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# EXPLORING OPPORTUNITIES *for* COLLABORATION BETWEEN HEALTH *and* EDUCATION *TO* IMPROVE POPULATION HEALTH

WORKSHOP SUMMARY

Joe Alper, Darla Thompson, and Alina Baciu, *Rapporteurs*

Roundtable on Population Health Improvement

Board on Population Health and Public Health Practice

INSTITUTE OF MEDICINE
*OF THE NATIONAL ACADEMIES*

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*Willing is not enough; we must do."*
—Goethe

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**JEFFREY LEVI,** Executive Director, Trust for America's Health

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# Reviewers

This workshop summary has been reviewed in draft form by individuals chosen for their diverse perspectives and technical expertise, in accordance with procedures approved by the National Research Council's Report Review Committee. The purpose of this independent review is to provide candid and critical comments that will assist the institution in making its published workshop summary as sound as possible and to ensure that the workshop summary meets institutional standards for objectivity, evidence, and responsiveness to the study charge. The review comments and draft manuscript remain confidential to protect the integrity of the process. We wish to thank the following individuals for their review of this workshop summary:

**E. Jane Costello,** Duke Institute for Brain Sciences
**Rochelle Davis,** Healthy School Campaign
**Whitney Meagher,** National Association of State Boards of Education
**Howard Wechsler,** Alliance for a Healthier Generation

Although the reviewers listed above have provided many constructive comments and suggestions, they did not see the final draft of the workshop summary before its release. The review of this workshop summary was overseen by **Georges Benjamin,** American Public Health



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Association. Appointed by the Institute of Medicine, he was responsible for making certain that an independent examination of this workshop summary was carried out in accordance with institutional procedures and that all review comments were carefully considered. Responsibility for the final content of this workshop summary rests entirely with the rapporteurs and the institution.

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# Contents

ACRONYMS AND ABBREVIATIONS xiii

1 INTRODUCTION AND OVERVIEW 1
The Roundtable on Population Health Improvement, 2
Workshop Scope and Organization of the Summary, 3
Report on the June 4 NIH Meeting on the Evidence for Education Improving Health, 4

2 WHY EDUCATIONAL ATTAINMENT IS CRUCIAL TO IMPROVING POPULATION HEALTH 13
Discussion, 22

3 HOW CAN THE HEALTH SECTOR SUPPORT EDUCATION SECTOR EFFORTS AT THE LEVEL OF STUDENTS, FAMILIES, AND SCHOOLS? 25
Healthy and Ready to Learn, 25
Leveraging the Links Between Health and Education, 30
Discussion, 35

4 HOW THE NATION'S HEALTH CARE EXPENDITURES REDUCE EDUCATION FUNDING 41
Discussion, 50



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5 THE POTENTIAL OF HEALTH SECTOR PARTNERS TO CONTRIBUTE TO THE IMPLEMENTATION OF THE BEST EVIDENCE ABOUT WHAT SUPPORTS EDUCATIONAL ATTAINMENT 53
Making Health Happen in Public Schools, 53
Programs at the U.S. Department of Education, 56
ParentCorps, 58
Discussion, 64

6 STATE AND LOCAL COLLABORATION BETWEEN THE HEALTH AND EDUCATION SECTORS 69
Models of State and Local Collaboration Between Health and Education, 69
Regional Disparities in Health and Education, 72
Reducing Dropout Rates to Improve Health Outcomes, 78
Discussion, 82

7 FINAL REFLECTIONS AND COMMENTS 87

APPENDIXES

A REFERENCES 93
B WORKSHOP AGENDA 97
C BIOGRAPHICAL SKETCHES OF WORKSHOP SPEAKERS AND MODERATORS 101

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# Acronyms and Abbreviations

| | |
|---|---|
| ACO | accountable care organization |
| ADHD | attention deficit hyperactivity disorder |
| APHA | American Public Health Association |
| CATCH | Coordinated Approach To Child Health |
| CDC | Centers for Disease Control and Prevention |
| GDP | gross domestic product |
| HIPAA | Health Insurance Portability and Accountability Act |
| ILSI | International Life Sciences Institute |
| IOM | Institute of Medicine |
| NEA | National Education Association |
| NIH | National Institutes of Health |
| NRC | National Research Council |
| OBSSR | Office of Behavioral and Social Sciences Research |
| RCT | randomized controlled trial |



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# 1

# Introduction and Overview[1]

The United States spends more on health care than any other nation, yet there are many questions about the value that the nation receives for all of that spending and whether that spending is equitable. A 2013 report from the National Research Council (NRC) and the Institute of Medicine (IOM) found a pervasive pattern of health disadvantages in diverse categories of illness and injury that exists across age groups, sexes, racial and ethnic groups, and social classes (NRC and IOM, 2013). The same report also pointed out that significant health disparities exist between different income groups and geographic locations in the United States and that among the important contributors to these disparities are various social determinants, such as education and income, and also place-based characteristics of the physical and social environment in which people live and the macrostructural policies that shape them.

A recently published discussion paper (Zimmerman and Woolf, 2014) noted that of all the various social determinants that play a role in health disparities by geography or demographic characteristics, the literature has consistently identified education as a major factor. Indeed, the authors report that research based on decades of experience in the developing world has identified educational status, especially the status of the mother,

[1] The planning committee's role was limited to planning the workshop, and the workshop summary has been prepared by the workshop rapporteurs as a factual summary of what occurred at the workshop. Statements, recommendations, and opinions expressed are those of individual presenters and participants, and are not necessarily endorsed or verified by the Institute of Medicine, and they should not be construed as reflecting any group consensus.



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as a major predictor of health outcomes and that the literature indicates that the gradient in health outcomes by educational attainment has steepened over the past four decades across the United States (Goldman and Smith, 2011). Other scholarship has examined the impacts of health on the ability of students to learn and the manner in which health contributes to the achievement gap between urban youth of color and white youths (Basch, 2011). Since the 1990s, while the average life expectancy in the United States has been steadily increasing, life expectancy has actually decreased for people without a high school education, especially white women (Olshansky et al., 2012).

To understand the complex relationship between education and health and how this understanding could inform our nation's investments and policies, the IOM's Roundtable on Population Health Improvement held a public workshop in Washington, DC, on June 5, 2014. This workshop, which featured presentations and extensive discussion periods, also explored how the health and education sectors can work together more effectively to achieve improvements in both health status and educational achievement. The workshop focused on three objectives:

1. learning from education leaders about ways in which the health sector could support their efforts at the level of students, families, and schools through actions such as addressing health care needs, advocating for better health care for children, and promoting better connections between schools and the health care delivery system;
2. learning from education leaders about which education policy efforts could benefit most from health sector partners' contributions and what education or other policy and investment changes could contribute to benefits for both health and education; and
3. highlighting state and local examples of successful collaboration between the health and education sectors.

## THE ROUNDTABLE ON POPULATION HEALTH IMPROVEMENT

The Roundtable on Population Health Improvement provides a trusted venue for leaders from the public and private sectors to meet and discuss leverage points and opportunities for achieving population health that arise from changes in the social and political environment. The Roundtable's vision is of a strong, healthful, and productive society that cultivates human capital and equal opportunity. The Roundtable recognizes that such outcomes as life expectancy, quality of life, and health are shaped by a variety of interdependent social, economic, environmental, genetic, behavioral, and health care factors and thus that achieving its vision will require robust national and community-based policies and dependable resources.

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Exploring Opportunities for Collaboration Between Health and Education to Improve Population Health: ...



The goals of the Roundtable are to catalyze urgently needed action toward a stronger, more healthful, and more productive society and to facilitate sustainable collaborative action by a community of science-informed leaders in public health care, business, education, early childhood development, housing, agriculture, transportation, economic development, and nonprofit and faith-based organizations. To accomplish these lofty goals, the Roundtable has identified six areas of activity on which it is working:

1. identifying and deploying key population health metrics;
2. shedding light on and reflecting on the allocation of adequate resources to achieve improved population health;
3. identifying, assessing, and reflecting on research and its implementation;
4. discussing and helping stakeholders who work to develop and implement high-impact public and private population health policies;
5. fostering and building relationships that will catalyze action to improve population health; and
6. developing and deploying communication to educate about and motivate action directed at improving population health.

## WORKSHOP SCOPE AND ORGANIZATION OF THE SUMMARY

In his introductory remarks, Roundtable co-chair and planning committee co-chair David Kindig, professor emeritus of population health sciences and emeritus vice chancellor at the University of Wisconsin School of Medicine and Public Health, said that the evidence shows that education and health are linked in multiple and complex ways and that the workshop would highlight some of that evidence. In her opening comments, roundtable member and planning committee co-chair Gillian Barclay, vice president of the Aetna Foundation, pointed out that health care accounts for just a small portion of the factors that influence health. "Factors that reside in our socioeconomic and built environments, such as educational attainment, access to parks, and safe neighborhoods, have a great deal more to do with whether we are able to live long and healthy lives," Barclay said, noting the increased recognition of the fact that it takes partnerships and collaborations across sectors to alter the non-health factors that shape health.

This workshop, the sixth in a series organized by the Roundtable, included an overview of a National Institutes of Health (NIH)-sponsored meeting on the evidence for education improving health that had been held a day earlier along with two keynote presentations and three panel discussions. This publication summarizes the discussions that occurred

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during the workshop, highlighting the key lessons presented as well as opportunities for addressing the disparities in education that negatively impact health. Chapter 2 discusses the evidence for why educational attainment is crucial for improving population health. Chapter 3 considers how the health sector can support the education sector, and Chapter 4 discusses the connection between rising health care expenditures and diminishing funds for education and suggests some approaches for restructuring the nation's investments in both health and education. Chapter 5 describes the potential for the health sector to contribute to the implementation of best evidence about what supports educational achievement, and Chapter 6 discusses state- and local-level collaborations between the health and education sectors. Chapter 7 recapitulates the wide-ranging end-of-workshop discussion and describes reflections on the day's proceedings that were offered by various workshop participants.

## REPORT ON THE JUNE 4 NIH MEETING ON THE EVIDENCE FOR EDUCATION IMPROVING HEALTH

Robert Kaplan, the chief science officer at the Agency for Healthcare Research and Quality and a Roundtable member, recounted the June 4, 2014, meeting, "Understanding the Relationship Between Years of Education and Longevity," which he had helped organize while serving in his previous position as director of the NIH Office of Behavioral and Social Sciences Research (OBSSR). The goals of that meeting, he said, were to convene a heterogeneous group of experts representing fields including education, economics, sociology, demography, epidemiology, psychology, and medicine; to identify gaps in knowledge; and to stimulate interest by funding agencies in developing a robust research agenda around the issue of education and life expectancy.

Kaplan began his summary by making the argument that educational attainment has a significant effect on life expectancy. When compared to other risk factors that people generally see as having a large impact on life expectancy, he said, educational level has a major impact on quality-adjusted life years by risk group (see Figure 1-1). For example, having a Pap smear once per year rather than once every 3 years increases quality-adjusted life years by, on average, a few days at most (Mandelblatt and Phillips, 1996). Having regular mammograms provides a benefit of about 1 month versus no screening at all (Gøtzsche and Jørgensen, 2013), while maintaining normal blood pressure adds about two-thirds of one quality-adjusted life year compared to having a systolic blood pressure of more than 140 (Clarke et al., 2009). The 6 years of quality-adjusted life years that one can gain by not smoking is much larger than these other factors (Clarke et al., 2009), but those who earn an advanced degree have an even

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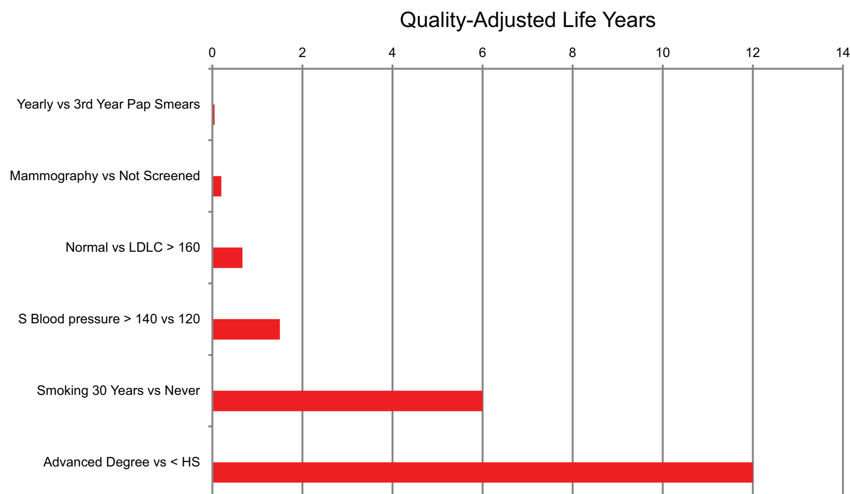


**FIGURE 1-1** The effect of various risk factors on quality-adjusted life years. Data estimated from Whitehall 38-year follow-up study. NOTE: LDLC = low-density lipoprotein cholesterol; S Blood Pressure = systolic blood pressure.
SOURCE: Kaplan, June 4, 2014, NIH meeting presentation, adapted from Clarke et al., 2009.

greater edge over those who never graduated high school—as many as 12 quality-adjusted life years (Brown et al., 2012; Montez et al., 2012). Effects this large are too big to ignore, Kaplan said. Granted, these data did not come from randomized controlled trials (RCTs), Kaplan said, but in this case that does not matter. RCTs are needed to identify subtle differences, but the 12-year effect of differences in education is not subtle (see Box 1-1).

Another way to look at the effect of education on life expectancy is to examine the impact of various events on the number of lives lost (see Figure 1-2). These data also show a clear relationship between education and risk of premature death. In particular, having less than a high school education is associated with 240,000 lives lost annually, compared with 125,000 for stroke and up to 70,000 for diabetes (Galea et al., 2011).

Addressing the policy implications of educational attainment differences may be quite challenging. Kaplan highlighted the presentation of Neal Halfon, who described an approach to revising the nation's health care system. In this talk, Halfon (2014) argued that there have been three eras in modern health care. The first, based largely on an industrial model, focused on acute disease and infections. In that era, hospitals were like factories where physicians worked and people with acute illnesses came to get "fixed." The second era, which resulted from advances in science, particularly in epidemiology, placed an increasing focus on chronic dis-

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**BOX 1-1**
**How Different Interventions Will Improve Life Expectancy (in Quality-Adjusted Life Years), as Described by R. Kaplan**

- Mammograms versus no mammograms → about 1 month of life
- Not smoking versus smoking → 6 years
- An advanced degree versus no high school diploma → 12 years

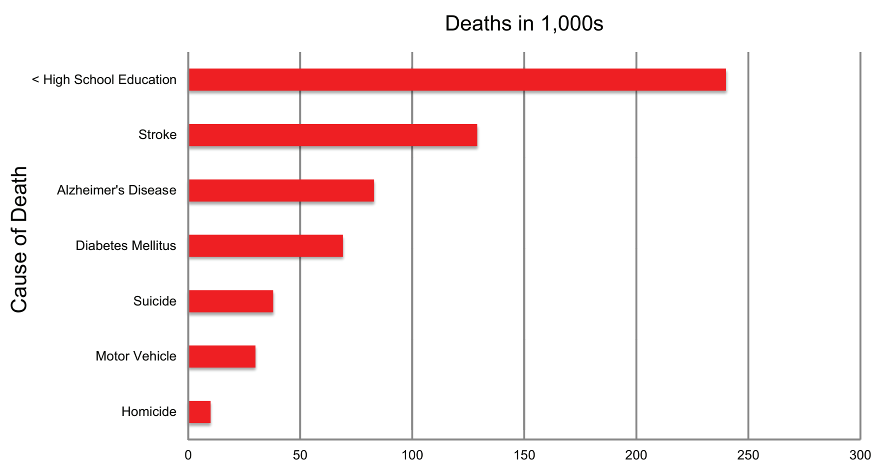


**FIGURE 1-2** Deaths associated with low educational level in perspective.
SOURCE: Kaplan, June 4, 2014, NIH meeting presentation, death data from the National Vital Statistics System of the Centers for Disease Control and Prevention (CDC, 2013a) and education estimates from Galea et al., 2011.

ease and attacking the risk factors associated with chronic disease. In this second era, health care moved from the acute care setting in hospitals into ambulatory care settings, and the goals shifted from simply reducing deaths to reducing morbidity and disability. The third era, which has not quite started, will place an increasing focus on achieving optimal health through investments in population-based prevention using a network model. Again, scientific advances will drive the transition between today's health system and tomorrow's, just as it did between yesterday's and today's.

Halfon suggested that today there are a number of factors—parent's lack of education and literacy among the biggest and earliest—that con-

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spire to put some American children on a "delayed/disordered" developmental and health trajectory (Halfon, 2012) (see Figure 1-3). He said that pushing children back onto a "healthy" trajectory will require a number of interventions, many of which will involve education. An integral part of tomorrow's health system will be to consider the entire life course of an individual, not just when someone presents with an illness.

Another presentation at the NIH meeting that Kaplan wanted to highlight was made by economist Favio Cunha, who, along with colleagues, has detailed the relationship between reading to children and the development of appropriate vocabulary (Cunha et al., 2010). Cunha argued that the well-known correlation between cumulative vocabulary and socioeconomic status at age 36 months has to do with allocation of parental resources, which includes both time and information. "This serves as a cornerstone for [many] other developmental processes," Kaplan said.

The heart of the NIH meeting was spent on the relationship between educational attainment and mortality risk (see Figure 1-4) and between education and morbidity risk factors (see Figure 1-5). Although the profound relationship between racial and ethnic group membership and life expectancy should never be downplayed, in fact the relationship between

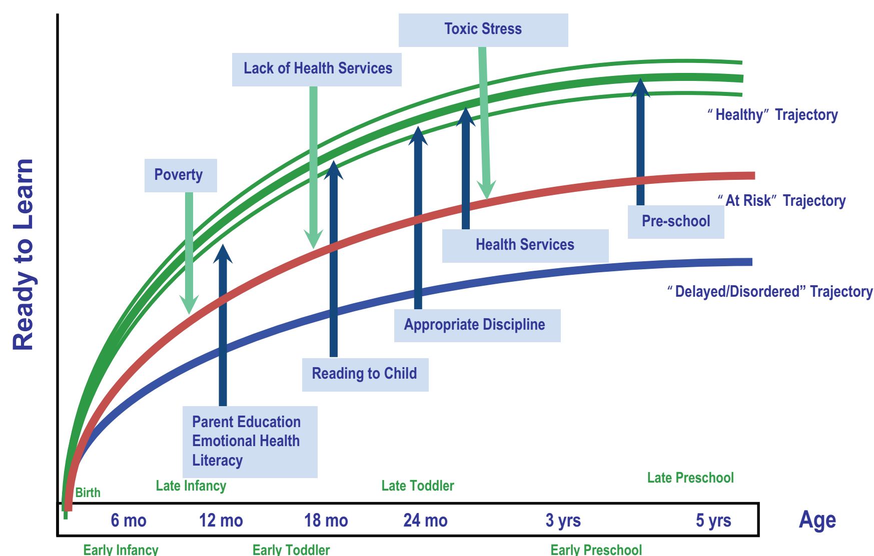


**FIGURE 1-3** Life-course health development: Reducing risk and optimizing protective factors.
SOURCE: Halfon, June 4, 2014, NIH meeting presentation.

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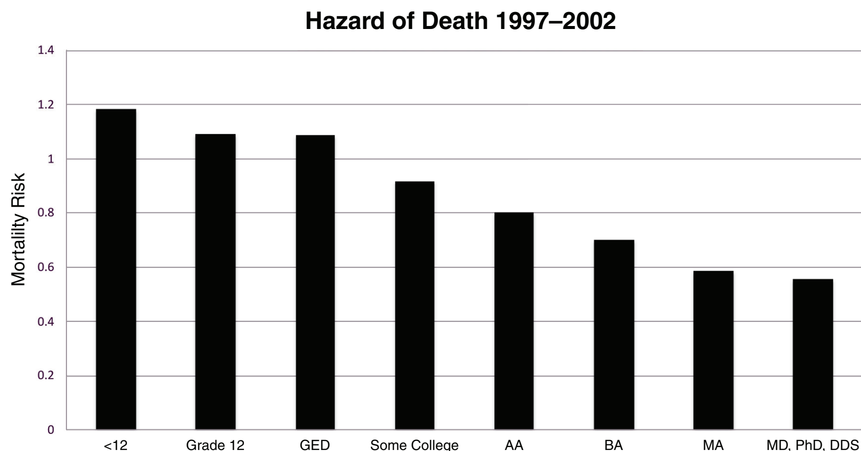


**FIGURE 1-4** Hazard of premature death by years of education.
SOURCE: Kaplan, June 4, 2014, NIH meeting presentation, adapted from Rogers et al., 2010.

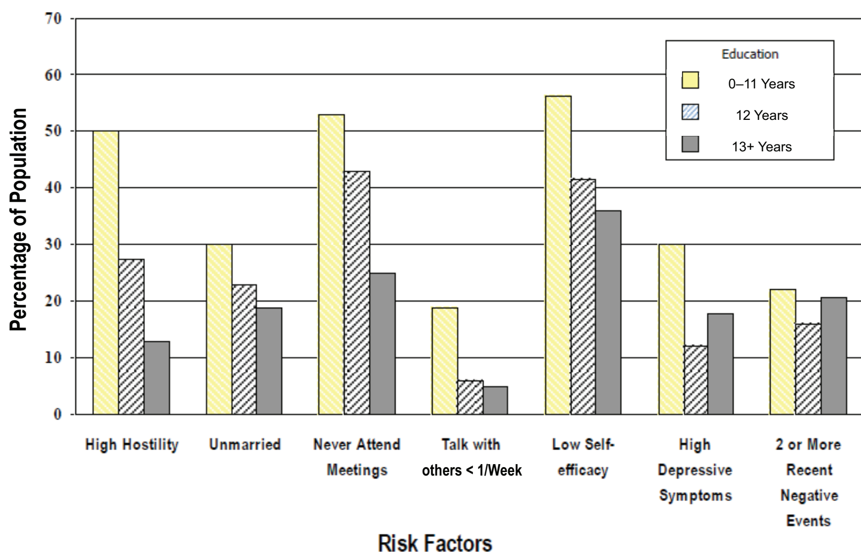


**FIGURE 1-5** Education and morbidity/risk factors.
SOURCE: House, June 4, 2014, NIH presentation, adapted from IOM, 2000.

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educational attainment and life expectancy is stronger and more systematic (Herd et al., 2007; McDonough et al., 2000). The issue of whether these trajectories are changing over time received a great deal of attention at the NIH meeting (see Figure 1-6). The data suggest that the trajectories are changing, particularly among white women. While there have been declines in mortality risk among educated white women, there have been increases in mortality risk among women who do not attain a high school diploma. This is particularly the case for young white women (Montez et al., 2011). "I think that is something quite disturbing and needs attention," Kaplan said.

