National Survey on Children's Health (2011–12) found that approximately 74 percent of publicly insured children ages 1–17 had received a dental visit in the previous year, compared with 83 percent of privately insured children. These findings are in keeping with an earlier, well-designed study that exploited a series of dental fee increases in the Michigan Medicaid program.⁵⁴

Recent research documents that elementary school counselors can have beneficial behavioral effects on children.

Using the same research design, but with data covering a longer study period and a larger set of dental procedures, a later study produced very similar results, though the effects were somewhat smaller.⁵⁵ However, this study used an additional calculation to show that the improvements in the public-private gap in dental-care use came at great cost, because the large fee changes required to induce marginal improvements in dental-care use among publicly insured children would be applied toward all visits the children made, not just those induced by the changing fee schedule. Thus, they calculated, the implied cost of one additional visit was approximately eight times the amount of the current Medicaid payment rate for a single visit.

Taken together, these compelling studies suggest that for prenatal care and children's dental care, increasing Medicaid provider fees is an important way to improve access. Unfortunately, to our knowledge, no studies of how Medicaid reimbursement levels affect children's access to medical care or behavioral health care have research designs that meet our criteria for inclusion in this article.

How Policies that Provide Direct Medical Care Affect Child Health

In recent decades, promoting access to insurance coverage has been the primary policy to improve children's access to medical care. But policies that provide medical care directly have also improved children's health. These policies include placing counselors or health-care workers in schools, funding community health centers, and subsidizing vaccinations.

Elementary School Counselors

Recent research documents that elementary school counselors can have beneficial behavioral effects on children. In contrast to counselors serving older children, who require intensive academic advising, elementary school counselors—there are more than 40,000 of them across the country—spend most of their time focusing on students' mental and behavioral health.⁵⁶

One study examined the effect of counselors by exploiting the differences within academic years in a Florida school district's student-to-counselor ratios that arose from the placement schedule of University of Florida graduate student counseling interns.⁵⁷ The researchers found that fewer students per counselor meant fewer discipline problems in schools. A decrease in the student-to-counselor ratio from the sample mean level of 544 students per

counselor to the ratio of 250 students per counselor recommended by the American School Counselor Association (ASCA) was associated with a 7.4 percent decrease in the probability that a given student would repeat a disciplinary problem. These effects were the most pronounced for black male students, who saw a 10 percent decrease. A school-level analysis suggests that a drop from the mean student-counselor ratio to the ASCA-recommended ratio is associated with an 11.8 percent decrease in the mean share of students with a disciplinary occurrence. A potential problem with the study design is that interns were more likely to be placed in schools with lower levels of discipline problems in the previous semester; to the extent that this occurred, however, it means that the study's findings are conservative and may underestimate the true effect.

Similar findings emerge from two companion studies. The first exploited the fact that Alabama has strict enrollment cutoffs for financing elementary school counselors, meaning that schools with almost the same number of students could have different numbers of counselors.⁵⁸ Importantly, there is no evidence—either in the data, or based on conversations with Alabama school officials—that schools were strategically manipulating their enrollment levels to get more resources the following school year, which could have biased the findings. The findings suggest that although the student-to-counselor ratio had no meaningful relationship to academic outcomes (measured by math, reading, and language test scores), it did have a statistically significant and qualitatively important influence on rates of suspension and weapons-related incidents. The estimated effect of having more counselors was somewhat sensitive to the assumptions used in different statistical

analyses; the study's best estimates indicated that an increase of one half-time counselor decreased the likelihood that the school would have at least one student suspension per school year by 20 percent compared to the mean rate of suspension and decreased the likelihood of at least one student weapons-related incident per school year by 26 percent. However, the study found that additional counselors had no effect on other behaviors, including rates of attendance, expulsions, and drug-related incidents.

In a later study, the same author explored how changes in state-level elementary school counselor policies affected a variety of teacher-reported measures of behavioral issues.⁵⁹ The research design took advantage of the fact that different states adopted minimum student-counselor ratios and/or subsidies for schools to hire more counselors at different times. The study consistently found that additional counselors were associated with decreases in the likelihood that teachers would report that a series of seven out of eight behavioral issues presented at least a minor problem. The decrease in likelihood typically ranged from 5 to 9 percent, with one outlier of 19 percent for the measure “students cutting class.” Interestingly, effects on the likelihood that teachers would report a given behavioral issue as a moderate or severe problem were much weaker—only two measures, “student drug abuse” and “physical conflicts among the students,” consistently showed significant effects.

Taken as a whole, these studies offer powerful evidence that public policies to reduce student-to-counselor ratios have meaningful effects on elementary school students' behavioral health. Such policies seem even more important when considered in the context of the high prevalence of mental and behavioral health

problems among children and the damage that they inflict, which Alison Cuellar discusses in detail in this issue.

School-Based Health Centers

A national network of approximately 2,000 school-based health centers (SBHCs)—distributed across elementary, middle, and high schools—provides preventive services to an estimated 2 million children and adolescents each year.⁶⁰ Though the SBHCs date back to the 1930s, the vast majority of existing centers (over 85 percent) were established after 1990, and 20 percent were established after 1999.⁶¹ The SBHCs serve a strikingly diverse student population; the racial/ethnic profile of host schools is fairly evenly divided among non-Hispanic white, Hispanic/Latino, and black students.⁶² The SBHCs are more prevalent in underserved communities, and over two-thirds of them explicitly seek to serve the broader community in addition to the host schools' student population.⁶³ Under the Affordable Care Act, the SBHCs recently entered a period of great expansion. Specifically, the ACA appropriated \$200 million over the years 2010–13 both to increase the number of SBHCs and to increase service levels at the existing SBHCs.⁶⁴

A recent working paper constitutes the first empirical study of the SBHCs with a research design that can plausibly show causation.⁶⁵ Based on the variation arising from openings, closings, and changes in per-student service levels in different counties over time, the authors estimated how the SBHCs affected teenage birthrates and high school dropout rates. Though they found no effect on dropout rates, they discovered large, statistically significant effects on teen birthrates. Specifically, they found that opening an average-size SBHC was associated with a 20 percent decline in the birthrate among teens less than

15 years old (from an average of 0.56 births per 1,000 teens) and a 7 percent decline in the birthrate among teens ages 16–19 (from an average of 45.6 births per 1,000 teens). Moreover, they found that these results were driven entirely by the 85 percent of the SBHCs that offered birth control services (either directly or through referral), underscoring the SBHCs' important role in providing access to reproductive health services, an issue around which there has been considerable controversy.⁶⁶

Other Direct Provision Policies

The Affordable Care Act has appropriated over \$10 billion to expand Federally Qualified Health Centers (FQHCs), also commonly referred to as community health centers, a network of 9,000 clinics that provide primary care to underserved populations, including an estimated 7 million low-income children each year.⁶⁷ A 2010 study found that increases in federal funding for the FQHCs directly translate into meaningful increases in the services offered by the clinics—including, importantly, increases in behavioral health services. Thus the new ACA funding should increase access to preventive and mental health services among low-income children.⁶⁸

Although extensive correlational evidence suggests that the FQHCs achieve impressive health benefits, no research that focuses specifically on the FQHCs and children's health meets our criteria for inclusion in this review.⁶⁹ A study of the early years of the FQHCs, beginning in the mid-1960s, found that the clinics were associated with declines in mortality among older adults, but no data suitable for analyzing outcomes among children were available.⁷⁰

Another major policy to directly provide health care is Vaccines for Children (VFC),

the federal program that offers free vaccines to participating pediatricians' offices for uninsured and publicly insured children. VFC pays for almost half of pediatric vaccines administered in the United States.⁷¹ As with the FQHCs, the research evidence behind VFC is mostly correlational. Studies suggest that VFC's introduction was associated with increases in immunization rates and, among inner-city children, decreases in fragmentation of care. However, these findings should not be taken as conclusive, because these studies were not designed in a way that can show causation.⁷²

The ACA and Children's Access to Medical Care

The passage and implementation of the Affordable Care Act (ACA) mark a new era for the health-care system. The law's hallmark provisions provide new pathways to insurance coverage for populations that have historically been at high risk of being uninsured. These provisions were crafted largely with adults in mind because, before the ACA, children were much more likely than adults to be eligible for public coverage and less likely to be uninsured. Nonetheless, some of the coverage provisions targeting adults or low-income families will have spillover effects on children's coverage and access to care. Moreover, some provisions of the ACA do focus on children or young adults. In this section, we outline how the ACA is likely to affect children's access to care.

Coverage Impacts

The primary way that the ACA can influence children's access to care is through increased insurance coverage. Overall, the ACA is projected to cut the fraction of uninsured children nearly in half, from 9.4 percent to 5.3 percent.⁷³ These gains will come from both private and public coverage. In

terms of private insurance, one of the first ACA provisions to be implemented required private plans offering family coverage to allow children to remain on a parent's policy until the age of 26, which produced an immediate and sizeable increase in insurance coverage among young adults.⁷⁴ Subsidized exchange coverage for children ineligible for public coverage whose parents also lack access to affordable employer-sponsored coverage, as well as a mandate that almost all children be covered, are projected to bring insurance to 2 million children.⁷⁵

Increased enrollment in public insurance programs will drive many additional gains. An estimated 68 percent of uninsured children are currently eligible for Medicaid and CHIP, and though the ACA left children's income eligibility for these programs broadly unchanged, several other forces are likely to increase this group's take-up of public coverage.⁷⁶ First, earlier experiences with public insurance expansions have consistently demonstrated what is often called the "welcome mat" effect—a phenomenon in which expansion affects previously eligible but unenrolled populations.⁷⁷ The ACA is likely to exert an appreciable welcome mat effect on children; the reform effort has been highly visible, and a variety of stakeholders have spent considerable resources on outreach, launching nationwide advertising campaigns and funding outreach workers who help facilitate enrollment. Moreover, parents' eligibility for Medicaid has increased greatly in many of the states that have implemented the optional adult expansion, and research compellingly indicates that children's Medicaid take-up increases when their parents become eligible for Medicaid.⁷⁸ Also, former foster-care children of all income

Box 1. Major Affordable Care Act Provisions Affecting Insurance Coverage of Children and Young Adults

Ban on excluding people for preexisting condition

Individuals (including children) cannot be denied coverage based on the presence of preexisting conditions (all large group and most individual/small group private plans*).

Premium determination

Most individual/small group plans cannot charge higher premiums based on health status or gender.

Ban on lifetime or annual coverage limits

No lifetime dollar limits are allowed on most covered benefits (all private plans); no annual limits are allowed on most covered benefits (all large group and most individual/small group private plans).

Maximum out-of-pocket responsibility

The law caps cost-sharing by most large group and individual/small group private plans. In 2014, this cap was \$12,700 for families.

Dependent coverage up to age 26

All private plans that cover children as dependents must make coverage available up to age 26.

Exchanges and subsidies

Health insurance marketplaces (“exchanges”) offer individual/small group private coverage. Families with incomes up through 400 percent of the federal poverty level who lack access to affordable employer coverage and are ineligible for Medicaid/CHIP are eligible for sliding-scale subsidies for exchange coverage.

Preventive services mandate

Most large groups and most individual/small group plans must cover a wide range of preventive services with no cost to the patient at the time of service.

Essential health benefits mandate

All exchange and most individual/small group plans must cover a wide range of preventive, acute, and rehabilitative services, including pediatric dental and vision services.

Medicaid expansion for parents

The law expands Medicaid eligibility to 138 percent of the federal poverty level for parents (state option). Large “welcome mat” effects are expected to increase the take-up of Medicaid coverage for eligible children who were previously unenrolled.

Medicaid expansion for young adults who have aged out of foster care

Young adults ages 19 and up who have aged out of foster care and who received Medicaid while in foster care remain eligible until they turn 26.

Individual mandate

All individuals in families with incomes over the tax filing threshold (\$13,050 for a single parent with children in the household; \$20,300 for married parents) must have health insurance; failure to meet this requirement results in a financial penalty (with limited exemptions including financial hardship or religious objections).

* In some cases, large groups may adopt a temporary preexisting condition exclusion period.

Definitions: A large group is a group health plan that covers employers/organizations with 100 or more employees/members; in some contexts, a threshold of 50 or more employees/members is applied. A small group is a group health plan that covers employers/organizations that fall below the large group threshold. Individual insurance policies cover individuals and/or families as opposed to groups.

levels will be eligible for Medicaid until the age of 26, mirroring the policy change in the private market.

These changes to coverage shift the policy debate regarding reauthorization of funds for CHIP. The program's current funding is slated to end this year. CHIP programs vary a great deal across states; however, there is bipartisan consensus that, on the whole, they have successfully lowered the uninsured rate among children.⁷⁹ One principal factor has been the direct enrollment of millions of near-poor children into CHIP, which was serving 8 million children at the most recent count. Arguably, however, CHIP's spillover effect on the much-larger Medicaid program, which serves approximately 40 million children, has been even more important.⁸⁰ CHIP is notable for successful outreach and administrative simplification, which produced a very large welcome mat effect among Medicaid-eligible children.

Under the ACA, the typical income range for CHIP eligibility—from 150 percent to 250 percent of the federal poverty line—now overlaps with the income eligibility levels for coverage through subsidized exchanges. Many current CHIP enrollees will be ineligible for this subsidized coverage, however, since their parents have offers of coverage under their employer-sponsored plans. Dependent coverage is typically very expensive, and its cost isn't considered when determining eligibility for exchange subsidies (a feature called the “family glitch”); thus many children covered by CHIP might become uninsured if the program is discontinued, unless the regulations governing eligibility for exchange subsidies are revised to fix the “family glitch.” With this in mind, the Medicaid and CHIP Payment and Access Commission (MACPAC), an independent

agency that advises Congress, has recommended funding CHIP for an additional two years, until adequate provisions for covering these children can be made. MACPAC is also concerned about potential differences in the generosity of children's benefits between exchange coverage and CHIP. Its preliminary analysis suggests that, on average, CHIP plans have more generous coverage than exchange plans; MACPAC was to continue to monitor the issue and report back to Congress in spring 2015.

The ACA also offers states the option of establishing and administering a Basic Health Program (BHP), which would mitigate the problem of differential benefit generosity. BHPs are intended to provide a subsidized coverage option, with benefits and provider networks similar to Medicaid's, to Medicaid-ineligible people with incomes up to 200 percent of the federal poverty line.⁸¹ Such a program could reduce the potentially damaging effects of coverage churn among such people. Moreover, it would provide an option for low-income parents who are eligible for neither Medicaid nor CHIP to have an insurance plan with the same provider networks as those available to their Medicaid- or CHIP-enrolled children. Though states have the option to establish a BHP beginning in 2015, as of this writing, very few states have signaled an interest in doing so.

Because it mandates increases in the scope or generosity of private coverage, the ACA may also improve access for children who are already insured. For example, the ACA prohibits annual or lifetime limits on coverage, and people can't be denied coverage because of preexisting conditions. The act also requires that all private insurance, including employer-sponsored plans, cover

the full cost of preventive services, such as childhood immunizations and well-child visits. The ACA may also increase the scope of coverage for private individual health insurance plans by introducing minimum benefit standards called Essential Health Benefits. These standards encompass a wide range of preventive, acute, and rehabilitative services and, for children, vision and dental services. It is unclear how many children will be affected by these provisions, since many plans are likely to have covered most of these benefits already.

The ACA also includes some smaller-scale supply-side provisions that are likely to affect children's access to care, although exactly how is hard to predict. These provisions include the expansion of funding for the SBHCs and the FQHCs, both of which are important sources of medical care for vulnerable children, as well as a temporary Medicaid reimbursement increase (in 2013–14) for primary care providers, including pediatricians, to achieve parity with Medicare. Additionally, several small-scale workforce initiatives are designed to increase the supply of providers serving vulnerable populations, including underserved children. These expansions in supply may not be enough to meet projected demand increases likely to be induced by the ACA's coverage provisions. Accordingly, it will be important to watch for barriers to access for newly insured children and their families. The first studies of the issue provide some reassurance that existing capacity in the health-care sector has been able to absorb the increased demand.⁸²

Finally, the ACA contains a series of health-care system delivery reforms designed to tackle two problems: the high cost and fragmentation of medical care. Specifically,

the ACA introduces and supports a series of pilot demonstrations involving financing changes that accelerate the existing trend away from payments based on quantity of services toward a fixed, global per-patient payment, with payment bonuses for providing higher-quality care (for example, ensuring that patients receive annual flu shots). Additionally, the ACA pilot demonstrations involve initiatives to enhance the coordination of care, which are expected to increase the continuity and integration of care across primary care providers and specialists. The two most notable reform models tested in these pilots are the Accountable Care Organization, a new type of multiprovider network that coordinates care across providers (primary care and specialty) and settings (hospital, outpatient, and in-home), and the Patient-Centered Medical Home (PCMH), a primary care-focused model providing enhanced payments to primary care providers to promote "whole patient" care. These pilots overwhelmingly focus on adult populations, so very few children are likely to benefit directly from them in the short run. But they indicate broader health-care system trends that are shaping changes in pediatric practice. Indeed, the concept of the medical home originated in pediatrics, and the American Academy of Pediatrics continues to advocate for pediatric-focused PCMHs.⁸³ A key aim of such efforts is to integrate behavioral health care into primary care, which is vital given the high prevalence of behavioral health problems among children.

Conclusions

The ACA builds on the earlier successes of Medicaid expansion and CHIP to promote children's access to care, but challenges remain. We close by summarizing the three most significant challenges facing policy makers and policy-oriented researchers when

it comes to the relationship between children's access to care and their health.

Not All Children Have Coverage

The country has made tremendous progress in increasing insurance coverage among children, but some groups have been left behind. In particular, undocumented children have very few affordable coverage options. Immigrant children, including the undocumented, are less likely to have access to employer-sponsored insurance than are citizen children.⁸⁴ Moreover, undocumented children are ineligible for both Medicaid/CHIP and exchange coverage. Many of these children will continue to rely on free and/or greatly reduced-price care from safety net providers such as the FQHCs, free clinics, and public hospitals. Federal payments to safety net hospitals for uncompensated care are slated to decrease substantially under the ACA, further reducing the medical resources available to this vulnerable group.

Coverage Does Not Guarantee Access

As we've noted, coverage is just one piece of the puzzle for ensuring access. Children may face barriers to access when they move between insurance plans ("churning"); they may also face barriers if there are not enough providers, or if not enough providers are willing to see children covered by Medicaid at the rate the government is willing to pay. Parents also play a critical role in ensuring that children get the care they need, when they need it. For example,

adolescents, especially boys, are much less likely to have a usual care provider than are younger children, and they have relatively fewer medical visits (including preventive visits), even though adolescents have more health problems.⁸⁵ Researchers hypothesize that a key reason for this gap is that parents are less aware of adolescents' health-care needs compared to those of younger children.⁸⁶

Other Inputs Are Critical

Our review of the evidence suggests that, without question, access to care plays an important role in promoting children's health. Moreover, improving children's access to care represents a relatively straightforward problem in the sense that, if the political will exists, we know which policies will work: expanding coverage, promoting continuous coverage, and increasing reimbursement rates. At the same time, as we noted at the outset, access to care is not the whole reason that some kids are healthier than others. It is worth repeating a point from the RAND Health Insurance Experiment: even in the free care plan, 30 percent of children had uncorrected vision problems in spite of receiving an average of more than three office visits per year.⁸⁷ Nonmedical inputs into children's health, such those discussed in the other articles in this issue, as well as the quality of the medical care that children can access, are also important pieces of the puzzle.

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Food Assistance Programs and Child Health

Craig Gundersen

Summary

Food assistance programs—including the Supplemental Nutrition Assistance Program (SNAP, or food stamps), the National School Lunch Program, and the School Breakfast Program—have been remarkably successful at their core mission: reducing food insecurity among low-income children. Moreover, writes Craig Gundersen, SNAP in particular has also been shown to reduce poverty, improve birth outcomes and children’s health generally, and increase survival among low-weight infants. Thus these programs are a crucial component of the United States’ social safety net for health.

Recent years have seen proposals to alter these programs to achieve additional goals, such as reducing childhood obesity. Two popular ideas are to restrict what recipients can purchase with SNAP benefits and to change the composition of school meals, in an effort to change eating patterns. Gundersen shows that these proposed changes are unlikely to reduce childhood obesity yet are likely to have the unintended effect of damaging the programs’ core mission by reducing participation and thus increasing food insecurity among children.

On the other hand, Gundersen writes, policy makers could contemplate certain changes that would make food assistance programs even more effective. For example, lawmakers could revisit the SNAP benefit formula, which hasn’t changed for decades, to make certain that aid is going to those who need it most. Similarly, the School Breakfast Program could be expanded to cover more children, and summer meal programs could reach more children when school isn’t in session.

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Food assistance programs have long been an important part of the social safety net for U.S. children. But the role of these programs, especially the Supplemental Nutrition Assistance Program (SNAP, formerly known as the Food Stamp Program), has increased over the past 20 years, as nonfood assistance programs have declined. The four largest programs, SNAP, the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC), the free- and reduced-price National School Lunch Program (NSLP), and the free- and reduced-price School Breakfast Program (SBP), have a combined budget of almost \$100 billion.

These four large programs exist alongside an array of policies that are intended to influence children's nutrition but are not specifically targeted to low-income children. These include nutrition education programs, restrictions on what can be sold at schools (for example, bans on vending machines), changes in the labeling of foods commonly eaten by children, nutritional supplementation (for example, folic acid in flour), and restrictions on advertising to children (for example, not allowing certain commercials to appear on children's programs). Although these other policies and programs could affect nutrition, most of the evidence indicates that they have little impact.¹

Thus I concentrate on SNAP, the NSLP, and the SBP (Maya Rossin-Slater covers WIC elsewhere in this issue). These programs were established to increase food consumption and, in the process, improve children's health by, for example, reducing food insecurity. Over time, though, they have been asked to tackle other goals, including reducing the obesity rate among children.

SNAP and school meal programs have been enormously successful at reducing food insecurity in the United States and have also improved children's wellbeing in other ways. Perhaps in an effort to build on these successes, several proposals have recently been put forth to change both SNAP and school meals. In my concluding remarks, I discuss how, despite their good intentions, some of these proposals—especially those receiving the most attention, such as restricting what can be purchased with SNAP benefits—would actually harm low-income children. Instead of pursuing these changes, I recommend that policy makers and program administrators work to increase participation and, if possible, raise benefit levels.

I don't cover all aspects of how food assistance programs may affect children's health. First, although some participants in school meal programs pay full price for their meals, I consider the impact only of free and reduced-price meals. I do so because (a) most participants (over 70 percent in 2013) receive free or reduced-price meals, (b) implicitly and explicitly, these programs are geared toward low-income children, and (c) considering only free and reduced-price meals allows me to draw parallels with SNAP, which is available only to low-income Americans.² For the interested reader, though, I do include some citations to broader studies. Second, I don't review findings about how school meals or SNAP affect nutritional intake or food consumption and expenditures more broadly. Needless to say, food insecurity is generally associated with lower intake of key nutrients, and nutrient intake can contribute to children's obesity; as such, it might seem natural to look at the impact of SNAP and school meals on nutrient intake and food consumption and expenditures in this article. However, compared

with food insecurity and obesity, there has been little research in this area, especially in recent years.³

Overview: SNAP

SNAP (then known as the Food Stamp Program) began with the Food Stamp Act of 1964.⁴ At first, the act allowed counties to decide whether to introduce the program. In 1974, SNAP became a national program, available in all counties.

Since becoming a national program, SNAP has undergone numerous changes, but its basic structure has stayed the same. The Personal Responsibility and Work Opportunities Reconciliation Act of 1996, for example, changed the program in many ways. For example, it restricted eligibility for most legal immigrants and set time limits for unemployed able-bodied adults without dependents in areas without high unemployment and/or few job opportunities. The Food Security and Rural Investment Act of 2002 made further changes; for one, it reestablished eligibility to qualified legal immigrants. The American Recovery and Reinvestment Act (ARRA) of 2009 increased SNAP's monthly benefits, expanded eligibility for jobless adults, and added federal dollars to support the program's administration.

Despite changes over time, SNAP has remained a core component of the safety net against hunger. It has become the largest food assistance program in the United States; in 2013, over 47 million people received SNAP, with benefits totaling almost \$80 billion.⁵ This is a very large increase from before the Great Recession—in 2007, 33 million participants received \$30 billion in SNAP benefits. The numbers have remained high despite the recession's end.

The Supplemental Nutrition Assistance Program has become the largest food assistance program in the U.S.; in 2013, over 47 million people received SNAP, with benefits totaling almost \$80 billion.

SNAP benefits can be used to buy food in authorized retail food outlets. Benefit levels are directly proportional to family size and inversely proportional to income, with a maximum of \$668 per month for a family of four in 2012. The eligibility criteria for SNAP today are found in box 1.

Despite SNAP's potentially high monetary benefits—high enough to have a nontrivial influence on the extent and depth of poverty in the United States—many people who are eligible don't participate.⁶ Nonparticipation reflects three main factors.

First, receiving SNAP may carry a stigma, due to a person's own distaste for receiving SNAP, the fear of disapproval from others when redeeming SNAP, and/or a possible negative reaction from caseworkers.⁷ Second, transaction costs can diminish the attractiveness of participation, including time spent in or traveling to a SNAP office; the burden of transporting children to the office or paying for child care in the meantime; and the cost of transportation. A household faces these costs repeatedly because it must periodically recertify its eligibility (the time

between recertifications varies by state and, within states, by the characteristics of the household).⁸ Though transaction costs might be a way to discourage those in less need from applying for a program, with SNAP the opposite appears to be true: those in most need, as defined by education and income,

find it most difficult to navigate the SNAP application process.⁹ Third, the benefit level can be quite small—for some families, as low as \$10 per month. Given the inverse relationship between income and SNAP benefit levels, this explains why, all else equal, households with incomes closer to the

Box 1. SNAP Eligibility

To receive SNAP benefits, households must both be eligible for and choose to enter the program. To be eligible for SNAP, households first have to meet a monthly gross income test—the household’s income (before any deductions) must be under 130 percent of the poverty line (although some states have set higher thresholds). There are exceptions; for instance, households with at least one elderly member or one disabled member do not have to meet this test.