Kaplan discussed data that he collected with George Howard and other colleagues showing that the relationship between educational attainment and life expectancy attenuates somewhat when the data are adjusted for demographic variables, further when an income adjustment is made, more when biological risk factors are considered, and more still when behavioral variables are added. He noted that there was a great deal of discussion among the demographers at the meeting as to whether this is a stepped relationship based on education level, where much of the gain in life expectancy occurs with post-high school education and then on through graduate education. More research is needed to confirm the functional form of the relationship.

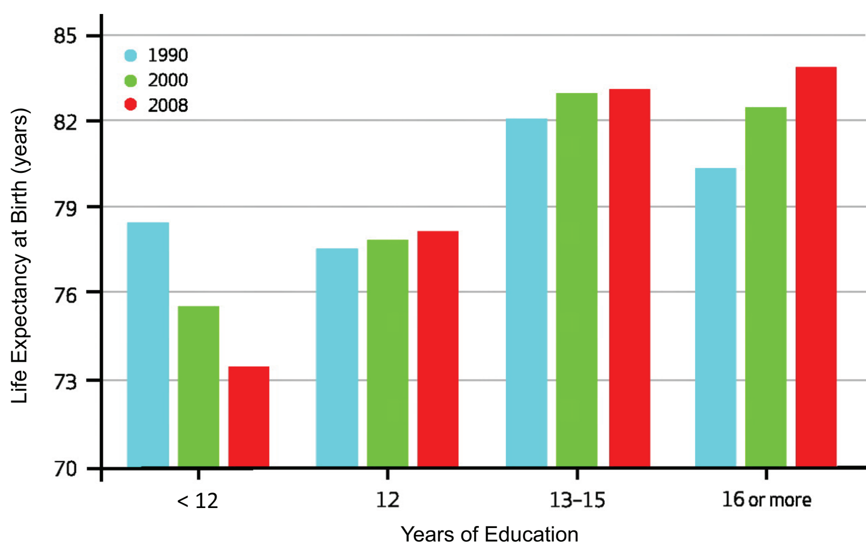


**FIGURE 1-6** Life expectancy by years of education at age 25 for white females.
SOURCE: Kaplan, June 4, 2014, NIH presentation, citing Olshansky et al., 2012.

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Kaplan then discussed Sandro Galea's presentation in which Galea argued that educational differentials, not educational attainment, are the real cause of these observed disparities. Galea hypothesized that variability in educational attainment across the population leads to diversion into other activities, particularly during adolescence, and that this diversion can have adverse effects on health outcomes years later (Galea et al., 2011). Galea noted that there is a need for more research on this relationship. Kaplan noted that in addition to the direct effects of education on individuals, there is a benefit obtained from a spouse's educational attainment (Montez et al., 2009). For couples with differences in educational achievement, the less-educated spouse can experience up to approximately 3 years of benefit in life expectancy through association with a more educated spouse, he said.

Adverse childhood events also have an impact on life expectancy (Montez and Hayward, 2014). Academic failures in childhood seem to have a particularly strong effect on being healthy as an adult, Kaplan said, and are remarkably strong predictors of disease outcomes in adult-

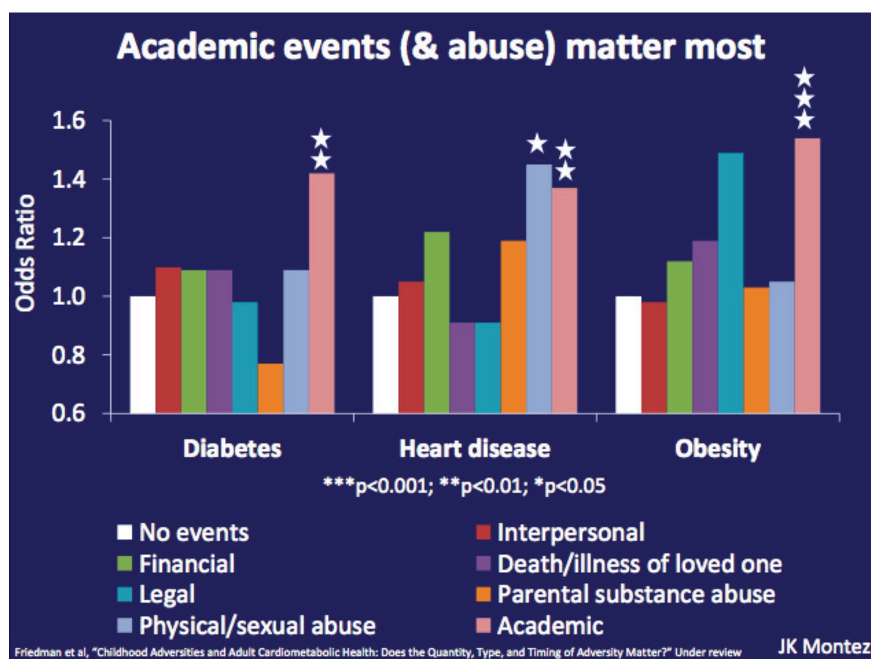


**FIGURE 1-7** Adverse childhood events predict poorer adult health.
SOURCE: Montez, June 4, 2014, NIH presentation, citing Friedman et al., n.d.

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hood (see Figure 1-7). The data also show that it is possible for a child's educational achievements to overcome the negative impact of a parent's low level of educational attainment.

A better understanding of the complex interplay between social factors—including education and health—will only come from more research in naturalistic settings, Kaplan said. One way to conduct such research would be to add health measures to some of the many intervention studies now being funded by the U.S. Department of Education and the department's Institute of Education Science. One such study, for example, is looking at children selected at random by lottery to attend high-profile charter schools in Los Angeles. This study will track education performance, health habits, and the transition to additional education.

Kaplan noted that the participants at the NIH-sponsored meeting discussed three different hypotheses, regarding neuroplasticity, personality, and habits, to explain the relationship between education and health. The neuroplasticity hypothesis suggests that interventions must be in the first 1,000 days of life, while the personality hypothesis holds that conscientious people are more likely to live longer and complete more education (Friedman et al., 1995). The habits hypothesis posits that education is associated with the development of better health habits (Cutler and Lleras-Muncy., 2010). Current evidence, Kaplan said, does not clearly support any one of these hypotheses.

In order to advance this field, researchers will need to explore new sources of data, Kaplan said. One opportunity for testing these hypotheses can be found in the development of a data infrastructure and the availability of "big data," such as the data that are being collected in Project Talent (Wise and McLaughlin, 1977). This longitudinal study of 440,000 high school seniors, who underwent testing in 1960 and were followed for 20 years, is now being analyzed to look for factors that influence mortality more than 50 years after the participants' high school graduations. Other novel data sources include new data available from the Society of Actuaries and from the many states that can link school performance to detailed information about communities, teachers, and school characteristics.

Kaplan concluded his remarks by noting that the NIH-sponsored meeting brought scholars together from disciplines that do not ordinarily have contact with one another. He noted how little progress has been made to date in identifying knowledge gaps and said that the diverse group of experts at the meeting suggested several important new directions. The meeting's effect on funding agency interest remains to be determined, Kaplan said, but he remains committed to furthering the dialogue on this topic.

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# 2

# Why Educational Attainment Is Crucial to Improving Population Health

The two major premises underlying all of the discussions in this workshop were that education is an important determinant of health and that any successful effort to improve health at a population level will depend on improving the overall education level of the American public. In the workshop's first keynote presentation, Steven Woolf, director of the Center on Society and Health and professor of family medicine and population health at Virginia Commonwealth University, reviewed the evidence base for the strong relationship between education and health. He also discussed a strategy for getting the public health and education policy communities working together toward common goals.

"It is clear that education is a big deal in terms of public health outcomes, and it is appropriate for the Roundtable on Population Health Improvement to make this a priority topic," Woolf said at the start of his presentation. The data show, for example, that by age 25, U.S. adults without a high school diploma can expect to live 9 fewer years than college graduates. Similarly, those individuals with less than a high school education are almost twice as likely to die in a given year as those with a professional degree, and even those who have completed college with a bachelor's degree are 26 percent more likely to die than those with professional degrees (Ross et al., 2012) (see Figure 2-1). Woolf noted that evidence accumulated since the 1960s indicates that the impact of educational attainment on health appears to be growing. "This is not a static problem," he said, "and in our knowledge economy, the difference in health between educated and non-educated Americans has progressively



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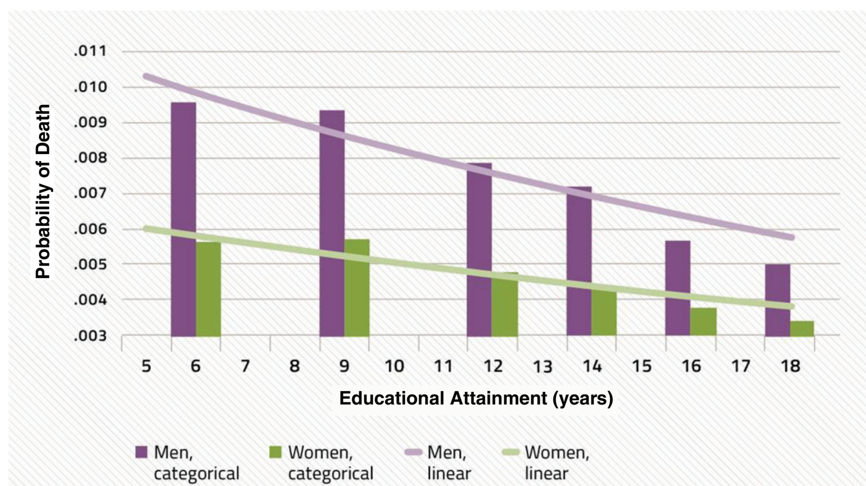


**FIGURE 2-1** All-cause mortality risk for men and women by years of education.
NOTE: Data derived from regression modeling.
SOURCE: Woolf presentation, June 5, 2014, adapted from Ross et al., 2012, Virginia Commonwealth University Center on Society and Health.

widened." Woolf added that while this appears to be a problem in all industrialized countries, it is especially so in the United States. The data also show that while there are steadily increasing benefits to getting more education, there is a major jump in the health benefits—what Woolf described as a "step-like benefit"—associated with high school graduates also graduating from college (see Figure 2-2).

What the data are showing, Woolf said, is that people who do not graduate from high school are experiencing an increase in mortality rates while everyone else is experiencing a decline in mortality. This is partly a selection phenomenon, he said. "The people who don't graduate from high school over time are becoming a more select population of sicker people because of the movement of the rest of society into the more educated population," Woolf said.[1] This trend is particularly true for white Americans and especially white women (see Figure 2-3). In 2008, white men with fewer than 12 years of education had the same life expectancy as U.S. men born in 1972, while white women with this level

[1] As it becomes rarer for people to not finish high school, the increasingly small percentage of individuals who do not finish are becoming more unlike the rest of the population—and, in particular, the ones who do not finish high school now are at significantly higher risk for health problems than those who did not finish high school several decades ago.

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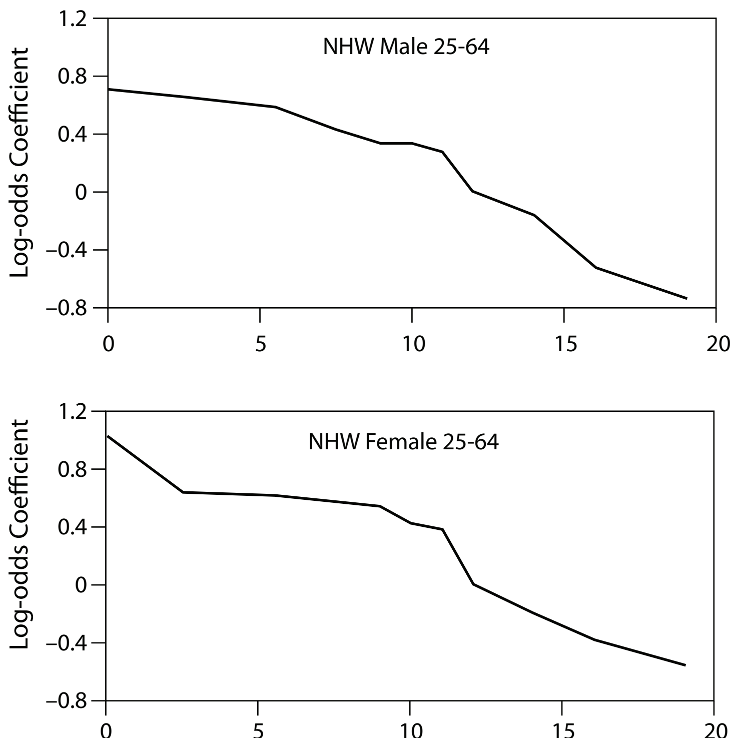


**FIGURE 2-2** The relationship between education and health shows clear step-like behavior at 12 years of formal education.
NOTES: Enlarged markers indicate high school diploma and bachelor's degree attainment. NHW = non-Hispanic white.
SOURCE: Woolf presentation, June 5, 2014, adapted from Montez et al., 2012, Virginia Commonwealth University Center on Society and Health.

of education had the same life expectancy as U.S. women born in 1964 (Olshansky et al., 2012).

The link between education and health is not confined to death rates, Woolf said; it applies to the prevalence of major diseases as well. "If you look at any number of health metrics, you again see this graded relationship in terms of education," he said. For example, self-reports of fair or poor health are some five-fold higher in high school dropouts than among those with a bachelor's degree or higher (see Figure 2-4). Similar trends are seen for most other major diseases, he said (see Table 2-1). The numbers show that there is "nothing we do in clinical medicine at the bedside

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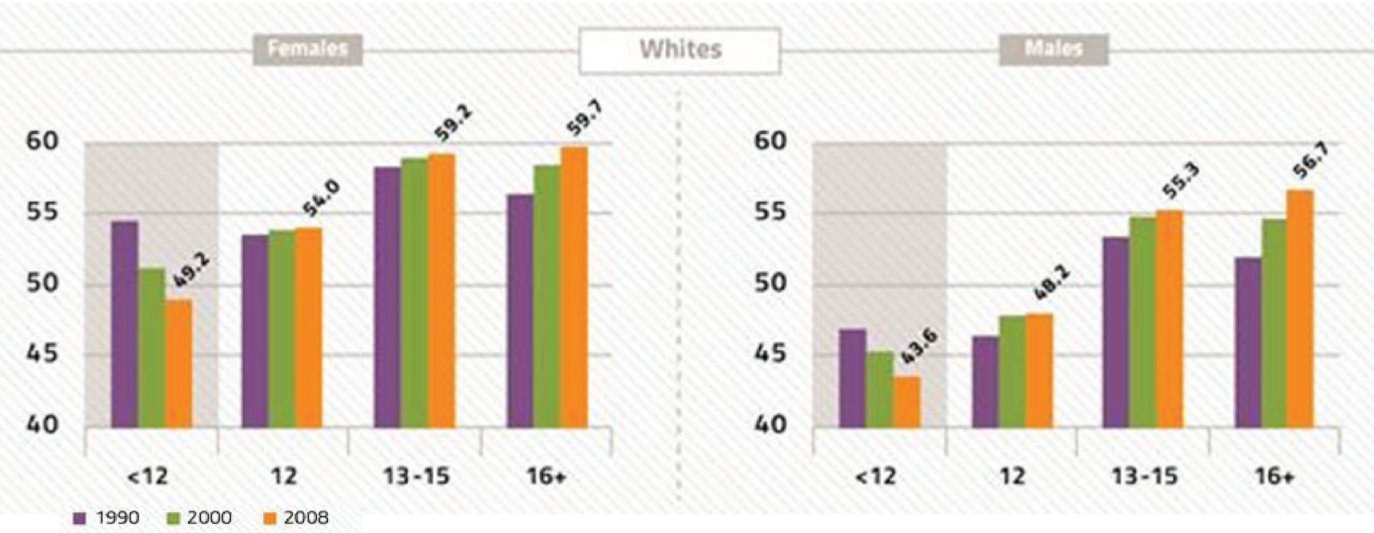


**FIGURE 2-3** Life expectancy at age 25 years by educational attainment level in years from 1990, 2000, and 2008.
SOURCE: Woolf presentation, June 5, 2014, adapted from Olshansky et al., 2012, Virginia Commonwealth University Center on Society and Health.

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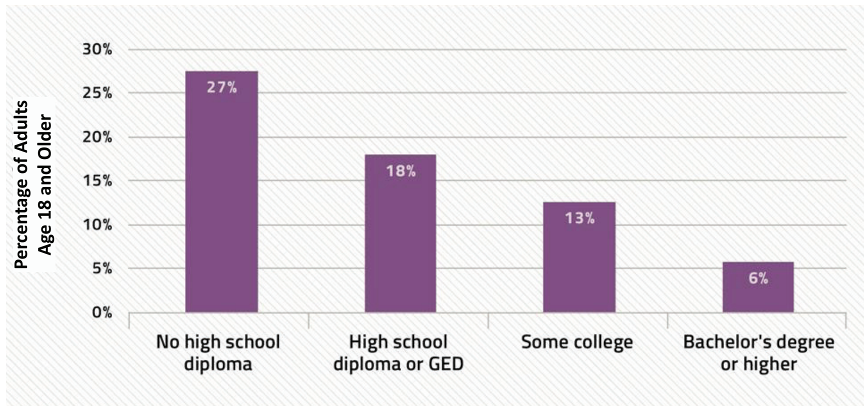


**FIGURE 2-4** Self-reports of fair or poor health.
SOURCE: Woolf presentation, June 5, 2014, adapted from Schiller et al., 2012, Virginia Commonwealth University Center on Society and Health.

**TABLE 2-1** Prevalence of Diseases Among Adults Age 18 or Older, 2011

| Disease | Less Than a High School Diploma (%) | High School Diploma or GED (%) | Some College (%) | Bachelor's Degree or Higher (%) |
|---|---|---|---|---|
| Coronary heart disease | 10.2 | 7.5 | 7.4 | 5.4 |
| Stroke | 4.7 | 3.4 | 2.7 | 1.7 |
| Emphysema | 3.3 | 2.5 | 1.9 | 0.7 |
| Asthma (current) | 8.1 | 8.3 | 8.6 | 7.1 |
| Chronic bronchitis | 5.1 | 5.2 | 5.0 | 2.3 |
| Diabetes | 15.1 | 10.5 | 9.6 | 6.5 |
| Ulcers | 9.8 | 7.4 | 8.0 | 5.0 |
| Kidney disease | 3.8 | 2.2 | 2.1 | 0.7 |
| Liver disease | 2.4 | 1.4 | 1.5 | 0.8 |
| Chronic joint symptoms | 35.0 | 33.3 | 34.6 | 25.2 |
| Hearing trouble | 18.8 | 19.3 | 18.1 | 13.5 |
| Vision trouble | 14.0 | 10.4 | 9.5 | 6.3 |
| No teeth | 16.2 | 9.6 | 7.1 | 3.6 |

NOTE: GED = general education diploma.
SOURCE: Woolf presentation, June 5, 2014, adapted from Schiller et al., 2012, Virginia Commonwealth University Center on Society and Health.

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or in the exam room that achieves differences in the numbers that we're seeing," Wolf said. "Education is that big of a deal."

Given the overwhelming data showing the major impact that educational attainment has on health and mortality, Woolf said, the question becomes: How can the health and education communities use this evidence in a pitch to those who can do something about it? As an example, he said, if a goal is to reduce admissions to emergency rooms, policy makers need to understand that mental health issues are the leading conditions that are contributing to those admissions, and that psychosocial wellness and education are closely associated with mental health outcomes. People with less wellness and less education are at a sharply higher risk for mental health problems. If the goal is to slow down the alarming increase in mortality rates among American women—mortality rates for women have increased in 42 percent of U.S. counties since the 1990s (see Figure 2-5)—then the link between this phenomenon and educational attainment has to be a critical piece of the argument on what kind of actions the country needs to take, Woolf said.

How is a person's education related to his or her health? Woolf said that there are three broad categories of possible relationships (see Figure 2-6). First, education has a number of downstream benefits that may lead to improved health, including a higher income, lower odds of being unemployed or having a job that does not provide health insurance, various social and psychological benefits that arise from the social environ-

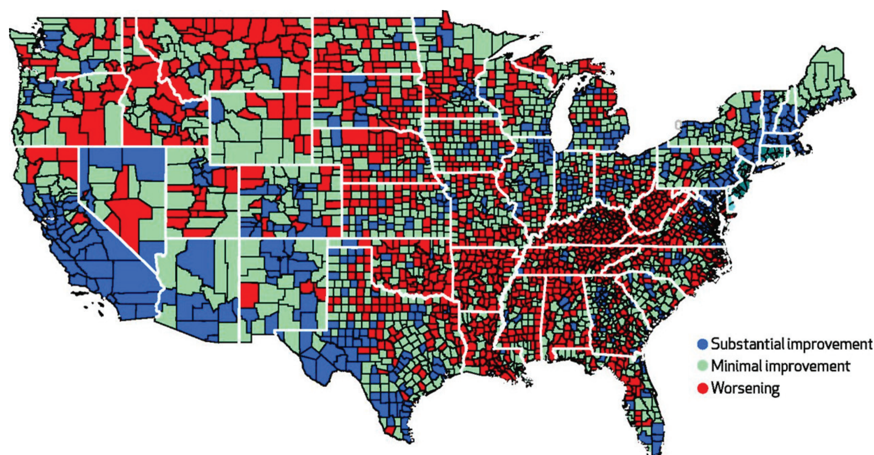


**FIGURE 2-5** The change in female mortality rates from 1992–1996 to 2002–2006 in U.S. counties.
SOURCE: Woolf presentation, June 5, 2014, citing Kindig and Cheng, 2013.