Households then must have a net income below the poverty line. Net income is calculated as gross income minus certain deductions, including, for example, a 20 percent earned income deduction and a dependent care deduction when such care is necessary for work, training, or education. Households that pass the gross income test must also pass the net income test; this is obviously more likely to be binding in states with higher gross-income thresholds.

The final SNAP eligibility test concerns assets. As defined at the federal level, a household’s total assets must add up to less than \$2,000. Some resources are not counted, such as a home and up to \$4,650 of the fair market value of one car per adult household member. As with the gross income test, states can apply for waivers to make the asset test less restrictive.

Some categories of people do not have to meet these tests. For example, households in which all members receive Supplemental Security Income (SSI) or Temporary Assistance for Needy Families (TANF) are automatically eligible for SNAP. (For more on TANF, see Lawrence Berger and Sarah Font’s article in this issue.) Conversely, able-bodied adults between the ages of 18 and 50 years without dependents (ABAWDs) must be employed to receive SNAP even if they meet the income and asset criteria. If they are not employed, they can lose their SNAP benefits. In areas with particularly high

unemployment rates or limited employment opportunities, this so-called “ABAWD requirement” is waived. This waiver is not automatic—states must make this request of the USDA.

For those who pass the eligibility tests, the amount of SNAP benefits is calculated by multiplying the household’s net income by 0.3. The multiplied value is then subtracted from the value of the Thrifty Food Plan, which varies by household size and composition. One implication is that a household that has a net income of zero will receive the maximum benefit level. Another implication is that households receiving less than the maximum benefit level are expected to spend at least some of their own income on food. Though states have discretion over various aspects of SNAP, including the gross income test and the asset test, all benefits are funded by the federal government.

Box 2. NSLP Eligibility

Eligibility for the NSLP begins at the individual level, insofar as any child at a participating school is potentially eligible (children who are home-schooled or who no longer attend school are not). Among children in participating schools, families with incomes at or below 130 percent of the poverty level are

eligible for free meals, and children with household incomes between 130 percent and 185 percent of the poverty level are eligible for reduced-price meals, which cannot cost more than 40 cents. The Community Eligibility Option allows schools in high-poverty areas to provide universal school meals

(free breakfasts and lunch to all students). Eligibility is based on the percentage of households in the community who are already participating in SNAP. In all schools participating in NSLP, the lunches served must meet federal requirements.

SNAP eligibility threshold are less likely to participate.

Overview: School Meal Programs

The NSLP is a federal assistance program that operates in over 100,000 public and nonprofit private schools across the United States.¹⁰ It began in 1946 under the National School Lunch Act, and has seen relatively minor changes since. In recent years, the primary shift has been toward greater emphasis on the meals' nutritional content. For example, in 1994, the U.S. Department of Agriculture (USDA) launched the School Meals Initiative for Healthy Children, which required nutritional improvements to school lunches based on dietary guidelines. In 2004, schools were required to create wellness policies that specify nutritional standards for all foods served in school.

In 2012, more than 31 million students participated in the NSLP. Of these, nearly 17 million received free lunches and slightly over 3 million received reduced-price lunches (the rest paid full price). Along with free food, the federal government gave schools over \$11 billion in 2012 to reimburse them for the cost of providing these meals. Current reimbursement rates are, in most cases, \$2.77 for free lunches, \$2.37 for reduced-price lunches, and \$0.26 for paid lunches. The eligibility criteria for the NSLP can be found in box 2.

The School Breakfast Program began in 1966 as a pilot program and was permanently authorized in 1975. It is operationally similar to the NSLP, with two main exceptions. First, as the name implies, schools participating in the program serve breakfast rather than lunch. Second, fewer schools serve breakfasts. While almost all schools in the

U.S. serve lunches, about two-thirds serve breakfasts. Over 89,000 public, nonprofit private schools, and public and nonprofit private residential child-care institutions, participate in the SBP. The program is administered at the federal level by the USDA's Food and Nutrition Service, and by state education agencies at the state level. In 2012, over 12.9 million children participated in the program every day, and 10.1 million received a free or reduced-price meal. Current federal reimbursement rates are, in most cases, \$1.58 for free breakfasts, \$1.28 for reduced-price breakfasts, and \$0.28 for paid breakfasts.

A high proportion of eligible children don't participate in the National School Lunch Program or the School Breakfast Program.

The benefits associated with receiving free or reduced-price meals through the NSLP or the SBP are not trivial. At least as defined by the reimbursement to schools, lunch for one child every day for a week is worth about \$15.¹¹ Still, a high proportion of eligible children don't participate in the NSLP or the SBP. This can be ascribed to three main factors. First, as with SNAP, receiving free or reduced-price meals can carry a stigma, so some children or their parents may not want to participate. Second, as we've seen, many schools don't participate in the SBP. Children at those schools can't participate even if they are eligible. Third, despite being enrolled, some children, for a myriad of reasons, don't always eat the meals provided. For example, a child might not want the meal

served; a parent might decide a meal isn't healthy enough; a child might have already eaten breakfast at home. This differs from SNAP—recipients spend virtually all their SNAP benefits, because they can decide what foods to purchase.

How Food Assistance Programs Affect Health

Because participation in these programs is not randomly assigned, and because some subsets of the eligible population have relatively low participation rates, I concentrate on studies that take seriously the issue of selection into these programs. (For a deeper discussion of selection and the challenges of making causal inferences about program impacts, see Maya Rossin-Slater's article in this issue.) Though I touch briefly on other areas, I limit my review to two problems that have generated the most interest in recent years: food insecurity and obesity.¹² I also limit my discussion to the programs' impact on low-income children.

Theoretical Effect of SNAP

As we've seen, households will participate in SNAP if the benefits they receive outweigh the stigma and transaction costs associated with receiving them. How does SNAP affect the health of those who choose to enter the program?

In theory, SNAP's effects on health should be clear in some areas. For example, it's clear that receiving SNAP benefits (in comparison to not receiving them) should reduce the probability of food insecurity, because the family now has more resources to spend on food. It's hard to see how having more resources available for food could increase the chances of food insecurity.

The case for a SNAP effect on childhood obesity, however, is not theoretically obvious.¹³ Here, we have to consider two effects. The first is that when a family receives SNAP benefits, money that might have been used to purchase food may be freed up for other expenditures. In some households, this additional money could be used to purchase goods that increase children's sedentary activities (for example, a television), leading to an increase in weight. Other households might shift these resources toward purchases that would lead to less sedentary activities (for example, a bicycle).

The second effect concerns how households might allocate additional money even if they restrict it to food purchases—they might disproportionately purchase either more "healthy" food or more "unhealthy" food. Keep two things in mind. First, I put "healthy" and "unhealthy" in quotes because virtually no food is completely healthy or unhealthy. Consuming more "unhealthy" foods is generally associated with a higher probability of obesity, but many other factors influence a person's weight. Second, when they receive SNAP benefits (or any other increase in income), households may change other aspects of their food-buying behavior; for example, they may purchase food prepared by others. I concentrate on the issue of "healthy" and "unhealthy" foods insofar as it portrays the central reason that SNAP participation may affect obesity. Without information about a household's preferences, it isn't clear what will happen to the consumption of "healthy" and "unhealthy" foods. If a household considers "unhealthy" food to be an inferior good, then its total consumption of "unhealthy" foods will fall, resulting in a proportional increase in "healthy" foods. The converse is also true; that is, if it considers "healthy" food to be an inferior good,

the household will use extra money to buy proportionally more “unhealthy” food. If it considers both “unhealthy” and “healthy” foods to be normal goods, then its consumption of both will increase. In any case, the effect of receiving SNAP benefits is theoretically ambiguous.

Food insecurity is at an all-time high, despite the end of the Great Recession.

Among children, is there a relationship between food insecurity and obesity? Because both obesity rates and food insecurity fall as income rises, there has been some speculation that food-insecure children are more likely to be obese. Yet careful empirical work using measured heights and weights or other obesity determinants has found no relationship between food insecurity and obesity, after controlling for other factors.¹⁴

SNAP and Food Insecurity

Food insecurity (a household-level economic and social condition of limited access to food) among children is a serious, policy-relevant issue in the United States today for two central reasons.¹⁵ First, the magnitude of the problem is enormous. The extent of food insecurity is at an all-time high, despite the end of the Great Recession. In 2013, 21.4 percent of children in America (15.7 million) lived in food-insecure households, and almost half of these children experienced food insecurity themselves.¹⁶ Second, extensive evidence shows that food insecurity is associated with many negative health consequences.¹⁷ See box 3 for more information on how food insecurity is measured in the United States.

SNAP’s central goal is to reduce food insecurity. However, food insecurity rates among recipients are about twice those among eligible nonrecipients.¹⁸ These rates remain higher even after controlling for observed factors (for example, income, household composition, or education levels).¹⁹ This effect is presumably due to the fact that SNAP participation is not randomly distributed among eligible participants and that SNAP recipients and nonrecipients differ in unobserved ways. Recently, researchers have used sophisticated statistical techniques to overcome this selection effect (as well as the oft-noted problem that, when surveyed, people frequently misreport their SNAP participation status).²⁰ These researchers asked what the food insecurity rate would be if all eligible households with children received SNAP, and what it would be if no eligible households with children received SNAP; the difference between these two estimates is known as the average treatment effect. They calculated that SNAP participants are between 14.9 and 36.6 percentage points less likely to be food insecure than nonparticipants. This range generally includes the estimated effects of SNAP found in other recent work on this topic.²¹ Given SNAP’s pronounced effect on reducing food insecurity, it’s likely that, without the increase in SNAP participation, food insecurity rates would have risen even more during and after the Great Recession.

SNAP and Childhood Obesity

As we’ve seen, SNAP’s effect on childhood obesity is theoretically ambiguous insofar as the impact of any increase in resources on obesity is unclear. The empirical evidence, however, provides some support for the notion that an increase in resources leads to reductions in obesity. Using 2001–10 data from the National Health and Nutrition

Examination Survey (NHANES), researchers examined the relationship between income and obesity among children between the ages of 3 and 18.²² A central advantage of the NHANES, given that self-reported height and weight are often inaccurate, is that heights and weights were measured by a trained technician in a mobile examination center.²³ For children, these measurements were mapped into a percentile, using age- and gender-specific reference values from Centers for Disease Control and Prevention (CDC) growth charts.²⁴ Analysis showed that as income increased, the probability of obesity steadily declined. For example, from the lowest to the highest income spectrum

(that is, from below the poverty line to above 400 percent of the poverty line), the probability of being in the 95th percentile or higher of body mass index (BMI) fell from 20.4 percent to 13.2 percent, and the probability of being in the 99th percentile or higher fell from 6.1 percent to 2.6 percent. This general pattern held for both boys and girls. As a consequence, we would assume that mechanisms like SNAP that increase the ability to purchase food would lead to declines in the probability of being obese.

Given this empirical evidence, it appears unlikely that receiving more money to purchase food would lead to higher rates of

Box 3. Measuring Food Insecurity in the United States

Food insecurity in the United States is measured through a series of questions in the Core Food Security Module (CFSM). The CFSM includes 18 questions for households with children and 10 questions for households without children. Examples of questions include: “I worried whether our food would run out before we got money to buy more” (the least severe item); “Did you or the other adults in your household ever cut the size of your meals or skip meals because there wasn’t enough money for food?”; “Were you ever hungry but did not eat because you couldn’t afford enough food?”; and “Did a child in the household ever not eat for a full day because you couldn’t afford enough food?” (the most severe item for households with children). Each question is qualified by the stipulation that the problem was caused by lack of money.

The USDA places households into food insecurity categories based on responses to the CFSM, on the assumption that the number of affirmative responses reflects the level of food hardship that the family experiences. The following thresholds are established:

Food security: All household members had access at all times to enough food for an active, healthy life.

Low food security: At least some household members were uncertain of having, or unable to acquire, enough food because they had insufficient money and other resources for food.

Very low food security: One or more household members were hungry, at least sometime during the year, because they couldn’t afford enough food.

A household is said to be “food insecure” if it falls into the second or third category. Another category that is sometimes used is marginal food security. A household is said to be marginally food secure if there are one or two affirmative responses. All households falling into the marginal, low, or very low food secure categories are then said to be “marginally food insecure.”

Food insecurity statuses are also established for the children in the household. The children in a food insecure household are said to have low food security if the respondent answers affirmatively to one to four child-specific questions and very low food security if the respondent answers affirmatively to five or more child-specific questions.

Note: A complete list of CFSM questions can be found in Craig Gundersen and Brent Kreider, “Food Stamps and Food Insecurity: What Can Be Learned in the Presence of Nonclassical Measurement Error?” *Journal of Human Resources* 43 (2008): 352–82. For determinants of food insecurity in the United States, see Craig Gundersen, Brent Kreider, and John Pepper, “The Economics of Food Insecurity in the United States,” *Applied Economic Perspectives and Policy* 33 (2011): 281–303.

obesity. Thus we would anticipate that SNAP recipients are less likely to be obese than eligible nonrecipients. It could be, though, that SNAP recipients are nonetheless more likely to be obese than nonrecipients, if, for example, households that choose to enter the program are more prone to obesity in the first place. A third possibility is that SNAP has no impact on the probability of obesity among participants, perhaps because the extra money received from SNAP is not enough to affect obesity rates.

Along with influencing food choices, SNAP could have other effects on obesity. For example, household stress has been associated with a higher probability of obesity, especially among children.²⁵ If receiving SNAP reduces stress, this could be an indirect way that SNAP participation reduces obesity.

Recent research on SNAP and childhood obesity has been inconclusive; some studies have found that SNAP has no impact, while others have found that SNAP reduces the probability of obesity. A study using the NHANES found that children in SNAP households were less likely to be obese than SNAP nonparticipants, but the result is not statistically significantly different from zero.²⁶ Using a sample of boys and girls between the ages of 5 and 18 from the National Longitudinal Survey of Youth 1997, another study found that boys and girls between the ages of 5 and 11 and boys between the ages of 12 and 18 who participate in SNAP are less likely to be overweight or obese than are eligible nonparticipants; among girls between the ages of 12 and 18, however, SNAP had no statistically significant effect.²⁷ A third study used data on households with children in three states—Illinois, Iowa, and Michigan—who lived in counties where the poverty rate was above

20 percent.²⁸ It found that children in SNAP households were less likely to be overweight (that is, to have a BMI above the 85th percentile) than children in nonparticipating eligible households. This effect was strong, suggesting that each 10 percent increase in SNAP participation rates would bring a 5.7 percent decrease in the proportion of children who are overweight.

Theoretical Effect of Free or Reduced-Price School Meals

As with SNAP, the theoretical effect of free or reduced-price meals on food insecurity is relatively unambiguous, insofar as children's participation in the NSLP, the SBP, or both should lead to declines in food insecurity. Even if a child would have eaten a meal anyway, a free or reduced-price meal would free up money for other food purchases. The benefits should, in general, be shared by all household members, and thus food insecurity should decline for all members of the household, not just the child who receives the meal.

Also as with SNAP, the effect of these programs on childhood obesity is theoretically ambiguous. But the reasons differ. Consider three simplified scenarios. First, after enrolling in a school meal program, on any given day, a child and his or her parents must make a decision about whether to eat the meal. If the meal is eaten, the impact on obesity will depend on whether this particular meal is "healthier" or "unhealthier" than the meal that would have been provided by the parent and taken to school. Second, a child who receives a school meal will then make a decision about whether to eat all the meal's contents. What the child eats will then influence his or her weight status, all else equal. Third, a child will choose to make other food consumption choices throughout the day based on what he or she consumed in the

school meals. These other choices could be “healthier” (if, say, parents decide to have “healthy” snacks because the school meal offered less “healthy” food than they would have liked) or “unhealthier” (if, say, an older child is still hungry and chooses a snack with low nutrient content because he or she is still hungry after eating school meals). Again, the impact of this compensating food consumption is not immediately clear.

Free or Reduced-Price School Meals and Food Insecurity

As with SNAP, food insecurity rates are substantially higher among NSLP participants than among nonparticipants. A recent study using the NHANES found that the food insecurity rate among children participating in the NSLP was 39.9 percent, versus 26.3 percent for nonparticipants.²⁹ As with SNAP, it seems implausible that giving children an extra meal each day would lead to a higher probability of food insecurity. And again like SNAP’s, NSLP’s true effect is difficult to assess because of a similar selection problem. In a recent study that used statistical techniques to address the selection effect, my co-authors and I found that the NSLP indeed alleviates food insecurity.³⁰ The average treatment effect was such that the NSLP should decrease the prevalence of food insecurity by 2.3 to 9.0 percentage points. The effect is smaller than that for SNAP, but that is to be expected, because NSLP’s benefit level, on average, is lower than SNAP’s.

Along with this direct evidence, there is also indirect evidence that the NSLP reduces food insecurity. Two studies have found that during the summer, when most children don’t participate in school meal programs, the extent of food insecurity increases.³¹

These studies examine the NSLP’s impact on household food insecurity rather than individual food insecurity. As such, some of the benefits from participating in these programs accrue to other persons in the household. This is consistent with other research, which shows that overall food expenditures increase when children receive free or reduced-price meals.³² To date, only a few studies have examined the SBP’s impact on food insecurity; they found that participants are less likely to be marginally food insecure (see box 3).³³

Free or Reduced-Price School Meals and Obesity

As with SNAP, studies of how obesity is affected when children receive free or reduced-price meals through school meal programs have shown mixed results. Here, I consider only studies that examine the impact of free or reduced-price meals. Other studies have considered the impact of receiving any school meal versus not receiving a school meal (recall that some children participating in the NSLP and the SBP pay full price). For reasons mentioned earlier, I don’t include these studies here.³⁴

Using data from the Panel Study of Income Dynamics, two researchers found that low-income participants in the NSLP are no more likely than nonparticipants to be obese.³⁵ And my co-authors and I found that children receiving free or reduced-price lunches through the NSLP were 3.2 percentage points less likely to be obese than were eligible nonparticipants, although this result was not statistically distinguishable from zero.³⁶

Conclusions

The research I’ve reviewed demonstrates that SNAP and school meal programs reduce

the probability of food insecurity among low-income children in the United States. In addition, SNAP improves children's wellbeing in other ways: it reduces poverty, improves birth outcomes and general health, and increases survival among low-weight infants.³⁷ For these and other reasons, Janet Currie has correctly pointed out that any discussion of the social safety net for health (and other dimensions of wellbeing) must account for the role of food assistance programs.³⁸ I now turn to policy issues that are worth considering, based on the evidence we've seen so far. When I can, I suggest how future research could help policy makers better understand these issues.

Restrictions on SNAP purchases

There have been several proposals recently to place restrictions on SNAP purchases and, in the process, fundamentally change SNAP's structure. The best-known proposal came from the New York Department of Health and Mental Hygiene and Human Resources Administration.³⁹ This request for a waiver from the federal government would have banned SNAP recipients from using their benefits to buy many beverages with more than 10 calories per eight-ounce serving. The ban would have included things such as sports drinks, soda, vegetable drinks (for example, V8), and iced tea drinks. Some products with more than 10 calories per eight-ounce serving would still have been allowed, including milk, milk substitutes, and 100 percent fruit juices. Proposals to restrict SNAP purchases along similar lines have been put forth in Maine, Wisconsin, and South Carolina (some would have restricted other purchases besides beverages).⁴⁰ These proposals are often based on the perception that receiving SNAP increases the chance of obesity. But this perception is based on comparisons between participants and

eligible nonparticipants; as we've seen, once we control for differences between these two groups, there is no basis for believing that SNAP increases obesity.

However, the perception that obesity rates are higher among low-income children than among higher-income children is accurate. Restrictions could, in theory, reduce children's consumption of "unhealthy" foods, at least among a subset of SNAP participants. In particular, children who live in so-called "infra-marginal" households, which don't spend any of their own income on food, might see reductions in "unhealthy" foods. Other households, however, would likely see no reductions in "unhealthy" foods, because such purchases would simply be shifted from SNAP benefits to cash. Virtually no households with children are infra-marginal, so, at least in this way, restrictions on SNAP purchases are unlikely to have much impact on "unhealthy" food purchases.

While restrictions on SNAP benefits are unlikely to reduce consumption of 'unhealthy' foods, these restrictions might still have negative consequences.

While restrictions on SNAP benefits are unlikely to reduce consumption of "unhealthy" foods, these restrictions might still have negative consequences. Specifically, the stigma and transaction costs associated with SNAP could increase, leading fewer households to enroll in the

program. (I discuss stigma and transaction costs and their effect on the decision to participate in SNAP in the overview of SNAP above.) Stigma might increase insofar as, among other things, participants might feel singled out as irresponsible and incapable of making well-informed food purchases for their children.

Transaction costs are also likely to increase along with restrictions on what can be purchased, for two reasons.⁴¹ First, SNAP recipients will need to spend time figuring out which food items they can purchase with SNAP benefits and which they can't (although if restrictions pertain only to beverages, this might be relatively easy). If stores clearly and correctly displayed whether products were "SNAP eligible" or "SNAP ineligible," the process would be straightforward. But in stores without such displays, SNAP recipients would have to figure it out on their own, and thus the opportunity cost of shopping with SNAP would be higher. Second, because of the cost to stores associated with implementing the restrictions, the number of stores accepting SNAP benefits might fall. If this occurred, SNAP recipients might have to travel farther to use their benefits. Since SNAP recipients are less likely to be food insecure than eligible nonrecipients, food insecurity rates might increase if participation fell.⁴²

Some observers have argued that WIC restricts purchases but that WIC recipients aren't stigmatized by such restrictions. With this in mind, the South Carolina SNAP proposal would explicitly tie restrictions on SNAP to those on WIC. Such a change would imply quite extensive restrictions on SNAP. The notion of connecting WIC and SNAP, though, should be tempered by two considerations. First, the programs have

different goals. SNAP is designed primarily to increase food security and nutrition across the lifespan. WIC is more narrowly targeted toward pregnant and postpartum women, as well as infants and young children. As a consequence, restricting purchases for SNAP would not be as straightforward as for WIC, insofar as nutritional and health needs differ across the lifespan. Second, WIC participation declines markedly as children age. For example, 36.5 percent of children between one and two years of age participate, but this falls to only 16.0 percent for children between four and five.⁴³ This decline in participation is often ascribed to two factors. First, older children have more agency to choose the food they eat, and the WIC package for older children may not be appealing enough to induce participation. Second, the value of the package is lower for older children than it is for infants.

Changes in School Meals

As we've seen, there is no evidence that receiving free or reduced-price school meals leads to a higher probability of childhood obesity. Nonetheless, changes have been made to the NSLP that require schools to make meals more "healthy," by, for example, reducing the amounts of salt and saturated fat in meals and increasing the use of fruits and vegetables. This may be a good thing in the abstract, but it has at least two important unintended consequences. First, because of higher costs associated with these requirements and falling participation among students, some schools have opted out of the NSLP.⁴⁴ NSLP-eligible children who attend these schools will no longer have access to free or reduced-price meals, putting them at heightened risk of food insecurity. Whether the schools that have opted out are isolated cases or part of a larger trend remains to be seen; the

NSLP participation rate remains high. Second, plate waste (food that children discard rather than consume) is greater for “healthy” items like vegetables than for other food types.⁴⁵ Thus serving more “healthy” items may increase plate waste.

No studies have yet examined the impact of these changes. One study, though, examined what happened after flavored milk was removed from school meal programs in some elementary schools, and found that milk consumption fell substantially.⁴⁶ As a consequence, the health benefits associated with milk consumption were not realized.

Assistance for People with Higher Incomes

Though SNAP and school meal programs play a critical role in reducing food insecurity, they don’t reach all children who are in need. In 2012, for example, one in four children in food-insecure households were ineligible for any type of food assistance because their income was too high.⁴⁷ These ineligible yet food-insecure families would presumably benefit from participating in SNAP and similar programs. It isn’t immediately clear how best to reach families in this income category who are food insecure, and policy makers would have to be concerned that benefits might go to families who are not in need. But one possibility would be to continue to let states set higher gross-income thresholds (see box 1). Since these households would still have to meet the net income and asset tests (if the state has an asset test), such a policy could reduce leakage to households that are less in need while still letting those who demonstrate need receive benefits.

Changes in SNAP Benefit Levels

A recent report commissioned by the Food and Nutrition Service argued that, for at

least some SNAP recipients, the current level of benefits is too low, and suggested increasing SNAP benefits.⁴⁸ Given today’s political climate, however, it’s unlikely that SNAP benefits will rise.

It might be possible, though, to change the formula used to establish SNAP benefits in a way that doesn’t increase total SNAP expenditures, so that those who need more SNAP benefits see an increase while those SNAP benefits exceed their food needs see their benefits fall. How to do this is not clear, however. We need research on the adequacy of SNAP benefits in various contexts and how it relates to the construction of SNAP benefit levels. Given that the central component of the SNAP benefit formula (that is, the maximum benefit level minus 30 percent of net income) has been constant for decades, despite numerous other changes that have affected SNAP, it seems worthwhile to reexamine how SNAP benefit levels are calculated.

More Summer Food Assistance

As we’ve seen, food insecurity rates among children rise over the summer, when they aren’t receiving up to 10 meals a week from school meal programs. And not only does food insecurity increase among children—other household members bear a portion of the burden, as the amount of money available for food declines. In response, we could expand summer food programs. Chief among them should be the Summer Food Service Program, operated by the Food and Nutrition Service. Today it is a relatively small program, with a budget under \$400 million in 2012, so it has room to expand to serve more children if policy makers are so inclined.⁴⁹

Expanding the SBP

The School Breakfast Program's ability to help children in need is currently limited, for two main reasons. First, many schools still don't participate. Though most schools that serve predominantly low-income populations take part, coverage is less widespread in other schools. Expanding the program to those schools would allow more eligible low-income students to reap the benefits of the SBP. Second, some students are unable

or unwilling to participate in the SBP. They may be unable to do so because the meals begin before their parents can bring them to school. They also may be unwilling to participate if the program is stigmatized as, say, being primarily for low-income students. In response, some schools have begun to have "breakfast in the classroom." Because this program is available to all students, it lets more students participate and helps reduce the stigma associated with SBP.