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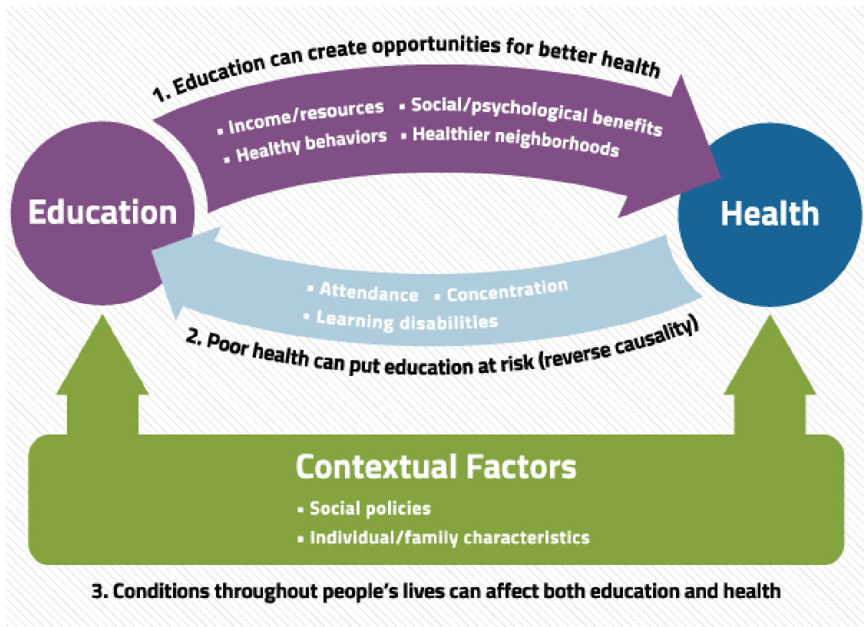


**FIGURE 2-6** Exploring the link between education and health.
SOURCE: Woolf presentation, June 5, 2014, Virginia Commonwealth University Center on Society and Health.

ment at school, and the cognitive and social skills that are acquired in high school and college. Other downstream benefits include the resources and knowledge to adopt healthier behaviors and the resources to live in healthier neighborhoods. Second, some suggest that there is a selection phenomenon at work, with people who are less healthy being less likely to succeed and advance in their education so that the people who do end up going farther in school are healthier; in this case better health would lead to more education rather than the reverse. Woolf said that while there is a body of evidence suggesting that education affects health more than the other way around, it is still important to try to improve the health and wellness of students so they can succeed in school. The third possibility is that various contextual factors—what an epidemiologist would call confounding variables—affect both education and health. The list of contextual factors would include adverse childhood events that can affect brain development and social, emotional, and cognitive development as well as childhood health and nutrition, parental and maternal health, stress, immigrant status, gender, and socioeconomic status. He noted that data show a clear link between adverse childhood events and increased

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odds of adult diseases, including obesity, diabetes, heart disease, cancer, stroke, chronic lung disease, and depression.

Woolf reported that an animated discussion had been prompted at the previous day's National Institutes of Health (NIH)-sponsored workshop by questions about how to measure the independent effect of education by adjusting for particular variables and contextual factors. This is more than just an academic question, he said; addressing these contextual factors in terms of social and economic policy, jobs, unemployment, and community development should concern policy makers beyond those interested solely in education reform and health care reform. The challenge, he said, is to think of this problem as a whole and not as isolated components. Education is a system; it is a package deal. Education comes with a set of interrelated variables, such as race and ethnicity and income, and this is true at any particular moment in time in the life course and also in the early years that put a child on the path to a successful education. Any strategy for achieving success must also be a package deal, Woolf said. It has to look at the whole system—the whole set of issues together.

In the last part of his presentation, Woolf turned to the subject of "silos" and the need to improve the connection not just between those who are concerned about health and education but also between these people and those who are interested in jobs and social issues. As examples of the education and health silos, he cited two reports: *Rising Above the Gathering Storm* published in 2007 by the National Academy of Sciences, the National Academy of Engineering, and the Institute of Medicine (IOM), which came from the education silo, and the *U.S. Health in International Perspective*, published by the National Research Council and the IOM, from the health silo. Both reports paint a dire picture, one of them of the educational system and the other of the nation's health status, yet neither of the two communities has thought enough about the role of the other in helping with their respective agendas.

In an attempt to break down these silos, Woolf and his colleagues at the Center on Society and Health have conducted the Education and Health Initiative, part of the center's Connecting the Dots portfolio. The education and health aspect of this initiative is aimed specifically at raising awareness among policy makers in education and health about the health implications associated with educational attainment—the subject of this workshop—and at helping researchers in these communities develop the tools to communicate their findings in a way that is responsive to their target audiences. Accomplishing the latter requires that each community understand the issues that policy makers in the other community are facing and to then use that understanding to develop better research questions. "This is a different model of research than the current model

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of investigator-initiated research, which is driven by the intellectual questions that interest academics," Woolf said.

Other important components of silo-busting are stakeholder engagement and strategic communication. "We need to package evidence in a way that is compelling and convincing to policy makers," Woolf said, acknowledging that this is a particularly weak skill in today's public health community. Target audiences include not only policy makers at the federal, state, and local levels, but also national organizations, health care systems, businesses and employers, foundations, the media, and other disciplines in academia. In the education policy area, for example, Connecting the Dots has reached out to a wide range of public and private sector organizations. Each of these organizations, Woolf said, already has its own agendas and sets of talking points, but Connecting the Dots is providing the organizations with an additional line of argument that these organizations have reported is valuable to them. "The resources that we are able to provide are very helpful," he said. "I am here to tell you that this cross-sector dialogue works very well."

As an example, Woolf cited the business community's positive response to the message that educational attainment has a direct impact on the health care costs that are becoming an increasing burden for companies. Subsequently, reforming the nation's education system will have significant effects on the companies' "bottom line" beyond the effects related to the companies' need for an educated and skilled workforce. As evidence that this message is having an effect, Woolf said that the Virginia Chamber of Commerce's recent blueprint for the newly elected governor cited population health and wellness and improved education among the eight domains on which it will focus.

One issue that often gets raised in discussions with policy makers is that given today's focus on the short term, the returns on investment from childhood programs take too long to interest government or business leaders. In answer to that concern, Woolf said that not only are there significant returns on investments in improving adult health, but an increasing amount of evidence shows that investments in health made in early childhood start paying off at an early age. He cited the work of Laurie Miller Brotman (a subsequent speaker in the workshop), which shows that early childhood investments have a positive impact on body mass index that can be seen in children as young as 8 years old. To its credit, Woolf said, the business community understands this connection, and businesses are participating in initiatives around the country that are making significant investments in early childhood. He said he is also encouraged by the financial industry's engagement in early childhood through novel investment instruments such as social impact bonds.

Woolf and his colleagues have identified a model for strategic com-

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munication that divides the target audience into three categories. The first category comprises those who have the lowest level of awareness and who have not yet "connected the dots." For that group, the best message is a simple one: Health and education are linked. The second category includes those who understand that there is a link between education and health but think that it is not a big deal and that reforming health care and health behaviors is more important. Quantification using compelling data is more important with this group. The third category would be the "choir," those who know that there is a critical connection between education and health and who now want an evidence-based action plan. For individuals and organizations in this group, it is important to show what works and how to prioritize effective strategies.

Recognizing this segmentation, Woolf and his collaborators have started developing materials to engage each of these audiences. One example is a YouTube video with the message that education matters more than ever to health. This video received 10,000 views in the first week it was available, which Woolf said is a big number in public health media. Another approach is to create layered issue briefs that enable members of each of the three types of audiences to get the information they need at a level they can understand and use.

Woolf then turned to the subject of stakeholder engagement. Among the stakeholders who must be engaged are members of the community, and in particular, the vulnerable populations in the community who know firsthand about these issues. Stakeholders other than the affected population also need to be engaged. Woolf said that he and his colleagues worked for 1 year to build relationships with health and education organizations to develop partnerships for reaching out to the broad range of stakeholders. "Education and teacher organizations that I never heard of before are distributing our materials, along with the public health networks that I am more accustomed to," he said. "I think this kind of cross-sector partnership and collaboration is the key if we are really going to connect the dots." As a final comment, Woolf said that although, as his model emphasizes, there is a tremendous need for collaboration in this area, federal agencies and funders are still stuck in their silos. For example, research about education and health has no natural government home because funders like NIH view education as outside their purview.

## DISCUSSION

Robert Kaplan started the discussion by noting that the charters that govern what federal agencies can and cannot do have a great deal to do with keeping those agencies in silos. For example, the National Science Foundation is not allowed to fund work in health care or undergraduate

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education and NIH is not permitted to fund educational research. The Agency for Healthcare Research and Quality, where Kaplan works, is not supposed to be concentrating on public health, but rather only with health services delivery. Kaplan then recounted a plea from the director of a government science agency. At the June 4 meeting sponsored by NIH, this director said that people outside of government have to get the message out that collaboration across these disciplines is essential to fully address the nation's challenges in both education and health. Woolf added that the status quo of the bureaucracy will allow for only incremental change. "The plea I would make to the Population Health Roundtable," he said, "is that the agenda for the Roundtable can only be achieved through transformational change." Woolf added that one thing he has learned through his interactions with Congress is how important it is to have an "elevator speech"—that is, a 1-minute summary of important points.

Debbie Chang of Nemours asked Woolf to list some of the bold steps that he would like to see the Roundtable take. Woolf said the first thing would be for members of the Roundtable to make a call for transformational change. Another opportunity is for the Roundtable to highlight the idea that building closer ties between the health and education fields will benefit both communities as well as other groups, such as those in community development and finance. "Helping to have a cross-sector conversation, being a facilitator and catalyst for bringing these communities together, and helping them recognize where they share aligned incentives is a real opportunity for the Roundtable," he said.

Marthe Gold of the City College of New York asked Woolf if he had any ideas on how to build support for this movement at the grassroots level and to help local groups take steps to improve the educational experience at the community level. Woolf said the same thing that is needed at the national level—cross-sector dialog—is important at the community level. As an example, he said, Connecting the Dots has started an initiative that involves getting residents in public housing together with the local housing authority, a developer, public health leadership, the leadership of the local health systems that serve that community, and the Urban Institute to think about how to apply evidence-based strategies to improve population health in public housing.

Concerning the education community, Woolf noted that Brotman would be speaking later in the workshop about an initiative in New York City that involves all the schools in Brooklyn. In Richmond, Woolf's Center is bringing representatives of the local school system together with leaders of the three main health systems to work with each other in the area of early childhood development. Woolf said that this conversation involves an intentional effort to align incentives around education.

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Kaplan added that these conversations ultimately have to be at the local level because federal education policy has so little impact on what states and school districts do.

George Isham commented that slides in both the Woolf and Kaplan presentations concerning the link between education level and mortality would make a good 1-minute elevator speech, and he asked Woolf what else he would include in a concise pitch to policy makers. Woolf replied that there is no blanket message. "We need to do the equivalent of market research and go to audiences and figure out what they need," he said, acknowledging that this is not something that researchers are particularly good at doing. "We need to take the resources that we have in our field and make a more serious investment in learning from the communication sciences, advertising, and marketing." Woolf noted that Washington University in St. Louis and the University of Texas at Austin have notable efforts for doing just that.

Woolf did say that there are different communication tools that would be useful for the three categories of audiences that he described in his presentation. For the first audience, where the goal is simply to raise awareness, social media and other new technologies can convey messages quickly and in a visually interesting way, and the field needs to learn how to exploit those capabilities to connect with this type of audience. For the second audience, infographics of the type that appears in the *Washington Post* or *New York Times* can be valuable tools because of their ability to condense large amounts of data and present them in a visually rich manner. His group has just started experimenting with this approach, he said. For the third audience, market research is critical because of the sophistication level of this group. "It is critically important to know exactly what they want to know," Woolf said.

In response to a question from Terry Allan of the National Association of County and City Health Officials and the Cuyahoga County Board of Health about community development and healthy neighborhoods, Woolf said that a number of communities around the country have exciting cross-sector collaborations that are ongoing, many of which have been stimulated by community transformation grants from the Centers for Disease Control and Prevention. He noted that communities with vulnerable populations already see education as the way to break the cycle of persistent poverty that exists in many U.S. cities, and now they are starting to see education as the path for revitalizing neighborhoods and improving the health of the community. He also said, in response to a question from Isham, that the business community is coming to appreciate the connection between education, early childhood development, and the health of its employees.

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# 3

# How Can the Health Sector Support Education Sector Efforts at the Level of Students, Families, and Schools?

The first of the workshop's panel sessions focused on how the education and health sectors could work together to address the health care needs of students and families and advocate for better health care for children. This session also explored ways of forming better connections between schools and local health care delivery systems. Charles Basch, the Richard March Hoe Professor of Health and Education at Columbia University's Teachers College, described some approaches for reducing the health barriers that contribute to the achievement gap between low-income minority students and other students. Allison Gertel-Rosenberg, the director of national prevention and practice at Nemours, and David Nichols, program manager for Nemours Health and Prevention Services, then discussed ways of leveraging relationships between health and education sectors to improve health. A discussion moderated by Jeffrey Levi, the executive director of Trust for America's Health and a Roundtable member, followed the presentations.

## HEALTHY AND READY TO LEARN

"No matter what we do to improve schools, no matter how effectively teachers could teach, how rigorous curricula may be, what assessments or standards are put in place, and how we organize schools, the educational benefits of all of these efforts are going to be limited unless the students are motivated and able to learn," Basch said to start his presentation on



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the power of health barriers to impede academic achievement. Addressing these barriers has largely been overlooked as a strategy for improving academic performance, he said, particularly among the most vulnerable of student populations. Basch noted that 40 percent of high school dropouts come from a mere 10 percent of the nation's high schools.

Schools cannot be all things to all people, and they must prioritize. Until now, schools have not been engaged in the nation's health agenda because it has not been part of their fundamental missions. But given the connection between health and education and the impact of disparities on both health and educational achievement, those missions Basch noted, need to change to reflect this connection. "We have to have criteria for prioritizing," he said. "I suggest considering the extent of disparities, the evidence of causal effects of health factors on education, and the evidence that we can do something about these problems, and based on those criteria, I am saying that these are a set of seven health problems—vision, asthma, teen pregnancy, aggression and violence, physical activity, skipping breakfast, and attention deficit hyperactivity disorder (ADHD)—that warrant consideration." He further emphasized that mental and emotional health must be addressed thematically because it is a cause or consequence, or both, of the other problems. The precise makeup of this list can be debated, Basch acknowledged, but the central idea is that "there are multiple health problems that influence academic achievement and that all of these problems are highly prevalent and disproportionately affect low-income kids." Vision problems, for example, affect low-income children more than others and black and Hispanic children more than white children (see Figure 3-1). The prevalence of childhood asthma is approximately 45 percent greater in black children and more than twice as high among children of Puerto Rican descent as compared with non-Hispanic white children, he said, noting that these numbers also demonstrate the importance of disaggregating the Latino population (see Figure 3-2).[1] These same disparities are found in the statistics for poorly controlled asthma. Concerning aggression and violence, some 35 percent of high school students report that they have been in a physical fight over the preceding 12 months (see Figure 3-3),[2] and almost 10 percent of Hispanic high school students in the United States say they have missed

[1] More recent data show that the asthma prevalence for youth ages 5 to 14 has increased for whites and blacks. The asthma prevalence rate for black youth is twice the rate for whites (18.8 percent versus 9.4 percent). See Moorman et al. (2012).

[2] The most recent Youth Risk Behavior Survey (2013) indicates that the percentage of high school students who report being in a physical fight in the past 12 months dropped from approximately 35 percent in 2011 to approximately 25 percent in 2013. Disparities among white students (20.9 percent) versus Hispanic students (28.4 percent) and black students (34.7 percent) persisted. See Kann et al. (2014).

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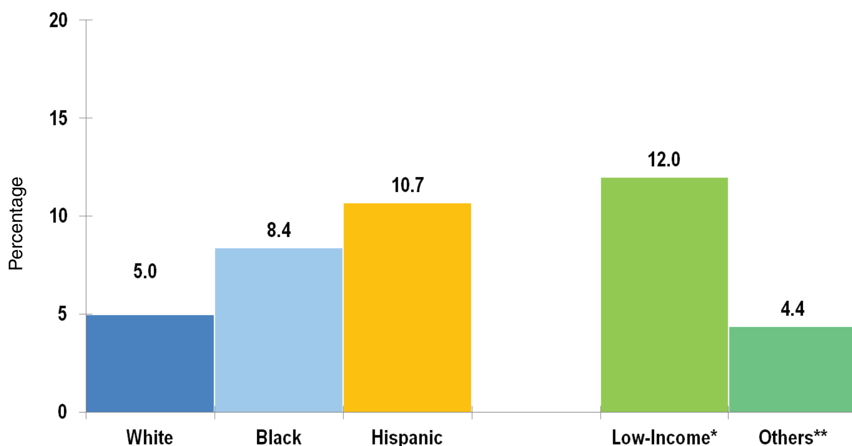


**FIGURE 3-1** Rates of visual impairment in the United States among persons 12 years or older by race/ethnicity and income.
NOTE: * Income below poverty level; ** Income ≥ 2× poverty level.
SOURCE: Basch presentation, June 5, 2014, adapted from Vitale et al., 2006.

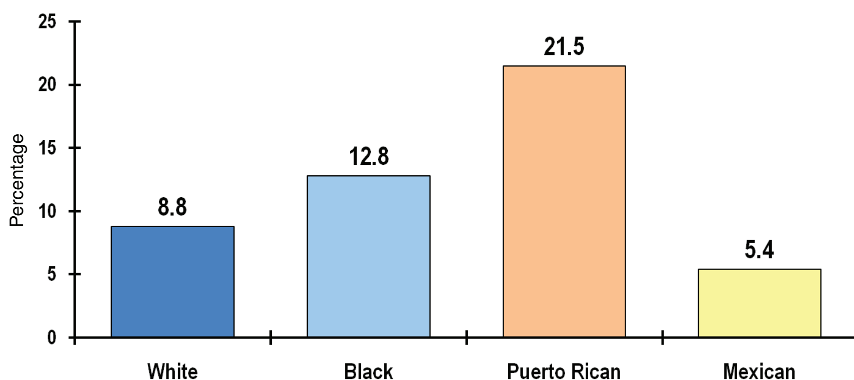


**FIGURE 3-2** Asthma prevalence for U.S. youth ages 5–14 by race/ethnicity.
SOURCE: Basch presentation, June 5, 2014, adapted from Moorman et al., 2007.

1 or more days of school in the past month because they were afraid to be at school or to travel to or from school (see Figure 3-4).[3]

[3] The most recent Youth Risk Behavior Survey (2013) indicates that more than 7 percent of high school students did not go to school at least 1 day in the past 30 because they felt unsafe to be at school or to travel to or from school. Rates among white students (5.6 percent) were lower than among black students (7.9 percent) and Hispanic students (9.8 percent). See Kann et al. (2014).

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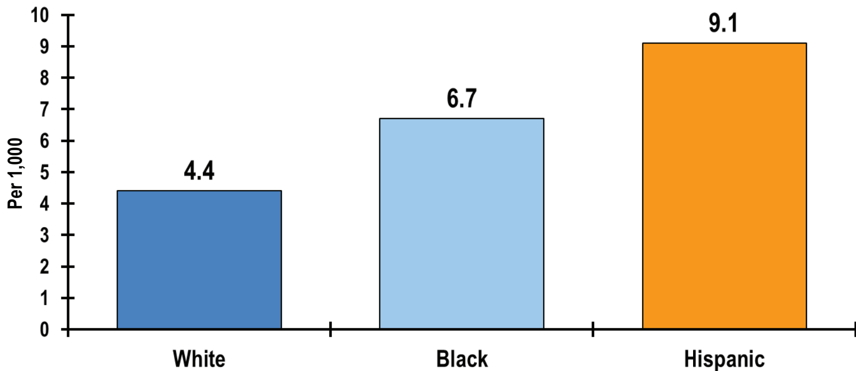


**FIGURE 3-3** Percentage of high school students in the United States who were in a physical fight in the previous 12 months, by race/ethnicity.
SOURCE: Basch presentation, June 5, 2014, adapted from Eaton et al., 2012.

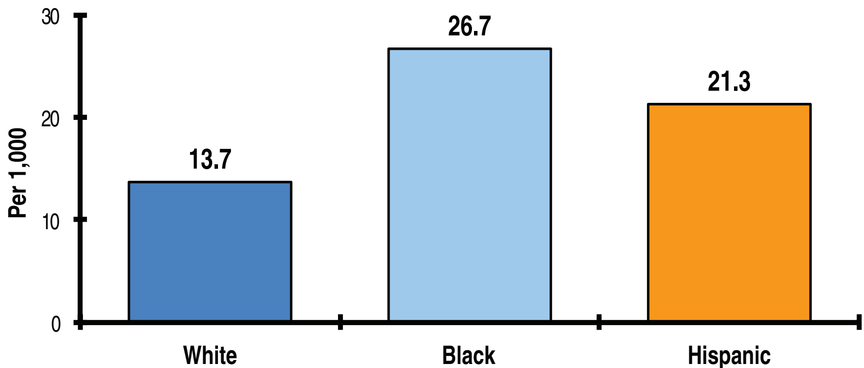


**FIGURE 3-4** Percentage of high school students in the United States who did not go to school because they felt unsafe at school or on their way to or from school, by race/ethnicity.
SOURCE: Basch presentation, June 5, 2014, adapted from Eaton et al., 2012.

Although these statistics tell an old story, what is new is research that has been carried out over the past 10 to 15 years showing how and why these health problems affect academic achievement and educational attainment. Basch said that his research has identified at least five causal pathways: cognition, sensory perceptions, school connectedness and engagement, absenteeism, and temporarily or permanently dropping out of school. Cognition pertains to working memory and the ability to focus and sustain attention, shift from one task to another, solve problems,

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and think critically, he explained. Sensory perception refers to being able to see and hear well. Basch noted, for example, that in New York City, vision screening of kindergarten children in the 60 lowest-performing elementary schools showed that 25 percent of the children failed the vision screen but, worse yet, that 60 percent of those children, or 15 percent overall, failed the vision test a second time when rescreened in first grade, indicating that they never got the care they needed for their eyes. "Imagine trying to learn how to read when you have hyperopia," he said. "You are trying to distinguish and decode letters and words," work that is hard for children with normal vision.

The third causal pathway, school connectedness and engagement, has to do with the extent to which the young people in school feel like they belong there and whether they feel like their peers and others care for them as people and as learners. "This is about human relationships," Basch said, "and we know how important human relationships are in shaping our mental and emotional health. Indeed, that, in turn, confers benefits and opportunities for learning." Regarding absenteeism, Basch said that about 20 percent of the 1.1+ million public school students in New York City schools are chronically absent, which means they miss a month or more of school each year. He noted that chronic absenteeism in the early grades, which can result from a health-related problem such as uncontrolled asthma, is highly predictive of high school graduation. And teen pregnancy and the consequences of ADHD—inattention and hyperactivity—are major contributors to dropping out of school.

"[E]ach of these causal pathways is influenced by multiple health problems simultaneously," Basch said, adding that children living in poverty are, in fact, those who are most often affected by multiple concurrent health-related problems, a phenomenon with interactive and synergistic negative effects on school performance. School health programs must therefore focus on multiple health barriers simultaneously. "Unfortunately, that is not the way most of our evaluation research has been conducted," Basch said. There are instead hundreds, if not thousands, of studies showing that breakfast alone does not have a consistent impact on achievement or that physical activity alone has merely a small or inconsistent impact.