ENDNOTES

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Preventing and Treating Child Mental Health Problems

Alison Cuellar

Summary

Children's mental health covers a wide range of disorders. Some, such as ADHD and autism, tend to manifest themselves when children are young, while others, such as depression and addiction, are more likely to appear during the teenage years. Some respond readily to treatment or tend to improve as children grow older, while others, such as autism, are much more intractable.

Moreover, children's mental and behavioral disorders may be detected and treated in any number of settings, from a pediatrician's or psychologist's office to schools to the juvenile justice system. This heterogeneity points to one of the problems Alison Cuellar finds with the United States' approach to children's mental health. Policies and programs to help children with mental disorders are fragmented and lack coordination, funding follows idiosyncratic rules, and all of this makes prevention programs hard to deliver.

Another problem, Cuellar writes, is that treatment often focuses on controlling symptoms in the present rather than on long-term life chances. Treatments and programs that reduce children's symptoms don't necessarily lead to long-term gains in areas like education and employment; that is, even children whose treatment is deemed successful may fare more poorly in life than children without mental disorders. Thus Cuellar recommends that we evaluate whether treatment for at least some disorders should focus less on relieving symptoms and more on educational achievement and overall functioning.

Another question for which policy makers in particular need the answer is whether our resources are best spent on programs that focus on detecting and treating individual children with mental health problems or on programs that focus more broadly on preventing mental health problems among populations of children who are likely to have high rates of mental disorders—for example, minority children who live in disadvantaged neighborhoods.

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Mental health problems take a heavy toll on children and are the dominant cause of childhood disability.¹ Studies show that child mental health problems have long-term negative consequences, including lower educational attainment, lower wages, lower likelihood of employment, and more crime.² Moreover, the negative impact of early mental health problems persists even if mental health later improves.³ Thus we should be strongly motivated to prevent, identify, and treat mental health conditions as early as possible.

What do we mean by mental health? A new, updated classification manual of mental disorders, developed by professionals in the field, recognizes a range of conditions, such as attention deficit/hyperactivity disorder (ADHD), autism spectrum disorder (ASD), depressive disorders, anxiety disorders, and disruptive, impulse-control, and conduct disorders.⁴ The classification also includes addictive disorders, learning disorders, personality disorders, and intellectual disability. In this article, I focus on the most common childhood and adolescent conditions, including both “externalizing” conditions, such as ADHD, problem behaviors, and conduct disorders, and “internalizing” conditions, such as anxiety and depression. I also address addiction disorders, which profoundly affect teens.

I consider the evidence on mental health treatment and how it stacks up with respect to societal outcomes that are important for children and teens, including education, self-harm, employment, and crime. Children receive mental health treatment in a variety of settings, frequently starting in a pediatrician’s office, but also with psychiatrists, in school or preschool, or in the child

welfare and juvenile justice systems. In fact, schools, through guidance counselors, school psychologists, and special classes, are the dominant source of care for children with mental health problems.⁵ In one study of 9- to 13-year-olds, three-quarters of children seen for a mental health problem were seen in the school system, not the general medical system. Whatever the setting, a child’s mental health treatment might include medication, some form of talk therapy, or exercises to modify thoughts or behavior. The therapy may occur together with parents, one-on-one with a provider, or in groups with other children.

Mental Health Trajectories

Table 1 shows the most common child and adolescent mental health disorders, including what percentage of children had each condition at the time of the survey and what percentage had ever had each condition. As we can see, ADHD is the most prevalent condition in children generally, and depression is the most prevalent among teens. The table also shows the prevalence of substance abuse.

To understand the context of an intervention, we consider the age of onset associated with mental illnesses. Several surveys ask adults to recall whether a condition began in childhood; surveys show that the age of onset of mental illness in children varies by condition. Anxiety disorders typically appear early in life, followed by behavior disorders, such as ADHD. Autism is typically detected around age four, but later for minority and low-income children.⁶ Disorders such as depression, substance abuse, or schizophrenia may not appear until adolescence or young adulthood.⁷

Table 1. Estimated Prevalence of Mental Disorders and Substance Abuse

| Mental Health Conditions | Age Range | Estimated Prevalence “Current” (percentage) | Estimated Prevalence “Ever” (percentage) |
|--|------------------|--|---|
| Attention Deficit/Hyperactivity Disorder | 3–17 | 6.8 | 8.9 |
| Behavior and Conduct Problems | 3–17 | 3.5 | 4.6 |
| Autism Spectrum Disorders | 3–17 | 1.1 | 1.8 |
| Depression | 3–17 | 2.1 | 3.9 |
| Depression | 12–17 | 6.7 | 12.8 |

| Substance Abuse | Estimated Prevalence (percentage) |
|---------------------------|--|
| Alcohol Use Disorder | 12–17 4.2 |
| Illicit Drug Use Disorder | 12–17 4.7 |
| Cigarette Dependence | 12–17 2.8 |

Sources: National Survey of Children’s Health, 2007; National Health and Nutrition Examination Survey, 2007–10; National Survey on Drug Use and Health, 2010–11.

Note: For younger children, responses are based on parent reports. Participants were asked about substance abuse over the past year for alcohol and drugs and over the past month for cigarettes.

One question of interest to policy makers is whether there have been large increases in the proportion of children with mental health conditions. This is a challenging question to answer. A review of 26 studies found no increase in the proportion of children with depression, at least not over the past 30 years.⁵ However, it does appear that the proportion of children with conduct problems has increased. Moreover, when researchers have looked at who is being treated for a mental illness—not just whether children have the condition—they have found that the proportion of children being diagnosed and treated for mental conditions is greater than ever before. For example, treatment rates for ADHD are rising rapidly, though it is not clear whether the increase results from earlier detection, increased rates of diagnosis, or the availability of new medications.⁹ In the past, ADHD was believed to manifest itself before age seven, and having symptoms before age seven was thus part of

how the condition was diagnosed. This is no longer the case.¹⁰ A number of studies have concluded that there is no clinical difference between children with ADHD symptoms that manifest earlier versus later in terms of their condition, severity, outcome, or response to treatment. Given the broadened diagnostic criteria, we can anticipate that ADHD’s prevalence will rise further.

Autism’s prevalence has also increased, partly due to greater awareness, greater availability of services, and earlier detection, but also due to changes in diagnostic criteria.¹¹ Yet these do not appear to be the only explanations. The estimated prevalence of ASD is approximately 14.7 per 1,000 children, according to the latest estimates from the U.S. Centers for Disease Control and Prevention—more than twice the rate identified in 2002.¹² The rate for males is five times as high as that for females. However, these estimates were created before the

release of the new mental health diagnostic guidelines. Under the new guidelines, several previously distinct conditions will be subsumed under ASD; for example, autistic disorder will no longer be distinguished from Asperger's disorder. Researchers found that the previous diagnoses were inconsistently applied and that they represented symptoms and behaviors along a continuum of severity, rather than distinct conditions. The new definition and criteria could lower the estimated prevalence of ASD over time. At the same time, it is still difficult for clinicians to consistently describe the severity of a child's ASD symptoms.¹³ Thus, any program or policy that seeks to serve children based on an ASD diagnosis will encompass children with a wide range of education or employment potential.

Substance use frequently begins in adolescence. The fact that teens are more likely to be impulsive, take risks, and try substances has been tied to brain development. Recent brain imaging studies have found that certain portions of the brain—including the prefrontal cortex, which controls reasoning, impulses, and risk-taking—continue to be relatively plastic until the early 20s.¹⁴ In contrast, the so-called limbic regions of the brain, which are involved in processing emotional information, are more likely to be fully developed by adolescence. This combination may open teens to greater peer influence and draw them to take risks such as self-injury, unprotected sex, and trying drugs; risky behaviors may also lead to unintentional injuries, especially in car accidents.¹⁵

Substance use among U.S. teens has declined to its lowest recorded levels. In particular, the teen smoking rate has fallen more than that of any other age group and is now at 5.6 percent, down from 13 percent in 2002.¹⁶

Similarly, the proportion of teens ages 12 to 17 who say they drink alcohol fell from 17.6 to 11.6 percent between 2002 and 2013, and the rate of teen binge drinking fell from 10.7 to 6.2 percent over the past decade (“binge drinking” means having five or more drinks on the same occasion). On the other hand, teens' marijuana use has not fallen, and the proportion of teens who think marijuana use is harmful has declined notably.¹⁷

Several studies have tried to look at how mental health conditions evolve over time, both by comparing the prevalence of conditions across age groups and by following individuals over time. The findings depend very much on the condition being studied. Starting with very young children, we see a dynamic picture. For example, in a sample of preschoolers who met criteria for a mental diagnosis at age three, half met the criteria again at age six; conversely, only about half the children who met criteria for a diagnosis at age six had met such criteria at age three. And although the prevalence of most disorders was similar at ages three and six, rates of depression and ADHD increased significantly, and rates of generalized anxiety disorder fell.¹⁸ If we look at a broader age range, we see that in the general child population, more than half of all mental health cases persist over several years.¹⁹

ADHD appears to persist for at least some children. National surveys using diagnostic interviews have found little change in ADHD rates from age 13 through age 17. Moreover, adult prevalence of ADHD is similar to that of children.²⁰ Studies that have followed children over time have found that ADHD endures from age 10 to age 21 in 69 to 79 percent of those who have it.²¹ These subjects, however, were patients referred to specialists involved in research studies, and

it's likely that they were more severe cases to begin with. In contrast, a study of individuals with ADHD in the community found persistence rates from childhood to adulthood of only 29 percent.²² Thus for some subset of children, ADHD abates.

For other conditions, the picture is mixed. In one study, conduct disorders persisted after one year in 50 percent of children, but they also showed fluctuations in symptoms from year to year.²³ When children and adolescents with depression are followed over time, studies show that 10 percent recover spontaneously within three months, and half recover within the first year.²⁴ At the same time, depression commonly recurs in teenagers. In contrast to conduct disorders and depression, autism and Asperger's appear to resolve for only a small minority of individuals; we don't know why.²⁵ In some cases, these problems worsen when children leave high school, possibly because they lose the structure that school provides and have more trouble accessing services.

Painting a complete picture of trajectories for each mental condition is complicated by comorbidities, meaning conditions that occur at the same time. These are common. Mental health conditions that may occur alongside ADHD include oppositional defiant disorder, conduct disorders, depression, and anxiety disorders.²⁶ Children with ASD have an elevated risk of ADHD, and of general behavior problems, including disruptive behaviors and aggression, anxiety, depression, and obsessive compulsive disorder.²⁷ Symptoms of hyperactivity and aggression at young ages can presage problems with delinquency, substance abuse, and antisocial behavior later on.²⁸ Further, young children with behavioral problems may also experience language delays.²⁹

In the context of treatment, another important comorbid condition is intellectual impairment. ADHD has been associated with mild intellectual and language impairments, as well as lower preacademic skills. Cognitive impairment is also associated with many autism cases. The Centers for Disease Control and Prevention reports that 31 percent of children with ASD have IQs under 70, although this proportion has fallen since 2000.³⁰ And when it begins before adulthood, marijuana use is also associated with lower IQs.³¹

Outcomes: Education and Income

Children with emotional disturbance are more likely to have academic problems and are overrepresented in the special education system. Teens with emotional disturbance have the highest school dropout rates and are among the least likely to attend college.

Despite differential patterns of onset and persistence, both ADHD and depression have been associated with lower educational attainment and lower income across a number of studies. Children with ADHD and conduct disorders tend to have poor grades, repeat grades more often, have poor test scores, and complete less schooling, while children with anxiety and depression show fewer or no effects from their condition on education outcomes.³² Adolescents with ASD have significant trouble finding employment.³³ In contrast, academic problems are considered a risk factor for substance use; that is, they come before and may contribute to drug and alcohol problems.

Outcomes: Crime

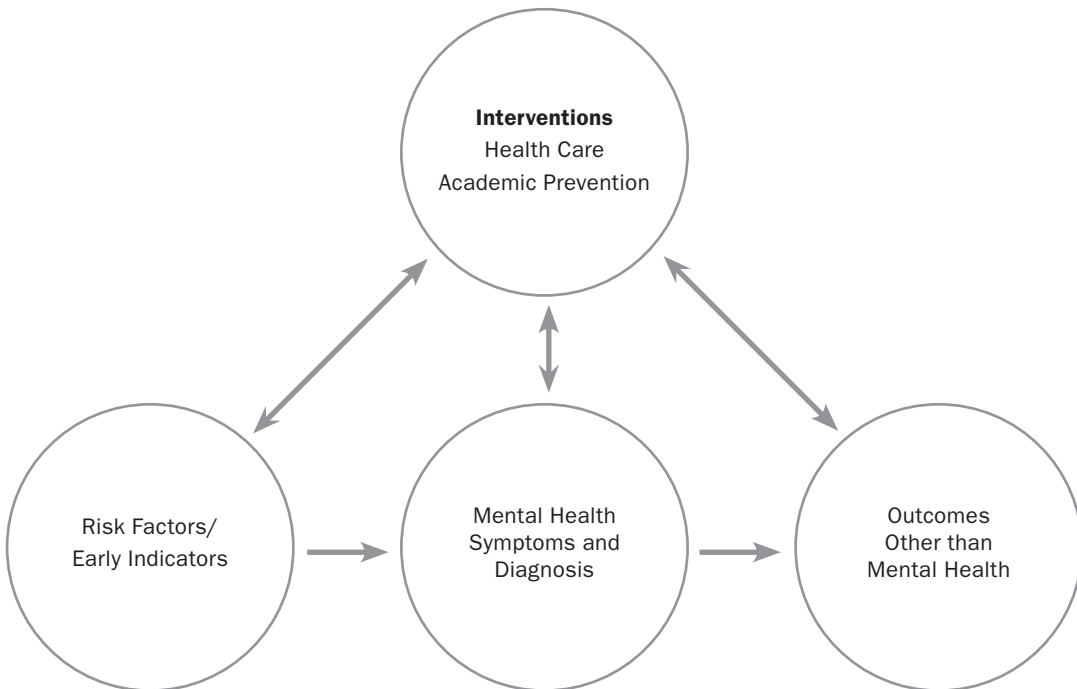
A few studies that follow children over time suggest that children with some mental health conditions—including ADHD, early aggression, and behavioral problems—are at

greater risk for later criminal behavior, partly because of their academic and interpersonal difficulties.³⁴ A study that followed 8-year-old boys with ADHD referred by schools to a psychiatric clinic found that 47 percent of them had been arrested by age 25, compared with 24 percent of a clinic comparison sample without ADHD.³⁵ The reported rates of ever being incarcerated were 15 percent among those with ADHD and 1 percent among those without. When they were interviewed again at age 41, 36 percent of those with ADHD at age 8 reported that they had ever been incarcerated, compared with 12 percent of the comparison group.³⁶ Because these boys were treated in a specialty setting and were likely more severely ill than boys with ADHD who weren't referred to the psychiatric clinic, arrest and incarceration rates among the general ADHD population are likely to be much lower.

Health-Care Interventions

No single system in the U.S. identifies and treats children with mental disorders. Figure 1 illustrates the pathways of various mental health conditions, including treatment settings and outcomes that are relevant for children. The medical or health-care system, including pediatricians, may screen children for mental disorders. Psychiatrists may receive referrals from parents, pediatricians, or school therapists, and they are frequently called on to diagnose complex cases. Both pediatricians and psychiatrists are likely to treat conditions with prescription medication. Schools also play an important role; often, the increased social demands that come with going to school make children's mental conditions more apparent. Autism is one example. In one study, from Atlanta in 1996, 57 percent of cases of autism were

Figure 1. Pathways for Various Mental Health Diagnoses, Treatments, and Outcomes



identified in school, and 40 percent were identified exclusively through school sources. Older children with mental disorders, particularly substance use or conduct disorder, may be identified in schools or in the juvenile justice system.

Many researchers have noted problems with fragmentation, meaning that the medical, school, and justice systems do not coordinate treatment, screening, or prevention. For instance, many children with mental disorders face academic problems, yet these are not the focus of treatments in the medical system. And although the Individuals with Disabilities Education Act provides special education and related services through age 21, few health-care interventions target children in special education, particularly those with severe emotional disturbance.³⁷

In this section, I highlight major interventions for children who have been identified with specific mental health conditions. Overall, we've made significant strides in the treatment of mental conditions, often with approaches that are tailored to the condition or that depend on the child's age. The treatments summarized here have been found to improve children's symptoms; notably less often, they have been able to improve children's ability to function by attending school, gaining employment, or desisting from crime. This continues to be a vexing problem for child mental health professionals, and some attribute this disappointing result to the fractured nature of services for these children.

Treatment of ADHD and Conduct Disorder

For young children with ADHD and conduct disorder, treatment focuses primarily on training parents, including how

to manage and cope with their children's problem behaviors. For example, the British National Institute for Health and Care Excellence's guidelines for both ADHD and conduct disorder recommend group parent training/education programs as a first-line treatment for preschool children.³⁸ Programs for parents include Incredible Years and Triple P, which have both been studied using randomized trials.³⁹ These parent treatment programs, conducted in groups, last 20 to 24 weeks. They involve role-playing and exercises to try at home. Incredible Years focuses on understanding ADHD and its effects, instilling nonpunitive parenting, teaching anger management and how to work with teachers, strengthening parent-child bonds, developing individual goals, demonstrating how children can regulate their behavior with support from parents, and modifying the home environment to provide more structure and predictable routines while offering more opportunities for physical movement, among other components. The program can also be combined with a child training component, as well as a teacher component that focuses on classroom management; these have been found to further improve outcomes. Parent training has also been found to be effective for school-age children with ADHD and conduct disorders through age 12 to 13.⁴⁰ However, for children beyond age 13, little evidence supports parent training for children with conduct disorder or ADHD, despite the fact that parenting may contribute to problem behavior.⁴¹

As children get older, therapy tends to focus on them rather than their parents. Medication is the most common treatment for ADHD in children. The largest randomized controlled study to date, the Multimodal

Treatment Study of Children with ADHD, compared the effect of medication, behavioral therapy, combined medication and therapy, and routine community care (the control group) for children ages 7 to 10. The broad behavioral therapy included parent training, teacher training in classroom behavior management, and child-focused group therapy that addressed both social and academic skills. Children who received the combined treatment did notably better than those who received the routine care with respect to symptoms (oppositional/aggressive and internalizing), teacher-rated social skills, and parent-child relations. Yet these effects did not translate into improvements in math and spelling achievement, and the children saw only small, short-run improvements in reading. A follow-up study roughly two years later found no differences in symptoms or academics. Moreover, when children were assessed again six to eight years after the study, at ages 13 to 18, there were few differences across the groups in psychiatric symptoms, reading, math, grade retention, grade point average, teacher- or parent-reported social functioning, police contacts, or arrests.⁴²

Others have found that treatment with stimulants (the standard medications for ADHD) may have downsides. One rigorous though not randomized study found that, among children with high symptoms of ADHD, stimulant use was associated with worse rather than better educational outcomes, as well as deterioration in children's relations with their parents; girls experienced more depression in the long run.⁴³ The study couldn't say why these outcomes occurred, but it's possible that children either didn't receive the correct dose or that because the medication reduced their visible symptoms, they received less attention and academic support.

Treatment of Autism Spectrum Disorder

Newer screening tools have made it possible to detect autism beginning at age two, making earlier intervention possible. Although there is no consensus on which approach is most effective for ASD, intensive behavioral therapy appears to improve very young children's cognitive and language skills, although the evidence for any one approach is not strong. Treatments can consume 25 hours per week and span the entire year, and they usually occur one-on-one or in small groups. They involve educational interventions to address deficits in language and communication skills, social skills, and self-help skills such as dressing, as well as maladaptive behaviors such as aggression or tantrums.⁴⁴ Parents also receive training. Although children's symptoms may improve, a high level of impairment often remains. Medications are not considered effective for the core of ASD, but two antipsychotics are federally approved for use in adults with ASD to reduce aggression, self-harm, or irritability. Physicians may prescribe other drugs to reduce hyperactivity or inattention, allowing children with ASD to derive greater benefit from behavioral interventions. However, these medications can have pronounced negative side effects.

Though it's generally believed that early intervention is best for children with ASD, only limited research has focused on older children. Most of our knowledge is based on studies of young children, leading to enormous gaps in our understanding about what works best for adolescents with ASD.⁴⁵

Treatment of Depression

Much of what we know about the treatment of childhood depression comes from trials of medication and cognitive behavioral therapy

(CBT) in adolescents. CBT teaches people how to change distorted thinking patterns and unhealthy behavior. The large-scale Treatment for Adolescents with Depression Study (TADS) tested antidepressant medication against combined treatment, that is, medication and CBT.⁴⁶ TADS and similar trials included some degree of participation by parents, either jointly with their children or in separate sessions. TADS found that after 12 weeks, combined medication and psychotherapy produced better results than medication alone. Further, when combined with medication, CBT also offered some protection against suicidal thinking. The effects may not last, however; a meta-analysis of trials that tested medication against medication combined with CBT found no differences in outcomes at later follow-up points, such as 24 and 36 weeks.⁴⁷

Among antidepressants, fluoxetine (Prozac) is the only one specifically approved by the Food and Drug Administration for the treatment of depression in children, and the approval is limited to ages 8 and older. Some antidepressants have been associated with a greater risk of suicidal behavior in children and must carry a special warning on the drug label.

Both adolescents and younger school-age children have been treated for depression using CBT or interpersonal therapy, alone or in combination with medication. In randomized trials, these approaches don't appear to be as successful in younger children as in adolescents, and they are not thought to be developmentally appropriate for children under 8.⁴⁸ Some researchers are developing parent-training programs to assist parents of preschool children who experience depression.⁴⁹ These treatments are in the pilot phase, but they have been

adapted from similar interventions for conduct disorder.

Treatment of Substance Use

Substance abuse begins with the use of one or more substances and moves on to prolonged use that affects brain functioning to the point where consuming the drug becomes compulsive. A number of strategies aim to prevent the onset of drug use; I describe them under prevention programs below. Treating people who have progressed to abusing substances is complex, as their self-control is often compromised and the abuse affects academic achievement, social functioning, and criminal behavior. Moreover, for most substances, use by adolescents is illegal in itself, increasing the chance that users will become involved in the justice system.

Treating people who have progressed to abusing substances is complex, as their self-control is often compromised and the abuse affects academic achievement, social functioning, and criminal behavior.

Treatment for substance abuse in adults can include medication, behavioral therapy, or both. Medications help with opioid, tobacco, and alcohol addictions, but only the tobacco-related medications have been approved by the FDA for children under age 18. Studies have found that one medication for opioid addiction, buprenorphine, could

be effective for children as young as 16, but the FDA has not yet approved this use. And buprenorphine must be prescribed by specially certified physicians, meaning access is tightly controlled. Behavioral therapies for addiction have numerous goals, including motivating patients to participate in treatment, cope with cravings, avoid relapse, and improve relationships and communication. For adolescents, behavioral therapies have been modified to include family components and to integrate important social structures such as schools; leading models of behavioral therapy with family involvement include multisystemic therapy, multidimensional family therapy, and functional family therapy. Evidence from at least one study of group therapy suggests that placing high-risk teens in group treatment may be ill-advised, because they may reinforce one another's risky behaviors.⁵⁰

Lessons from Advances in Treatment

Medical research offers several lessons. We have made inroads in improving clinical symptoms for certain conditions such as ADHD, depression, and, to some extent, ASD. Young children with ADHD show improved symptoms with parenting and teacher interventions and respond to individual or group therapy when they are older, while intensive behavior therapy along with parent training is favored for children with ASD. Very young children with depression appear to benefit from parent interventions, while older children show success with cognitive-based therapies. Medication is frequently used to treat children with ADHD, and studies show that it reduces symptoms. Because children with ADHD and ASD, and those who are at risk for substance abuse, are likely to experience problems in school, there has been a focus on earlier childhood intervention. Early intervention may also be important because there may be critical

periods when the developing brain is relatively more plastic and thus offers more opportunity for change; for many mental disorders, however, we don't know whether such a critical window of opportunity exists. Improving educational outcomes has not been the central focus of most clinical interventions. They more often focus on improving mental health symptoms or behaviors, and improving academic performance remains difficult.

Academic Interventions

Most children spend much of their time in school. Because so much evidence points to a link between mental health disorders and poor academic and social outcomes, new mental health interventions have been designed to directly improve these outcomes, rather than simply target mental health symptoms. In some cases, these direct-targeting interventions single out children with mental disorders. In other cases, their approach is broader—they identify an at-risk group with high rates of mental health problems, such as economically disadvantaged children who also have trouble in school.

Direct Targeting

The direct-targeting approach has been studied among children with ADHD and conduct disorder. Direct-targeted interventions focus on academic deficits and fall into several categories: approaches directed at classroom behavior management, at parents, and at teachers. Classroom behavior management for children with ADHD, which was incorporated into the psychosocial treatment component of the Multimodal Treatment Study, includes goals- and rewards-based behavior management programs. These are delivered in cooperation with teachers and parents, for example, using a daily report that

documents behavior goals and rewards. Such approaches rely on participation by school counselors and teachers and can be difficult to implement or sustain.

Challenging Horizons is a classroom management program designed for middle school students with ADHD.⁵¹ This after-school program incorporates behavioral strategies (such as a daily report or a point system) administered by teachers along with monthly parent-training groups. Children are taught organizational and study skills, problem-solving steps, and core social skills, individually and in groups. By comparison, children in the Multimodal Treatment Study were younger and were taught social, academic, and study skills through an eight-week intensive summer program.⁵² Preliminary findings from Challenging Horizons show some improvement in social functioning and classroom disturbance as rated by parents and teachers, but few academic gains.

Some other approaches don't involve behavior management; they include alternative teaching methods or new curricula.⁵³ These, too, require support from a student's regular classroom teacher. In general, evidence for many academic interventions—child-peer approaches, computer-based approaches, and modification of assignments and materials—is sparse, and at this stage these interventions show modest early promise.

Still other approaches target learning barriers associated with specific mental disorders, for example, memory deficits. But when they've been tested in randomized trials, the results so far have been discouraging, showing no improvement in ADHD symptoms, more complex memory tasks, or academic tests (reading, spelling, and math), at least in the very short run.⁵⁴

Broader Academic Interventions

Some interventions reach out to a broader audience than children with mental disorders alone. One such strategy is ParentCorps, which seeks to reach families of prekindergarten students in disadvantaged urban communities.⁵⁵ The program focuses on improving children's behavior in school and improving their academic performance through parent training. Parents are trained by mental health professionals and teachers in the evening hours at their children's schools. They are taught to support children's positive behaviors, manage their behavior effectively, and get involved in their education. All parents in the interventions schools are offered the evening program, and all teachers are offered professional development training. ParentCorps was studied in two randomized trials, in which one set of schools received ParentCorps and another set of randomly selected schools did not. It was found to increase kindergarten achievement test scores in reading, writing, and math achievement, roughly two years after the intervention. ParentCorps was also found to increase teacher-rated academic performance. Longer-term outcomes are being collected but have not yet been published.

There are two major reasons to target interventions toward adolescents. In some cases, mental health conditions don't emerge until adolescence, when they begin to impact school performance. In other cases, the effect of treatment received when children are younger may fade. Several interventions for adolescents have targeted school achievement, using a math tutoring component, CBT, or a combination of the two. Like ParentCorps, these are broad-based interventions directed at minority children in disadvantaged areas. They are not directed at

individuals who have a mental illness, but in some cases they use mental health intervention strategies.

One example, the Pathways to Education Program, offered in a housing project in Toronto, provided case management, intensive tutoring, group activities, and financial support for school, college, and transportation expenses. By relying on tutors, schools can avoid the difficulties experienced with models that rely on teachers. Pathways produced better grades, large increases in high school graduation rates (which rose from 38 percent to 58 percent), and a greater chance of enrolling in college.

Another intervention, with boys in seventh through ninth grade in the Chicago Public Schools, focused on crime and educational outcomes, but not test scores specifically.⁵⁶ The study randomized over 2,700 boys to the usual school programming, a group-based CBT program called *Becoming a Man* (BAM) offered in school, *Becoming a Man* offered with after-school programming, or after-school programming only; there was no tutoring group. The *Becoming a Man* program was offered weekly over 27 weeks. Half of the teens who were offered the program attended, and those who attended came for an average of half of the sessions. The BAM groups had higher grade-point averages, but they saw no improvement in the chance of dropping out by year's end or average days of school attendance. The BAM group participants were less likely to be arrested for both violent crimes and nonviolent crimes in the first year of the program; however, there was no difference in arrests during the following year.

The research on academic interventions paints a mixed picture. First, while

academic problems are prevalent among children with mental disorders, it isn't yet clear whether interventions should be tailored to specific mental disorders or to the mechanism that drives the learning challenges. Second, some interventions, such as classroom behavior management, rely on teacher compliance, which may be difficult to achieve on a large scale. Academic interventions are being developed using components that have been tested in clinical psychiatry research, such as parent training or CBT for youth. However, we don't always know whether the therapy components in these interventions would meet the high standards established in clinical settings. Perhaps if they did, their outcomes would be better. Third, tutoring for disadvantaged youth appears to yield large gains, on average. We don't know how youth with mental disorders are affected, but it's possible that tutoring programs could take these differences into account. Finally, because most studies have included only students attending school, they have by design excluded those who have dropped out. We likely need different approaches for dropouts.

Delinquency and Juvenile-Justice Interventions

Interventions for delinquency sometimes begin with younger children, often those who have trouble with self-control or aggression, and are sponsored in schools or communities. Another set of interventions targets crime among youth who have already reached the juvenile justice system and typically, therefore, are over 10 years old. Although these youth are referred to treatment by the justice system, the treatment is delivered in the community.

Programs for younger children have achieved some success. A summary of 34 randomized trials found that interventions targeted at children under age 10 can increase their self-control and reduce delinquency, with consistent results whether those reporting the behavior were teachers, parents, or outside observers. The improvements were generally larger for girls than for boys. No outcomes were assessed beyond age 12, however, so these studies don't tell us whether improvements in self-control or delinquency persisted over time or reduced the chances of criminal behavior, which tends to come later in life.⁵⁷

The Seattle Social Development Project, which targeted elementary school-age children (from first through sixth grade) in high-crime portions of Seattle, exemplifies a more broad-based approach.⁵⁸ Because of their disadvantaged environment, these children were considered at risk for perpetrating violence. One group of children was assigned to classes where teachers received instruction in classroom behavior management; their parents received training in interpersonal cognitive problem-solving, with a focus on social bonding. Eighteen months after beginning the program, boys who participated were significantly less aggressive than were boys who did not, according to teacher ratings. The girls in the program were not significantly less aggressive, but they were less self-destructive, anxious, and depressed. In a follow-up at age 18, the intervention group reported significantly less violence. Follow-ups at ages 24 and 27 found no differences in criminal activity, although the experimental group reported significantly higher educational and economic attainment and better mental health. Thus this intervention directed at elementary school children had a number of positive outcomes.

Another effort, Reclaiming Futures, targets teenagers who are involved in the justice system and who use or are at risk of using substances. These youth are typically served by multiple, redundant, and uncoordinated agencies; often, a judge's orders determine whether they receive services. Reclaiming Futures attempts to establish teamwork across agencies and develop a community-wide response to the needs of this group of teens. Communities in 10 sites pursued different strategies, but each tried to screen and assess teens for substance abuse and link them to family and individual services, including prevention, health, and education services. An evaluation of the program found that agencies worked more collaboratively and that, at some sites, the youth received more mental health and substance abuse services. However, it is not clear whether the initiative reduced subsequent crimes.⁵⁹

Prevention Approaches

One approach to mental health problems is prevention rather than treatment. This encompasses both primary prevention, or preventing mental health problems before they occur, and secondary prevention, which involves minimizing or correcting the course of a problem once it has begun to manifest.

Successful primary prevention requires a solid understanding of what causes mental health problems. If the source is genetic, we may find ways to prevent the disorder before it develops, or we may be able to develop better treatments. In fact, ADHD and ASD appear to have a genetic component—children who have a sibling with the condition are more likely to have the condition themselves.⁶⁰ Aside from genetic factors, some mental health problems appear to originate during pregnancy. For instance,

ASD has been linked to certain prescription drugs taken during pregnancy, and ADHD has been linked to maternal smoking and alcohol use. Aggression and behavior problems have also been tied to prenatal exposure to substance abuse. Low birth weight has been tied to ASD, ADHD, and learning problems.⁶¹ Fathers' age may also play a role—children born to older fathers are more likely to use substances and to have autism, schizophrenia, and ADHD.⁶² Finally, environmental and social factors can cause mental health problems. For example, children exposed to lead are more likely to experience ADHD, and behavior problems have been tied to family poverty and harsh negative parenting practices.

Prevention encompasses both primary prevention, or preventing mental health problems before they occur, and secondary prevention, which involves minimizing or correcting the course of a problem once it has begun to manifest.

A central consideration for secondary prevention is whether there are sensitive developmental periods when intervention is more effective or less costly. For example, children's emotional attachments are established in their very early years, while IQ appears to stabilize by age 10. Adolescence is both a critical period of risk-taking and potential substance use and a period of potential

intervention because portions of the adolescent brain are still plastic. Not surprisingly, therefore, prevention programs' emphasis depends on a child's age.

Other articles in this issue discuss early interventions for young children. Scholars have examined these prevention efforts, such as home visiting programs or Head Start, for their impacts on emotional outcomes for young children in general. However, we don't know whether such programs are particularly effective for children with mental disorders. Because the children in the studies were from disadvantaged families, they also were more likely to have mental health disorders, but none of the studies report outcomes specifically for children with mental disorders. More recently, some newer nurse home visiting programs have explicitly included mental health consultation for both parents and children.⁶³ No rigorous evaluation of this approach has yet been conducted.

Head Start and Mental Health Targeting

Head Start programs have also been modified for children with mental health problems. Generally speaking, Head Start enrolls children ages three to five in an enhanced preschool program that also includes medical services, meals, and parent training. Several studies have compared children in Head Start to those who don't participate and found some improvement in IQ and achievement test scores, but these effects fade or persist only for white children.⁶⁴

Modified versions of Head Start have included evidence-based clinical interventions for mental health. In one study, children in 14 Head Start centers were randomized to receive Incredible Years training for teachers, parents, and family services

workers or to a control group that received Head Start only (see the article in this issue by Lawrence Berger and Sarah Font for more about Incredible Years). The Incredible Years training was targeted to all children in the Head Start center, not just children with conduct disorder or hyperactivity. Immediately after the intervention, children who received Head Start plus Incredible Years demonstrated fewer conduct problems at home and at school, as reported by parents and teachers, and less hyperactivity at school.⁶⁵ Improvements were greatest among children considered at high risk for conduct problems. One year later, parents of children in the Incredible Years group continued to report fewer conduct problems, and many fewer of these children were considered at risk for deviant and noncompliant behavior.

A similar study in the United Kingdom replicated Head Start plus Incredible Years for 104 children and their parents, and compared them with 29 children on a wait list.⁶⁶ At six months after the program began, the intervention group experienced fewer parent-reported behavior and hyperactivity problems than the comparison group. At 18 months after the program began, the treatment group could no longer be compared with the wait-listed group because the wait-listed children had entered treatment. However, the treated children showed no loss of the benefits from the program.

These modifications to Head Start show that the program can be successfully tailored for children with mental disorders. But we need more research to assess whether these efforts should be broad-based or more targeted. Studies could also test whether the programs should include parent training, teacher training, or both for the greatest impact.

Prevention and Substance Abuse

Aggressive behavior among children can presage academic and social difficulties that can lead to greater risk for problems such as substance use, particularly in families where parental attachment and control is lacking or where parents abuse substances. Thus, early interventions targeted at impulse control and family attachment are central to preventing substance abuse among children.⁶⁷ Prevention efforts that target young children whose parents abuse substances include the Strengthening Families Program (SFP), which supports parents who abuse drugs and have children ages 6 to 11. Over 14 weeks, parents and children receive training in separate groups and are then brought together for family training.⁶⁸ In a randomized study, results were the best when three program components were combined—parenting training, children’s skills training, and family relationship enhancement. These led to improved child behavior and fewer emotional problems, improved family communication, and reduced family conflict.

When children enter adolescence and become more prone to taking risks and experimenting with peers, the focus turns to prevention messages around drug-free behavior, reducing self-harm, peer interaction, and avoiding the temptation to try drugs.⁶⁹ Programs that broadly target middle schoolers include, for example, the Life Skills Training Program and Project Alert, which teach self-management and drug resistance. In randomized studies, these programs have been found to reduce initiation of drinking, smoking, and drug use in high school.⁷⁰

Overall, adolescence is characterized by an increase in the likelihood of harm from such things as injury, depression, anxiety, and

substance use.⁷¹ Some adolescents are more prone to taking risks than others, due to observable differences in their brains, their personalities, or experiences such as changing schools or divorce. This suggests the need for targeted interventions for adolescents, in addition to more general approaches. Some interventions, such as the Adolescent Transitions Program, are “tiered”—that is, they address both broad audiences, in this case entire schools, and targeted groups, in this case at-risk families within the schools. In two randomized studies, Adolescent Transitions was found to decrease total problem behavior, reduce youth smoking, and decrease antisocial behavior at school.

A different but very successful community prevention approach has been applied to tobacco use. We’ve had great success in reducing teen smoking by increasing the price of tobacco through taxes, because teens are particularly sensitive to the price of tobacco. Moreover, reducing teen smoking can have far-reaching implications, both because most adult smokers began smoking when they were in their teens and because teens smoke in response to peer behavior.⁷² Studies estimate that a 10 percent increase in the price of cigarettes leads to a 6 to 12 percent decline in the prevalence of teen smoking. The most recent U.S. federal tobacco tax increase, in 2009, was particularly large, from \$0.39 to \$1.01 per pack of cigarettes; it has been associated with a 9.7 percent decline in teens’ cigarette use and a 13.3 percent decline in their use of other tobacco products.⁷³ Observational studies that compare states over time show that state policies to ban cigarette vending machines, require identification for younger purchasers, and prohibit the distribution of free samples are also effective.⁷⁴

Funding and Fragmentation

The intervention services I’ve described—health care interventions, academic interventions, and prevention programs—are funded in different ways and take place in different settings. The nature of funding can contribute to an underlying lack of integration among medical providers, schools, and justice agencies.

Health care services, such as medications and mental health therapies, are paid for to varying extents by health insurance. Thirty-one million U.S. children have public health insurance coverage through Medicaid or the Children’s Health Insurance Program (CHIP), including half of all low-income children (see the article in this issue by Lindsey Leininger and Helen Levy). Most children become eligible for Medicaid or CHIP based on their age and family income, but some become eligible because a disability qualifies them for Supplemental Security Income. People who receive SSI automatically receive Medicaid.

The structure of health insurance can make it difficult to fund intensive mental health interventions.

The structure of health insurance can make it difficult to fund intensive mental health interventions. Because health insurance pays for individual services on behalf of those who are covered, it may not pay for parent education or for therapies that target parents and children jointly, particularly if the parents are not eligible for Medicaid; it also doesn’t pay for

interventions that target teachers or schools. Moreover, each service paid for by insurance must be provided by a licensed health practitioner, whereas some interventions rely on peers or educators. Finally, health insurance often doesn't cover the time that health-care providers spend interacting with schools and community service agencies.

Aside from insurance, mental health programs for children are also funded through federal grants from the Substance Abuse and Mental Health Services Administration. Such programs include Comprehensive Mental Health Services for Children and Families, which supports services for children, and the Substance Abuse Prevention and Treatment Program, which serves adults and children. These funds are distributed in a variety of ways, for example, to states via a federal formula or to local agencies that compete for them. This type of funding, though small compared to Medicaid, is more flexible than funding through health insurance. It can support outreach, public education, prevention programs, screening services, treatment, and, to some extent, coordination among agencies. However, such funds can also be limited to specific communities, settings, or priority areas. Substantially smaller federal block grant programs exist for juvenile justice populations. These include programs through the Office of Juvenile Justice and Delinquency Prevention that are specific to youth who are involved with the justice system but don't reside in correctional facilities.

Children also receive support through special education programs funded by the federal Individuals with Disabilities Education Act (IDEA). In 2014, IDEA funding totaled \$12.5 billion. The act's main provision, Part B, provides \$11.5 billion in grants to states and local agencies, based on the population

living in poverty, to support the additional cost of educating children with disabilities. Services are offered to students in kindergarten through grade 12, and in some cases to preschool children ages three to five. Part C of IDEA supports modest early intervention services for infants and toddlers, including screening, assessment, referral, and treatment.

In 2010–11, 6.1 million children with disabilities, or 13.1 percent of all students, received special education services.⁷⁵ The IDEA program tracks the types of disability among the children it serves. The largest category is "specific learning disability," accounting for 37 percent of children in special education. Intellectual disability, emotional disturbance, and autism each account for 6 to 7 percent of children in special education. Conditions such as ADHD don't have their own recognized disability category; ADHD is captured under "other health impairments" if a child's educational performance is affected. That said, many children with ADHD could fall under the learning disability category based on another condition. Once a child is identified as eligible, special education can support a variety of services, including mental health therapy in the community and in school; parent counseling and training; curriculum and instructional supports; tutoring services; and modified teaching and testing materials. In general, states vary widely in the distribution of disabilities under IDEA, highlighting the influence of local practices and policies. One challenge for planning, designing, and coordinating services across health-care and school settings is that the IDEA disability categories don't conform to clinical definitions.

Conclusions

Child mental health is a serious public health and social problem, yet our interventions

are notable for their lack of cohesiveness. Mental health disorders can affect children at different ages and can be detected and treated in health-care settings, schools, and even justice agencies. Funding streams follow idiosyncratic rules that make services more difficult to coordinate and deliver. When services are provided, they often focus on one dimension of a child's mental health, such as symptoms, without sufficient attention to long-term outcomes such as educational success and employment. Divided system responsibilities for children also make it difficult to deliver prevention programs. All this can come at a heavy cost both for children and for society.

How can we generate lasting gains in education and other life outcomes for children with mental disorders? Even where our interventions reduce children's mental health symptoms—particularly for ADHD and depression, but also for conduct disorder and autism—this success doesn't translate into success in other areas such as education. This is not to say that education is the only important outcome, but it is an important milestone for children, and results from our medical interventions have been disappointing. Future intervention studies need to track children's progress through the early school years, middle childhood, and adolescence and help sort out whether better school outcomes can be achieved only if mental health symptoms improve or whether an intensive focus on education and overall functioning is more important than mitigating mental health symptoms.

Substantial evidence indicates that, on average, early intervention is better than later intervention for disadvantaged children. Work in this area should be extended to help understand the advantages of early

intervention for subgroups of children with mental health diagnoses. Policy makers also need to know whether we obtain the best results by broadly reaching out to minority populations living in disadvantaged neighborhoods, that is, areas with disproportionately high rates of mental disorders, or whether our approaches should be adapted specifically for children with mental disorders. And if approaches are adapted for children with mental disorders, how broadly should they be applied?

While prevention and early intervention play an important role in child mental health, we are increasingly finding evidence that our programs can help at later ages as well. New interventions to address academic and social deficits are being designed for adolescents with substance abuse and behavior problems. Tiered approaches that provide interventions to entire at-risk communities of children and then focus additional services on high-need families are also being developed. For some disorders and at some ages, we lack solid interventions, such as for autism in teens.

To improve our policies across the age spectrum, we need to understand several dimensions of the problem: How effective is the treatment at earlier versus later ages? Do early effects taper off? Does this differ by mental disorder? And what is the timing of important outcomes? Initiation into crime, for example, is heavily concentrated in the adolescent years. On the one hand, this would appear to imply that targeted approaches may be warranted. On the other hand, precursors to crime, such as problems with self-control, can be effectively targeted at earlier ages. Finally, we need to identify effective approaches that help overcome the fragmentation of medical, school, and social services.

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Housing, Neighborhoods, and Children’s Health

Ingrid Gould Ellen and Sherry Glied

Summary

In theory, improving low-income families’ housing and neighborhoods could also improve their children’s health, through any number of mechanisms. For example, less exposure to environmental toxins could prevent diseases such as asthma; a safer, less violent neighborhood could improve health by reducing the chances of injury and death, and by easing the burden of stress; and a more walkable neighborhood with better playgrounds could encourage children to exercise, making them less likely to become obese.

Yet although neighborhood improvement policies generally achieve their immediate goals—investments in playgrounds create playgrounds, for example—Ingrid Gould Ellen and Sherry Glied find that many of these policies don’t show a strong effect on poor children’s health. One problem is that neighborhood improvements may price low-income families out of the very neighborhoods that have been improved, as new amenities draw more affluent families, causing rents and home prices to rise. Policy makers, say Ellen and Glied, should carefully consider how neighborhood improvements may affect affordability, a calculus that is likely to favor policies with clear and substantial benefits for low-income children, such as those that reduce neighborhood violence.

Housing subsidies can help families either cope with rising costs or move to more affluent neighborhoods. Unfortunately, demonstration programs that help families move to better neighborhoods have had only limited effects on children’s health, possibly because such transitions can be stressful. And because subsidies go to relatively few low-income families, the presence of subsidies may itself drive up housing costs, placing an extra burden on the majority of families that don’t receive them. Ellen and Glied suggest that policy makers consider whether granting smaller subsidies to more families would be a more effective way to use these funds.

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Housing and neighborhoods shape many dimensions of children's health. Housing's physical condition affects the risk that children will be injured, especially younger children, who spend much of their time at home. Environmental toxins in a child's home, such as mold or lead paint, can cause diseases and disabilities. Poor housing conditions may also cause family stress and lead to behavioral health problems. Neighborhood characteristics also affect the health of children, especially older children, in several ways. Physical characteristics such as crosswalks, sidewalks, and playgrounds shape whether children can play safely and be active outdoors. The presence or absence of grocery stores, fast food outlets, and health care facilities may affect obesity and use of preventive health care. Social characteristics, including rates of violence and disorder, can affect both children's physical wellbeing and their mental health. Two of the five leading causes of death among children over one year old, injuries and homicide, are closely connected to characteristics of a child's home and neighborhood.¹

Such relationships between a child's physical surroundings and her health have motivated housing and neighborhood policy since at least 1842, when Edwin Chadwick published his pathbreaking *Report on the Sanitary Conditions of the Labouring Population of Great Britain*, which identified a link between poor living conditions and disease. In the 1930s, public health emerged as a central justification for the federal public housing program.² Even today, one of the commonly stated motivations for housing and community development programs is their potential to create healthier environments. For example, the New York State Healthy

Neighborhoods Program aims to reduce the incidence of both physical illness and injury through upgrading housing and the surrounding built environment. Similarly, enhancing residents' health is one of the goals of the Choice Neighborhoods Program, an Obama administration initiative that aims to improve both distressed subsidized housing developments and the neighborhoods surrounding them.

Despite this long history, there is little direct evidence that housing and community development programs actually improve children's health. We know that, in many situations, a child's physical environment affects her health, and public policies can sometimes change the quality of housing and neighborhoods in which children live. But public policies can also have countervailing effects that may break the apparent link between improvements in the environment and improved child health. For example, better-constructed homes and safer, more walkable neighborhoods can lead to higher home prices or rents, making housing less affordable. Further, rent subsidies can potentially bid up rents, burdening families who do not receive subsidies. Finally, increases in the quality and price of housing may also change the composition of neighborhoods, as higher-income families move in and lower-income families are priced out. Such a change may mean that the benefits of housing and neighborhood improvements accrue to a different population than the one initially targeted. The connections between housing and neighborhood policies, affordability, and population characteristics make it difficult to evaluate the effects of policy, and they complicate the relationship between child health and housing and neighborhood policy. With these concerns in mind, our assessment of

the evidence suggests that policy makers should carefully scrutinize both the benefits of regulations to improve quality and how these regulations affect affordability.

In many cases, the costs associated with improved quality may be offset by the value of consequent health benefits. In some cases, however, the effects of diminishing housing affordability on children's health may outweigh the benefits of the improvements themselves. That calculation leads us to prioritize strategies that generate large effects on health, such as policies that enhance neighborhoods' physical safety. It also suggests that strategies that focus on improving affordability through housing subsidies might aim to reach more households with smaller subsidies, rather than providing larger subsidies to a small number of households.

Policy makers should carefully scrutinize both the benefits of regulations to improve quality and how these regulations affect affordability.

We begin this article by discussing the mechanisms through which housing and community development programs may improve both physical and mental health. We then review the evidence on how existing policies and programs shape children's housing and neighborhood environments, and how those environments in turn affect children's health. We next explore what this evidence implies for reforms across a broad range of policies aimed at housing and communities. We consider housing subsidy programs, housing and

building codes, local land use regulations, and the targeting and design of community development and public safety programs.

Finally, we identify critical gaps in knowledge—about both how and why neighborhoods affect children's wellbeing, and about which policies can effectively create healthier local environments.

Mechanisms: How Policies May Improve Health

Housing policies in the United States typically have multiple, sometimes conflicting goals. Policy makers and researchers often quote the Housing Act of 1949, which set out ambitiously to provide "a decent home and a suitable living environment" for every American family.³ This goal sounds simple, but its interpretation is ambiguous, depending on your view of what constitutes a decent home and a suitable living environment. Further, families must be able to pay for these things and still have funds to meet other critical needs.

Housing policies generally have at least four key goals: to improve housing quality, to improve neighborhoods, to reduce housing costs, and to stabilize families' living situations. Many considerations motivate these four goals, but achieving any of them could improve children's health.

Housing policies to improve quality operate through regulations and subsidies. Governments—especially local governments—impose regulations aimed at reducing the likelihood that children will be injured in their homes. Specifically, local housing codes prohibit such deficiencies as broken windows, missing bannisters, and exposed wiring, with an eye to reducing

the prevalence of falls and other accidents. At the federal level, housing programs that subsidize new construction, or rehabilitation of existing structures, require that funds are used to produce housing that meets certain safety standards. Similarly, federal programs that provide subsidies for rent require that rental homes meet certain quality and safety standards.

More recently, housing policies have aimed to improve the indoor environment as well, through reducing exposure to various toxins, such as lead paint or radon, or reducing exposure to allergens like mold. Proponents of green building standards assert that those standards not only reduce energy use but also improve indoor environmental quality and thereby occupants' health. Most states now include some green building attributes in their qualified allocation plans, which outline priorities for allocating Low Income Housing Tax Credits to developments. Many states also offer tax credits to owners of buildings that meet energy and indoor air quality standards (New York enacted the first green building tax credit in 2000). Though these policies aim primarily to conserve energy, proponents often mention enhancing residents' health as well.

Our housing policies also aim to improve the quality of housing by increasing its size or reducing the number of people living in homes of a certain size. For example, local housing codes typically dictate both a minimum size of housing (say, 350 square feet) and a maximum number of people who can live in each room in a home. Born of the Progressive Era, these regulations are designed to minimize crowding and thereby limit the spread of infectious diseases.

The second key goal of housing policy is to ensure "a suitable living environment" for

families. This goal recognizes that because housing is fixed in space, it brings with it not only a bundle of structural characteristics (for example, plumbing, stairwells, and roofs), but also a bundle of neighborhood characteristics, such as institutions, physical conditions, and social networks and norms.⁴ All of these neighborhood features could affect health. With respect to neighborhood institutions and resources, neighborhoods differ most obviously in the quality and presence of doctors and health clinics. Some neighborhoods have poor transportation networks that make it difficult for residents to reach health-care providers. Further, some neighborhoods may lack features that encourage healthy behaviors (such as parks, playgrounds, gyms, and grocery stores with fresh produce), while they are saturated with features that encourage unhealthy behaviors (such as liquor stores).

A neighborhood's physical characteristics may affect health, too. At the extreme, polluting factories and toxic waste sites may lead to ill health, both immediately and by increasing children's chances of contracting certain diseases in the long term. Nearby highways may elevate asthma rates. Other aspects of the physical environment, such as broken streetlights, crumbling sidewalks, poorly maintained playgrounds, and litter-strewn streets with broken glass and other hazards may increase the risk of injury and discourage outdoor activity.⁵ Urban planners also argue that the density, design, and mix of uses in a neighborhood can affect how much people walk and thereby their health.