So how can schools influence the health of the nation's youth? "We actually know a lot about how to do this," Basch said, noting the importance of developing a strategic focus on health problems that are known to have powerful effects on education. "We have to rely on evidence-based, scientifically generated knowledge, and we have to have efforts that are effectively coordinated." The silos that separate health, education, and social services that Steven Woolf discussed in his presentation are a major obstacle to enacting coordinated efforts, Basch said.

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An important challenge to addressing these issues on a national scale is that, unlike most countries, the United States has a decentralized educational system. "That said, I think the United States Department of Education can really have a powerful role to play because it can influence state education departments through a variety of ways," Basch said. That influence can start with communicating the importance of the links between health and education to a national audience that includes not only school administrators but parents and community leaders. Basch said that the most successful programs will be those that involve the family, not just the children, and that provide financial support and incentives, technical assistance, and teacher development opportunities and involve the broader community in public–private partnerships.

The crux of the matter, Basch said, is that while there is a great deal of evidence identifying what needs to be done, "we are not doing what we already know how to do. We have to put into practice things that we have already learned through large investments in research and development." On the other hand, he added it is imperative that widely used school health programs with no evidence of effectiveness be stopped. Basch said that colleges of education, medicine, and public health have an important role to play in preparing the next generation of teachers, school leaders, pediatricians, and others in the community to use evidence-based programs and to advocate for changes in the ways health care services in schools are reimbursed. Today, he said, Medicaid rules make it difficult to pay for health care services in schools even though schools are a powerful place to have an impact on the health of the nation's youth. "That is where 50+ million young people in America go every day," he said in closing.

## LEVERAGING THE LINKS BETWEEN HEALTH AND EDUCATION

Nemours, an operating foundation that provides integrated child health services in the Delaware Valley and Northern Central Florida, promotes comprehensive, multi-sector prevention efforts, said Allison Gertel-Rosenberg. She and her colleagues at Nemours realized early on that no sector was going to be effective at addressing the health of children without taking a comprehensive approach that considered societal health issues and incorporated the child's entire family. They know that when the health and education sectors work together and cross-reference each other, they can generate synergies that produce positive outcomes.

Nemours' prevention-oriented strategy uses a socio-ecological model that looks beyond the individual to include a range of other factors that affect health outcomes at multiple levels and that takes a population health perspective rather than one focusing solely on an individual's health. Gertel-Rosenberg acknowledged that taking such an approach

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requires a shift in thinking from a health system in which providers are used to thinking about the patient sitting in front of them and not of the population as a whole. Nemours also came to realize early on in its work that strategic partnerships are important in assuring that a program has the greatest possible impact in effecting the desired policy and practice changes and that it leverages limited resources more effectively. Nemours also concluded in its planning activities that social marketing would be important for creating and accelerating the social policy and behavioral changes that would be required in order to have a truly transformative impact on health at the population level.

To illustrate how Nemours is turning these ideas into action, Gertel-Rosenberg discussed two programs, one focused on early literacy, the other on healthy eating and physical activity. Nemours' BrightStart! program focuses on early childhood literacy and creating materials and services targeted at young children who are at risk for having reading problems. The goal, she explained, is to effectively teach young children to read. This program goes beyond the child, though, and aims to help parents, teachers, health care providers, community leaders, and policy makers understand the critical actions that promote reading success for all.

One important element of BrightStart! is screening all 4- and 5-year-old children using a quick, psychometrically sound measure of reading readiness in order to identify at-risk children. Those children then receive a 20-lesson, small-group instructional program, followed by rescreening. A 4-year, cluster-randomized study conducted in preschools and child care centers screened more than 13,000 children, of whom 3,300 received the BrightStart! intervention. Two-thirds of the children moved to an age-appropriate range in reading readiness skills after the intervention. "The great part about this is that we are also seeing these gains sustained as the children move into grade three," Gertel-Rosenberg said. "It is both those short-term gains and those longer-term gains that we are looking for from this intervention."

She explained that after each school year her colleagues used the data they collected to modify the intervention to respond to the weaknesses that the data had identified. The primary weakness identified by the data involved the need to do more work to enhance phonological awareness in young children. She added that additional research is needed to develop approaches to reach those children who are not responding to the treatment.

The second program Gertel-Rosenberg discussed was the National Early Care and Education Collaborative Initiative, which is funded through a cooperative agreement with the Centers for Disease Control and Prevention (CDC). This program focuses on changing systems and

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practices at early care and education centers in order to promote healthy eating, physical activity, and breastfeeding and to decrease time spent watching television and on the computer. The program consists of five learning sessions plus homework given over the course of the year. The in-person sessions are spaced approximately 6 to 8 weeks apart to provide enough time for the leadership teams to complete their "homework" with early childhood education program staff.

The program's first cohort, which includes 7 partner organizations in 6 states, and more than 500 early care and education programs serving 52,000 children, is finishing its fifth learning session, and Gertel-Rosenberg said she expected to have the first data available on the impact of this intervention in the fall of 2014. Three-quarters of the children enrolled at these early childhood education centers are preschoolers, ages 37 to 59 months. Two out of five of the centers participate in the Quality Rating and Improvement System, and two out of three participate in the Child and Adult Care Food Program. All but 2 percent of the programs serve food, and two-thirds of the centers prepare the food they serve, which, Gertel-Rosenberg said, provides the opportunity to influence how food is prepared for a large group of children.

Gertel-Rosenberg said she and her colleagues have already learned some important lessons about what is needed to have an effect, and not just at the center level. At the state level, organizations need greater capacity and they need to start thinking more about weaving projects into existing initiatives. Gertel-Rosenberg and colleagues also learned that it is important to ask center staff to become leaders, to have a trained workforce, and to provide staff support through coaching. They also discovered that there are no perfect trainers because those who are strong in early childhood education are usually weak in health knowledge, and vice versa. Early data have also shown the challenge of getting families to agree with and commit to the changes that they need to make in order to support what their children are learning in the program. State organizations have reported that personal contact and relationships with early childhood educators are critical for engagement and participation and that some providers need coaxing to implement these changes.

Gertel-Rosenberg concluded her presentation by saying that her team is evaluating this initiative comprehensively and is starting to roll out the initiative's second cohort in two phases. In the first phase, she said, the program will be extended to several new states, while the second phase will add new centers in the original six states.

Gertel-Rosenberg's colleague, David Nichols, spoke about three school-focused initiatives that Nemours Health and Prevention Services is managing. The organization started this work, he explained, when the U.S. Department of Agriculture issued new regulations mandating that

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schools create a wellness policy and a wellness council. "We saw that as an opportunity to work with school districts to change the way they look at students and to start to impact that and help them move to thinking more about students' health instead of just students' academic performance," Nichols explained. He noted that one of the effects of demanding that educators focus more on testing has made children's health a low priority.

The first initiative he described is called Making School a Moving Experience, which Nemours started in 2009. "After working with school districts for several years on wellness policy, our school district leaders in Delaware were telling us that they could not figure out how to change the food policies in their school or how to change the physical activity patterns that children had in school," Nichols said. "They saw those as something important, but something beyond their capacity to do given their other requirements." Nichols' approach was to identify schools that were tackling these two problems and using them as exemplars to showcase to school districts.

The goal of this initiative, which was funded by a Carol M. White Physical Education Program grant from the U.S. Department of Education, is to support partner schools in providing students with at least 150 minutes of physical activity per week. Nichols and his colleagues work with schools to help them create their own combination of physical education, classroom activities, recess activities, and other adaptations to the school schedule in order to meet this goal. The Nemours team suggests some evidence-based practices that each school could undertake, though Nichols noted that there are not many evidence-based programs available. Two that he identified were the Coordinated Approach To Child Health (CATCH) program developed at the University of Texas and the Take 10! program from the International Life Sciences Institute (ILSI) Research Foundation. Once each school develops its plan, the Nemours team develops materials such as window decals, signs, pins, and slides to communicate the plan to staff. Staff then receives multiple onsite and offsite training sessions, provided as part of the Making School a Moving Experience initiative. Nichols and his team monitor implementation and make suggestions for adjusting the original plan. He said that he views the role of Nemours as providing a supportive atmosphere and technical assistance that help schools make these changes in a way that fits their individual requirements and circumstances and that give each school ownership of its particular program. "That proved to be very important," Nichols said.

By the end of the U.S. Department of Education grant, Nemours had partnered with 13 out of 15 school districts in Delaware that have elementary grades and had gotten 74 public elementary schools to incorporate 150 minutes of physical activity into the school week. More than 40,000

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students participated in the program, and more than 2,000 teachers and staff members were trained to provide physical activity. The result was that student physical activity increased from an average of less than 100 minutes per week to around 200 minutes per week, Nichols said, and approximately 138 of those minutes involve moderate to vigorous activity. "We didn't meet our '150 moderate to vigorous' goal, but we made great strides," he said.

The second program that Nichols discussed used a CDC community transformation grant to focus on physical activity, active living, nutrition, and behavioral health. This initiative was designed to help schools coordinate the resources that they already had but that were not well-coordinated. Using available tools, the Nemours team helped schools evaluate their wellness policies and understand the activities that should be undertaken in light of the opportunities available for improving both health and education. The team also helped create nutrition promotion plans that included such things as food of the month and taste testing and that used behavioral economics to promote increased consumption of healthy foods and decrease plate waste. Nichols said that when this grant ends in late September 2014, there will be a population of school leaders who understand wellness policy, who see the benefits of it and understand what it should look like, and who are committed to implementing strong wellness policies in their schools.

The third program Nichols described, the Student Health Collaboration, is designed to transform care coordination by collaborating with school nurses. School nurses, he said, provide essential medical care to children while they are in school. Many of these children have complex medical conditions that require careful management and care coordination. Unfortunately, school nurses today are not routinely considered as part of a child's care team. Recognizing this problem, a multidisciplinary team was formed to develop a way to facilitate the exchange of medical and educational information among school nurses, primary and specialty clinicians, and families with the goals of improving communication between school nurses and Nemours clinicians and enhancing nurses' access to students' health information and medical records.

Through this effort, 100 percent of Delaware's public school districts, 64 percent of its charter schools, 24 percent of its private schools, and 48 percent of its diocese schools have completed partner and user agreements with Nemours. More than 1,500 students with chronic or complex conditions are now enrolled, as are 235 school nurses. Nurses report that because of the closer ties to clinicians that have developed, they are making better use of their time and now find it easy to get the medical and treatment information they need for their students. In the process, Nemours learned that having integrated care champions is a key to suc-

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cess and that it is important to use systems that are already in place rather than building new ones. Parental feedback on communication products has proven important, as has the opportunity for school nurses and clinical staff to have face-to-face meetings. Going forward, the main focus of this program will be to ensure that all school nurses in Delaware have the opportunity to participate and also to use quality improvement measures to improve health outcomes for all students and improve health communications betwen the families and health care providers. Nichols and his team are currently fielding a pre–post survey with parents and guardians to measure perceived changes in health-related quality of life, parent opinions about the program and their child's health, and days of work missed due to children's illnesses.

## DISCUSSION

The session moderator, Jeffrey Levi, started the discussion by describing a few of the key messages he took away from the presentations, the most important of which was that these are multi-factorial problems that require multi-factorial solutions. He also mentioned the importance of breaking down silos, and he said he thought that Roundtable members need to consider how they can add to conversations about strategies for dismantling silos. There is value in thinking across generations when thinking about health and education, he said, so that even if the focus starts with children, it must eventually expand to include families and communities. There is also a tremendous opportunity for the Roundtable to promote ways to educate educators and clinicians about ways to collaborate and sustain team-based care that broadens the notion of who should be part of that team.

Levi then asked the panelists if they had any data yet showing that these programs are capable of improving the bottom line of health systems. Both Nichols and Gertel-Rosenberg replied that it was still too early to see those kinds of gains, but each described some of the tangible benefits that they are seeing. Nichols noted that one component of the Make School a Moving Experience initiative was to assess children in fourth grade as being either fit or unfit, and the data showed that students who were fit attended a remarkable 30 days of school more per year. "They did markedly better on their state tests and there were few discipline problems," Nichols said (Gao et al., 2011). Gertel-Rosenberg said that the collaboratives in Delaware that were focused on healthy eating induced 81 percent of the enrolled centers to make changes to both physical activity and healthy eating policies or practices that were sustained at least 1 year after the collaborative program ended, while the other 19 percent of the centers made changes to either healthy eating policies and practices

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or physical activity policies and practices that were sustained for at least 1 year after the program ended. "The idea is that if we are changing the context of the environment, whether that is through the availability of more water or low-fat milk or increased physical activity," he said, "that we are increasing the opportunities for healthy behaviors to take place and that in the long run would hit the students themselves."

Basch responded to Levi's question by describing a collaboration he has with the Children's Health Fund that provides mobile delivery of health care to about 400,000 of the nation's most vulnerable children and families. This organization, he explained, came to the conclusion independently that it could have a bigger impact by helping children succeed in school and in life. In the fall of 2014, the collaboration will launch the first phase of an initiative called Healthy and Ready to Learn. This initiative will start in New York City and be rolled out through a network of approximately 200 schools located in some of the most high-poverty communities across America.

One example of the barriers that this initiative will attempt to address is the lack of follow up after a failed vision screen. Each student will get an onsite exam with an optometrist, and students with a refractive error will be provided with two pairs of glasses, one each for home and for school. Students will receive replacement glasses when their glasses are lost or broken. In addition, this collaboration with New York City public elementary schools will work to educate teachers about the need for their students to use their eyeglasses and work with parents and guardians to encourage children's use of eyeglasses at home. This project is also going to focus on identifying children with poorly controlled asthma, connecting them to a medical home and helping them receive the medications necessary to get their asthma under control. It will also be important, Basch said, to implement social-emotional learning programs that can help produce permanent behavior changes. He noted that there is a list of social-emotional learning programs for which there is an impressive body of evidence available at the U.S. Department of Education's What Works Clearinghouse and the Collaborative for Academic, Social, and Emotional Learning.[4]

Basch said that the collaboration with the Children's Health Fund will also implement physical activity programs, which the education community finds attractive because of the evidence showing that short breaks in the morning and afternoon improve children's on-task learning

[4] For more information see the U.S. Department of Education's Institute of Educational Sciences website at http://ies.ed.gov/ncee/wwc (accessed August 4, 2014); also see the Collaborative for Academic, Social, and Emotional Learning (CASEL) website at http://www.casel.org (accessed August 4, 2014).

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behavior. "That is what school administrators pay attention to," Basch said. They will also be working to increase participation in school breakfast programs, an important task given that New York City has one of the lowest participation rates of large cities in the United States. Parent outreach and education will be a critical component of this effort, as will professional development for teachers. Basch commented that principals in these schools already recognize the need for these programs and are both excited about and open to participating. They understand that certain health problems affecting children in their schools are undermining and jeopardizing the other investments that are being made to foster educational attainment.

Basch said that the Children's Health Fund is trying to build a database that will integrate education and health-related data to help determine which children need what services when. This database will also be valuable in evaluating programs to determine if the changes they produce lead to improvements in health and education. Levi said that having the data be bidirectional so that health care providers know what is happening academically with the children under their care will be an important challenge to address. Basch replied that there is also work under way to get pediatricians to start asking questions relevant to school performance, such as whether parents are reading to their children and if their children are happy at school.

Sanne Magnan from the Institute for Clinical Systems Improvement asked Gertel-Rosenberg if there had been a control group in the BrightStart! experiment. Gertel-Rosenberg replied that schools were randomly assigned to intervention or control groups based on zip code and the percentage of children receiving financial subsidies. The timing of the introduction of the interventions at schools were also staggered, and there was no difference between interventions delivered in the spring and those delivered in the fall. Debbie Chang added that BrightStart! was first tested in Jacksonville, Florida, and that it has since spread across the entire state. Nemours now has a partnership with Kaplan Early Learning Company and is planning to spread the program nationally.

Phyllis Meadows from The Kresge Foundation and the University of Michigan said that from her perspective all of these issues were debated in the 1950s, "and yet here we are again fighting for the same policies to feed our children, to make sure that there is community use of schools so that we can have extra activities for our children, that we can have access to supportive referral resources within the schools." Given this situation, she asked the panelists if they had ideas on the kinds of policies needed to make such efforts more sustainable so that the same situation does not repeat itself in another 50 years. "What kind of sustainable policies do we need to be thinking about," she asked, "and how do we structure those?

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Are there some policies that we need to sunset, either on the educational side or the health side that are really not advantageous to this agenda?"

Basch responded that these questions demonstrate that science is not the only thing that drives policy. "Indeed, ideology, political will, and economic factors have a pervasive effect," he said, "and one thing that would address these concerns is to have a strategic plan for the nation that invests in shaping the lives of youth through schools." *Healthy People 2020* is a useful blueprint that creates accountability for the national health agencies, he added, and a strategic plan for the nation's schools could provide a similar accountability structure to keep these issues on the agenda, he added. Basch said that he agrees with Woolf's assessment that better communication efforts are needed to inform other audiences—particularly members of the business and industry communities, those who make economic policy, elected officials, and members of the media—of the importance of the connection between health and education. In particular, he said, efforts should be made to elevate the discussion above health or education outcomes and to frame it in terms of economic security and the vitality of American democracy.

Robert Kaplan of the Agency for Healthcare Research and Quality remarked that the educators he talks to all say they are doing the best that they can, given all of the programs that they are responsible for administering, and he asked the panel members what they would say in response to a principal or school superintendent. Basch answered that when he speaks with education leaders, he emphasizes that if they do not address these health barriers to learning, they will jeopardize the educational benefits of all the other investments they are making. "They seem to understand that more and more," Basch said, adding that there is increasing recognition of the educational significance of health barriers to learning throughout the education community, from the secretary of education to the state superintendent to principals, teachers, and parents. He added that school leaders need help setting priorities, which is why he suggested a conversation about a strategic plan. Levi said that the development of good metrics and report cards might warrant some attention as well, and Basch strongly agreed.

Mary Pittman of the Public Health Institute asked Nichols to expand on how data are exchanged between schools and health providers, and Nichols said that such a two-way exchange does not occur. "Honestly, the schools are not sharing medical information with us," he said. "We are sharing medical information with them, but they do not have the systems in place yet to share back with us." Nemours is able to share data with the schools by using an add-on tool to its medical records system that allows information sharing with physician groups and community doctors. He noted that an assumed conflict between the regulations in the Health

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Insurance Portability and Accountability Act (HIPAA) and the Family Educational Rights and Privacy Act turned out to be an easy obstacle to overcome.

Pittman also asked how school nurses were funded. Nichols said that in Delaware school nurses are part of regular school funding. “Every school is expected to have a school nurse,” he said. “That is part of the teacher count.”

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# 4

# How the Nation's Health Care Expenditures Reduce Education Funding

In the second keynote presentation Peter Orszag, vice chairman at CitiGroup, Inc., and a columnist for *Bloomberg View*, addressed the fiscal impacts on education of the dramatic rise in health care expenditures and suggested some possibilities for better structuring the nation's investments in both areas. He began by citing a variety of indicators demonstrating the dismal state of funding for public higher education. Thirty-five years ago, he said, a starting assistant professor at the University of Illinois at Urbana-Champaign earned about the same amount as a starting assistant professor at the University of Chicago. The same comparison held true for the University of Texas at Austin and Rice University. By the year 2000, however, new assistant professors at Illinois and Texas were earning 15 percent less than their counterparts at Chicago and Rice, and by this year that differential had widened to 20 percent (see Figure 4-1). The impact of this disparity is significant, as evidenced by the imperfect but nonetheless useful *U.S. News & World Report* rankings of U.S. colleges and universities. In 1987 there were 8 public universities in the top 25, while in 2014 there were only 3, with the highest of the 3—the University of California, Berkeley—ranking number 20; it had been ranked fifth in 1987. Other metrics paint the same picture, Orszag said.

While it is not obvious at first, this pattern is another manifestation of the complicated relationship between health and education. According to research that Orszag has conducted with Thomas Kane of the Harvard Graduate School of Education, a major factor in the relative decline in the quality of public universities has been the falling ratio of spending per



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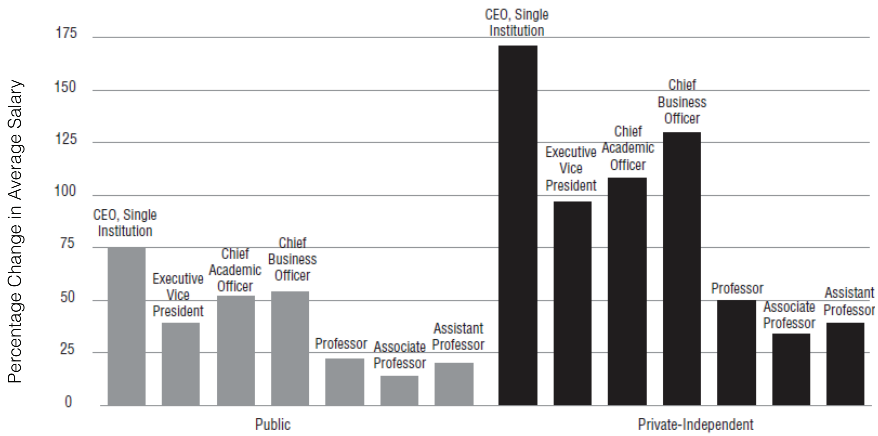


**FIGURE 4-1** Percentage change in the average salary for senior higher education administrators and full-time faculty members by sector, 1978–1979 to 2013–2014.
SOURCE: Orszag presentation, June 5, 2014, citing Curtis and Thornton, 2014.

student at public universities relative to private universities. That drop in turn has been driven in large part by shifts in state government appropriations, which themselves have been driven by Medicaid and other health expenditures. One-quarter of a century ago, state government support for higher education was 50 percent greater than state government spending on health care. Today, those ratios have flipped, Orszag said. He added that if higher education's share of state budgets had remained constant instead of being crowded out by rising health costs, it would get some $30 billion more than it receives today, or more than $2,000 per student, enough to cover the gap that has opened between private and public universities.

**One-quarter of a century ago, state government support for higher education was 50 percent greater than state government spending on health care. Today, those ratios have flipped, Orszag said.**

A more detailed econometric analysis showed how this disparity arose. During recessions, when the share of state budgets devoted to health care spending increases significantly, states ratchet down appropriations to higher education and raise tuition (see Figure 4-2). During good times, though, those cuts to higher education are never restored. The traditional answer to this problem has been to raise tuition to offset

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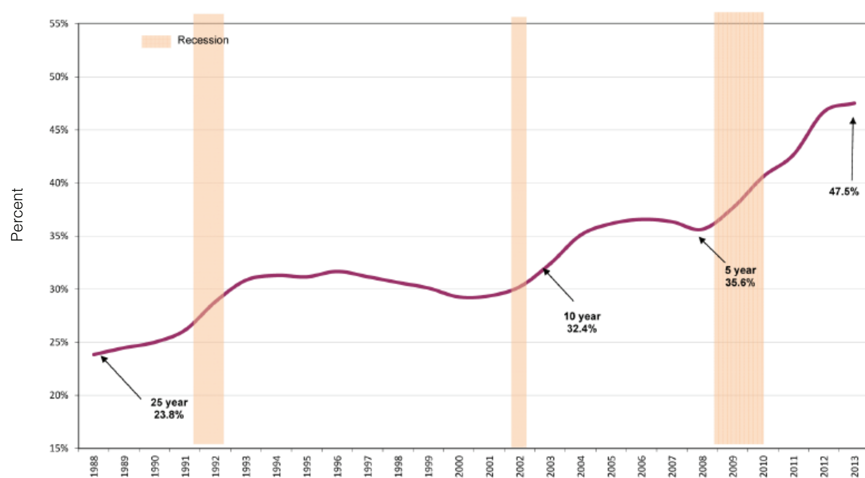


**FIGURE 4-2** Net tuition as a percentage of public higher education total educational revenues for fiscal years 1988–2013.
SOURCE: Orszag presentation, June 5, 2014, citing State Higher Education Executive Officers, 2014.

declining state appropriations, but cutting back state appropriations by 20 percent would require a tuition hike of 80 percent. "That is not going to happen," Orszag said. The result is that, despite the fact that tuition has been rising significantly, that rise has not been sufficient to offset cuts in state appropriations. However, Orszag noted, primary and secondary education has been sheltered from this trend.

One possible solution to this problem would be to try to mitigate the impact of upward pressures on Medicaid expenditures during slowdowns in the economy, but this would only lessen the impact of the rise in health care costs that, without some change, will continue to account for an ever-growing share of state budgets. "Ultimately, the only way to really get at this problem is to slow the growth rate in health care spending, because without that, you are going to be making sandcastles on the beach, and it is not really going to work," Orszag said.

The second point that Orszag made concerning the diminishing support for public universities was that it puts college out of the reach of an increasing number of students, and, as Steven Woolf had pointed out earlier, years of higher education are associated with lower mortality and morbidity in adulthood. This is particularly important because the gap between more educated and less educated people is growing. "We

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might not care so much about the health effects of education if we felt that everyone had the same access to higher education," Orszag said, "but we know that is not true," and he noted that there is also a growing gradient in college completion rates by income even among students who score highly on standardized tests (see Figure 4-3).

Furthermore, according to the scientific literature, the internal rate of return on college expenditures is about 7 percent in additional wages earned, adjusted for inflation. As a result, not only do those who go to college live longer, but they also make more money for each year that they are alive. In turn, data show that being richer also correlates with a greater decrease in mortality (see Figure 4-4), further compounding the disparity between the more and less educated. The magnitude of these changes over a relatively short period of time is "massive," Orszag said.

There are difficulties in making conclusions from these data given that there are likely to be differences between a dropout today and a dropout in 1987, and there are likely to be various other selection effects as well, but the fact that so many data sets reveal this same basic phenomenon at least attenuates the concerns that these trends could be driven by selection effects, Orszag said. "It would be a little odd that the selection effect on lifetime earnings was exactly the same kind of thing with regard to education." Orszag added that the net effect of these growing gaps in disparity means "that we are actually starving low-income kids, not only

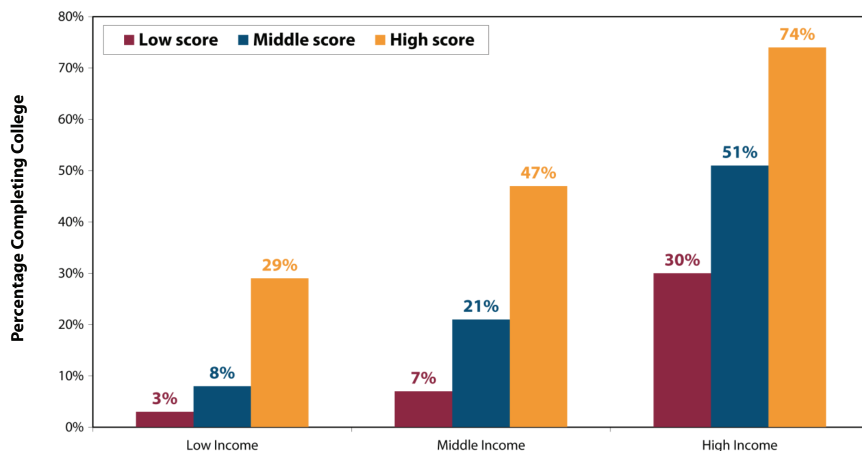


**FIGURE 4-3** College completion by income status and eighth-grade test scores.
NOTE: Low income is defined as the bottom 25 percent, middle income as the middle 50 percent, and high income as the top 25 percent.
SOURCE: Orszag presentation, June 5, 2014, citing an Economic Policy Institute analysis of Fox et al., 2005.

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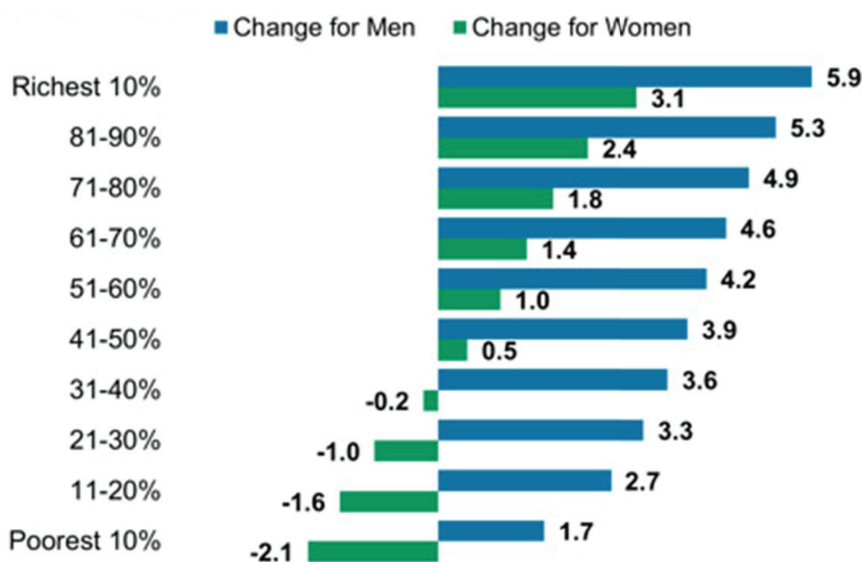


**FIGURE 4-4** Change in average additional life expectancy in years at age 55, by income, between cohorts born in 1920 and 1940.
SOURCE: Orszag presentation, June 5, 2014, citing figure created by Barry Bosworth, Brookings Institution, 2014, available at http://blogs.wsj.com/economics/2014/04/18/the-richer-you-are-the-older-youll-get (accessed September 5, 2014).

of income, but of life expectancy extension opportunities because of the growing gradient in educational college completion" (see Figure 4-5).

Turning to a trend that is more optimistic, Orszag discussed the potential impact of the recent deceleration in health care spending (see Figure 4-6). It is often forgotten, he said, that between now and 2050 Social Security's share of the budget is expected to rise from 5 percent to 6 percent of the gross domestic product (GDP). Furthermore, official projections for Medicare, Medicaid, and other health expenditures predict an increase over the same time period from 5 percent to somewhere between 10 and 20 percent of the GDP. The good news is that health care spending has slowed dramatically over the past 5 to 7 years. There is a raging debate ongoing about how much of the slowdown was structural and how much was the result of the slowdown in the economy, but evidence from Medicare suggests that the slowdown is not being driven only by cyclical forces. "Most Medicare beneficiaries have some type of wraparound insurance so that their net out-of-pocket expenses are low," Orszag said, "and if you look at Medicare alone, the states that had the

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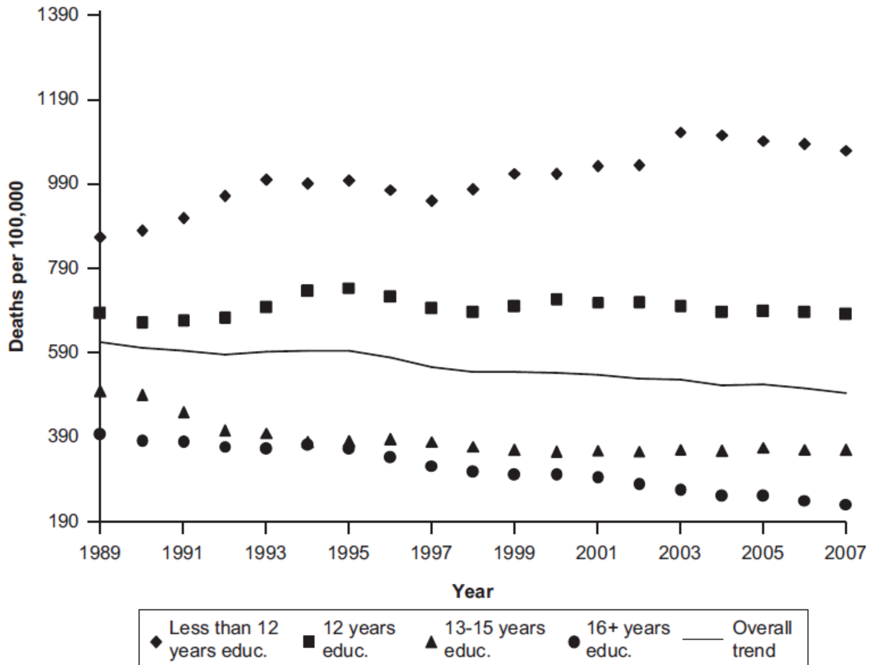


**FIGURE 4-5** Trends in U.S. mortality levels by education for individuals 40 to 64 years old, 1989–2007.
SOURCE: Orszag presentation, June 5, 2014, citing Miech et al., 2011.

biggest increases in unemployment or the biggest decreases in housing prices had zero correlation with the states that had the most significant declines in Medicare spending growth rates."

Orszag mentioned recent reports in the media that assert that the slowdown in total health care spending has ended. This assertion is based on the rise in overall health care spending as a proportion of the GDP between the first quarter of 2013 and the first quarter of 2014. The problem with that simple analysis, Orszag said, is that there was something else going on during that period: More people were becoming insured. "This doesn't say anything about whether the cost for the already insured has accelerated or not. It simply says that if you add a bunch of people to the insurance roles, spending is going to go up," Orszag said. The real question is what is the underlying trend? The answer to that question is still unclear, though the continued deceleration in Medicare spending has continued well into 2014, he noted. For the first 7 months of the 2014 fiscal year, Medicare spending rose a mere $2 billion, or 0.7 percent. Consider-

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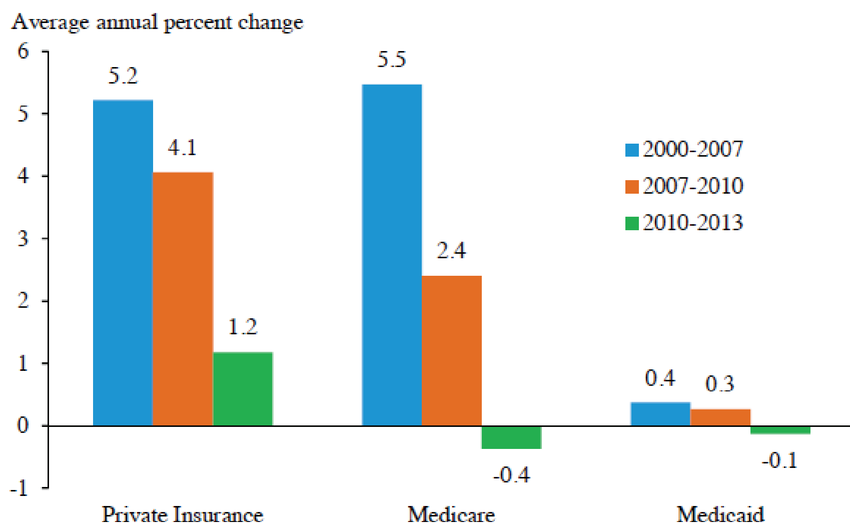


**FIGURE 4-6** Growth in real per-enrollee health spending by payer.
NOTE: Figures for 2013 are estimates.
SOURCE: Orszag presentation, June 5, 2014, citing Council of Economic Advisers, 2014.

ing the growth in the number of beneficiaries that occurred over the same 7 months as baby boomers hit age 65, the real growth per beneficiary is highly negative.

If this trend continues, the impact on the federal budget would be enormous (see Figure 4-7). In fact, if the recent growth rate in Medicare spending is taken as the baseline for projections, the entire rise in Medicare as a share of the GDP would halt, despite the effects of the baby boomers. That in turn would mean that much of the long-term fiscal gap facing the United States would disappear. "If we could simply perpetuate the growth rate in Medicare spending per beneficiary that we have actually experienced over the last 5 years, then everything that you think you know about the nation's long-term fiscal gap would be wrong," Orszag said. In fact, the Congressional Budget Office, which Orszag used to run and which he characterized as "not an overly dynamic place that likes to incorporate new information very rapidly into its estimates," has already taken the 10-year deficit projection and reduced it by $1.2 trillion because of the ongoing deceleration in Medicare and Medicaid spending.

The question then becomes whether this trend will continue, and the one caution point is that the nation has experienced this kind of deceleration before (see Figure 4-8). However, this earlier drop in spending

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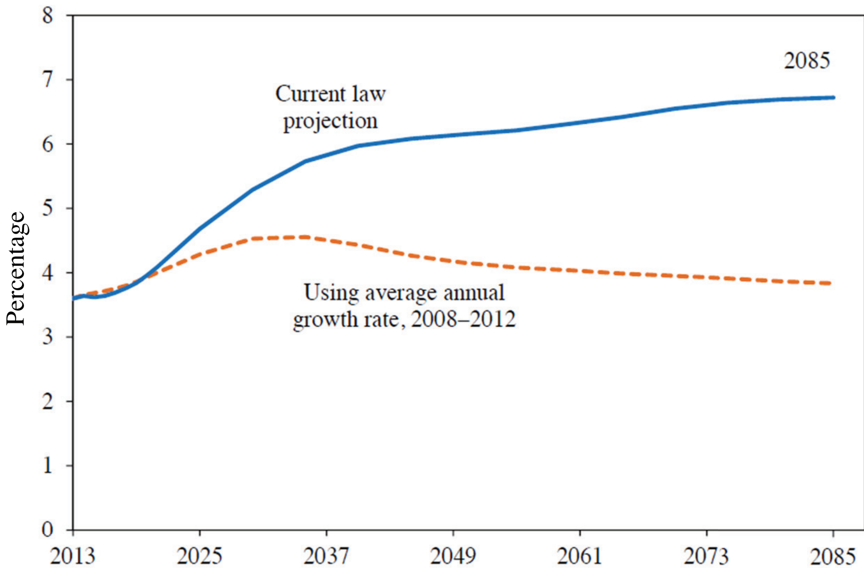


**FIGURE 4-7** Projected Medicare spending as a share of GDP, 2013–2085.
SOURCE: Orszag presentation, June 5, 2014, citing Council of Economic Advisers, 2013.

was the result of legislation that reduced payment rates to providers and not the result of any systemic change in the health care system. The deceleration seen over the past 5 to 7 years is a result of changing utilization, not because of payment reform or a change in the mix of patients. "The rate of increase in how many things we're doing to patients is slowing down, which is a much more promising vignette than if it were all done just with price," Orszag said. "When you just ratchet down provider payments, you can slow nominal spending for some period of time, but it ultimately is not sustainable. The only sustainable way of slowing the growth rate in health care over time is by slowing utilization growth rates. That appears to be what is happening."

Orszag concluded his presentation by saying that there is a need to pay more attention to policies that can reinforce this trend. When asked what those policies should be, he said that depends on knowing why this deceleration is happening and that his views on this are speculation. One possibility is that hospitals have been successful in reducing readmission rates even though this hurts their profitability, something that he has seen at Mount Sinai Medical Center in New York, where he is a board member. The reason Mount Sinai and other hospitals are taking these steps regard-

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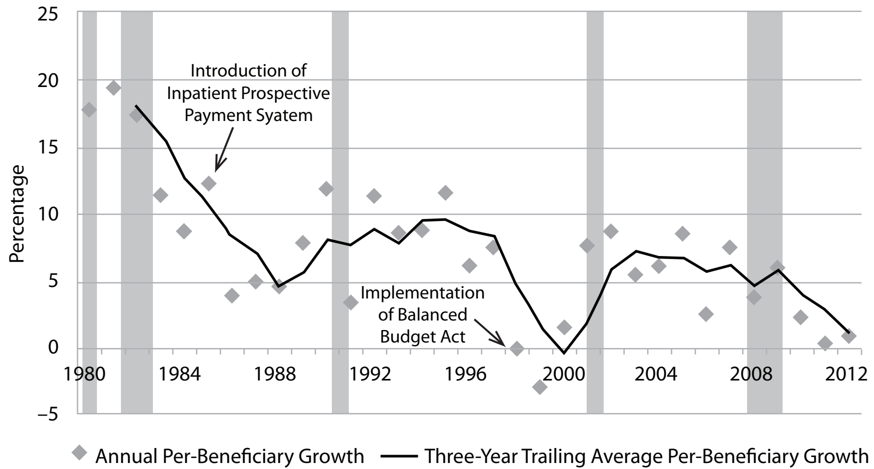


**FIGURE 4-8** Annual growth in per-beneficiary spending in parts A and B of Medicare, fiscal years 1980–2012.
NOTE: Based on expenditure data provided by the Centers for Medicare & Medicaid Services, Office of the Actuary.
SOURCE: Orszag presentation, June 5, 2014, citing Levine and Buntin, 2013.

less of the profit picture today is that these organizations expect the payment system to change over the next 3 to 5 years. "Running an academic medical center is like captaining an aircraft carrier," he said. "You have got to start turning the ship now, so they are practicing for where they think the payment system will be."

Given the possibility of the payment system changing soon, the deceleration trend could be reinforced by policies that provide clarity regarding exactly which payment for value policies are likely to take the place of fee-for-service. "We are at a moment where policy makers need to provide a glide path in terms of how we transition away from fee for service and exactly how that is going to work," Orszag said in response to a follow-up question from Sanne Magnan. "My utter frustration here is that, ironically, both Democrats and Republicans agree on that proposition. Pretty much everyone agrees we are going to have a risk-adjusted, capitated type payment up front with a quality adjuster at the backend. That is like apple pie among the health policy wonks.

"The problem is," he continued, "Republicans want that payment to go to insurance companies who will then contract with providers to make that a reality. Democrats want the payments to go directly to the provider.

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That is the big difference." The irony, he added, is that private insurance companies are moving in this direction anyway and the dividing line between a provider and payer is becoming blurry.

Other steps to reinforce the deceleration trend would be to integrate health care data into a more useful form and making sure employers have the proper incentives that are supported by research. For example, it is commonly believed that people will use exercise facilities more if they are convenient, but there is no research demonstrating that to be true. "If there were compelling studies showing that having a gym in the building makes a massive difference," Orszag said, "then you could imagine a movement to make sure every major workplace had both a healthy cafeteria and a gym. Today, we are lacking that kind of information."

## DISCUSSION

David Kindig of the University of Wisconsin School of Medicine and Public Health asked Orszag if he was at all optimistic about the possibility that savings in health care will get funneled back into education and the other social areas where investments are needed to drive improvements in population health. Orszag replied that at the state and local levels, the main goal is to make sure that the long-term decline in funding for public higher education is stopped. "I do think that would happen organically if the pressure on state budgets from health spending were attenuated," he said, though he added that he does not see a plausible scenario under which state appropriations for higher education would increase. At the federal level, he said, the main problem is that neither political party will own up to the revenue base needed to fund everything that the federal government is being asked to do, and the way that this is being dealt with is by placing unrealistic caps on discretionary funding. Although a deceleration in health care spending would solve this problem, Orszag said that, as with the states, he did not hold out great hope for a massive new federal public investment in education.

George Isham of HealthPartners then asked what Orszag thought of a past Institute of Medicine recommendation that the Secretary of Health and Human Services declare a target for life expectancy, establish data systems for a permanent health-adjusted life expectancy target, and establish a specific per capita health expenditure target to be achieved by 2030 with the goal of galvanizing the nation to take action, much as John F. Kennedy did with his goal of putting somebody on the moon by the end of the 1960s. Orszag replied that it is important to have goals, but picking which goal to set is of critical importance. He wondered if setting a mortality rate goal is too ambitious, in part because it is beyond our direct control. He speculated that perhaps setting a goal for total

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Medicare spending would be more attainable and could be accompanied by a clear statement of what would happen if the nation did not reach that goal. Another goal could be to change the payment system from fee-for-service to outcomes-based. "I'm just nervous about setting a goal at the national level for something not fully under our control," he said. "If a policy maker wanted to go do that, I would stand up and cheer. As a researcher, I am a little bit nervous about the degree of control that one has over mortality in particular."

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# 5

# The Potential of Health Sector Partners to Contribute to the Implementation of the Best Evidence About What Supports Educational Attainment

The workshop's second panel featured three presentations. James Bender, executive director of the Health Information Network of the National Education Association (NEA), spoke about educator-driven, union-led programming for making schools a healthier place for children. Norris Dickard, director of the Healthy Students Group at the U.S. Department of Education's Office of Safe and Healthy Students, described some of the department's programs related to student health. Laurie Miller Brotman, director of the Center for Early Childhood Health and Development in the Department of Population Health at the New York University Langone Medical Center, discussed how ParentCorps is attempting to address the socioeconomic adversity that many children experience and to lessen the impact that such adversity has on children's lifelong health and productivity. A discussion moderated by session chair Holly Hunt, chief of the School Health Branch at the Centers for Disease Control and Prevention (CDC), followed the three presentations. Hunt said that CDC now has two units that focus specifically on school health: her branch, which concentrates on physical activity, nutrition, and the management of chronic conditions in schools, and the division of Adolescent School Health, headed by Captain Stephanie Zaza.

## MAKING HEALTH HAPPEN IN PUBLIC SCHOOLS

To begin his presentation, Bender explained that the NEA is a member-driven organization and that any program that the NEA runs must



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be appealing to its approximately 3 million members who work at 70,000 schools. He noted that the NEA has 51 state affiliates and a huge infrastructure that reaches into every state and almost every municipality in the nation. The nonprofit organization that he works for—the Health Information Network—is affiliated with the NEA and looks for common ground between the concerns of the NEA members and effective public health practices. Among the issues that are on the minds of the NEA's membership, he said, are the common core standards and high-stakes testing, school funding, meeting individual student's needs, and professional growth.