Finally, neighborhood social environments, which include such factors as noise and violent crime, racial segregation, and the level of poverty and unemployment, may heighten children's stress levels and exacerbate

stress-related disorders.⁶ Violence can threaten children's physical wellbeing directly (and perhaps even through their mothers' exposure during pregnancy). Violent and stressful living environments may also affect mental wellbeing, and drive older children and teens to engage in unhealthy behaviors, such as smoking and drinking. Exposure to such environments may even weaken the immune system.⁷

In 1940, about 45 percent of housing units lacked complete plumbing—that is, hot and cold piped water, a bathtub or shower, and a flush toilet. By 1985, that share had fallen below 1 percent.

Neighborhoods also offer families a set of social networks, which may both give them critical information about doctors and health care and communicate norms about accepted behaviors. For example, children's views on smoking are likely to be strongly shaped by how many people they see smoking around them. Some neighborhoods offer children richer social and support networks than others do, and these richer networks have been shown to be associated with better physical and mental health.

The third key goal of housing policy is to reduce housing costs. Making housing more affordable may improve health through an income effect, by freeing up resources for nutritious food and preventive health care. Reducing housing costs may also reduce family stress, and thereby improve children's

mental health and reduce the incidence of stress-related disorders.

The fourth key goal is to stabilize living situations. Without housing subsidies, low-income families may have to struggle to pay rent, or rely on shelters and the couches and floors of a series of family members and friends. Such families are continually at risk of having to move. High levels of mobility—and housing insecurity more generally—can heighten stress and undermine physical and mental health. Lee Rainwater, in his classic article, "Fear and the House-as-Haven in the Lower Class," highlights the psychological benefits of having a secure and stable home.⁸

Evidence on Housing, Neighborhoods, and Health

Though only a few studies directly assess how housing and neighborhood policies affect health, many researchers have examined the relationships between various aspects of housing and neighborhood conditions and children's health. Below we discuss this evidence, and consider it in the context of changes in the quality and safety of housing and neighborhoods in the United States over the past few decades.

Housing Conditions and Health

Over the years, we have improved the quality of housing in the United States considerably and reduced the incidence of physical deficiencies. Consider that in 1940, about 45 percent of housing units lacked complete plumbing—that is, hot and cold piped water, a bathtub or shower, and a flush toilet. By 1985, that share had fallen below 1 percent. In the mid 1970s, to track more nuanced changes in housing quality, the Census Bureau came up with a set of new questions. The American Housing Survey now

Table 1. Housing Conditions of Households with Children

| Housing Conditions | 1975 | 1993 | 2005 | 2011 |
|--|------------|------------|------------|------------|
| Physically Inadequate | | | | |
| Percentage of all households | 9.1 | 7.2 | 6.2 | 5.9 |
| Percentage of all poor households | 24.0 | 15.7 | 12.8 | 11.0 |
| Percentage of all near poor households | 13.3 | 9.1 | 9.0 | 7.1 |
| Crowded | | | | |
| Percentage of all households | 10.7 | 6.3 | 6.4 | 7.1 |
| Percentage of all poor households | 27.2 | 15.0 | 14.5 | 17.9 |
| Percentage of all near poor households | 17.7 | 9.9 | 10.7 | 9.0 |
| Square Footage of Unit per Person | | | | |
| Average of all households | – | 472.9 | 541.2 | 545.0 |
| Average of poor households | – | 361.8 | 426.9 | 415.5 |
| Average of near poor households | – | 388.7 | 418.5 | 446.8 |
| Total Square Feet | | | | |
| Average of all households | – | 1,775.7 | 2,034.4 | 2,064.6 |
| Average of poor households | – | 1,326.9 | 1,551.7 | 1,578.4 |
| Average of near poor households | – | 1,506.9 | 1,599.1 | 1,700.5 |
| Rent/Income >0.30 | | | | |
| Percentage of all households | 28.5 | 42.8 | 52.9 | 59.0 |
| Percentage of all poor households | 67.9 | 68.9 | 85.9 | 87.8 |
| Percentage of all near poor households | 27.2 | 45.2 | 59.5 | 67.0 |
| Rent/Income >0.50 | | | | |
| Percentage of all households | 11.8 | 20.2 | 27.2 | 30.6 |
| Percentage of all poor households | 40.0 | 45.7 | 65.8 | 67.8 |
| Percentage of all near poor households | 2.9 | 11.4 | 15.6 | 19.4 |
| Weighted number of households with children (under 18) | 32,316,190 | 35,454,815 | 38,447,275 | 37,564,648 |

Source: American Housing Survey, 1975, 1993, 2005, and 2011.

Notes: 1. Crowding is defined as more than one person per room (excluding bathrooms, halls, and balconies); 2. Rent/income ratios are calculated for all renters by dividing annual gross rent costs by family income; 3. "Poor" is defined as family income at or below the federal poverty line; 4. "Near Poor" is defined as family income between 101% and 200% of the federal poverty line.

queries households about structural deficiencies; breakdowns in plumbing, heating, and electrical systems; and the presence of rodents. The Census Bureau combines these measurements into a summary index that identifies units that fail to meet a standard

of adequacy. The share of units that were deemed severely inadequate was 1.9 percent in 2011, down from approximately 5 percent in 1975.⁹ The proportion is slightly higher in rural communities.¹⁰ Looking at specific questions, the share of occupied units with

holes in their floors fell from 1.7 percent in 1985 to 1 percent in 2011, the share with exposed wiring fell from 2.3 percent to 1.6 percent, and the share with cracks or holes in interior walls fell from 6.3 percent to 4.3 percent.

More directly relevant to this article are the conditions of homes where children live. Table 1 summarizes how housing quality measures have changed for families with children from 1975 to 2011. In 2011, 5.9 percent of families with children lived in homes deemed severely or moderately inadequate, down from 9.1 percent in 1975. Poor children are far more likely to live in inadequate housing than other children; a full 11 percent of poor families with children lived in housing deemed inadequate in 2011, but that share had declined sharply from 1975, when it was 24 percent.¹¹

These standard measures of quality capture physical deficiencies reasonably well, but they fail to capture the presence of toxins and allergens. The share of children exposed to lead-based paint at home has declined substantially. Unfortunately, some homes built before the ban on lead-based paint in 1978 still have such paint, but much of the risk has been remediated. The American Healthy Homes Survey estimated that 35 percent of U.S. homes, mainly in central cities, had any trace of lead paint in their buildings in 2005–06, down from 83 percent in 1990.¹² Homes with young children were no more or less likely to have lead paint. Further, just 22 percent of homes were deemed to have levels of lead-based paint that posed risks. Of the homes with lead-based paint, 93 percent were built before 1978, suggesting that the problem will continue to subside.¹³ Still, many children continue to face risks, especially lower-income

children living in households that are not receiving housing subsidies.

As for exposure to mold and mildew, a special 2011 supplement to the American Housing Survey offers some insight. In that year, 3.5 percent of households in the U.S. reported seeing mold in their housing unit, while nearly 9 percent reported smelling musty smells at least once per week over the past year. Of course, many households may be unaware of mold in their homes. And because we don't have earlier data, we don't know how these figures have changed over time.

During the past few decades, the size of housing units in the United States has increased. The median newly constructed single-family home in the United States grew by 45 percent from 1973 to 2010—swelling from 1,500 square feet to 2,170 square feet.¹⁴ The share of families with children living in crowded conditions (less than one room per person) shrank accordingly, from 10.7 percent in 1975 to 7.1 percent in 2011 (see table 1). Still, nearly a fifth of poor families with children live in housing that would qualify as crowded.

In summary, the data suggest that the size and quality of homes in which children live have improved over time. Children in the United States are living in larger and less crowded homes with fewer physical deficiencies.

Some of this progress has likely translated into improved health. For example, substantial research has shown a connection between elevated blood lead levels and neurological damage in young children, and less lead paint in housing has clearly led to a decline in elevated blood lead levels.

According to the National Health and Nutritional Examination Survey, a population survey administered by the Centers for Disease Control and Prevention (CDC), the share of children aged one to five with blood lead levels of at least 10 micrograms per deciliter, the level the CDC used until 2012 as its threshold of concern, had fallen from 88 percent in the late 1970s (before the ban on lead paint) to less than 1 percent during the 2007–10 survey waves.¹⁵ Research also shows an association between children’s asthma and exposure to allergens, such as dust mites, mold, and cockroaches, though in this case we aren’t sure if children have become less exposed to these risks over time.¹⁶

The evidence concerning the connection between housing’s structural quality and children’s health is relatively thin, with most of it coming from nonexperimental studies, which compare children living in higher and lower quality housing.¹⁷ These studies generally find an association between poor housing quality and poorer health, but because poor-quality housing is also generally cheaper than better-quality housing, we cannot infer that the poor housing quality actually caused the poor health outcomes. That is, families often live in low-quality housing because they are poor, and poverty leaves children with multiple disadvantages, any of which may undermine their health. Still, remedying obvious risks is likely to make a difference. For example, installing relatively inexpensive window bars on apartment buildings in New York City reduced fall-related deaths among children by an estimated 47 percent.¹⁸

The evidence on how housing affects mental health is also generally associational. One recent study followed families over time and found that children whose housing quality worsened were more likely to exhibit

emotional and behavioral problems.¹⁹ But even following the same families over time does not solve the challenge of sorting out the relationship between quality of housing and other issues families face. Children may move to lower-quality housing precisely because their parents experience a loss of resources or wealth.

Despite Progressive Era reformers’ concerns about the health dangers of crowded housing, there is little research evidence showing a causal link between crowding and health problems. Beyond the problem of sorting out causality—that is, whether families living in crowded housing are in poor health because of their low incomes and limited resources rather than because of the housing itself—cultural norms, such as expectations about whether children of opposite sex can share a bedroom, may modify the relationship between crowding and stress. However, a number of studies that have compared children who live in more and less crowded housing show that crowding is associated with worse health. In a pair of studies, for example, Gary Evans and colleagues found that, among children, crowding is associated both with physical signs of stress (such as elevated blood pressure) and with psychological distress (as reported by children and teachers).²⁰ Using the Panel Study of Income Dynamics (a large data set that follows families over time), Claudia Solari and Robert Mare tested how changes in crowding affect changes in parents’ rating of their children’s health. When they examined changes in crowding within the same families, they found a small, marginally statistically significant association between crowding and physical health: even a substantial increase in crowding between one interview and the next was associated with only a very small

reduction in parents' rating of their children's health. Solari and Mare were able to control for families' fixed attributes, such as parental education and race, as well as for changes in income; however, they were not able to control for many other possible changes in family status and resources, such as increases in debt, job changes, residential moves, or shifts in family composition, that might also have affected parents' assessments of their children's health.²¹ These other factors might well have led both to changes in crowding and to the modest changes in ratings of children's health they found to be associated with increases in crowding.

Neighborhood Conditions and Health

Over the years, changes in children's neighborhood environments have not been as

positive as the changes in children's housing conditions. As table 2 shows, the typical child in a metropolitan area in the United States in 2011 lived in a neighborhood with more poor and unemployed residents and more households headed by single women than did the typical child in a U.S. metropolitan area in 1970. On the other hand, the average metropolitan child in 2010 also had considerably more educated neighbors than did the average metropolitan child in 1970.

One clear pattern seen in table 2 is that poor children consistently live in more disadvantaged environments than do other children, and these neighborhood environments may have a distinct effect on their health. Over the past several years, researchers have made considerable strides toward examining these effects through experimental studies,

Table 2. Average Characteristics of Neighborhoods Where Children Live

| Neighborhood Conditions | 1970 | 1980 | 1990 | 2000 | 2010 |
|---|------|------|------|------|------|
| Poverty Rate | | | | | |
| All children | 11% | 12% | 14% | 13% | 14% |
| Poor children | – | – | 25% | 22% | 24% |
| Unemployment Rate | | | | | |
| All children | 4% | 7% | 7% | 6% | 9% |
| Poor children | – | – | 11% | 10% | 11% |
| High School Dropout Rate | | | | | |
| All children | 20% | 15% | 15% | 13% | 9% |
| Poor children | – | – | 20% | 18% | 13% |
| College Graduation Rate | | | | | |
| All children | 11% | 16% | 18% | 22% | 26% |
| Poor children | – | – | 12% | 15% | 17% |
| Percentage of Female-headed Households | | | | | |
| All children | 13% | 20% | 22% | 24% | 28% |
| Poor children | – | – | 33% | 33% | 38% |

Source: Neighborhood Change Database (NCBD) tract data, 1970–2010.

Notes: Children are defined as individuals below age 18; unemployment is calculated for the age 16-plus civilian labor force; the college graduation rate is the share of individuals over 25 years old with a four-year college degree.

yet concrete associations remain relatively scarce, and the mechanisms through which health effects occur remain unclear, in part because routinely collected data rarely capture the characteristics of neighborhoods that we think may matter most to children's health, such as pollution, traffic, and crime.

Poor children consistently live in more disadvantaged environments than do other children, and these neighborhood environments may have a distinct effect on their health.

Pollution undoubtedly harms children's health. When researchers have examined variations in air quality caused by regulations, weather, or changes in local pollution-emitting industries to assess the link between air pollution and infant health, they have found that higher levels of carbon monoxide and particulates increase infant mortality.²² Other studies have found that living in a zip code with a hazardous waste site increases the risk of congenital anomalies in infants and significantly increases the rate of children's hospitalizations for asthma and infectious respiratory diseases.²³ And electronic toll booths on highways that reduce both traffic congestion and vehicle emissions appear to reduce the incidence of low birth weight by 11.8 percent and of premature births by 10.8 percent among mothers who live within about a mile of the toll plaza.²⁴

High neighborhood traffic is associated not only with elevated air pollution; it also brings elevated risks to pedestrians. In this context, speed bumps and other traffic control devices are associated with reduced rates of child pedestrian injuries. For example, an evaluation of the Safe Routes to School Program, a government-funded initiative to increase safe walking and bicycling paths to school, found that child pedestrian injuries decreased significantly in neighborhoods where the program was implemented and increased slightly in neighborhoods where it was not.²⁵

Concerns about childhood obesity have spurred research on the extent to which neighborhood design shapes children's physical activity. One common measure of neighborhood design is the walkability score, which uses several measurements to determine how friendly an area is to walking. Several studies find that children and adolescents who live in more walkable areas report more physical activity.²⁶ However, rural children are somewhat more likely than average to be overweight or obese, even though they are more physically active than urban children.²⁷ Clearly, activity levels are only one of the factors that lead to obesity.

Children's health has been linked to a number of other neighborhood features, including the presence of grocery stores and recreational facilities, the availability and quality of schools, and access to doctors and health clinics.²⁸ One thing families in inner cities and in rural areas have in common is that they are less likely to have easy access to healthy groceries.²⁹ Access to groceries may affect children's health, but like most of the work in this area, it is unclear whether these environmental factors actually cause poor health outcomes, or whether sorting and

selection explain the relationships instead.³⁰ For example, children living in more disadvantaged families are more likely to be in poor health to begin with, and disadvantaged families are also more likely to live in neighborhoods with fewer parks, healthy grocery stores, and health clinics.³¹

As for social conditions, studies consistently show that families care a great deal about safety and think about crime and violence when choosing neighborhoods.³² And there is good reason for families to care about crime. Homicide is a leading cause of death among children, and violence imposes spillover costs, too. Research that examines week-by-week changes in violent crimes shows that exposure to violence can profoundly affect how children perform on cognitive tests. Specifically, children living on the same block or across the street from where a violent crime occurred in the previous week scored lower on tests than those living in similarly violent areas in the same neighborhoods but on blocks in which a violent crime occurred during the following week.³³

A few researchers have studied whether racial segregation affects health, and birth outcomes in particular, as a way to explain racial disparities. This research stems from the notion that minorities in more segregated areas may have access to less health information and may live in communities that have suffered from decades of institutional disinvestment and offer fewer health resources. Most such studies examine the link between neighborhood racial composition and the health of that neighborhood's residents, and their results have been inconclusive. There are two problems with examining the links between a neighborhood's racial composition and individual health. On the one hand, this approach may overstate the effects of

segregation, because the more successful members of minority groups may migrate to more integrated neighborhoods. On the other hand, it may understate the effects of segregation, because the degree of segregation in a metropolitan area may influence all minorities there, even those who live in largely white communities.

One of the authors of this article, Ingrid Gould Ellen, sought to overcome these problems by considering segregation at the level of the city and by using a statistical approach to control for the fact that households may sort themselves into different cities by resources and motivation. She found that black mothers are more likely to deliver low birth weight infants when they live in more segregated metropolitan areas, but the birth weights of white mothers' children are not linked to segregation. The mechanisms behind this effect are unclear, but Ellen shows that the more segregated a city, the more likely black mothers are to live in more central, older areas, which may have more deteriorated housing and inferior neighborhood services.³⁴ Another study found that the percentage of blacks in a city is associated with lower birth weights among infants born to unwed black mothers, even after controlling for neighborhood racial composition.³⁵ In some cases, then, a city's overall environment may affect children's health, in addition to conditions in their own neighborhoods.

Nonexperimental studies consistently find associations between children's health and neighborhood characteristics such as traffic safety and walkability, and a few studies designed to test causality show strong links between children's health and exposure to violence, racial segregation, and pollution. But the experimental Moving to Opportunity study offers more ambiguous

lessons about the effects of neighborhood poverty. This experiment, sponsored by the U.S. Department of Housing and Urban Development, was conducted from 1994 to 1998 in five cities: Baltimore, Boston, Chicago, Los Angeles, and New York. In each city, families with children under 18 who lived in public housing in high-poverty areas were randomly assigned to one of three groups. Families in the first group received a housing voucher that could be used only in low-poverty neighborhoods; those in the second group received a housing voucher that they could use anywhere; and those in the third group received no housing voucher but could remain in their current public housing development.

While researchers found that the offer of a voucher to help families move to a low-poverty neighborhood was associated with significant (though modest) reductions in mothers' obesity and diabetes, it did not appear to generate any detectable, long-term effects on children's overall physical health.³⁶ As for mental health, the effects varied with gender and age.³⁷ Girls who moved to lower-poverty neighborhoods exhibited lowered rates of depression and conduct disorder, but boys exhibited higher rates of depression, posttraumatic stress disorder, and conduct disorder.³⁸ Younger children who moved to lower-poverty neighborhoods were less likely to exhibit an increase in behavioral problems than were older children.³⁹

Housing Affordability and Health

Unfortunately, we have made far less progress in making housing more affordable than we have in improving quality. Table 1 shows that the proportion of renter families with children who pay more than 30 percent of their income for housing (the typical threshold used to measure what's called housing

cost burden) rose from 28.5 percent in 1975 to 59 percent in 2011. The share of poor renters with children who were paying more than 30 percent of their income for rent meanwhile rose from 67.9 percent in 1975 to 87.8 percent in 2011. Further, two-thirds of poor renters with children paid more than half of their income toward rent in 2011, up from 40 percent in 1975.

We have made far less progress in making housing more affordable than we have in improving quality.

Though it seems intuitive that high housing costs might undermine health, few researchers have directly explored this connection. As we've suggested, one way that high housing costs might undermine health is by reducing the amount of money that families have available for other critical expenditures that improve health. According to an analysis of the 2012 Consumer Expenditure Survey, severely cost-burdened renters in the bottom quartile of the income distribution spend about \$200 less each month on food and health care than do renters who are not cost-burdened.⁴⁰ Similarly, households that face higher heating costs (because of colder than expected weather) spend less on food.⁴¹ Spending less on food and health care could translate into worse health in both the short and long term. More generally, other research shows that higher incomes improve children's health, holding other factors constant.⁴² Second, the stresses associated with living in unaffordable housing could also undermine health.

Recent research has come to contradictory conclusions. Some studies have found that unaffordable housing and foreclosures are associated with worse health in children and more emergency room visits and hospitalizations; others have found no such effects.⁴³ Of course, to some degree, families can decide how much they will spend on housing, and it's hard to disentangle the impact of housing affordability from that of other factors.

Housing Stability and Health

As we've said, a final goal of housing policy is to stabilize households' and families' living situations. Without housing subsidies, many low-income families move frequently, and many more worry about having to move. In 2005, for example, 55 percent of U.S. children in poor families had moved in the past two years.⁴⁴ Such housing insecurity might heighten stress and thereby undermine both physical and mental health. But few researchers have explored the health effects of such instability. One study finds weak evidence that public housing is associated with better child health, and that one possible mechanism is the greater residential stability that public housing affords.⁴⁵ But the results might also be explained by the lower rents that public housing residents pay. Other research shows associations between residential mobility and behavioral and adjustment problems in adolescents, but it is difficult to know whether the mobility actually caused the behavioral problems, or whether the behavioral problems were caused by the same conditions that also caused the mobility.⁴⁶

The Role of Policy

Public policy has significantly affected the quality of housing and neighborhoods. Many of the gains in housing quality that we have documented in this article came about

because of changes in housing and building regulations. These improvements have the potential to directly benefit children's health. At the same time, however, improvements in housing quality typically lead to increases in housing costs, and these increases may leave families with fewer resources to invest in other health-enhancing goods and services. As we've shown, over the past few decades, families renting their homes have seen large increases in rents and rent burdens. John Quigley and Steven Raphael argue that a large part of this increase comes from increasing regulatory restrictions on new construction.⁴⁷ Though many of these restrictions aim to reduce the density of development, housing codes also regulate the structural quality of housing itself.

Some regulations, such as the 1978 federal lead paint ban and local rules requiring window guards, have led directly to well-documented improvements in both the quality of housing and children's health. Other regulatory efforts focusing on physical deficiencies are also likely to have benefited children's health in ways that outweigh their costs, though the health gains have not been studied or clearly documented. But policy makers should recognize that building and housing regulations increase housing costs, and they should scrutinize such regulations accordingly. This seems especially true in the case of minimum unit and lot sizes. Most cities in the United States impose minimum unit sizes and govern the number of occupants who can live in a housing unit.⁴⁸ Jurisdictions also typically restrict the number of dwelling units that can be constructed on a lot. These regulations might reduce crowding and neighborhood density, but their impact on health is unclear (especially in an era when infectious disease is controlled primarily through immunization).

Meanwhile, such regulations increase housing costs by increasing size and likely by reducing supply as well.

Many of our housing policies provide subsidies to low-income households to lower their costs. Recent experimental research suggests that these subsidies help increase housing quality, keep families from becoming homeless, and reduce housing costs.⁴⁹ But there is little evidence that our housing subsidy programs move families to better and safer neighborhoods.⁵⁰ Further, the Welfare-to-Work Voucher program, the one experimental study that has directly explored how housing subsidies affect children's wellbeing, found no quantitative evidence that the housing choice voucher program had any short-term impacts. Nonetheless, in qualitative interviews conducted as part of the study, parents reported that their increased disposable income was allowing them to spend more money on their children, which might lead to improvements in the long term.⁵¹ It is also possible that the short-term costs of the residential moves required to receive the subsidy may have outweighed any immediate benefits from more affordable and better quality housing, but that over the long term, as children adjusted to their new homes and communities, they would begin to benefit.

While we can question the magnitude of the benefits that our housing mobility programs deliver, their most serious shortcoming is their lack of coverage: only one in four eligible U.S. households actually receives a housing subsidy. Some research even suggests that our largest housing subsidy program, the Housing Choice Voucher program, actually leads to higher rents for the three-quarters of low-income households who do not receive subsidies.⁵² Thus, a critical

question for policy makers is whether spreading the same amount of subsidy dollars across more households would lead to greater or lesser aggregate benefit.⁵³

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Conclusions

Many recent policies involve strategies to help low-income households use their housing subsidies to reach more affluent neighborhoods with greater opportunities. Others strive both to renovate distressed subsidized housing developments and to improve the neighborhoods surrounding them. Policies have generally achieved their immediate goals. Investments in playgrounds create playgrounds; incentives for healthier food bring fresh fruits to poor neighborhoods; building sidewalks makes environments better for walking. The evidence that these changes improve children's health, however, is thin. The results of the Moving to Opportunity demonstration program suggest that the overall impact of neighborhood quality on child health may not be as strong as expected, though this impression may result partly from the difficulties children and teens faced in transitioning to new communities.

Another issue is that improvements to homes and neighborhoods may make housing less affordable. Policy makers should be careful to consider how improvements in housing and neighborhood quality might affect affordability and neighborhood composition. This calculus is likely to favor policies that generate clear and substantial benefits, directly targeting low-income children. One example comes from the recent research showing that exposure to neighborhood violence significantly undermines children's ability to focus and impulse control.⁵⁴ Judging from the evidence, the most reliable way to make neighborhoods healthier may be making them safer.

Subsidies for housing help offset the increased cost generated by improvements in home and neighborhood quality. Our housing subsidy system, however, provides large subsidies to a minority of poor households and leaves others with no subsidy, and perhaps even higher rents. A better approach might be to expand the number of people who receive subsidies while reducing the size of the subsidy available to each family. Though some advocates worry that such shallower subsidies would be too modest to improve living conditions, we have little hard evidence. At the very least, we should experiment with shallower subsidies to test their impacts.

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The Role of the Family and Family-Centered Programs and Policies

Lawrence M. Berger and Sarah A. Font

Summary

Families influence their children's health in two ways that are amenable to public policy—through their financial and other investments in children, and through the quality of care that they provide. In general, children who receive more resources or better parenting are healthier than those who don't. Public policies, therefore, might improve children's health either by giving families more resources or by helping parents provide better care.

When it comes to financial resources, write Lawrence Berger and Sarah Font, the research is straightforward—programs that add to disadvantaged families' incomes, whether in cash or in kind, can indeed improve their children's health. The Earned Income Tax Credit, for example, has been linked to higher birth weights and greater cognitive achievement.

When it comes to programs that target quality of care, however, the picture is more complex. At the low end of the spectrum, poor parenting shades into neglect or abuse, which can seriously harm children's health and development. Thus we might expect that the child protective services system, which has the power to intervene and protect children in such cases, could also improve children's health in the long run. But Berger and Font find that the system's ability to affect children's health is limited, largely because it becomes involved in children's lives only after damage has already occurred.