When the NEA members were surveyed in 2013 about the health issues that impede student learning, they ranked inattention and hyperactivity as their major concerns. However, despite the negative effects that vision problems can have on learning, as had been described earlier in the workshop by Charles Basch, vision problems ranked only 20th in importance on this survey. This, Bender said, presents a challenge for programs and funders.

Before describing an example of his organization's efforts, Bender said that one of the great things about working with a union is that unions have an extensive infrastructure that can be used to institutionalize an intervention that works in pilot studies if it effectively taps into educator and school needs. He said that the interventions are science-based and developed with constant feedback from the NEA members to ensure that any intervention links educator priorities with health programming. The first example of such a program, he said, is Breakfast in the Classroom, which has received generous funding from the Walmart Foundation and is being carried out in collaboration with the School Nutrition Foundation, the Food Research and Action Council, and the National Association of Elementary School Principals Foundation. This program is intended to address the fact that schools with a large percentage of students eligible for free lunch often have as many as half of their students coming to school without having had breakfast. Schools in the Breakfast in the Classroom initiative serve breakfast to all the school's students in the classroom. "Bringing breakfast to the classroom reduces the stigma of having to go to the cafeteria to get breakfast," Bender explained.

This program has been rolled out to the NEA membership by first targeting local chapter leadership to garner their support, Bender said. Once that has been done, Breakfast in the Classroom staff hold meetings with all of the professionals involved—food service people, custodial staff, and teachers—to get buy-in from these essential stakeholders. This process is challenging, he said, "because you have got to get a lot of people to a lot of meetings and answer all of their questions, but once you get through that, it works [well]." The main complaint that Bender has received from

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the NEA relates to teachers who have heard about this initiative and who want their schools to participate. As of 2013, this program had reached 70,000 students, Bender said. He added that Colorado recently passed legislation to offer Breakfast in the Classroom in various school districts across the state that have a high fraction of students receiving free and reduced meals. "That is sustainability," he said. "That is what we are looking for."

Bender said that he and his team have learned two important lessons from Breakfast in the Classroom. The first is the need to engage educators. The program succeeded only with complete educator inclusion and by building educator priorities into the training sessions and implementation phases. Developing a sense of shared responsibility leads to smoother implementation and increases the chance that the program will be sustainable, he said. The second lesson is that it is necessary to understand and access the union's governance and communications infrastructure as a means of aiding the development and implementation of any initiative.

Another program run by the NEA Health Information Network, this one in collaboration with Kaiser Permanente, is intended to improve school employee wellness, which CDC has defined as a key component of a comprehensive approach to a healthy school environment. Health promotion activities have been shown to improve productivity, decrease absenteeism among teachers, and reduce health insurance costs. With the help of Kaiser Permanente, Bender and his colleagues conducted an organizational assessment to determine whether the NEA was ready to work on this issue. This assessment focused on the so-called UniServ staff, the shop stewards who are no longer in the classroom but who spend all of their time dealing with union members and their issues, and it found that 93 percent of these men and women believed the NEA should promote wellness programs. More importantly, although UniServ staff members already had a lot to do, they were willing to take on the promotion of wellness programs to the membership.

Currently, Bender and his team are planning on working with the NEA local affiliates to see how they can set up incentives for promoting wellness activities, disease management, and onsite delivery of health services, including screening, prevention, and stress management. "Stress is a huge problem," Bender said, adding that teacher stress has increased substantially over the past 5 years and is connected to a corresponding drop in job satisfaction among teachers. Bender concluded his presentation by commenting on the incredible insight that local educators possess. "They know their students and their families," he said. "They are members of the community. They routinely prioritized students' needs over all else, and it is very hard to get them to talk about their own needs. But if

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you can connect their healthiness state and their productivity to student needs, they are going to go for it. At least that is what we are counting on." He added, "A project succeeds once it captures the educator's imagination as they understand how it benefits their student. Union involvement can accelerate the process and can catapult it forward."

## PROGRAMS AT THE U.S. DEPARTMENT OF EDUCATION

In his brief remarks, Norris Dickard provided an overview of programs that the U.S. Department of Education has in the area of student health. Referring to earlier comments about elevator pitches, Dickard began by describing a hypothetical 30-second elevator talk that he might give to a U.S. senator if asked about key messages of this workshop. Dickard would tell the senator, "Education affects health. Health affects education." If you dig into the details, it gets more complicated. He also said that after he first joined the U.S. Department of Education in 1993, the department released the National Adult Literacy Survey, and one of the things the survey found was that a significant percentage of the American adult population had low literacy levels and that this had an impact on their ability to understand health and medical information. A subsequent report issued in 2007 found the same situation to be true and noted the effects of low education levels on the ability to navigate a complex health care environment. "That was my first introduction to social disparities in health and the impact of education," Dickard said.

He cited the 2012 statistics from a recently released CDC School Health Policies and Practices Study, which found that 60 percent of elementary school districts mandated that schools provide recess, while another 32 percent recommended that schools offer recess to their students. This survey found that 12 percent of school districts have at least one school-based health center that offers physical or mental health services. He encouraged the workshop participants to read this report, which is available from the CDC website (http://www.cdc.gov/HealthyYouth/shpps/index.htm [accessed November 3, 2014]).

Turning to the U.S. Department of Education's programs, Dickard first noted the billion-plus dollars per year investments that the department makes through its 21st Century Learning Center's program, which is also known as the before school and after school program. In addition to the academic enrichment and remediation activities that take place under that program, the program also expands opportunities for recreation, movement, and fitness activities and drug- and violence-prevention activities. Dickard also mentioned the department's new Promise Neighborhoods Program, which was based on the model of the Harlem Children's Zone in New York, which focuses on the critical first 1,000 days of a child's life

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but also has a continuum-of-services component that allows the department to get involved in the health of students (see Box 5-1).

Dickard characterized the Carol White Physical Education Program, which funded some of the Nemours work discussed in the first panel session, as an innovation and demonstration fund. Dickard explained that grantees are encouraged to push the envelope with this infusion of supplemental federal resources that enable schools and districts to really ramp up their fitness and nutrition education and to promote lifelong wellness among both the students and their families. He noted that the department recently awarded a new round of grants under this program.

Dickard then highlighted a new initiative, called Birth to Five, Watch Me Thrive, which the U.S. Department of Education implemented in collaboration with the U.S. Department of Health and Human Services. This program builds on their experience of conducting vision and hearing screening on children by moving into the area of developmental screening. The department is developing tools to help local public health departments, pediatricians, and others get engaged in conducting developmental screening. Dickard also said that CDC would soon release its report on health and academic achievement, which will serve as a resource for local educators and health officials who want to make the case that health is important to the education sector. The report will outline the evidence from the research in plain English, with informational graphics and core messages that can be used by various sectors, showing, for example, that skipping breakfast is associated with decreased cognitive performance and that higher levels of physical education and physical activity are associated with improved cognitive performance. The report also provides concrete actions that can be taken at the local level. Dickard said that while this CDC report focuses on nutrition, movement, and fitness, it provides a useful model for what can be done in other places where health and education intersect.

**BOX 5-1**
**Promise Neighborhoods**

The Promise Neighborhoods program focuses on improving the educational and developmental outcomes of children in the nation's most distressed communities. Programs build a continuum of solutions designed to improve educational outcomes significantly and also support the healthy development and well-being of children. These "solutions" must also include family and community supports, which may include student health programs (e.g., home-visiting programs, programs to improve nutrition and fitness, and programs to create healthier communities).

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## PARENTCORPS

In providing context for her remarks, Laurie Miller Brotman began by noting that outcomes in a child's health and development are affected by a wide range of factors and that in the science of early childhood there is not a disconnect between education and health.[1] She noted, too, that socioeconomic adversity is an important factor in the development of a child, and she pointed out that nearly half of American children under age 5 live in "poor" or "near poor" families. She also said that poverty and near-poverty are associated with negative outcomes across all key domains of child development—health, learning, social, emotional, and behavioral—and influence the development of self-regulation skills (Blair and Raver, 2012).

Self-regulation, Brotman said, is a key way in which health and academic achievement are linked through what psychologists call the developmental cascade (see Figure 5-1). This cascade starts with socioeconomic adversity, which leads to dysregulation in the child, that is, problems in a child's ability to regulate his or her own behaviors, including sleep, eating, emotions, and impulsive and aggressive behavior. Data show that a disruptive child in a poor environment is at increased risk of having his or her parenting disrupted, Brotman said, and when parenting is disrupted, it negatively affects the parent's ability to create a nurturing relationship with the child and makes it more difficult for the parent to engage in effective behavioral management and to be involved in early learning activities. All of these effects in turn disrupt early childhood development in terms of behavior and learning. Disrupted early childhood development may result in lifelong problems, including dropping out of school, antisocial behavior, mental health problems, and obesity. Brotman said there is compelling evidence from longitudinal studies showing that this developmental cascade exists and that with each step down the cascade, it becomes more difficult for a child to get out of it and avoid the worst outcomes.

Given that adversity leads to problems in all of these areas, Brotman said, the question that she as a prevention scientist asks is: How can we impact the developmental cascade? "If we can," she said, "there is some

[1] The science of early childhood development is emerging from the convergence of diverse disciplines such as developmental psychology and epidemiology in longitudinal studies of early childhood interventions. These studies have demonstrated that there are associations between the ecology of childhood with a range of developmental outcomes over a lifespan. In the biological sciences, the mechanisms underlying the associations between social and physical environments and physiological adaptations and disruptions are being illuminated by work in epigenetics, while neuroscience is contributing to understanding how those adaptations and disruptions influence learning, behavior, and well-being (Shonkoff et al., 2012).

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**FIGURE 5-1** The developmental cascade.
SOURCE: Brotman presentation, June 5, 2014.

hope that we can not only affect one domain but all of these domains." That idea, she explained, is at the heart of ParentCorps (Brotman et al., 2011), which is as much an approach as it is a program (see Box 5-2). The work that Brotman then discussed was conducted in New York City elementary schools with universal pre-kindergarten programs. She reported findings from a randomized controlled trial conducted in highly disadvantaged minority and immigrant-dense neighborhoods with high school graduation rates of approximately 50 percent and in which half of students in district elementary schools scored below grade level on third-grade tests of reading or math. The trial enrolled nearly 90 percent of the pre-kindergarten population over 4 years in 10 schools. The schools were

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**BOX 5-2**
**ParentCorps**

ParentCorps is an evidence-based, multi-component intervention for pre-kindergarten students that promotes *high-quality learning environments* at *home* and *school*, resulting in meaningful educational and health benefits for all children, especially those who are behaviorally dysregulated (e.g., impulsive, inattentive, overactive) in pre-kindergarten. ParentCorps promotes positive parent–child and teacher–child interactions and strong home–school connections through professional development for early childhood teachers and school staff and a 14-week family program.

ParentCorps is a universal program, offered to all families of young children, and it aims to promote foundational skills for students as they make the critical transition to school. ParentCorps engages diverse parents as partners and creates networks of knowledgeable, motivated, and empowered parents throughout the school community. It builds on the strengths of culturally diverse students and families and includes tailored proactive strategies to address the needs of students who are behaviorally dysregulated. The ParentCorps approach incorporates best practices from mental health, education, and professional learning in order to provide supportive, safe, and inspiring spaces for educators and parents to work together on their shared goal of helping young children to succeed. It supports sustainable school-based programming for parents and students and evidence-based teacher practice that synergistically combine to ensure early and equal opportunities for every student.

randomly assigned to receive ParentCorps or education as usual, and children were studied prospectively from pre-kindergarten through second grade. By second grade, relative to children in control schools, children in schools with ParentCorps had higher reading and math test scores, improved teacher ratings of academic performance, and fewer emotional and behavioral problems. In addition, children who had dysregulated behavior when they entered pre-kindergarten had lower rates of obesity (Brotman et al., 2012, 2013).

Replicating and extending findings from a smaller trial (Brotman et al., 2011), this trial with more than 1,000 Afro-Caribbean, African American, and Latino low-income families found substantial benefits for parents across several domains (see Figure 5-2). Approximately 60 percent of families participated in the family program during early evening hours. Based on intent-to-treat analyses (including all parents whether or not they participated), parents in schools with ParentCorps were more knowledgeable about evidence-based practices, reported using more strategies to support positive child behavior, and, according to teachers, were more involved in education. One interesting finding, Brotman said, was that even parents

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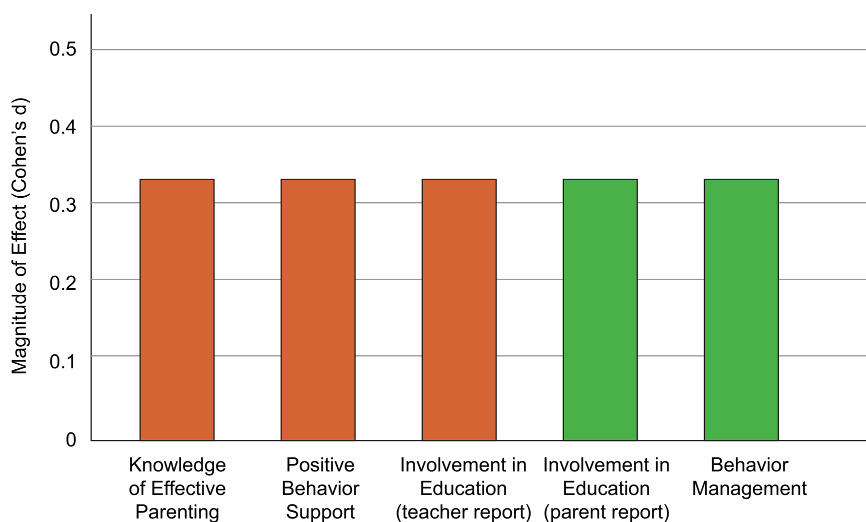


**FIGURE 5-2** ParentCorps impact on parenting that is sustained from pre-kindergarten through kindergarten.
NOTES: Impact for parents of all pre-kindergarten students regardless of program participation (intent-to-treat). Green indicates high risk.
SOURCE: Brotman presentation, June 5, 2014.

who did not come to the after-school intervention but whose children were in a ParentCorps school were somewhat more involved in their children's education, according to teacher reports. She attributed this finding to the fact that the professional development training is giving teachers the skills to better engage families. The data also showed that parents with behaviorally dysregulated children in pre-kindergarten benefited in terms of decreasing their use of harsh and inconsistent parenting (Dawson-McClure et al., 2014).

As an example of the type of gains that ParentCorps is producing, Brotman reviewed the program's impact on reading achievement (see Figure 5-3). The data show that relative to education as usual, children in schools with ParentCorps had greater reading achievement test scores in kindergarten, and this effect was still apparent in second grade. Children who were in pre-kindergarten in schools that had been implementing ParentCorps for several years showed much greater effects, as more parents participated and teachers were more proactive at engaging families and promoting children's social and behavioral competencies. The more sessions that the parents attended, the better the child's reading achieve-

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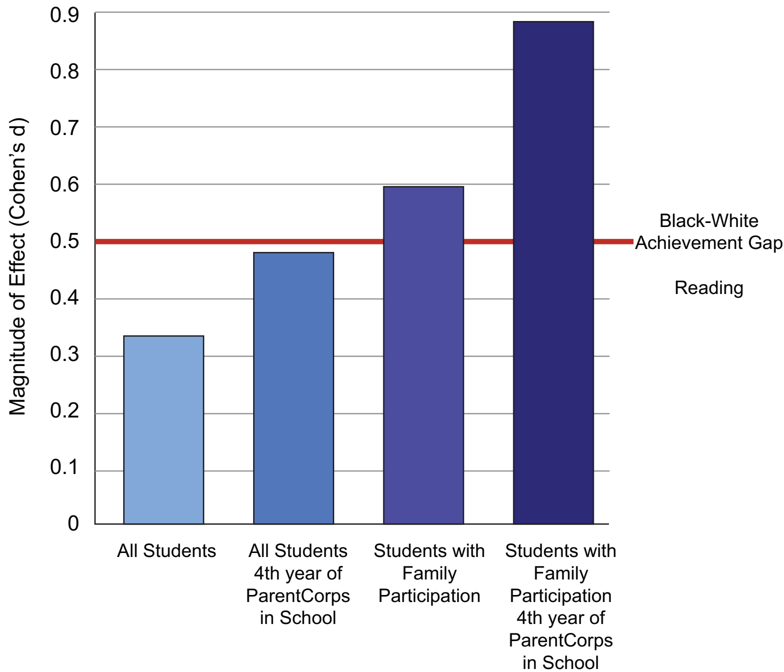


**FIGURE 5-3** The impact of ParentCorps on reading achievement.
NOTE: Red line indicates size of black-white reading achievement gap.
SOURCE: Brotman presentation, June 5, 2014.

ment. Children who were in the ParentCorps school during the fourth year of implementation and whose parents participated in five or more group sessions had the largest gains, which suggests that ParentCorps has the potential to close the achievement gap for poor and minority children (Brotman et al., 2013). Gains were also seen in teacher-rated mental health problems (see Figure 5-4) and in obesity among children with behavior regulation problems in pre-kindergarten (see Figure 5-5; Brotman et al., 2012). Brotman said that, taken together, these data point to the importance of self-regulation as an important risk factor for achievement outcomes, health outcomes, and mental health outcomes as well as to the ability of parents and teachers to support all children, especially those with regulation problems, as a strategy for improving population health.

In closing, Brotman said that she and her colleagues are now thinking about ParentCorps "as a population-level approach to buffer the adverse effects of poverty on early childhood health and development by engaging and supporting both parents and teachers of young children." They

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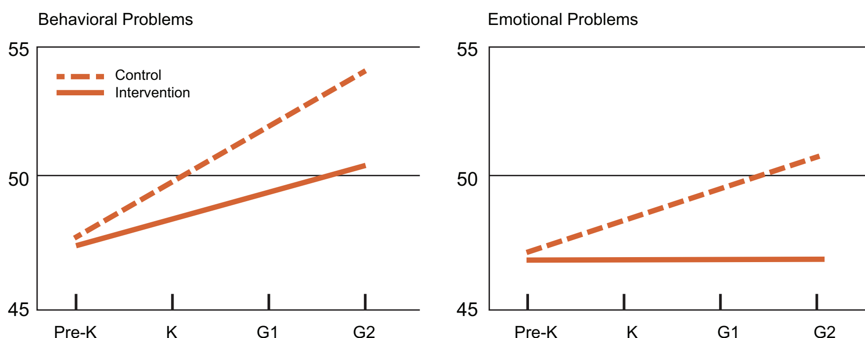


**FIGURE 5-4** ParentCorps impact on teacher-rated mental health problems.
SOURCE: Brotman presentation, June 5, 2014.

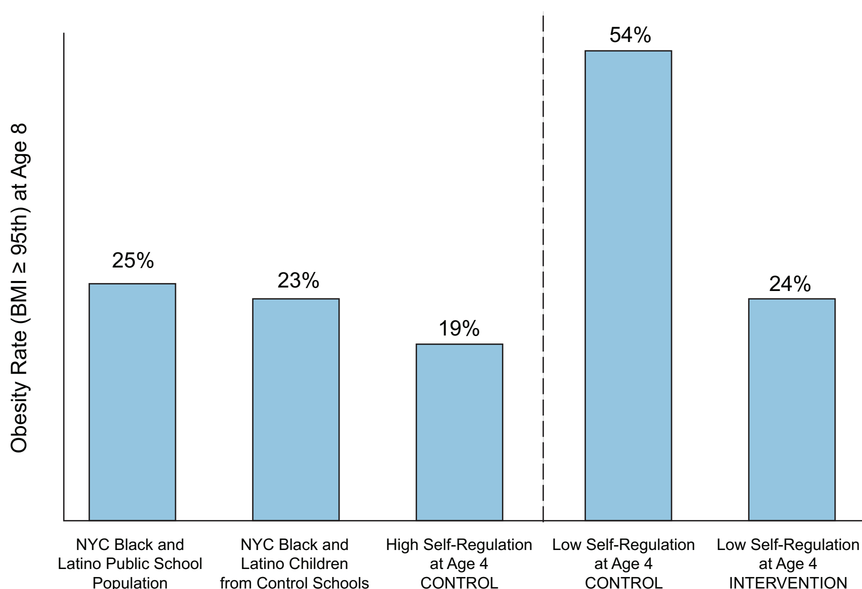


**FIGURE 5-5** ParentCorps impact on obesity at age 8.
NOTE: BMI = body mass index; NYC = New York City.
SOURCE: Brotman presentation, June 5, 2014.

have added various elements to all aspects of the program and have developed supports for the schools that implement the program. She said that the newest and potentially most important feature for dissemination is "leadership consultation," which refers to working with principals, not only to implement the program well, but to really change school policies

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and practices in order to increase opportunities for all children, especially those kids who have problems with self-regulation or who do not have the foundational skills that are necessary for school success.

## DISCUSSION

Bender started the discussion by commenting that he was fascinated to see that the ParentCorps intervention showed an impact on obesity without any specific content related to obesity. It illustrates how addressing some of the underlying factors related to health issues can produce a measurable difference, he said.

Session moderator Holly Hunt commented that it is not easy working across the health and education sectors and asked the panelists if they had any ideas on what the health sector could do more efficiently or take on in order to work better with schools and educators. Dickard replied that many of the topics discussed at the workshop, including vision screening and asthma management, are matters of state law rather than federal mandates and that this might be a place for education and health to work together. For example, approximately 30 states currently require vision screening of school children, and the nation's optometrists, through their professional society, are working to encourage the remaining states to mandate vision screening for all students. Similarly, allergists have been involved in passing state laws on emergency response to anaphylactic shock. Activism on the part of physicians and other health care specialists at the state and local levels was instrumental in the passage of these laws, Dickard said. He added that physicians are in the position at the local level to help make the case from a scientific and medical perspective that health contributes to positive academic achievements.

Robert Kaplan of the Agency for Healthcare Research and Quality commented that mandating screening could drain resources from other needed areas and that caution should be exercised unless a careful evidence-based review shows that screening is effective on a population basis. Mary Pittman of the Public Health Institute wondered if dental screening should also be considered, given the connection between dental cavities, mouth pain, and nutrition. Bender said that he did not think the NEA or teachers would object to that even though that is not currently on their list of concerns. He added that if dental issues are important, there needs to be an effort to educate teachers why they should be concerned about their students' dental health.

Brotman said that there are incredible opportunities for taking action, particularly in the early childhood setting, given that the science shows it is important to take action at an early age in order to have the biggest

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impact and that the federal government, philanthropy, and the business community all seem ready to invest in the early childhood years. "I think the energy and the momentum is there, and that this is one place where the different sectors can really come together," Brotman said. She added that the best opportunities she sees lie in creating new approaches that involve both the health and education communities rather than trying to undo systems that are already in place. Brotman said that children with behavioral and emotional problems and with problems in other heath areas discussed at the workshop account for a large proportion of special education dollars and that about 20 to 25 percent of children in a disadvantaged urban area start their first day of pre-kindergarten or kindergarten with these problems.

Pamela Russo from the Robert Wood Johnson Foundation asked Bender if he could provide advice on how to approach local NEA affiliates to help connect with schools. Bender replied that it is best done on a one-to-one basis. "You have to establish a relationship and build trust," he said, and one should not expect a yes or a no answer on the first meeting. "You have to establish a relationship over time and really listen to what they are dealing with and what is important to them and then connect what you need to do with what they need," he added. He did note that there is no public directory of union locals associated with specific schools. One approach he recommended is to contact the state NEA affiliates, which are listed on the NEA website, and ask for their help in contacting local affiliates.

Marthe Gold from the City College of New York asked about the time and effort required of the parents enrolled in ParentCorps and about the type of professionals involved in the program. She also asked Brotman if she had any idea on the per capita cost of implementing this type of program. The parent program, Brotman responded, consists of 14 2-hour sessions, and she said that in the last trial, 60 percent of the parents had come to at least 1 session and 40 percent had come to 5 or more, with an average attendance of 10 sessions. The program's goal is to have parents attend 10 or more sessions in order to get the biggest impact at the population level, and she and her colleagues have been working over the past 6 to 7 years on ways of marketing the program to parents. ParentCorps has developed a 14-month start-up model to help schools build capacity for sustainable implementation.

Regarding the professionals involved, Brotman said that in the trial, school-based mental health professionals and teachers delivered the program to parents. The members of her staff are mostly psychologists and social workers. She added that the program now focuses on training schools to run the program on their own, with technical support from ParentCorps staff. One reason that the program is getting bigger effects

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over time, she said, is that teachers are participating in the program, which not only helps the teachers but also increases interaction time with parents.

Speaking about the cost of the program, Brotman said that once the program is in place in a school, its cost is less than $500 per family, and the ParentCorps team is working to reduce costs further. Brotman and her colleagues are also in the process of finishing a cost–benefit analysis for ParentCorps. Brotman said that their preliminary analysis clearly shows that ParentCorps improves quality of life and saves money in the long run.

In response to a question from George Isham of HealthPartners about how to set priorities for action, Brotman said that the top priority should be to engage families and understand the family perspective. "If we are going to make change over the long run," she said, "it is going to be at least in part through the parents and through the family." She also expanded on the complex approach that ParentCorps takes to get its program integrated into schools. The first step is to work with a school's principal to establish policies and practices for that specific school. Next comes working on the classroom and thinking about what actually takes place in the classroom when it comes to combining health and education. The third step is rolling out the evidence-based program for families. "I think that if we really want to influence children's trajectories for health, as well as education," she added, "we have to get much more serious about really appreciating the complexities of what it means to change an environment at home and in the classroom and in school."

Pittman asked the panel for ideas on how to deal with the fact that many children are not engaged in any academic pursuits during summer break and may also be experiencing inadequate nutrition, given that they are not getting the free breakfast or lunch that they receive during the school year. California, she noted, has some summer meal programs that it runs through the public library that combine education, public health, and nutrition. Dickard responded that the U.S. Department of Agriculture has a program to promote summer meals in order to overcome that nutrition deficit and also that many school districts offer summer reading programs to keep children engaged in learning activities. Bender added that there has been a spontaneous effort among teachers, working together with local food banks, to provide students with weekend backpacks filled with non-perishable food so they have something to eat over the weekend, an idea that could perhaps be carried over to summer break. Such efforts get complicated rather quickly, though, without the logistics of a formal school meal program. "When you get into these other areas where kids aren't normally congregating during the summer," Bender said, "you have to find out where they are and figure out how you make the food program work there."

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Debbie Chang from Nemours asked Bender and Brotman about the sustainability of their programs. Bender said that the Breakfast in the Classroom program is the most sustainable because of the U.S. Department of Agriculture regulations and reimbursement policies. The main challenge is getting start-up funds because the program pays for itself once it is running. Based on the results of pilot programs, some state legislatures have stepped up and provided start-up funding for high-need districts. Bender added that the key to sustainability is to take time to ensure that a program fits into local priorities and to customize it to fit the needs of the school district and its employees. Then, making a value proposition becomes easier, and the program becomes sustainable. "For us," he said, "it's that engagement piece, that customization piece, that is so important."

Brotman said that most of the ParentCorps program was funded by grants from the Institute of Education Sciences and the National Institute of Mental Health. However, the program has relied upon generous—and critical—funding from philanthropic organizations to pay for the research trials, innovations, and the development of best practices. Over the past couple of years New York State's Office of Mental Health has provided funding for implementation and the cost–benefit analyses because the office recognizes the value of preventive intervention, social-emotional development, and families. Brotman's team is working with schools and principals to learn more about how to repurpose existing funds to cover costs of this evidence-based program. She noted that the expensive part of ParentCorps is the after-school component, which requires funds for meals and stipends for school staff. Her team is working on a cost-efficient model that offers the less expensive school-day version and reserves the more expensive after-school version for families who need it. Brotman added that her team is undertaking a strategic planning process to guide ParentCorps growth in New York City and in other urban centers across the country.

Regarding national scale-up, Brotman said that there are both opportunities and challenges related to ParentCorps implementation in large urban school systems and Head Start. She said that the Head Start system has workforce issues that are different from those in schools. "If we move too quickly into different systems and with different people, we are going to lose all of the effects," she said. "We are sure about that." As a result, ParentCorps is for the moment keeping its focus on the prekindergarten and kindergarten populations in urban schools, but Brotman added that there are incredible opportunities for others to develop similar programs for daycare settings, primary care practices, and other community settings.

Terry Allan from the National Association of County and City Health

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Officials and the Cuyahoga County Board of Health asked Bender if schools ever complain about the time needed to apply for grants to bring the type of programs discussed in this session into their schools. Yes, Bender said, and the problem is that principals and teachers are not grant writers. His team's approach has been to prescreen schools with the help of the NEA state affiliates to identify those with the greatest chances of success and then motivate that select group to complete the application process. "Our solution to the problem is to try to reduce the number of rejections and frustration because it does hurt the program long term."

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# 6

# State and Local Collaboration Between the Health and Education Sectors

The workshop's third and final panel discussion featured three presentations on the conditions under which state and local collaboration between health and education can work. Loel Solomon, vice president for community health at Kaiser Permanente, discussed some models of state and local collaboration based on his organization's work in eight states and the District of Columbia. Kent McGuire, president and chief executive officer of the Southern Educational Foundation, described the regional disparities that exist regarding poverty and health outcomes and the policy challenges at the state and local levels for those interested in addressing those disparities. Terri Wright, director of the Center for School, Health, and Education at the American Public Health Association (APHA), discussed her organization's focus on partnering with school nurses to reduce dropout rates. A discussion moderated by Solomon followed the presentations.

## MODELS OF STATE AND LOCAL COLLABORATION BETWEEN HEALTH AND EDUCATION

Kaiser Permanente is the nation's largest nonprofit private health care organization that both delivers care and offers a health plan, Solomon told the workshop participants. Kaiser Permanente has both the incentives in place and the mission to provide high-quality, affordable care and to improve the health of the members in the communities that it serves, he said. Of particular relevance to this workshop, Kaiser Permanente has a



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long history in early childhood education and in schools, starting with the early childhood care centers that Henry J. Kaiser established, at the personal request of Eleanor Roosevelt, in the Kaiser shipyards that existed during World War II. These centers, which were established to support the women who worked in the shipyards, offered well-child care and immunizations.

Over the past 25 years Kaiser Permanente has run an education theater program that has performed for some 10 million children, and over the past decade Kaiser Permanente has been engaged in community health initiatives that feature multi-sector collaborations, including collaborations with schools. Over the past couple of years, Solomon said, the organization has been trying to determine how best to integrate these different programs and its assets with a deliberate focus on schools. The logic for this focus is that 20 percent of Kaiser Permanente members spend most of their days in school and that there is a growing amount of research indicating that schools are the hub of health. "Schools, as the heart of health, represent an important civic anchor," Solomon said. "They can generate health, not just for the school, but for the entire community, and there is a growing evidence base" that school-based interventions work. Solomon added that Kaiser Permanente's total health perspective (see Figure 6-1), which looks for ways to affect health in a positive way outside of its medical facilities, is another driver of the organization's focus on schools, in alignment with the organization's overall priorities.

Kaiser Permanente's school strategy primarily stresses health goals, but it also takes into account the fact that those are not the goals that are most important to its education partners. As a result, the Thriving Schools program aims to produce, in addition to health benefits, the benefits in academic performance, school achievement, and workforce productivity that are of most importance to school leaders. The program's areas of focus are promoting healthy eating and active living—two areas of competence for Kaiser Permanente that are a major focus of school wellness policies—and also improving school climate, including addressing behavioral issues and promoting the social and emotional health of students. The targets for this work include students, staff and teachers, and all of the other people who are engaged in promoting student health within schools during the day.

Solomon remarked that Kaiser Permanente is trying to involve its entire workforce to serve as volunteers who can bring their varied experiences into the schools. For example, senior leaders in its Oakland headquarters are working with the Oakland Unified School District on strategic planning and project management issues that are important for the school district. In addition, Kaiser Permanente is partnering with other organizations, such as the Alliance for a Healthier Generation, the Safe

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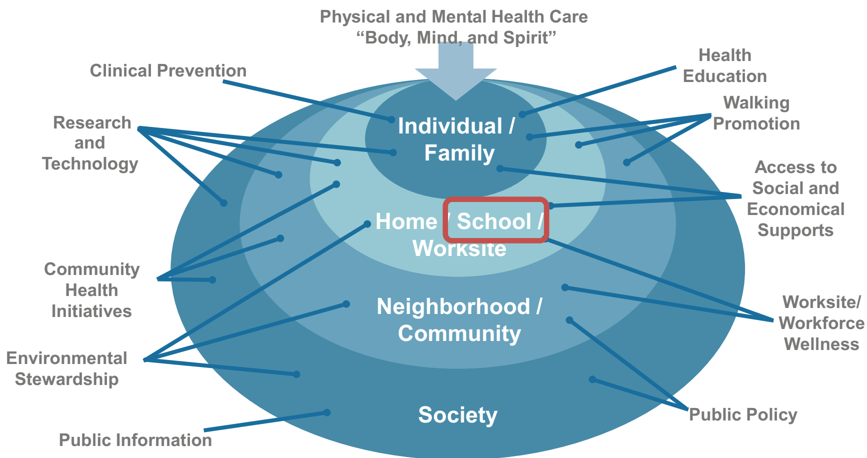


**FIGURE 6-1** Kaiser Permanente's total health perspective aims to activate the organization's assets at all levels to improve the health of the communities it serves.
SOURCE: Solomon presentation, June 5, 2014.

Routes to School National Partnership, and the School-Based Health Alliance, to build on their expertise and leverage Kaiser Permanente's competencies. For example, Kaiser Permanente is working with the Alliance for a Healthier Generation and its program managers to deliver intense interventions across its partner schools and is also working with the Safe Routes to School National Partnership to support physical activity at or on the way to and from school. Kaiser Permanente's collaboration with the School-Based Health Alliance is looking at ways in which school-based health centers could become a more effective driver of school wellness.

To date, out of the 14,000 schools located in its service areas, Kaiser Permanente has engaged some 1,000 schools in physical activity programs and about 250 schools in a joint program with the Alliance for a Healthier Generation. Solomon said that the Los Angeles Unified School District, the nation's second largest school district, has recently joined the Thriving Schools program and that he and his colleagues are now putting in place an evaluation that will provide solid baseline data so that the program will be able to measure success and drive improvement efforts.

Based on Kaiser Permanente's experience in cross-sector collaboration, Solomon offered a few lessons that he and his colleagues have learned. He prefaced those lessons with the comment that both the education system and the health system are undergoing incredible transformations today that can cause organizations either to become narrowly

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focused, which is not a good environment for collaboration, or to reach out to others to get new ideas and new partners. "We need each other so much more than ever," Solomon said. "Health needs education to deliver prevention and bend the trend in a sustainable way on health care cost growth. Education needs health to have kids that are ready to learn." Turning back to the lessons learned, he said that those who are interested in creating the necessary conditions for successful cross-sector collaboration must start with and be focused on areas where there are convergent strategies even when the goals are divergent. It is important, too, to find people who are "bilingual in health and education and to support them on the ground," Solomon said. "These local champions are so incredibly powerful. We need to nurture them, and we need to provide sustainable funding streams for them."

Another lesson Solomon offered is that it is important to mind the gap between knowledge and practice. "We have found very few people in education [who] don't understand the connection between health and education," he said. It is all a matter of making "it easy for educators to implement those practices that are evidence-based and that are going to make a difference." Also critical is the need to align measurement and accountability systems. "That is what institutionalizes the incentives," Solomon said. Imagine the opportunities for natural experimentation, he said in conclusion, if there were educational data systems that included longitudinal core health measures.

## REGIONAL DISPARITIES IN HEALTH AND EDUCATION

Kent McGuire began his presentation by showing a series of maps of the United States that illustrated the regional disparity in the percentage of low-income students enrolled in public schools (see Figure 6-2). These maps showed rates of persistent poverty (see Figure 6-3), social mobility (see Figure 6-4), obesity rates (see Figure 6-5), life expectancy (see Figure 6-6), teenage births (see Figure 6-7), graduation (see Figure 6-8), and state and local funding of public schools (see Figure 6-9), and by comparing them one can see a clear connection among poverty, poor health outcomes, graduation rates, and school funding.

"The states that we worry about the most," McGuire said, "are the ones that are persistently in extremely high poverty," particularly given the dire situation that these figures show in aggregate. "[The figures] pretty much speak for themselves," he said. "Not too surprisingly, the lowest high school graduation rates are in the same geography." These are also the same areas where the least amount of money is spent on public school education, where life expectancy is lowest, where childhood obesity is most prevalent, and where teen pregnancy rates are the highest, he noted.

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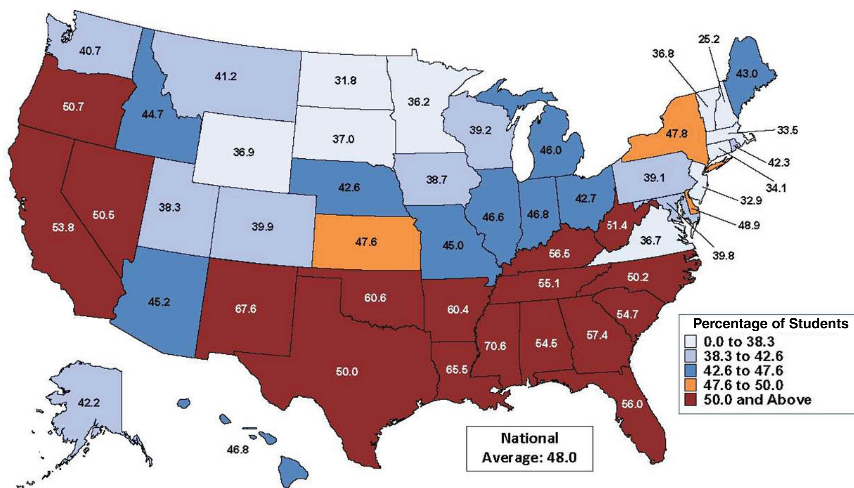


**FIGURE 6-2** Percentage of low-income students in all public schools, 2010–2011.
SOURCE: McGuire presentation, June 5, 2014, citing Suitts, 2013.

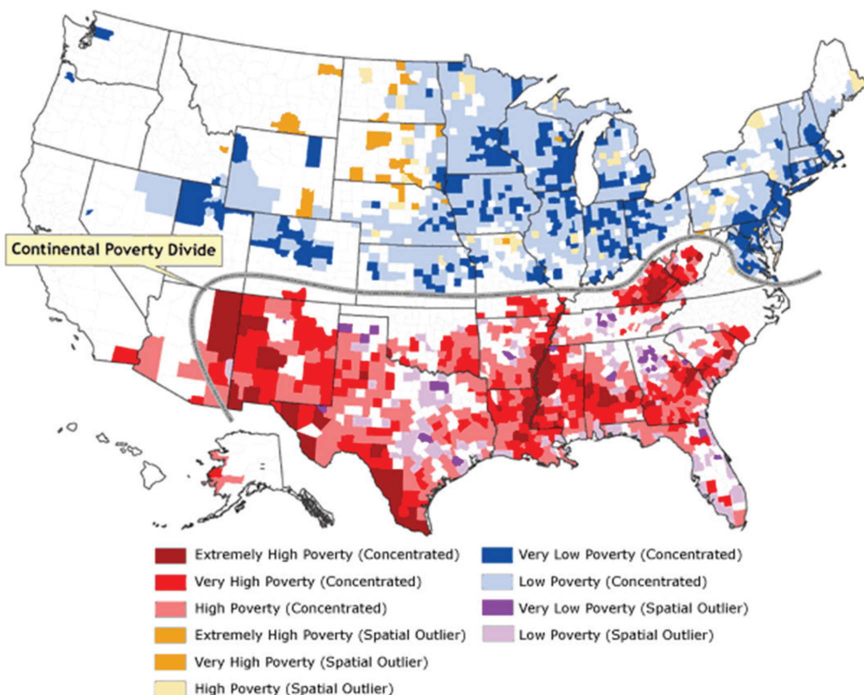


**FIGURE 6-3** Rates of persistent poverty.
SOURCE: McGuire presentation, June 5, 2014, citing Holt, 2007.

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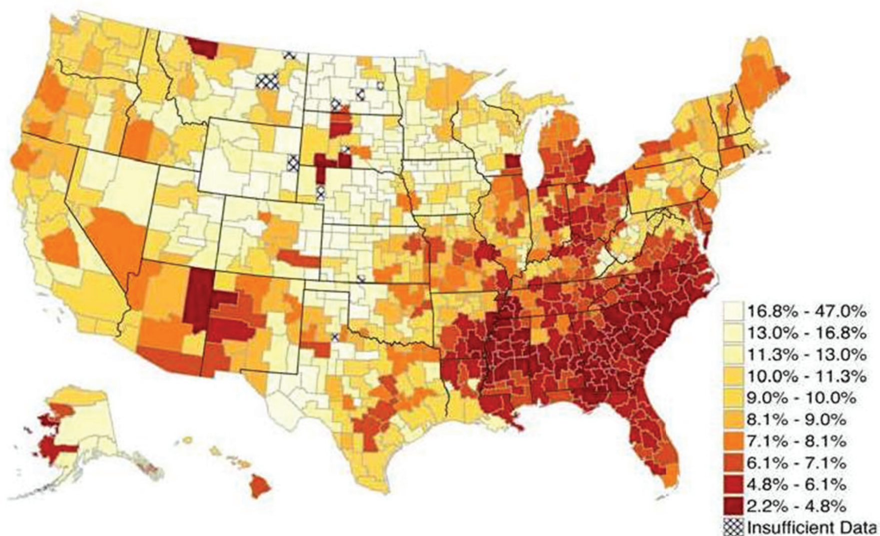


**FIGURE 6-4** Social mobility for a generation of poor children.
SOURCE: McGuire presentation, June 5, 2014, adapted from Chetty et al., 2014.

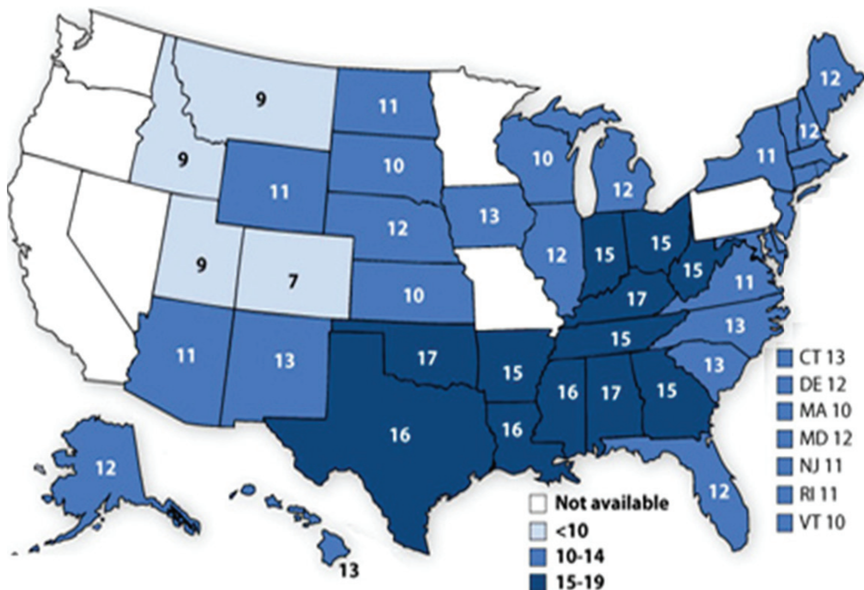


**FIGURE 6-5** Obesity rates for high school students.
SOURCE: McGuire presentation, June 5, 2014, Eaton et al., 2012.

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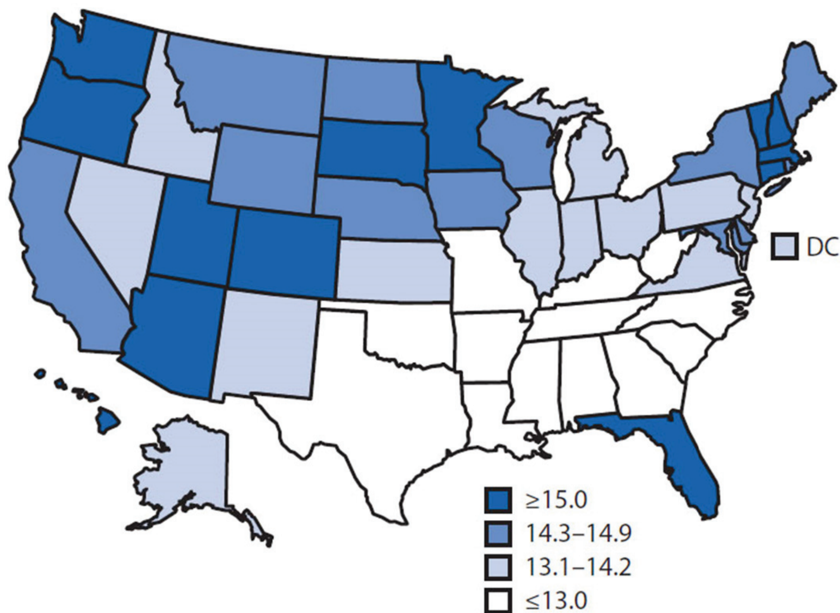


**FIGURE 6-6** Life expectancy at age 65.
SOURCE: McGuire presentation, June 5, 2014, citing CDC, 2013b.

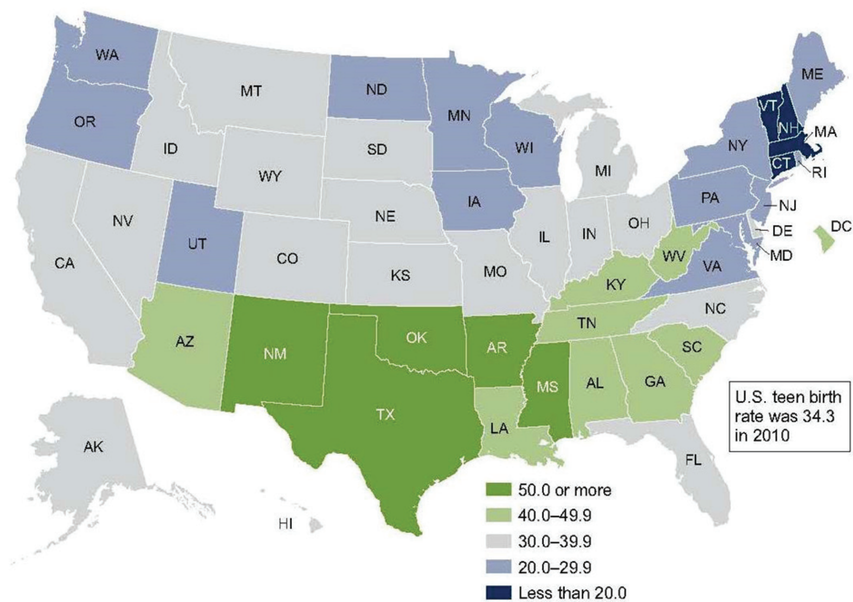


**FIGURE 6-7** Rates of teenage births.
NOTE: Birth rate for women aged 15–19, by state, 2010.
SOURCE: McGuire presentation, adapted from Hamilton et al., 2012.