Other programs, however, have the potential to improve parenting, reduce maltreatment, and thus enhance children's health and development. Home visiting programs show particular promise, as do large-scale, community-level primary prevention programs.

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Childhood health is associated with a wide variety of outcomes throughout the life course, from ongoing physical and mental health to disability, mortality, and socioeconomic status. Families bear the primary responsibility for making direct investments in children, as well as for regulating and allotting other public and private investments. That is, families provide the caregiving context in which most children grow and develop; they also provide and allocate resources to children. In this way, families play the primary role in promoting child health and development. Thus, any effort to promote child health must necessarily involve families. Yet the quality of the family environments in which children are raised varies considerably; in particular, not all families provide safe, stable, and high-quality care.

In this article, we first explain how families are believed to influence children's health. In particular, we focus on family context (structure, composition, and access to resources) and parenting behaviors. We consider health in a broad sense, including physical, social-emotional, behavioral, cognitive, and mental health and development. Second, we describe the role of the child protective services (CPS) system in protecting children from familial harm and intervening with families where child maltreatment has occurred. We conclude that CPS has limited ability to influence child health, because it primarily intervenes only after harm has occurred and because a combination of resource constraints and a relatively narrow mandate means that CPS focuses on only a small proportion of children and families. Third, we review other policies and programs that can influence family contexts and behaviors before harm has occurred. We highlight

several promising programs—including economic support, community-level interventions, and home visiting programs—that have the potential to improve the quality of care children receive, reduce child maltreatment, and positively influence child health and development.

How Do Families Influence Child Health?

Families are thought to influence child health through three primary mechanisms: biological and genetic endowments, financial investments (goods and services purchased), and behavioral investments (caregiving quantity and quality).¹ Specifically, given their knowledge about a child's health from birth onward, parents make decisions about the quantity and quality of their financial and economic investments in their children. Wealthier parents can afford more and higher-quality goods and services than their lower-income counterparts. Likewise, within a given budget, more highly educated or skilled parents may make higher-quality caregiving choices than do less-educated or less-skilled parents. Parents' own health and mental health are also likely to affect the quantity and quality of their investments. Finally, family structure, complexity, and fluidity are linked to the financial and behavioral investments that parents provide.

Biological and Genetic Endowments

Genes affect physical and mental health, and predispositions for many health conditions are heritable. Because genetic predispositions are not malleable to public policy, we don't cover them in this article. Instead, we focus on how children's caregiving environments—which may be influenced by public policy—can influence their health. We emphasize, however, that children's genetic

attributes and predispositions interact with their environments to determine their physical and mental health.² Indeed, strong associations between parents' and children's health appear to be driven largely by shared experiences and behaviors—both in the womb and after birth—regarding the adequacy of material resources, stress, exposure to environmental stimulation and/or toxins, sleep and nutritional habits, parental behaviors and decision making, and parenting styles with regard to discipline, monitoring, and emotional support. In short, biology is far from destiny.

Financial Resources and Investments

Financial resources let families purchase goods and services that promote children's healthy development. These include basic material needs, such as food, shelter, and medical care, as well as things that support social and cognitive development, such as schooling, books, and toys. Children from low-income families have poorer prenatal health and poorer birth outcomes than do their higher-income counterparts; these disparities persist throughout childhood and, indeed, their entire lives. In addition to exhibiting poorer overall health and higher rates of a host of specific health problems, low-income children receive fewer and lower-quality medical and related services for their health problems, and their families are less able to manage these problems and provide compensatory and supportive environments.³ Furthermore, stressful experiences associated with growing up in a context of limited economic resources may adversely affect children's neurological and biological development, thereby adversely influencing their physical and mental health, as well as their cognitive and social-emotional development.⁴

Families vary in their access to financial resources as well as the extent to which they invest available resources in children. Specifically, higher-income families make greater and higher-quality investments in every area.⁵ This may partly reflect the fact that low-income and poor families have fewer options when choosing neighborhoods, housing, food, medical care, child care and schooling, and a host of other goods and services. However, financial resources are intertwined with other social advantages, most notably higher levels of education and social status. Consequently, along with constrained choices, low-income parents may have less knowledge to guide them in selecting the healthiest environments for their children.⁶ Parental characteristics, including physical and mental health, education, and intellectual capacity, are also known to influence parenting behaviors and are thereby thought to affect children's health.⁷ Parents' mental health problems may be particularly worrisome. Research has shown, for example, that maternal depression is associated with both low-quality parenting and with poor health and development among children. It may also make mothers less willing or able to take advantage of available services.⁸ Regardless of parents' financial resources, education, or intentions, however, the level and quality of goods and services that a child receives can be conceptualized along a continuum ranging from extremely high investments in child health and development to serious material deprivation, which is closely associated with child neglect. As we discuss below, economic support policies can affect family resources and may thereby influence the amount of resources invested in children.

Behavioral Investments

Behavioral investments in children's care are equally important for their health. Such

investments include the full range of caregiving environments and activities to which children are exposed, taking into account both quantity and quality. High-quality child rearing requires that parents be accessible and available to children, engage with them, take responsibility for their safety and well-being, and use developmentally appropriate monitoring, management, and discipline strategies.⁹ Parents also serve as role models. Each of these tasks requires forethought, collaboration, and coordination. Furthermore, parents' behaviors may directly influence child health by protecting children from or exposing them to a variety of health-related risks both before and after birth. Parents' health behaviors and exposure to toxins, both before conception and during pregnancy, may directly influence children's initial and ongoing health.¹⁰ After birth, parents' decisions affect children's nutritional intake, physical activity, health care, supervision and safety, sleep routines, emotional support and stimulation, and exposure to secondhand smoke and other environmental toxins, each of which can affect children's health. Parents' behaviors may also influence their children's health indirectly, in that parents may model healthy or unhealthy behaviors or lifestyles.¹¹

There are no commonly established thresholds for high-quality parenting. However, authoritative parenting, which combines supportive engagement with productive discipline, is thought to be the most developmentally stimulating parenting style. Children benefit most when parents are warm, responsive, affectionate, nurturing, and supportive; when they impart information and skills in a productive and positive manner; and when they exercise appropriate monitoring, control, and discipline so children recognize that their actions have consequences. Children raised by authoritative

parents exhibit higher levels of self-esteem and less depression and anxiety, and they engage in fewer antisocial behaviors such as delinquency and substance use, than do children raised by authoritarian (harsh, cold, and controlling) or permissive parents.¹² Like financial investments, the level and quality of behavioral investments in a child can be conceptualized along a continuum ranging from those that strongly promote health to those that create serious health risks. At the low end of this continuum, substandard care may, at the extreme, cross a threshold into child abuse or neglect.¹³ Furthermore, just as public policy may influence the economic resources available to children, so, too, may policies and programs influence parental behaviors and the quality of the caregiving environments in which children are raised. We discuss several such policies and programs below.

Child Maltreatment

Child abuse and neglect pose a significant health risk for a large number of children. The Fourth National Incidence Study of Child Abuse and Neglect, which aimed to estimate child maltreatment beyond only those circumstances known to CPS, suggested that each year, between 1.7 and 4.0 percent of U.S. children are maltreated or at risk of maltreatment.¹⁴ For both legal and policy purposes, states define child abuse and neglect differently, most notably with regard to children's exposure to domestic violence, parents' substance abuse, and the threshold (that is, the level of injury) for physical abuse.¹⁵ However, in most states, four categories of behaviors are thought to warrant report, investigation, or CPS intervention. Child neglect refers to inadequate provision of basic necessities such as food, clothing, shelter, supervision, education, or medical care and, in some cases, a failure

to meet children's emotional needs. It is by far the most common form of maltreatment. Physical abuse consists of acts that cause bodily harm to a child or place a child at risk of bodily harm, often as a result of punishment or discipline. Sexual abuse is defined by a number of sexual activities involving children, ranging from direct sexual contact to sexual exploitation or exhibitionism. Psychological or emotional maltreatment (often termed "mental injury") is an umbrella term for actions or omissions that cause, or are likely to cause, psychological harm. Maltreatment behaviors may take the form of acts of commission (child physical abuse, child sexual abuse, some forms of psychological or emotional maltreatment) and acts of omission (child neglect, some forms of psychological or emotional maltreatment) on the part of either a permanent or temporary caregiver. In approximately 71 percent of confirmed maltreatment cases, a biological parent is the perpetrator.¹⁶

A recent comprehensive review and meta-analysis of the research identified 39 risk factors for child abuse and 22 for child neglect.¹⁷ The strongest predictors of child abuse were parent anger/hyper-reactivity, family conflict, and lack of family cohesion; the strongest predictors of neglect were a poor parent-child relationship, parental perception of the child as a problem, parental stress, parental anger/hyper-reactivity, and parental self-esteem. In addition, growing evidence suggests that socioeconomic disadvantage is "the most consistent and strongest" predictor of involvement with CPS.¹⁸ This may mean that economic factors directly or indirectly affect the probability of maltreatment. Moreover, among families reported to CPS, poor families have a greater number of risk factors than their better-off counterparts, and, among poor families, those that are reported to CPS

have more maltreatment-related risk factors than do families that are not reported.¹⁹

Maltreatment during childhood is associated with a wide range of problems; these can be cognitive (executive functioning and attention, skills development, or educational achievement and attainment); mental health and social-emotional (attachment and behavior problems, emotional regulation, posttraumatic stress disorder, depression, suicidal thinking, criminal behavior, alcohol problems, or intergenerational transmission of maltreatment); physical (brain development, growth, obesity, or disease); and economic (earnings and income, job trajectory, occupation, or wealth).²⁰ It's not clear, however, that these associations are causal, because many of the family characteristics and behaviors that are associated with child maltreatment are also associated with poor health and development even in the absence of maltreatment.²¹

Substandard Parenting

Some children receive considerably lower-quality care than most other children do. We sometimes call this being exposed to substandard parenting or child maltreatment risk, which occurs when children receive a level of care that places them in the bottom end of the caregiving-quality distribution in one or more areas of parenting. These include parental warmth, emotional support, outings and activities, cognitive stimulation and access to learning materials, problems with the home interior (such as safety hazards, clutter, crowding, inadequate lighting, or inadequate heat), harsh discipline or frequent spanking, accidents requiring medical care, and access to routine medical and dental care. Notably, though low-quality behaviors in these areas are associated with child maltreatment, they do not necessarily

constitute maltreatment from a legal perspective. Nevertheless, substandard parenting indicates developmentally inappropriate caregiving and, at the extreme, may constitute or lead to maltreatment. For example, a lack of medical or dental checkups may be a marker of risk for medical neglect. Extremely low levels of parental warmth, emotional support, or cognitive stimulation may suggest that a family is at risk of physical or emotional neglect. Likewise, excessive spanking may indicate that a family is at risk of physical abuse.²²

Substandard parenting and child maltreatment are also closely related. Abusive and neglectful parents tend to be more punitive and less responsive to their children than other parents, as well as less demanding of their children. Recent research also suggests that, after accounting for a host of other factors, substandard scores on widely used parenting assessments, such as the Home Observation for Measurement of the Environment and the Parent-Child Conflict Tactics Scales, are correlated with CPS involvement, as well as with other indicators of child maltreatment.²³ Furthermore, children may be at risk for adverse health and developmental outcomes if they are exposed to substandard parenting regardless of whether such behaviors constitute abuse or neglect. For example, our research has shown that measures of substandard parenting that don't meet the legal threshold for child maltreatment are equally or more strongly associated with children's later cognitive and social-emotional development than is maltreatment investigated by CPS.²⁴ Also, spanking, particularly in early childhood, is linked to a host of poor health and developmental outcomes.²⁵ Finally, low income and family complexity and fluidity appear to have similar associations with both substandard parenting and child maltreatment.²⁶

Family Structure, Complexity, and Fluidity

Modern families come in a range of diverse and fluid forms. A large proportion, if not the majority, of U.S. children will experience one or more transitions in family structure and will have many types of caregivers and siblings. These transitions can provide opportunities to enhance investments in children's health, but they can also expose children to a variety of health-related risks.

Children who experience family complexity and fluidity tend to exhibit poorer average health and to have less access to regular health care.²⁷ In part, this reflects differences in parents' financial and behavioral resources; family complexity and fluidity are particularly common among poorer families.²⁸ Moreover, higher income is associated with lower levels of psychological distress, warmer and less harsh parenting, and higher-quality caregiving environments.²⁹ At the same time, the association between family complexity and fluidity and children's health may also reflect differences in how parents invest their financial and behavioral resources in their children.³⁰ Married two-biological-parent families, for instance, not only tend to be better off, they also tend to make greater average investments in children regardless of available resources. The reason may be that biological parents have greater incentives to invest in their children, that the institution of marriage encourages better parenting, and/or that individuals who choose particular family types differ in other ways as well. Higher-income and married biological parents also make higher-quality behavioral investments.³¹ On average, children in lower-income and complex families (loosely defined to include families other than those consisting solely of a married couple and their joint biological

children) have poorer sleep routines, housing, nutritional intake, child care, home environments, schools, and neighborhoods than do children in higher-income and noncomplex families.³² They also receive less monitoring and harsher parenting, and are exposed to more stress, conflict, and environmental toxins both in and outside their homes.³³ Each of these factors can adversely affect their health.

Children who experience family complexity and fluidity tend to exhibit poorer average health and to have less access to regular health care.

Likewise, compared with children in stably married, two-biological-parent families, children in other (heterosexual) family settings experience, on average, lower levels of parental support, supervision, and monitoring, as well as less consistent discipline. They also face greater levels of stress and parental conflict, and their parents have poorer psychological wellbeing. Each of these factors is associated with lower levels of parental support, engagement, and warmth, and limited parental attention to children's health and emotional needs.³⁴ These factors may be compounded when families experience fluidity and instability. For example, many children receive less child support (whether formal or informal) and direct caregiving involvement from nonresident fathers; these behaviors decrease further when mothers or fathers take a new partner or have new children.³⁵ Furthermore, children in married or cohabiting stepparent households tend to receive fewer financial and behavioral

investments, on average, than those in married two-biological-parent households; however, some recent research has found relatively high levels of stepfather involvement with children, particularly among married stepfather families.³⁶

The Child Protective Services System

An estimated 13 percent of all U.S. children and 21 percent of black children will experience confirmed maltreatment at some point between birth and age 18.³⁷ In 2012 alone, CPS agencies received reports on 6.3 million children. Yet only a small portion of those children and their families received any compensatory services. About 62 percent of the reports received by CPS are screened in, meaning they receive an investigation or assessment, but the remaining 38 percent receive no formal response, and the families involved are often unaware that a report had been made.³⁸ Reports are screened out when allegations don't meet statutory definitions of maltreatment, or when the agency has insufficient information to start an investigation. The proportion of cases that are screened out varies substantially across states, however, giving reason to believe that these determinations are somewhat subjective and that the proportion of cases investigated likely depends on the availability of resources.

Once reports are screened in, whether children or families receive services tends to depend on the outcome of the investigation or assessment. Families most commonly receive services after CPS determines that a child has suffered maltreatment. Roughly 4.6 percent of U.S. children were reported to CPS in 2012, and maltreatment was confirmed for about 0.9 percent of children (19 percent of screened-in cases).

In the vast majority of CPS cases, children are determined not to be maltreatment victims; 70 percent of these children and their families receive no additional services. If a report is confirmed, CPS has several options: child victims and their families may receive no services (40 percent of confirmed cases), in-home services (36 percent), or out-of-home (foster care) services (24 percent). In all, in 2012, over 1 million U.S. children and/or their families received CPS-related services, including about 60 percent of children whom CPS had determined to be maltreatment victims.³⁹ Furthermore, as a result of CPS involvement, more than 250,000 children entered and more than 460,000 were living in some form of out-of-home placement.⁴⁰

CPS Services to Parents

State and county CPS systems vary greatly in terms of the services they offer and how accessible those services are. In part, this reflects the fact that CPS makes referrals to and contracts with a range of community-based agencies that tackle problems such as substance abuse, mental health, economic hardship, domestic violence, and parenting behaviors. Most frequently, families receive parenting-related services that are similar to those available to the general public. They receive other types of services much less frequently. For example, despite the fact that substance abuse and mental health problems are common among CPS-involved families, intensive inpatient or outpatient services are not typically available to them, given budgetary constraints and limited capacity.⁴¹

Arguably, the two most intensive types of interventions that CPS offers are family preservation programs to prevent removal of a child and family reunification programs to facilitate a safe return home after an out-of-home placement. Family preservation

programs do little to prevent out-of-home placement or future maltreatment, though they have been shown to produce modest improvements in family functioning, parenting behavior, support, and child wellbeing. Moreover, family preservation efforts on the whole have not consistently provided high-quality services. Family reunification programs could both facilitate children's return home after a placement and ensure that the homes to which they return are safe and stable. Yet few reunification programs have been rigorously evaluated. Furthermore, children who spend time in foster care go back to foster care at relatively high rates after being reunified with their families. Specifically, between a quarter and a third of reunified children will return to foster care within 10 years. Thus we have little reason to believe that family preservation and family reunification services, in their current form, do much to promote the health and development of CPS-involved children.⁴² (For a discussion of how the U.S. legal framework may influence the role of CPS in family life, see Clare Huntington and Elizabeth Scott's article in this issue.)

CPS Services to Children

CPS largely aims to promote child wellbeing by improving the quality of children's caregiving environments. For children who remain in their homes and those who are in an out-of-home placement but are expected to return home, the primary target of CPS intervention is most frequently their parents, rather than the children themselves. This focus is crucial for achieving safety and promoting permanency, but it may be short-sighted with regard to promoting child wellbeing more generally, because it may miss opportunities to tackle children's health and developmental needs head-on. This may be particularly true for children who remain in their own homes. Compared to children

in out-of-home placements, child maltreatment victims who remain in the home are less likely to have health insurance; to receive regular medical checkups and mental health screenings, referrals, and services; and to be up to date on their immunizations. They are also more likely to have their dental, physical, or mental health care needs delayed due to cost, as well as to be hospitalized due to illness or injury.⁴³ This, at least in part, reflects the fact that more resources are available for the care of children in out-of-home placements, and more prescriptive (and widely established) guidelines govern that care. However, children who are removed from the home, on average, have experienced more severe maltreatment than those who are not. As such, they are likely to exhibit more health and developmental problems and to need more services than do those who remain in the home.

Though foster care remains essential for children who can't safely stay in their homes, in its current form it is unlikely to produce meaningful improvements in children's health.

In short, CPS-involved children generally receive inadequate health services—even those in foster care, who are typically covered by Medicaid. Furthermore, although CPS caseworkers are expected to refer children for services when they identify physical, mental, or educational needs, it's not clear that workers have the tools and training to accurately

identify such needs. Indeed, studies that compare CPS caseworker assessments of children's health and developmental needs to assessments conducted using standardized measures suggest that caseworkers fail to identify behavioral/emotional, developmental, and substance use needs, respectively, in 35 percent, 46 percent, and 70 percent of cases in which such needs were identified by standardized assessments.⁴⁴ These facts limit our confidence that the CPS system, in its current form, plays a large role in promoting child health and development. Furthermore, CPS funding, caseloads, and the availability of community services that CPS can access all vary considerably by locality. More fully and evenly resourced CPS systems, in which caseloads allowed for intensive developmental assessments and caseworkers were adequately trained to identify children at risk for health and developmental problems, might play a significant role in identifying at-risk children and connecting them to services. However, this would require a considerable commitment of resources, as well as a shift in CPS priorities.

Foster Care Services

Foster placement may promote children's health by protecting them from additional maltreatment. At the same time, foster care may disrupt familial and community ties and can thereby diminish mental and behavioral health. The effects of foster care placement itself are difficult to assess, given that children who enter care have generally experienced more severe maltreatment than children who remain in the home. Among children on the borderline of being placed in care, foster care placement is associated with worse academic and behavioral outcomes in early adulthood. However, it's unlikely that such foster care placements can be prevented in most cases, and research has found that

during childhood, maltreated children in foster care and those who remained at home have essentially equivalent cognitive and behavioral outcomes.⁴⁵ In sum, though foster care remains essential for children who can't safely stay in their homes, in its current form it is unlikely to produce meaningful improvements in children's health.

CPS and Child Health

Since 2001, state CPS agencies have been required to undergo federal Child and Family Services Reviews, which assess and monitor their progress toward promoting child wellbeing (in addition to safety and permanency). States are assessed in three areas related to wellbeing: (1) enhancing families' capacity to provide for their children's developmental needs; (2) whether children receive services that meet their educational needs; and (3) whether children receive services that meet their physical and mental health needs. (These measures assess only the availability and provision of services, and not whether the services are effective.) In the most recent round of reviews, no state achieved "substantial conformity" with outcomes 1 or 3, and only 10 achieved "substantial conformity" with outcome 2.⁴⁶ This largely reflects the fact that CPS systems are constrained by the quality and quantity of service providers in their regions as well as by limited resources with which to serve the large number of families that come to their attention. Nonetheless, the findings reinforce our conclusion that the services currently provided through CPS are unlikely to promote child health and wellbeing, other than perhaps through crisis management.

Family-Centered Programs and Policies

A range of family-centered policies and programs attempt to influence children's

health and development either directly, or, by targeting families' financial resources and parenting behaviors, indirectly. Because this article deals with the role of the family, we don't discuss programs targeted directly at children. Rather, we focus on programs that may influence child health and development by improving family investments.

Programs Targeting Financial Resources and Investments

Many U.S. policies and programs aim to increase access to financial resources either by transferring income directly to families or by providing some of the goods and services that greater financial resources would allow a family to purchase. A recent review of empirical research linking economic support policies with child health and development concluded that policies and programs that reduce poverty or increase income positively influence child wellbeing.⁴⁷ The Earned Income Tax Credit (EITC), for example, is now the largest and perhaps the most generous antipoverty program in the U.S. It constitutes a refundable tax credit for low-income earners who work. The income subsidy that EITC provides has been linked to increased birth weight and thereby improved child health, as well as to greater cognitive achievement. It may also function indirectly to improve children's health by improving mothers' physical and mental health.⁴⁸ The Child Tax Credit, which provides a tax credit with a maximum of \$1,000 per child (a part of which is refundable) to all working families to help offset the cost of raising children, and in particular its refundable component, the Additional Child Tax Credit, might be expected to operate similarly, though there has been less empirical work in this regard.

Although researchers have generally found positive associations between income

supports and child health and wellbeing, it's important to recognize that the outcomes that they've examined and the effect sizes that they've found vary across programs and policies, and, in many cases, by population subgroup. The timing and magnitude of transfers may also be important, as may additional conditions for receiving benefits, such as the work requirements associated with Temporary Assistance for Needy Families (TANF) participation. Furthermore, TANF is intended to be temporary and includes many behavioral requirements. Unlike the EITC, we lack substantial evidence that TANF participation is positively associated with child health.

Beyond direct public income transfers, child support enforcement promotes private transfers from noncustodial parents to custodial parents, and thereby increases the economic resources available to children. Additionally, a variety of fatherhood programs include education, job training, and employment components in an effort to increase nonresident fathers' economic contributions to their children. On the whole, these programs have produced only small improvements in earnings and employment; nonetheless, they have had some success at increasing child support payments.⁴⁹ In short, to the extent that such programs can meaningfully increase the financial resources available to children by increasing the child support received on their behalf, they could positively influence child health. However, research on the connection between child support and child health and wellbeing has been inconclusive.⁵⁰ Nor are we aware of any evidence that the employment and earnings components of fatherhood programs are linked directly to children's health and wellbeing. (For detailed discussions of how housing and nutrition programs affect child

health, see the articles in this issue by Ingrid Gould Ellen and Sherry Glied, and by Craig Gundersen, respectively.)

Programs Targeting Caregiving Quality

A variety of programs aim to help parents provide an optimal caregiving environment. When they target families that are not involved with CPS, such programs are generally considered preventive. They may function in one of two ways: to prevent a family's level of risk from elevating to the point at which child health or development is jeopardized, or to compensate for parent or family deficiencies. We focus on programs with the most promising evidence of effectiveness. (We also reviewed the evidence on couple-relationship and father-involvement programs and concluded that such programs are unlikely to play a substantial role in improving child health and development; thus we don't discuss these programs.)

Primary Prevention Programs

Primary prevention programs address parenting and developmental risk for children and families outside the context of CPS. Whereas traditional efforts were most often focused at the family level, these programs increasingly also target the role that communities and institutions can play in enhancing or constraining parental choices. The principle that guides many such programs is that optimal caregiving occurs when families' environments are conducive to positive parenting choices. As such, these programs tend to focus on enhancing protective factors, strengthening cohesion (trust, informal support networks, social organization, or norms regarding helping behaviors), and reducing structural barriers (economic conditions, crime and victimization, or limited availability and quality of human services) at the community level.

Primary prevention programs tend to have both universal (community-level) components and targeted components (more intensive interventions for at-risk families). Universal components include public awareness campaigns on issues of parenting, child maltreatment, and child development (for example, sleeping in the same bed, spanking, or exposure to secondhand smoke). These programs frequently also include screening and community involvement efforts aimed at identifying high-risk families and increasing informal support networks. When families are identified as at risk, they are referred for more intensive services. Rather than offering a specialized set of services, many primary prevention programs aim to strengthen the capacity of existing community services to better assist local families, as well to help families access existing community support services, such as home visiting or respite care. Indeed, the fact that community-level primary prevention efforts tend to make optimal use of existing services and structures has been widely touted as one of their most appealing characteristics.⁵¹ In terms of child health, many such programs explicitly encourage parents to take up parenting and health insurance programs for which they are eligible.

Systems of Care

Large-scale community-level prevention efforts vary considerably in the extent to which they emphasize universal versus targeted components. At one end of the spectrum are system-of-care models; the Durham Family Initiative (DFI) in North Carolina is a prime example. The DFI constituted a universal effort to identify and intervene with at-risk families. It aimed to improve community social cohesion and resources, as well as the capacity and accessibility of the service delivery system, by promoting cooperation

among agencies, engaging communities via outreach workers, and working to reform policies and practices by developing innovative service models to help families meet their children's needs. It focused specifically on reducing child maltreatment rates, identifying families at risk for maltreatment through universal screening of pregnant women. Despite positive results, the program was ultimately scaled down under a new name, Durham Connects, and now primarily offers nurse home visiting for all newborns and their families; those found to be at risk of maltreatment or child development problems are referred to appropriate services.⁵²

System-of-care approaches like DFI are difficult to evaluate experimentally. Compared to otherwise similar counties in North Carolina over the same time period, however, Durham County experienced a relative decline in substantiated child maltreatment and maltreatment-related hospital visits after DFI began. Evidence also suggests that DFI may be associated with decreases in spanking, parental stress, and substandard parenting and maltreatment behaviors, as well as improvements in parental efficacy and warm and responsive caregiving.⁵³

Another promising model, the Los Angeles Prevention Initiative Demonstration Project (PIDP), takes a similar approach to DFI in its scope and aims. However, PIDP was designed to vary across communities. It also focuses more intensively than DFI did on improving families' economic resources through activities like financial literacy training, educational and employment training, and free tax preparation to increase the number of families who take advantage of the EITC. Evaluations of whether PIDP has decreased CPS involvement have produced mixed results, although there is some

evidence that it has reduced the chances that a child will be referred to CPS more than once, and increased the chances of timely reunification for families who have children in foster care.⁵⁴

Social Learning Approaches

The social learning approach to primary prevention is best exemplified by the Triple P—Positive Parenting Program, which calls itself a “comprehensive public health model of intervention.” Its current incarnation consists of a “system” of parenting interventions that includes universal public education, as well as a range of voluntary parenting advice seminars, skills-training sessions, and tailored group and individual services offered in a variety of settings. It also supports coordinated efforts by local service providers to promote key aspects of healthful, developmentally appropriate parenting activities. These services primarily target the family. They emphasize self-regulation, self-sufficiency, and personal agency, and they seek to improve caregiving by influencing how parents view and respond to children, using a range of techniques grounded in developmental science. Triple P interventions, which are designed to meet the unique needs of at-risk families, operate at varying levels of intensity. At the most basic level, Triple P gives the public information on parenting through media campaigns; at the most intensive level, parents participate in 10 or more sessions that teach an array of parenting skills, such as mood management, partner support, and recognizing unproductive parenting behaviors.

Triple P delivers its services in many formats, including individual sessions, group sessions, media-based materials, self-directed modules, and telephone

consultations. This flexibility allows parents who otherwise might have difficulty scheduling sessions to access information and training on their own time. Moreover, media-based materials and self-directed modules cost considerably less than individual or group sessions. The combination of tailored levels of intensity and modes of delivery indicates the program’s ambitious scope. In multiple experimental evaluations, Triple P has demonstrated improvements in child behavior, parenting skills, rates of substantiated child maltreatment and removal from the home, and hospital admissions for child injuries. Although the size of these effects varies based on the module and whether the outcomes were measured by parents’ self-reports or by clinical or teacher observations, on average, the effects are considered large by conventional standards. For example, in a randomized study of 18 South Carolina counties, Triple P was associated with reduced rates of substantiated maltreatment, out-of-home placement, and hospital admissions for child injuries on the order of 25 percent or more.

In short, based on the few comprehensive and well-implemented interventions, best represented by DFI and Triple P, the evidence for social learning approaches is quite encouraging. These programs are associated with improved parenting behaviors and decreased child maltreatment, both of which should positively influence child health and development. Furthermore, Triple P is associated with decreases in child behavior problems, a key indicator of social-emotional adjustment. On the whole, however, because these programs tend to be universal in nature, they are difficult to implement and rigorously evaluate. Moreover, given their high cost (DFI, for example, cost about \$1 million per year), few communities have

initiated and sustained integrated systems of care, despite the fact that their large effect sizes suggest that the economic benefits of such programs may outweigh their costs.⁵⁵

Secondary Prevention Programs

Secondary prevention programs target families that have been identified as at risk for substandard parenting, child maltreatment, or adverse developmental outcomes for children, but that are not (in most cases) being served by CPS. Factors that might lead a family to be identified as at risk include teen birth, low income or material hardship, parental psychosocial problems, or having children with special needs. In many cases, families are identified via a primary prevention program.

Home Visiting Programs

Home visiting has arguably become the most touted means of delivering services to parents. Such programs take many forms, but they generally target socioeconomically disadvantaged mothers with infants or young children. Intervention often begins (or is intended to begin) during the prenatal period. Despite the fact that they primarily target low-income mothers, these programs do not predominantly focus on providing material or economic resources; rather, most of them focus on parenting education and skill building. Home visitors may be nurses, other professionals, or paraprofessionals.

Home visiting programs tend to focus fairly narrowly on parenting competency, while acknowledging that individual behavior is not simply a function of personal pathology but rather exists in the context of familial, social, cultural, and community characteristics and processes. Thus, most programs aim to help parents master their role, in part by helping

them access informal and formal supports; the programs also model and teach parenting behaviors, such as warmth, responsiveness, sensitivity, and appropriate discipline, that encourage child-parent attachment.⁵⁶

Overall, research suggests that well-targeted home visiting programs relying on a tested model that has been implemented with fidelity (that is, staying true to the original program design) are a promising approach to improving parenting behaviors and children's cognitive and social-emotional outcomes. Evidence on whether home visiting reduces child maltreatment has been inconclusive, however. There is only weak evidence that home visiting prevents child maltreatment as measured by official maltreatment records; however, there is strong evidence that many home visiting programs are associated with reductions in substandard parenting and maltreatment-related behaviors. Among home visiting programs that have assessed child health, at least one reported decreased emergency room visits; the evidence on whether such programs increase regular doctor and dental checkups is inconclusive, and there is little to no evidence that they improve immunization rates.⁵⁷

Research suggests that well-targeted home visiting programs relying on a tested model that has been implemented with fidelity (that is, staying true to the original program design) are a promising approach.

Not all home visiting programs are of equal quality. Several models have been rigorously evaluated, but these results may not apply to generic home visiting programs, or to programs that are not implemented and delivered with fidelity to tested models. To date, the Nurse Family Partnership (NFP) model has been the most heavily and rigorously evaluated via random assignment experiments with diverse populations in Elmira, New York; Memphis, Tennessee; and Denver, Colorado. On the whole, results suggest that the program substantially improves maternal parenting behaviors, reduces child maltreatment and child injuries, and improves children's social-emotional functioning.⁵⁸ Several other models, including Healthy Families America (HFA), may also hold promise. HFA has been experimentally evaluated in a number of states. A meta-analysis of HFA studies suggests consistent positive effects on parenting attitudes and parent-child interaction, and smaller effects on parent-reported child maltreatment. The program appears to have mixed effects on children's health. It is most consistently linked to higher birth weight and reduced birth complications; there is less consistent evidence of a link to improved cognitive functioning and regular doctor visits, and no evidence of increased immunization rates.⁵⁹

An additional benefit of home visiting programs is that they may present an excellent opportunity to screen parents for mental health problems, link them to appropriate services, and, in some cases, directly provide preventive treatment, or support services.⁶⁰

Parent Training Programs

In addition to home visiting, a variety of individual and group parent training interventions are offered outside families' homes. These programs differ widely in

their theoretical underpinnings, the types of families and functional problems they target, levels of intensity and duration, modes of service delivery, types of services provided, and the skill and education levels of providers, making direct comparisons difficult. A recent meta-analysis loosely grouped these programs along three dimensions.⁶¹ First, programs were defined as either behavioral or nonbehavioral in orientation. Behavioral programs focus on how parents' reinforcement and punishment choices affect the development and maintenance of children's behavior; nonbehavioral programs focus on interactional styles in areas such as parent-child communication and problem-solving. Second, programs were identified as focusing on the parent only, the parent and child, or multiple systems. Finally, they were categorized as having group, individual, or self-directed modes of service delivery.

The meta-analysis suggests that behavioral parent training programs are associated with moderate improvements both in parenting and, particularly, in child behaviors in the short term, but that these effects fade to the extent that they are either no longer statistically significant or are very small in magnitude by about one year after the intervention. Nonbehavioral programs, which have been less rigorously evaluated, show less evidence of effectiveness, though some short-term positive associations have been found for parental stress and attitudes about parenting. Furthermore, a recent systematic review of the effectiveness of group-based parenting programs concluded that behavioral and cognitive-behavioral group-based parenting programs are associated with short-term improvements in parental wellbeing in areas such as stress, depression, anxiety, anger, guilt, self-esteem, and satisfaction with romantic partnerships.⁶² Again, however,

these effects were found to be short-lived—none persisted over the course of a year.

On the whole, parent training programs, particularly when delivered outside a community-level framework such as those provided by DFI and Triple P, seem to have limited utility for improving caregiving practices and home environments and, thereby, promoting child health and development. Nonetheless, programs that teach parents hands-on skills that they can practice in the presence of service providers may hold some promise. Both Incredible Years (IY) and Parent-Child Interaction Therapy (PCIT) exemplify this approach. IY is a group-based parenting program that focuses on developmentally appropriate problem-solving, self- and child-management, discipline, and communication strategies; participation is associated with less harsh and more responsive and cognitively stimulating parenting, as well as decreased child behavior problems. PCIT coaches parents to manage their children through developmentally appropriate attention, feedback, and discipline; participation is associated with improvements in parent-child interactions and decreased child maltreatment.⁶³ Finally, given that parental education and health are strong predictors of child health, interventions that increase parents' education and improve parents' health, including two-generation programs, may hold promise for improving child health, largely by their positive influence on health behaviors within families.⁶⁴

Conclusions and Recommendations

Our review suggests that financial resources and investments, along with the quality of caregiving behaviors and environments to

which children are exposed, are two primary mechanisms through which families influence child health and development. The quantity and quality of investments in each of these areas tend to be greater among more stable and better-off families than among more complex, fluid, and poorer families. As such, policies and programs that increase family financial resources or improve caregiving behaviors have the potential to positively influence child health and wellbeing, particularly for disadvantaged families. That is, to the extent that economic support policies successfully increase family resources, they are likely to positively influence child health both directly and, through improved caregiving environments, indirectly. Thus, cash or in-kind transfers, whether public or private (for example, child support), are one promising approach to promoting child health.

The CPS system has a clear role in protecting abused and neglected children from maltreatment, as well as in promoting permanency for children who have been removed from their homes. To the extent that it accomplishes these objectives, CPS should have positive implications for child health and development. Unfortunately, however, existing family preservation and reunification efforts have not been particularly successful. In addition, most children do not receive CPS services until they have already been abused or neglected—that is, the system is compensatory rather than preventive. As such, many referred children will already face health and development problems by the time they come to the attention of CPS. Enhanced prevention efforts may therefore be a more sensible approach to promoting child health, although some degree of compensatory help for maltreated children will always be necessary. It is important to

recognize, however, that individual CPS systems operate in the context of a state's or county's broader approach to intervening with children and families. Indeed, CPS relies extensively on existing community services. Community efforts with a holistic orientation to meeting the needs of children and families may be more successful at both preventing CPS involvement and serving CPS-involved children and families than would efforts that take a more fragmented approach.

A wide range of primary and secondary prevention programs are intended to improve children's caregiving environments. They vary widely with regard to the rigor with which they have been evaluated and the extent to which empirical evidence demonstrates their efficacy. Large-scale community-level primary prevention efforts such as DFI and Triple P offer a coordinated and holistic approach to promoting high-quality caregiving and supporting healthy child development—in stark contrast to the fragmented array of programs that are available in many communities. The evidence suggests that such large-scale efforts have considerable potential to help children and families. At the same time, however, they are difficult to implement and require large amounts of coordination, collaboration, and resources.

Turning to secondary prevention efforts that target at-risk families, we conclude that home visiting programs, such as NFP and HFA, if implemented and delivered with fidelity to their tested models, hold particular promise for improving parenting and, thereby,

children's health and development. Again, though, implementing these programs with fidelity on a large scale is an intensive and expensive proposition, although the benefits of doing so are likely to well outweigh the costs. Home visiting programs have gained traction in recent years, and the Affordable Care Act includes funding to expand them, with an emphasis on the NFP model. One important mechanism through which these programs may benefit child health and development is screening parents for mental health problems and linking them with services; this area is ripe for additional research and program exploration. In contrast, individual- and group-based parenting programs are considerably less expensive and have greater capacity to serve a large number of families. However, though a few programs, such as IY and PCIT, show promise, we are much less sanguine about the potential for these programs to produce lasting effects on parents and children.

In short, we believe that efforts to promote child health by improving the caregiving behaviors and environments to which children are exposed are most likely to be successful when they comprise a coordinated package of prevention, intervention, and treatment services and emphasize identifying and engaging at-risk families, offering adequate access to both preventive and compensatory services, and helping families acquire financial resources. To this end, we endorse the proliferation of large-scale community-level primary prevention efforts as well as the expansion of evidence-based home visiting programs.

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Children's Health in a Legal Framework

Clare Huntington and Elizabeth Scott

Summary

The U.S. legal system gives parents the authority and responsibility to make decisions about their children's health care, and favors parental rights over society's collective responsibility to provide for children's welfare. Neither the federal government nor state governments have an affirmative obligation to protect and promote children's health, nor do children have a right to such protection. In this sense, write Clare Huntington and Elizabeth Scott, policies to promote child health in this country, such as those discussed elsewhere in this issue, are optional.

Our libertarian legal framework grants parents broad authority to raise their children as they see fit. Parents can refuse recommended medical treatment for their children, and when they do so, courts respond with deference, particularly when parents' objections are based on religious beliefs. Parental authority has its limits, however. For example, the government can intervene to protect children's welfare in cases of medical neglect or when the child's life is in danger. Additionally, the law sometimes limits parental authority over older children. For example, teenagers may be able to refuse some treatments, such as psychiatric hospitalization, over their parents' objections. Older minors may also have access to treatments such as family planning services without their parents' consent.

Because the government has no positive obligation to promote children's health, write Huntington and Scott, children's health programs are often underfunded and vulnerable to political pressure. Programs are also more likely to focus on responding to family crises than on helping parents raise healthy children. In this environment, policy makers, researchers, and advocates must build political support by showing that investments in children's health not only benefit children but also promote social welfare.

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In the United States, parents have primary responsibility for their children's health and have a corresponding right to make health-care decisions for their children. This parental power, however, is not absolute. Under its police power, the state can sometimes override parental rights to promote social welfare: thus, for example, the state can require that children be vaccinated against disease.¹ The state can also protect the welfare of individual children, if, for example, their parents act in ways that threaten their health. Parental rights are qualified in another way as well. Lawmakers have authorized adolescents to make some health-care decisions without involving their parents. Pregnant minors have a limited right to obtain abortions and, in many states, birth control treatment is available to teenagers.² Finally, although not a legal exception, in practice the government tends to defer less to the parental rights of low-income parents and to condition public assistance on considerable intrusion into the family. The legal system deals very differently with most families, whose parental rights are strongly protected, and low-income families, whose parental rights may receive little consideration.

In this legal regime based on parental rights, the state has the power to limit parental authority, but it has no affirmative obligation to help parents care for their children's health needs unless it undertakes to do so, as with Medicaid and the Children's Health Insurance Program (CHIP). Moreover, the government's deference to parents may deter the state from providing useful services and support.

An important implication of the United States' approach to children's health and

wellbeing is that efforts to improve children's health must be undertaken within the reality of this libertarian framework. The U.S. legal framework is germane to the other articles in this issue because it demonstrates that any policy proposal should be understood as optional from the state's perspective. It also underscores the need to develop political support for any initiative to improve health services for children. Often, as this article shows, the state intervenes to promote children's health only in response to compelling social welfare needs such as reducing teenage pregnancy, juvenile crime, and communicable diseases, or to crises in which parents abuse their children or fail to provide adequate care.

In this article, we flesh out the legal framework that shapes and constrains children's health policy under American law. We focus first on parental rights doctrine under constitutional and statutory law, its justification, and the limits of parental rights. We examine an important conflict between parental rights and the state's interest in children's health involving cases where parents' religious beliefs deter them from seeking medical treatment for their children. We then explore the policy implications of the libertarian framework, explaining that because no support for families is legally mandated, the libertarian framework encourages a reactive approach to child wellbeing based on crisis intervention rather than prevention. Finally, we examine adolescent health policy, an area where the law has sometimes departed from the parental rights approach, first by giving adolescents authority to make some treatment decisions and, second, by intervening through juvenile justice policies that mandate rehabilitation programs for delinquent youth and their families.

Legal Framework: Parental Rights and State Authority

The U.S. legal system is based on strong principles of individual liberty and autonomy and relatively weak commitment to collective responsibility for the welfare of individual members of society. This libertarian strain in our political and legal history is embodied in constitutional parental rights doctrine elaborated by the Supreme Court in the twentieth century. But the court has also recognized that parents' authority has limits when the health and welfare of their children are at stake and, in a series of important opinions, it has sought to strike a balance between parental rights and the state's authority to intervene to protect children.

Beginning with two landmark opinions in the 1920s, the court has held that parents have a liberty interest, protected under the 14th Amendment of the U.S. Constitution, to raise their children as they see fit, free from undue interference from the state. The early Supreme Court opinions, *Meyer v. Nebraska* and *Pierce v. Society of Sisters*, both dealt with state statutes seeking to limit parents' freedom to guide their children's education, by requiring that instruction be in English and that children attend public school, respectively.³ In each case, the Supreme Court struck down the statute as unreasonable interference with the parents' liberty to direct their children's education and upbringing, a role that parents have "the right, together with the high duty" to perform.⁴ The court has been particularly deferential when the claim of parental rights is combined with a First Amendment claim that a state law interferes with the parents' right to teach their religious faith to their children. In *Wisconsin v. Yoder*, for example, the court held that Amish parents could not

be found in violation of the state's compulsory school attendance law for withdrawing their children from public school after the eighth grade to train them for their religious roles in the Amish community.⁵

The Supreme Court has also made clear that parental rights are not absolute.⁶ A statute that limits parental authority may be justified because it promotes child welfare (or social welfare in general) under the government's police power. This was the justification for Progressive Era laws in the early twentieth century requiring school attendance and prohibiting child labor. The state also has the authority to protect the welfare of individual children and other vulnerable members of society who are unable to look out for their own interests. This authority is the basis for policies that allow the state to intervene in families in child maltreatment cases.

The upshot is that parents have broad constitutional authority to guide their children's upbringing, subject to some constraints embodied in the state's legitimate interest in protecting children. But the state has no *obligation* to protect children or promote their welfare, nor do children have a *right* to state protection. Indeed, in a famous case that arose in the 1980s, the Supreme Court held that the state had no liability when an abusive father grievously injured and disabled his child, even when the Department of Social Services had been notified several times of the father's abuse and failed to intervene.⁷ Unless the state has actually taken a child into custody or otherwise assumed responsibility for her, the government has no duty to provide for her welfare.

Furthermore, the United States has not undertaken any obligation to promote children's health and wellbeing under

international law. The United Nations Convention on the Rights of the Child (CRC), for example, states that “the family, as the fundamental group of society and the natural environment for the growth and wellbeing of all its members and particularly children, should be afforded the necessary protection and assistance so that it can fully assume its responsibilities within the community.”⁸ Signatory countries have several obligations, including a duty to ensure that children have health care, adequate food, and education.⁹ Additionally, countries must address “all forms of physical or mental violence, injury or abuse, neglect or negligent treatment, maltreatment, or exploitation, including sexual abuse.”¹⁰ Every member of the United Nations has ratified the CRC except the United States and Somalia. The United States’ stance appears to express the libertarian values that shape its policy toward children generally.

Justifications for Parental Authority

The constitutional framework in which parental rights play such a prominent role has shaped legal regulation of the parent-child relationship in many domains, including health care. But deference to parental authority under American law is entrenched, in part, because it is supported by pragmatic justifications as well as by libertarian principles. The law assumes that most parents love their children, are motivated to make decisions that promote their welfare, and are best positioned to know their needs. In this view, a parental-rights approach ultimately promotes children’s interests more effectively than any alternative. Parents’ legal authority comes in exchange for the responsibility that they bear in caring for their children and guiding

their upbringing.¹¹ Giving parents responsibility also reduces the direct financial burden on and cost to society.

In health care, parents’ authority includes the right to consent to medical treatment for their children, and also the right to reject recommended treatment, discussed below. Medical decisions require informed consent by the patient—the ability to understand treatment information, compare the risks and benefits of treatment options, and make a decision.¹² Children are assumed to be incompetent to make their own treatment decisions because of their immaturity, and thus, under the law, a competent adult must provide consent. Because parents are presumed competent and know their children better than other adults do, the law views them as best situated to perform this function. Moreover, parents are financially responsible for their children’s health care. Parental control over health-care decisions is challenged only when parents are deficient or negligent in carrying out this role, or when they reveal a conflict of interest with their children.

The assumption that children can’t make their own treatment decisions is probably accurate for younger children, but likely not for teenagers.

The assumption that children can’t make their own treatment decisions is probably accurate for younger children, but likely not for teenagers. Indeed, research has found

that by age 14, adolescents' cognitive ability to understand and reason is sufficiently developed that most teenagers are capable of making informed medical decisions.¹³ But in a legal framework based on parental rights, children have little autonomy, and even adolescents have limited authority to make health-care decisions. As we discuss below, the law has carved out some exceptions to this general principle, where constitutional interests or public health concerns are implicated. For routine health-care decisions, however, all minors are subject to their parents' legal authority, and parents must generally consent to treatment.

Parents' Failure to Provide Medical Treatment

Parental control includes the right to decline as well as consent to medical treatment for their children. This authority is far from absolute, however, and legal regulation constrains parents' authority to refuse or fail to obtain treatment deemed important for their children's health. In general, when parents fail in this regard, the child welfare system may intervene on the basis of child maltreatment. State statutes that define parental abuse or neglect usually include a provision that in cases of "willful or negligent failure of the parent or guardian to provide the child with adequate ... medical treatment," the state may order the parents to obtain treatment or even remove the child to state custody.¹⁴ As with other forms of maltreatment, low-income families are more likely than others to be subject to intervention on the basis of medical neglect, which may be one component of a determination that a parent has generally failed to provide for the child's needs. In these cases, the family might be offered help in obtaining medical treatment for the

child, or, if the state determines that the parents will not provide necessary medical treatment, the child might be placed in foster care.¹⁵

In striking contrast, the general legal response to parents who refuse to consent to beneficial treatment for their children is quite deferential. For example, the state can require parents to have their children vaccinated against communicable diseases, but many states are reluctant to challenge parents who refuse to do so.¹⁶ This has sometimes led to outbreaks of measles and other preventable diseases.

State deference is particularly strong when parents refuse to provide treatment for their children on religious grounds. These cases have been treated as a special category, distinct from other medical neglect cases. Some religious sects oppose medical treatment, and members may either decline to obtain treatment for their children or refuse treatment urged by physicians. For example, Christian Scientists believe that physical ailments should be treated by Christian Science practitioners rather than medical doctors.¹⁷ These parents assert that they can refuse medical treatment for their children on the basis of their parental rights and their First Amendment right to raise their children in their religious faith.

In contrast to their response to medical neglect cases, legislatures and courts have largely respected these parents' claims. For example, in response to lobbying by Christian Scientists and other groups, many states have enacted civil and criminal religious accommodation statutes. These laws define child neglect to exclude parents' good-faith decisions to treat their children solely by spiritual means, according to the

tenets of an organized religion.¹⁸ Thus, such parents face neither liability nor the stigma and intrusion associated with a finding of child abuse or neglect. These statutes do not preclude the state from intervening to direct that a child receive medical treatment if nontreatment poses a serious threat to her life or health. But such intervention occurs only if the child's condition is dire and becomes known to authorities. Most courts have found that parents who seek spiritual treatment bear no liability if their children die because the children did not receive medical assistance.¹⁹

A great deal of litigation has revolved around states' efforts to override parental authority when parents refuse to allow their children to receive necessary medical treatment for religious reasons. In general, the judicial response has been to order treatment when the parents' refusal seriously threatens the child's life or is likely to have severe and lasting health consequences, and when the proposed treatment is likely to have beneficial effects.²⁰ Sometimes, courts have been criticized for intervening too aggressively: In a famous case involving a 15-year-old with disfiguring neurofibromatosis, the court ordered dangerous surgery requiring blood transfusions over the religious objections of both the mother and the child, even though the surgery would have been safer if postponed until the boy was an adult.²¹ But, in general, courts have been very deferential to parents' religious objections to conventional medical treatment, occasionally even when treatment represented the only hope for a child's survival. A Delaware court upheld the right of Christian Scientist parents to refuse painful chemotherapy that offered their young child, who suffered from Birkhett's Lymphoma, a 40 percent chance of survival, even though he faced certain death without

the treatment.²² Several legal scholars have sharply criticized this respectful approach, but parental rights continue to be robust in this context.²³

How the Framework Affects Policy Choices

The libertarian framework, which favors parental rights over collective responsibility, influences policy making in two significant ways. First, without an affirmative legal obligation to promote children's health, governmental investment is optional. Although many children's health programs exist, they are often underfunded and are vulnerable to budgetary and political pressures. Moreover, in our federalist system, broad discretion translates into considerable variability among states in children's health programs. Second, the libertarian framework encourages a reactive rather than preventive approach to children's health and wellbeing. Deference to parental authority has produced a system that primarily responds to family crises rather than helping parents generally to raise healthy children.

As Maya Rossin-Slater and Lawrence Berger and Sarah Font write elsewhere in this issue, when it comes to funding, the government has chosen to promote children's health and family functioning through income supplements such as the Earned Income Tax Credit, food voucher programs such as the Special Supplemental Program for Women, Infants, and Children, parenting support initiatives such as the Triple P—Positive Parenting Program and visiting nurse programs, and child development efforts such as Head Start. These authors show that many such programs effectively promote children's health and wellbeing as well as society's interests.

The authors show that many of these programs are also highly cost-effective. The programs that Rossin-Slater categorizes as intensive center-based early childhood care, for example, improve both cognitive and noncognitive outcomes for children and have a benefit-cost ratio larger than one. And for every \$1.00 invested in visiting nurse programs, which cost \$7,300 per child, society saves \$5.70 in the long run for high-risk populations and \$1.26 for lower-risk populations.²⁴

Indirect investments in children's health and family wellbeing differ from state to state.

Despite the social and economic benefits of broad-based preventive programs, the absence of any affirmative legal obligation to promote children's health means that these programs are vulnerable to shifting budgetary and political priorities. Moreover, the government often declines to respond to pressing family needs, for example, by failing to ensure paid parental leave or to provide adequate subsidies for quality child care. As Rossin-Slater writes in this issue, the United States is one of the only countries that does not guarantee new mothers some form of paid leave.²⁵ The federal Family and Medical Leave Act requires employers to allow workers to take up to 12 weeks to care for a new child or an ailing family member, but not all employers and employees are covered. More important, the leave is unpaid, which does not help parents who must work to support the family.²⁶ Similarly, government subsidies for child care do not come close to satisfying the demand.

Additionally, the combination of optional government funding and the federalist system of government in the United States means that efforts to promote children's health vary greatly among the states. Eligibility for CHIP, for example, differs from one state to the next. For example, Alabama and Oklahoma have a similar percentage of low-income children. But Alabama caps CHIP eligibility for young children at 300 percent of the federal poverty level and Oklahoma caps eligibility at 185 percent of the federal poverty level.²⁷

Indirect investments in children's health and family wellbeing also differ from state to state. As Berger and Font explain in this issue, the federal Earned Income Tax Credit is one of the most important antipoverty programs, and it is associated with better health among children. Twenty-five states, the District of Columbia, and two localities have chosen to supplement the federal program by offering a similar tax credit, providing additional support for family incomes.²⁸ But this means that 25 states don't offer a state tax credit to low-income families. Moreover, the existing state programs vary in generosity. Maryland's Earned Income Tax Credit, for example, provides up to 50 percent of the federal credit and is fully refundable; thus, families receive a payment from the state government for the amount of the credit rather than simply an offset against taxes owed (a nonrefundable tax credit).²⁹ By contrast, Ohio's Earned Income Tax Credit is only 5 percent of the federal credit and is nonrefundable.³⁰

The federalist system certainly has advantages. It allows states to experiment with different approaches to child health and wellbeing, and states can thus learn from one another. But the federalist system also

allows states to offer greatly varying levels of support for families, and services depend on a state's political values and financial resources, underscoring the point that government investment in children's health is optional.

The second major policy implication of the libertarian framework is that it encourages the government to take a reactive, rather than preventive, approach to children's health and wellbeing. Because of the importance of family autonomy, the government seldom intervenes in family life unless parents have seriously defaulted on their responsibility to care for their children. Of course, sometimes the government preempts parental authority, for example, through regulations mandating the use of car seats or requiring certain vaccinations, but even these preventive measures can be controversial, at least initially. Moreover, they do not target particular families and are justified on public health grounds.

By contrast, when parents default on their responsibilities, the state intervenes directly, and often intrusively, providing an array of services to the family and child. As Berger and Font write, the child welfare system profoundly affects the lives of many families, particularly low-income and minority families. The child welfare system uses two approaches to pursue its goals of protecting children believed to be abused or neglected by their families and strengthening families where children are at imminent risk for abuse and neglect.³¹ First, if child welfare officials believe a child can remain safely at home with additional support, the family receives preventive services, such as family or individual counseling, substance-abuse treatment, domestic-violence intervention, or parenting classes. These services aim to

strengthen the family and keep the child out of foster care. But when officials determine that the child cannot remain safely in the home or that preventive services have not been effective, they follow the second approach: the child is placed in foster care with a relative, an unrelated family, or an institution. The state typically has a duty to reunite the children with their families, but when this is not possible, it can move to terminate parental rights and place the child with an adoptive family.

Both of these approaches to child wellbeing follow a crisis-intervention model. The preventive services—counseling, substance abuse treatment, etc.—are provided only after the family has come to the attention of the authorities and the child is deemed to be at risk. Too often at this point, an adversarial relationship develops between the state and the family. Parents who face the threat of losing their children are understandably suspicious of state involvement. And the state is wary of the parents, because by the time intervention occurs, the functioning of at least one of the parents is likely at a nadir. As Berger and Font show, preventive services offered at this stage are largely ineffective.

Most cases in the child welfare system involve parental neglect rather than abuse, among families struggling with substance abuse, inadequate housing, or inappropriate child-care arrangements.³² These problems may indeed threaten a child's wellbeing, but the child welfare system, with its late-stage intervention and extreme sanction of removing children and placing them in foster care, often fails to adequately address the underlying issues, which are grounded in poverty.

Although the crisis-intervention approach stems partly from the law's respect for family

autonomy, in practice it offers little protection for parents who become involved in the child welfare system. This fact raises serious questions about socioeconomic discrimination. Children in the system overwhelmingly come from low-income families.³³ The fact that parental rights are constitutionally protected ensures that the state must meet a high standard of harm before it removes a child, but parental rights do not give parents a right to any state assistance before they face the risk of losing a child.

Even outside the child welfare system, when the government offers to help low-income parents improve their children's health, the assistance often comes at a cost to personal autonomy and privacy. New York, for example, offers the Medicaid-funded Prenatal Care Assistance Program (PCAP), which seeks to decrease infant mortality and increase birth weight among babies born to low-income mothers. But to participate in PCAP, low-income women must divulge extensive personal information that women with private insurance would not be required to tell their doctors. Women are asked questions about their immigration status, sources of income (including questions about criminal activity and working off the books), prior involvement with the child welfare system, and many questions about their eating habits and psychosocial history. Although the PCAP is well-intentioned, the state's stance toward the participants appears to be distrustful rather than collaborative.³⁴

In sum, the libertarian legal framework, with its emphasis on parental rights and responsibilities, deeply influences programs and policies affecting children's health. Because the government has no obligation to promote children's welfare, every program is optional and vulnerable to the vagaries of politics.

Under the federalist system, states are free to adopt widely varying levels of support for children's health and wellbeing. And libertarian values discourage a preventive approach to family welfare, despite evidence that preventive programs can enhance children's health. Instead, the state often offers support only after a family hits a crisis. To be sure, there is much to like about a regime that values parental autonomy and encourages pluralism. But the libertarian legal framework together with our federalist system can hinder efforts to provide comprehensive health services for children and families.

Adolescent Health and Parental Authority

Adolescents are more capable than are young children of making health-care decisions, and once they reach the age of majority at 18, they become legal adults with the authority and presumed competence to do so. Until then, as we have seen, parental consent is required, and parents continue to bear responsibility for their children's health care. But there are exceptions to this general rule, and in some treatment contexts, consent by adolescents to medical treatment is legally valid with limited or no parental involvement. Further, an adolescent's *refusal* of treatment is occasionally given some weight; for example, parents' authority to admit their children to inpatient psychiatric facilities is subject to restrictions. In this section, we discuss four areas in which the law treats adolescents differently from younger children: the mature minor doctrine; public health laws sometimes called minors' consent statutes; minor's refusal of treatment; and the right of access to reproductive health services, including abortion and contraception. In each setting, for different reasons, parental involvement in their

children's health-care decisions is deemed unnecessary or is restricted. Sometimes, mature minors' consent is deemed legally adequate to shield physicians from liability. Occasionally, parental authority is limited because the parent and child may have a conflict of interest (as when parents seek to admit children to psychiatric facilities); in other situations, a parental consent requirement might deter adolescents from seeking needed services, and public health concerns favor letting them get treatment without involving parents (minors' consent laws). Finally, abortion decisions represent a unique category of health-care decisions that involve key constitutional values.

The Mature Minor Doctrine

Under the long-recognized mature minor rule, parental consent to medical treatment is sometimes deemed unnecessary for adolescents mature enough to make their own decisions.³⁵ Courts developed the mature minor doctrine to protect physicians from legal liability when they treat minors under circumstances in which obtaining parental consent is either impossible or difficult and waiting to provide treatment would be risky. A physician who fails to obtain informed consent before providing treatment can incur legal liability for committing a battery on the patient. Because minors are presumed to be incompetent to make informed treatment decisions, treating physicians could incur tort liability for providing treatment without valid parental consent. Mature minor doctrine recognizes that the presumption of incompetence as applied to older minors is based more on administrative convenience than on scientific reality.

When is the mature minor doctrine applied? Courts have focused on the following factors in concluding that parental consent is not

necessary: 1) The treatment must be undertaken for the benefit of the minor; 2) the minor must be mature enough to understand the procedure and its consequences; and 3) the procedure cannot be of a serious nature (except for emergency treatment).³⁶ In the case of a serious procedure, parents should be consulted or a guardian appointed.

The mature minor doctrine indirectly acknowledges that adolescents are competent to make medical decisions, but it should not be understood to confer "rights" on teenagers on this basis. The doctrine's purpose is to protect physicians from liability if parents later bring suit against them on the grounds that informed consent was not obtained before the teen was treated. The mature minor doctrine is also not a general rule authorizing adolescents' consent, although a recent study found that physicians believe this is the case.³⁷ Instead, the adolescent's consent constitutes a valid substitute for the absent parent only under limited conditions.

Minor Consent Statutes

Many states have enacted minor consent statutes that allow minors to obtain particular health-care services without parental consent or involvement.³⁸ These services typically include outpatient treatment for substance abuse; outpatient mental health therapy; treatment for sexually transmitted diseases; and contraceptive, pregnancy, and family planning services. Although such statutes do not explicitly target adolescents, the nature of the designated treatments is such that application to younger children would be unusual. Thus, presumably, most patients who obtain treatment under such statutes are likely competent to consent to treatment.

The primary purpose of these statutes is not to protect physicians from liability (although

they in fact do so) or to expand adolescents' rights. Instead, minor consent statutes have an important public health purpose—they encourage teenagers to get treatment that they might be deterred from seeking if parental consent or involvement were required. These sensitive treatments involve private concerns and behaviors that adolescents may be loath to share with parents. At one level, the statutes recognize and respect individual privacy, but their purpose is also pragmatic. Society has an important interest in contraceptive use by teenagers who are sexually active and in appropriate treatment for those who have STDs or substance abuse problems—both for their own welfare and that of society. Legislatures enacting these statutes believe that removing obstacles to treatment in these cases serves both public health and teen welfare goals. Further, even if most parents likely would help their teenager obtain these sensitive treatments, the intuition is that some might not, and the laws allow children to receive treatments without confronting their parents' objections.

Adolescents' Refusal of Treatment

Parents' general authority is sometimes restricted either because the parent seeking treatment may have a conflict of interest with the child or because the adolescent child objects to the treatment. Both of these elements may be present when parents seek admission to inpatient psychiatric facilities for their children. Psychiatric hospitalization generally is assumed to differ from conventional medical treatment because it often involves restrictions on personal liberty to protect mentally ill patients from harming themselves or others. For these reasons, in the 1970s and 1980s, state lawmakers, partly responding to constitutional concerns raised by the Supreme Court, greatly reduced long-term institutionalization of mentally ill

people and restricted involuntary commitment.³⁹ These policies indirectly affected parents' authority to admit their children to psychiatric hospitals.

A conflict of interest may arise when a parent's decision to place a child in an inpatient facility is prompted by the child's disruptive and perhaps offensive behavior rather than a serious mental illness. In response, lawmakers have created special regulations that apply to parents' decisions to admit their children to psychiatric hospitals. Most importantly, in 1979, the Supreme Court held that because minors have a liberty interest in not being confined unnecessarily and not being subject to the stigma of inappropriate placement, special procedures are required to admit minors to inpatient psychiatric treatment.⁴⁰ The court decreed that a neutral fact finder (who could be a psychiatrist not involved with the minor's treatment) must confirm that institutional placement is medically indicated; the court also required an independent review after an initial period of treatment to determine whether continued commitment is necessary. Some states have required more rigorous procedures when an adolescent objects to psychiatric hospitalization, such as appointing an attorney to represent the minor in a judicial hearing. Further, in some states, the standard for involuntary commitment is adapted from the standard applied to adults—the minor must present a serious danger to himself or others or be unable to care for himself in an age-appropriate manner.⁴¹

Sex Education and Reproductive Services

Minors' access to sex education and reproductive health services—and particularly to abortion—has generated far more political controversy than other issues affecting children's health care. On the one hand,

some religious and political advocates argue that sexual activity should be reserved for marriage and generally view teenage sexual activity as immoral; many oppose minors' access to abortion as well. Those who hold these views also often believe that parents' authority in this realm is critically important. In their eyes, sex education is the parents' role, and teenagers need parental guidance when they make decisions about sexual behavior. Thus they oppose sex education in public schools and object to the notion that teens have a right of privacy. On the other hand, pragmatic public health advocates and others assume that teenage sexual activity is inevitable and see reducing teenage pregnancy as a major policy goal. From this perspective, the most effective way to reduce teenage pregnancy and limit the need for abortion is to provide comprehensive sex education and make contraceptive services readily available to teenagers. In this view, abortion should be available to pregnant minors to avoid teenage childbearing and rearing, but avoiding teen pregnancy altogether is the primary policy goal.

Since public schools began to offer sex education classes in the 1970s, some religious parents have objected on the ground that the instruction conflicts with the religious and moral values that they want their children to learn, and that the state is interfering with a parental prerogative. In response, many school districts have voluntarily established policies allowing parents to exempt their children from classes and programs that deal directly or indirectly with sexuality. When school districts have declined to do so, courts have been divided on the question of whether parents have a constitutional right to exempt their children from exposure to material that they find offensive on grounds

of their religious faith. Increasingly, courts have rejected parents' claims, pointing to public schools' broad discretion to control curriculum, as well as to the state's substantial public health interest in combating AIDS, other STDs, and teenage pregnancy.⁴² As public schools have become the forum for instruction on important public health issues, parental rights have been accorded less weight in that context.

As public schools have become the forum for instruction on important public health issues, parental rights have been accorded less weight in that context.

The battle over contraception has also largely been won by public health advocates. Teen pregnancy has declined in recent years, but its costs to the young parents, their children, and society are substantial. Teenage parents' educational attainment and socioeconomic status are lower than that of people who postpone childbearing into their twenties, and their children have lower educational achievement and poorer health than do children born to older parents.⁴³ Many states now have statutes (sometimes as part of broader minor consent statutes, described above) allowing minors to obtain contraceptive services without parental consent. Making contraceptives available through public school nurses' offices has been more controversial, though some urban public school systems allow high school students to get contraceptives this way, often with the provision that

parents can exclude their children by signing a form.⁴⁴ Many experts believe that policies making it easy for teenagers to obtain contraceptives, together with neutral educational programs that tell them how to avoid pregnancy, have played a major role in the dramatic reduction in teenage pregnancy and childbearing over the past decade.⁴⁵

Independent access to abortion by pregnant minors continues to be far more contentious. Currently, minors who are willing to involve their parents can obtain abortions subject only to the restrictions that have been found legally acceptable for adult women. The disputes arise when states restrict minors' ability to get an abortion without parental consent or involvement. In general, although the political and legal debate is often framed in terms of parental rights or teen welfare, the issue of minors' access to abortion also represents another setting in which the right to abortion itself is disputed; advocates for restricting access for minors often oppose abortion altogether.

Abortion decisions are distinctive in many ways. The issue is constitutionally important, of course; partly for this reason, many see the decision to get an abortion as fundamentally different from routine medical decisions that require parental consent. Parents may have a conflict of interest with their pregnant daughter, because of their views either about abortion or about her sexual activity and pregnancy; minors may fear their parents' anger or objection to the abortion.⁴⁶ Moreover, abortion (like other reproductive decisions) involves a private and sensitive matter that adolescents may be reluctant to discuss with their parents. Finally, the teenager considering an abortion will become a parent if the pregnancy is not terminated,

making her status as a minor subject to her parents' authority somewhat discordant.

Since it decided *Roe v. Wade* in 1972, the Supreme Court, in several opinions, has examined the constitutionality of state statutes that restrict minors' access to abortion by requiring either parental consent or parental notification.⁴⁷ In these decisions, the court has sought to balance the reproductive rights of pregnant teenagers against the parents' right to be involved in important decisions affecting their children's welfare, while also recognizing the independent interest of the state in the welfare of minors.

In *Bellotti v. Baird*, a landmark 1979 decision, the court provided a framework for regulating minors' access to abortion in states seeking to design a constitutionally acceptable process that accommodates some level of parental involvement.⁴⁸ In *Bellotti*, the court reiterated that pregnant minors have constitutionally protected reproductive rights, but it held that the state may limit minors' rights to a greater extent than would be acceptable for adult women.⁴⁹ The court justified such limits on three grounds: minors' greater vulnerability and need for protection; their lack of the "experience, perspective and judgment" needed to make sound decisions; and parents' constitutionally protected authority to guide their children's upbringing. *Bellotti* held that a state may require parental consent to abortion, but it must also provide an alternative procedure in which a minor can demonstrate that she is mature enough to make the decision without her parents' consent. If a minor is found to lack the requisite maturity, the judge (or other designated official) should decide whether abortion without parental consent is in her best interest. Thus, under the court's

guidelines, parental consent to abortion should be required only when it is in the minor's interest.

The Supreme Court has also upheld statutes that require parental notification (but not consent) before a minor can get an abortion.⁵⁰ In theory, these statutes infringe less on the pregnant minor's rights, because parents, once notified, lack the authority to block the abortion by withholding consent. But the prospect of notifying their parents constitutes a major deterrent for many teenagers, who fear their parents' response.⁵¹ Although the court did not explicitly exclude mature minors from the notification requirement, most states have established a procedure by which mature minors can avoid notification.

Some states do not distinguish between pregnant minors and adults, allowing minors to consent to abortion without parental consent or notification. But a majority of states have responded to the Supreme Court decisions by enacting statutes that establish judicial bypass hearings, in which a judge can evaluate the maturity and (sometimes) best interest of the minor seeking abortion without involving the parents.⁵² The Supreme Court did not provide any criteria to guide judges in evaluating whether a minor is "mature enough and well enough informed to make the abortion decision independently of her parents' wishes," or whether abortion without parental consent would be in her best interest.⁵³ Thus courts have broad discretion to interpret these terms and to apply the constitutionally mandated requirements.

Implementation of statutes requiring judicial bypass proceedings and the obstacles facing minors who seek abortions vary considerably across and even within states. In some states, each minor is provided an attorney to assist

her in the hearing (often through the pro bono services of bar associations); in other states, teenagers receive little assistance.⁵⁴ Further, courts take different approaches to evaluating the maturity of petitioning minors. Some courts focus narrowly on the minor's basic understanding of the medical procedure and its consequences, while others undertake a broad evaluation of the minor's maturity. Courts that use the latter approach are more likely to find the minor "immature," pointing to such factors as her financial dependence on her parents, nervousness in the hearing, and even carelessness in engaging in unprotected sex.⁵⁵ The outcomes of these proceedings also vary in different areas, although most petitions are granted. In Massachusetts, a study found that judges virtually always approve the minor's petition, either finding her sufficiently mature to make the decision or concluding that the abortion is in her best interest.⁵⁶ Courts in other states, applying rigorous maturity criteria, reject some petitions; more importantly, they likely deter some pregnant teens from petitioning in a timely manner, or at all. Further, in some areas, bypass proceedings and abortion facilities may not be available near a minor's home—a greater impediment to access for minors than for adults.

Many legal scholars have criticized judicial bypass proceedings for creating burdensome obstacles for pregnant teenagers, many of whom are already experiencing extraordinary stress.⁵⁷ The procedure itself creates delay, sometimes increasing the risk of the abortion. Moreover, although bypass hearings are supposed to be confidential, petitioning teens must reveal in court the very intimate facts of their sexual activity and condition, as well other highly personal information. As legal scholar Carol Sanger has put it, bypass hearings, despite their purportedly benign

purposes, can serve as a form of punishment for pregnant teens.⁵⁸

Treatment in the Juvenile Justice System

When juveniles commit a crime and are adjudicated delinquent, they are subject to the authority of the juvenile justice system. As part of their disposition, they may be required to participate in rehabilitative treatment. This treatment aims to reduce the risk of reoffending and to promote healthy psychological development, increasing the likelihood that delinquent youths will mature into productive adults. Moreover, adolescents in the justice system are more likely to suffer from untreated mental health problems than are youths not involved in the system, including depression, attention deficit disorders and substance abuse problems. Diagnosing and treating these problems is often essential to rehabilitation. The parents of delinquent youths may also be required to participate in treatment programs on the well-substantiated theory that parents and family may directly or indirectly contribute to adolescents' criminal activity and are often critically important to rehabilitation.⁵⁹

In the early twenty-first century, juvenile justice policy has undergone a major shift toward a more rehabilitative approach, supported by a growing consensus that juvenile offenders, due to their developmental immaturity, differ in important ways from their adult counterparts, and that, for most young offenders, treatment is more effective than harsh punishment in furthering the law's goal of reducing reoffending. This trend represents a departure from the punitive policies of the 1990s, when elevated rates of juvenile crime led many states to enact laws making it easier to prosecute and punish juveniles as adults. In the juvenile system

also, incarceration became the norm.⁶⁰ In part, the momentum behind the recent rehabilitative trend comes from a growing body of evidence that incarcerated youths have high recidivism rates and that some community-based programs not only cost less than incarceration but are quite effective at reducing reoffending.⁶¹ Moreover, research in developmental neuroscience and psychology has reinvigorated the traditional assumptions about youthful immaturity and the potential of young offenders to reform that animated juvenile courts for much of the twentieth century but fell out of favor in the 1990s.

Many states have embraced this research, as well as an evidence-based approach to juvenile crime regulation, and have diverted resources from state institutions to community-based correctional programs that are tailored to the needs of adolescent offenders. In New York, for example, a governor's task force in 2009 issued a scathing report describing abusive conditions and lack of treatment in juvenile institutions, most of which were far from offenders' homes.⁶² In response to the report and other investigations, New York City Mayor Michael Bloomberg announced that city youths would no longer be sent to these facilities. Many have been closed, with youths being sent to smaller therapeutic programs in their communities.⁶³ In 2013, a National Academy of Sciences committee issued a National Research Council report advocating a developmentally informed, research-based approach to juvenile justice policy.⁶⁴ The report cites a large body of research in strongly recommending that most youths be treated in rehabilitative programs in the community, that those who require residential treatment be placed in small facilities near their homes, and that parents play a key role in treatment.

The most effective correctional treatment programs seek to encourage healthy psychosocial development by giving juvenile offenders developmental tools and support in their social context. A critical dimension of treatment in most programs, as the NRC report suggests, is parents' participation, even for youths in residential facilities. Experts on adolescent development emphasize that authoritative parent figures are important to psychosocial maturation, and parents are frequently directed by juvenile court judges to participate in treatment programs. Thus parents whose children are in the justice system do not enjoy the deference to parental authority that other parents enjoy. Parental involvement is a core component of tested programs such as Functional Family Therapy, Multi-dimensional Treatment Foster Care, and Multisystemic Therapy (MST).⁶⁵

MST is thoroughly grounded in developmental knowledge and is one of the most effective treatment programs for adolescent offenders; it has been carefully evaluated for more than 20 years with a broad range of offenders.⁶⁶ MST combines cognitive behavioral therapy with an ecological approach that deals with individual youths in the multiple social contexts that they inhabit—their families, peer groups, schools, and communities. It focuses on giving parents the skills and resources they need to avoid problem behaviors, and it helps delinquent youths cope with family, peer, and school problems that contribute to their criminal activity. The success of MST and other programs in reducing recidivism has been instrumental in creating support for a community-based rehabilitative approach to juvenile justice policy.

Diagnosing and treating mental health problems of youth in the justice system has taken on greater urgency in recent years, with growing evidence that many delinquent

youths suffer from mental health conditions that likely contribute to their criminal activity. For example, a major study that followed teen offenders over time has found a high correlation between youthful reoffending and substance abuse, suggesting that effective treatment of offenders' drug and alcohol problems may reduce recidivism rates. Many offenders in the study received substance abuse treatment in juvenile facilities, but treatment was less common in the community. The researchers found that substance abuse treatment in the justice system reduced both substance abuse and recidivism, but only when the treatment lasted for a substantial period and involved the parents.⁶⁷

In recent years, the juvenile justice system has responded more effectively to the mental health problems (including substance abuse) of youths in the system with a simple, accurate, and inexpensive screening test. The Massachusetts Youth Screening Instrument, developed by psychologist Thomas Grisso and psychiatrist Richard Barnum, is now widely used in juvenile detention centers and has been credited with reducing suicides and increasing diagnosis and treatment of juvenile offenders' mental health problems.⁶⁸

The recent focus on treatment and rehabilitation of juvenile offenders is both paternalistic and pragmatic. A growing body of research in developmental psychology and brain science has persuaded many people that harsh adult punishment for adolescents is usually inappropriate, and likely more harmful to youths than to adult criminals.⁶⁹ But support for a rehabilitative approach to youthful offending also comes from evidence that it is more effective in reducing recidivism than the punitive sentencing policies of the 1990s. Thus, as in other areas of legal

regulation, social welfare, and not simply the welfare of minors, guides policy in response to issues of children's health.

A rehabilitative approach to juvenile crime is both less costly and likely more effective than incarceration-based policies. But like intervention in child maltreatment cases, juvenile justice dispositions represent a form of crisis intervention—the approach adopted by our libertarian legal system. As we have indicated, early childhood prevention programs that offer support to families and children have been shown to reduce adolescent offending and to produce other positive outcomes. Greater use of programs and policies that provide health care and other services—especially mental health services—to younger children and their families might reduce problem behavior in adolescence, and at a lower social cost than society incurs in responding to juvenile crime.

Conclusions

The libertarian legal framework that regulates children's health care in the United States—protecting parental rights while taking a hands-off approach to child wellbeing—has important consequences for policy. Unlike other developed countries, the United States has not undertaken an affirmative legal obligation to ensure children's health and wellbeing. This lack of a legal mandate to invest in family functioning and child health puts the onus on policy makers, researchers, and advocates to build public and political support for policies promoting child and family welfare. To do so, and to overcome philosophical opposition, requires persuasive arguments that investments in children's health will not only benefit children but will also promote social welfare.

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