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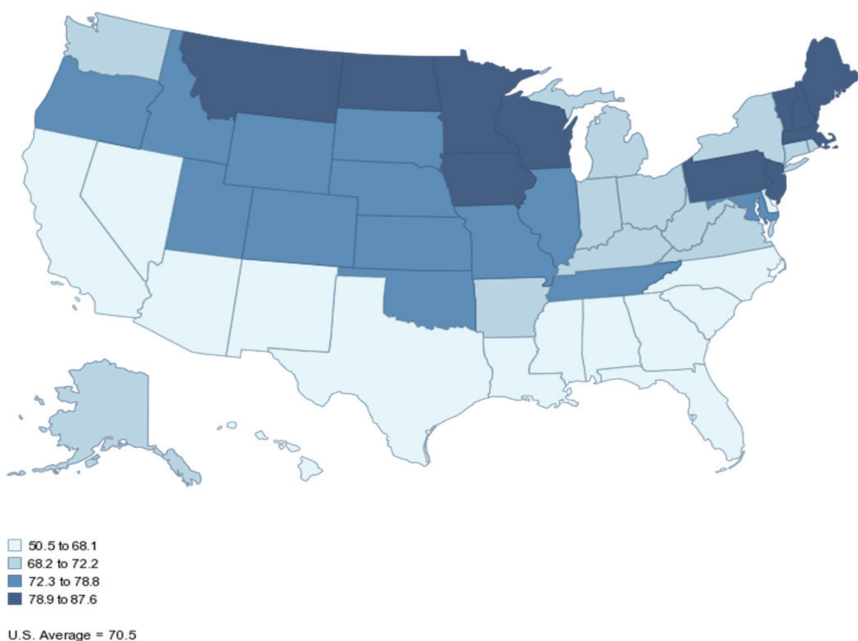


**FIGURE 6-8** High school graduation rates, 2009.
SOURCE: McGuire presentation, June 5, 2014, citing National Center for Higher Education Management Systems, 2014, adaptation of National Center for Education Statistics common core data.

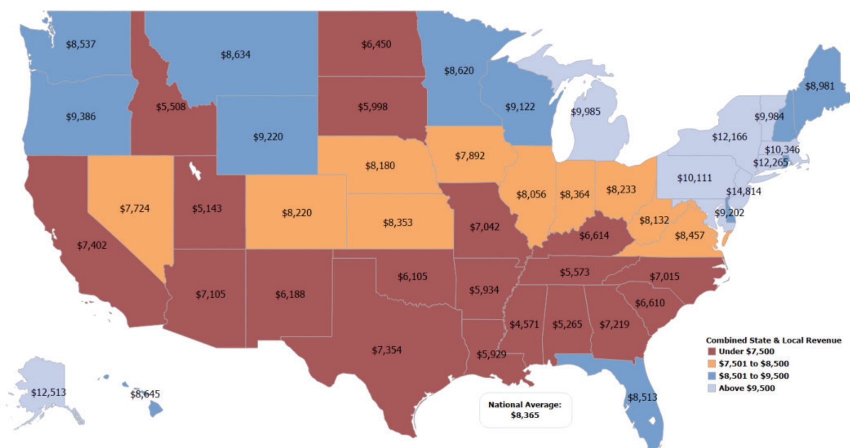


**FIGURE 6-9** State and local funding of public schools.
NOTE: State and local spending per student for K–12 education, 2011.
SOURCE: McGuire presentation, June 5, 2014, adapted from U.S. Census Bureau, 2012, by the Southern Education Foundation.

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With that as a background, McGuire provided several examples of successful collaboration and interaction between the health and education communities aimed at remedying the unacceptable situation illustrated by the maps. One example was how school report cards are incorporating an increasing number of health and wellness indicators, which goes hand in hand with the increased activity in screening and fitness assessment in schools. Louisiana, he noted, asked for Medicaid waivers so that it could pay for school-based health services. The systems that are interacting and collaborating closely, he said, are those with fewer resources. "They have more incentives and interest in trying to figure things out."

On the other hand, he said, it is uncommon to find examples of systematic thinking, which can be hard to sustain when reliable funding is lacking. It is important, McGuire said, to get school systems to start to think in terms of evidence-based interventions. "We have got some maturation to do on the education side in that respect," he said. Other items on his to-do list are preparing teachers and principals to promote health and wellness and arming schools and school districts with effective, evidence-based strategies. More needs to be done to incorporate health and wellness into school metrics and accountability policies and to better integrate school and health care data systems so that student academic records are merged with health data, McGuire said. He also noted that most of the attention paid to data systems in public schools is focused on the alignment of administrative records for preparing school report cards. "It is not for decision making and continuous improvement," he said. "That is a very different motivation."

Describing actions he would like to see, McGuire suggested that existing state Medicaid plans could be tuned to adapt to the opportunities and challenges of paying for services in school districts. He also thought that integrating student academic and medical records should be a top priority for action because it would create an opportunity to conduct experiments in conjunction with coordinated care networks in order to better understand how various programs are working. There is also an opportunity to create more sustainable policies by better integrating support for students and families. McGuire said that the charter school movement could be an ideal environment in which to innovate but that, for the most part, this is not happening.

McGuire also listed some policies that should be retired. First, he said, there needs to be a better dependent variable than standardized test scores for judging the efficacy of educational programs. "If we could focus on the whole child, that would open up to all of the things you would need to take into consideration in order to get the learning outcomes that we are really interested in," he said. One challenge, he added, is that too many reformers and political leaders are unsure that the current

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educational system can accomplish anything and so are reluctant to add new responsibilities and provide new resources to improve the system. He also said that the focus on test scores as a means of holding teachers and schools accountable is misdirected. "Accountability is not a capacity-building strategy for schools," he said.

In his concluding remarks, McGuire emphasized that the disparities and gaps in income that he illustrated with his series of maps and the correlations between those gaps and health and wellness are real, and he said that it is time for the health community to step to the podium and argue for systemic change. "If there was ever a leadership moment for folks outside of the education system to underscore how important it is for that system to actually work and then offer a range of ideas to generate better outcomes, I would say that now is that time," McGuire said. He asked the Roundtable to drill more deeply into ideas and strategies that might give rise to broad-scale systemic change to go along with the efforts being funded largely by philanthropies to create pilots and generate evidence.

## REDUCING DROPOUT RATES TO IMPROVE HEALTH OUTCOMES

As a preface to her remarks, Terri Wright said that public health, population health, and health care have distinctive roles that are complementary. "One is an outcome, and two are processes and products that can lead to that outcome," she said. She then provided some background information about the Center for School, Health, and Education, which was established in 2010 at APHA to focus on, and elevate, dropout prevention as a public health policy. She said that APHA has a policy in place that speaks specifically to public health and education and to the need to work collaboratively across sectors to improve high school graduation rates as a means of eliminating health disparities. The Center for School, Health, and Education is a focal point for APHA's work at the intersection of public health and education. She also commented that it was significant that high school graduation was as an explicit goal in *Healthy People 2020*.

Wright briefly reviewed the reasons that had already been given for why high school graduation matters: Dropouts experience shorter life expectancy and are more likely to suffer from chronic illnesses such as cardiovascular diseases, cancer, infections, lung disease, and diabetes; dropouts earn 41 percent less than someone with a high school diploma and are 28 percent less likely than college graduates to have insurance coverage; and dropouts are less likely to be enmeshed in social conditions that promote health as an adult. Wright also reiterated the oft-stated

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message that for children and adolescents, health and education are two sides of the same coin.

Wright said that she and her colleagues at the Center for School, Health, and Education believe that it is possible to make a difference for all youth through school-based health care because schools are the only institutions that can reach nearly all youth. In that respect, she said, schools are in a unique position to improve both education and the health status of young people throughout the nation. With that in mind, the center works to advance school-based health care as a comprehensive strategy for preventing school dropouts and improving graduation rates as an interim step toward adult health.

"Why school-based health centers?" Wright asked. "Because they have a track record of dealing with the social circumstances associated with educational success." They also have a track record of dealing with some of the social experiences associated with dropping out, such as school violence and bullying. In addition, school-based health centers explicitly focus on risky behaviors and the dangerous health outcomes associated with adolescents, and they do so as a confidential, nonjudgmental, trusted source of expertise in the school building upon which both students and school personnel have come to rely.

Wright said that the primary reasons that male students drop out of school are disciplinary issues, the need to earn an income, poor academic performance, absenteeism, and disengagement from school. For females, the number one reason for dropping out is pregnancy. Other reasons that females drop out are parenting and caregiving responsibilities, the need to earn an income, and harassment at or on the way to or from school. The center focuses on a public health approach to addressing these factors and uses school-based health centers as trusted hubs for making that happen. These school-based health centers play a number of other key roles, including using assessments to identify the factors involved in students dropping out, responding to those factors, being the catalyst for raising awareness of the important issues that the assessments have identified, and then bringing the resources into the school to address those issues (see Figure 6-10).

School-based health centers represent a successful example of state and local partnerships between the health and education sectors, Wright said. At the state level, health departments and education agencies may work in partnerships, along with the Medicaid agency, to provide financial resources. In some cases, these financial resources can be state or federal funds that are used directly or indirectly to address these issues in local schools. State health and education departments also provide guidance and technical assistance. Some of these programs, Wright said, are funded by the Centers for Disease Control and Prevention's coordinated

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**FIGURE 6-10** The Center for School, Health, and Education's strategic model for dropout prevention.
SOURCE: Wright presentation, June 5, 2014.

school health programs, which put people in state health and education departments with the explicit mandate of collaborating together to address issues at the local level that can affect the health and success of children at school.

At the local level, Wright continued, there are partnerships between local school districts and health agencies in which the school districts pay for school nurses, who are school employees, while the health providers in school-based health centers are sometimes funded by large hospitals or health systems. In some cases, the funding for school-based health care comes from a patchwork of private and public sources that come together in a collaborative way to meet the needs of children and adolescents through the schools, Wright explained.

There is a variety of evidence supporting a central role for school-

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based health centers, Wright said. Studies show, for example, that they attract harder-to-reach populations, particularly racial and ethnic minorities and males. And they do a better job of getting these hard-to-reach populations the services they need, such as mental health care, and of conducting risk assessments and early interventions. Data also show that adolescents are 10 to 21 times more likely to come to a school-based health center than to a community health center for mental services. "Why?" Wright asked. "Because it is in the school building, which makes it easier for them to do."

Other evidence shows that sexually active adolescents are more likely to accept and use contraception when it is provided by a school-based health center. Furthermore, students, teachers, and parents with access to a school-based health center rated academic expectations, school engagement, safety, and respect significantly higher than did those in schools without a health center. "The mere presence of a school-based health center positively impacts the overall school climate and learning environment," Wright said.

Students who have access to school-based health centers have lower rates of absenteeism and tardiness and higher grade point averages than students in schools without a health center. African American males in particular are three times more likely to stay in school if they have access to a school-based health center. There is even preliminary evidence that school-based health centers have a positive impact on school suspensions.

Wright concluded her presentation by discussing some sobering statistics collected in a school-wide assessment in one high school and one middle school in an impoverished U.S. city. This assessment was conducted in a manner that allowed the students to truly tell what was going on in their lives and to speak openly about their behaviors and their environmental circumstances. Thirty percent of the middle schoolers said they were sad or had nothing to look forward to, and 24 percent of them reported carrying a weapon. Nearly half of the students had gotten into trouble because of anger, and 35 percent missed school for work, because of transportation issues, or because they had to care for someone in the family. One-third of the students were earning a grade of less than a C in one or more classes.

Among the high school students, 51 percent had had sex, and 25 percent of those were not using a condom or any type of protection. "It is not if they are going to get pregnant," Wright said, "it is when are they going to get pregnant or cause a pregnancy." More than one-third of the high schoolers carried a weapon to school, nearly one-third felt sad or hopeless, and 28 percent got in trouble because of anger. More than one-fifth of the students smoked marijuana or used other street drugs; 39 percent missed school for work, because of transportation issues, or to care for a family member; and about one-third had grades of less than a C in all of

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their classes. "This is just a smattering of what you learn about what is going on in their lives when you give students a way to respond confidentially and without judgment," Wright said.

In this assessment, Wright and her colleagues also asked about homelessness and whether the students had electricity or running water in their homes. "This is when you start unpacking what we mean when we talk about poverty and what it means in the lives of these young people: not being able to take a shower or wash their clothes and having to go to school perhaps not smelling good and being teased and then deciding they are not going back to school the next day because they are tired of being teased." She said that this is why one principal asked a school-based health center to put a washer, dryer, and shower facilities in the health center.

Wright stressed the importance of gathering this type of information if the real goal is to make a significant and long-lasting impact in the lives of these young people. "I suggest to you that we are not going to change the indicators that we care about," she said, "until we dig deeper, beyond the global bucket of poverty, to figure out what it is that is going on in their lives, get to the root of what is happening, and make a difference in their lives." To conclude, she read some of the sobering stories that the students recounted:

- *"[T]here was like 13 people in that house. . . . [A]fter a while, you know, there's not enough food and everything for everybody to be there."*
- *"One winter we had no heat. We had no electricity. We had no water. It was bad."*
- *"People judge me for the way I look all the time. . . . I think it's because I'm black and I'm tall. . . . I'm walking past cars, people lock their doors."*
- *"What's stressful in my life is being raped and getting pregnant from it."*
- *"They took away the swings and the play skate [at the park]. . . . [T]here's nothing but a basketball [court] there, and they don't even have nets. . . . [I]t's irritating and makes [me] mad."*
- *"[B]ring all the rich people back . . . so they can fix it up. . . . I would put them in our place to see how it feels to be us at the bottom of the food chains."*

## DISCUSSION

Raymond Baxter from Kaiser Permanente started the discussion by asking the panelists whether they believed that the fragmentation of systems will make it difficult to implement what he called "grand schemes" for aligning the health system with the education system. McGuire said that it will be a challenge to overcome the fragmentation of both the health and education systems but that it needs to happen, and he said

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he thought that the biggest obstacle will be surmounting the language barrier that exists between the two fields. Wright said that to address this language issue her team engaged a consultant from the education community who could help translate education language into concepts that the health community could understand and who could help navigate the differences between these two communities. "You have got to learn the language," she said. "You have got to learn the nuances. You have got to learn the protocols. You have got to learn the sweet spots that make sense for them, just like any other culture."

Wright then commented on some of the expectations associated with the Affordable Care Act and the way that the health care community will need to identify and respond to social factors such as homelessness. "I am trained as a physician," she said. "I am not trained as a fixer around that kind of social issue. I know that that social issue absolutely impacts what I see in an exam room, but I don't know what to do about it." One way to address this dilemma would be to integrate public health and primary care in a very deliberate and demonstrative way. This, Wright said, would give primary care providers some comfort in asking those questions because they will have other experts available to provide responses to those social factors.

George Isham from HealthPartners then asked what he characterized as a "provocative" question, which was how various organizations should determine their areas of focus, given the list of seven health care priorities that Charles Basch noted in his talk and other areas, such as oral health, that have been noted throughout the workshop. Solomon said that the questions that an organization has to ask itself as it figures out how to marshal its finite resources and connect to another organization are: "What do I have to offer? What are my unique competencies and expertise? What are my organizational imperatives? How can I build a case for connecting to another institution, another setting, another group of stakeholders in a way that I can actually bring something to the game that matters to my organization and my leadership?" Then, he said, once you get into a collaboration and start working on a few priority areas, others arise that can be identified and added to the list. "You can't boil the ocean," Solomon said. "You have to start somewhere, and you might as well start somewhere where you have got some competence and where schools have a willingness to engage."

Debbie Chang explained that Nemours picked prevention as a focus area because there was a void that needed to be filled and the organization felt it had the capacity to work in that area. Then, in the course of understanding the connection between primary care and population health, the organization realized there was a need for work on asthma. Chang

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summarized Nemours' approach as being opportunistic, proactive, and prioritizing along the way.

Jeffrey Levi of Trust for America's Health said that there are some collaborative grant programs, such as the school climate transformation program, that require potential grantees to apply for grants from each of the participating federal agencies. Other programs, such as the performance partnership grant initiative, blend funding from several agencies into one grant, an approach that required specific legislative authority. The relevance of this approach, Levi said, is that it helps break down the silos that were mentioned earlier in the workshop. McGuire wondered if the Roundtable could offer advice on how to modify grant programs and requests for proposals to encourage—rather than discourage—cross-sector collaboration. He also said that government agencies could be more effective if there were more strategic interaction among agencies at the stage at which programs are being designed. The research side could then weigh in on designs that will generate interesting results that could, in turn, create opportunities to learn how things work, McGuire said.

Michelle Larkin from the Robert Wood Johnson Foundation asked the panel to comment on challenges and innovations in the area of dissemination and sustainability. Solomon replied that public resources are critical to sustaining efforts and that those resources can be marshaled, even in tough fiscal environments, when advocacy is brought to bear in order to raise awareness. Wright agreed with Larkin's comment. Solomon said that without public resources, physical education will not be back in school and the spread of programs such as Colorado's Breakfast After the Bell initiative will be limited.

Wright added that an important piece of sustainability is transformation. Transforming behavior—as opposed to merely throwing money at a problem—increases the odds that a successful program will find the support it needs to spread. For example, programs to address asthma in students that merely pass out inhalers are not transforming behavior, while those that include home teaching and that bring in a public health team to help address environmental and social factors that can make it difficult for a student to use their inhaler consistently are more likely to transform behavior. Taking the latter approach requires educating primary care physicians that writing a prescription for an inhaler or nebulizer is just the first step needed to treat their patients in a sustainable manner. The physicians need to start thinking about what else is going on in a student's life and to know what other components of the health and school system need to be involved in that student's care. Larkin added that the goal is to change the culture—to enable adults and children to be resilient and to empower them to create the change that needs to be fostered in their communities.

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Sanne Magnan of the Institute for Clinical Systems Improvement brought up the need to find the right balance between accountability and flexibility—a need that health and education share. As an example, Magnan told the story of a fifth grader who did not receive a grade on spelling because her teacher did not want to give her a failing grade but instead wanted to address this student's learning disability. The teacher may have gotten into trouble for her flexibility because she did not use consistent grading metrics. Similarly, she described the case of a man who was counseled to take a statin for elevated cholesterol but refused to do so—a response that was likely to cause that man's physician to be scored lower on accountability measures even though the physician did counsel the patient to use a statin. The point of these stories, she said, is that there is a need to identify the right measures and accountability metrics in both health and education that can be used to advance a child's welfare by considering the needs of specific patients and families. Solomon said that meeting this challenge is exactly what Trust for America's Health and its partners in the Health in Mind campaign are doing. Commenting that the field is "drowning in metrics and indicators," McGuire concluded the discussion session by saying, "We have to have the discipline to arrive at the smallest number of things that make the biggest difference in telling us if we are getting what we want."

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# 7

# Final Reflections and Comments

The workshop's final session featured an open discussion among the Roundtable members and other workshop attendees about the ideas presented over the course of the day. Session moderator George Isham from HealthPartners remarked that one point of view that he had heard over the course of the day was that instead of finding a way to get health and education working together for common goals—the title of this workshop—the two communities should be working with a common purpose to meet divergent goals. He commended Peter Orszag for pointing out in his presentation that, in Isham's words, "Health care is eating the socioeconomic heart and soul of the country through its costs," and Isham noted that several of the presentations emphasized the need to break down silos in both the government and private sectors.

Isham then commented that he would like to see a serious examination of what conditions are necessary to improve the health of students and enhance their learning. He added that he would like the health care sector to understand more clearly the needs, objectives, and issues in the education sector. He also commented on the lack of curriculum content that could be used to teach health literacy and life skills in order to create healthier lifestyles, and he wondered if the case could be made for including health literacy content at every level of primary and secondary education curriculum, from kindergarten through grade 12. He then reminded the workshop participants of the tremendous impact that education has on morbidity and mortality, and he made particular note of the maps that Kent McGuire presented that showed that the areas in the United States



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with the largest disparities in education outcomes overlapped considerably with those parts of the country with the largest disparities in health outcomes, with both types of disparities being most prominent in the southern and western parts of the United States.

Having noted once again the seven health priorities that Charles Basch presented (vision, asthma, teen pregnancy, aggression and violence, physical activity, skipping breakfast, and attention deficit hyperactivity disorder [ADHD]), Isham asked the workshop participants to consider how that list could serve as a foundation for coordinated efforts between the health and education sectors. He also suggested to the Roundtable members that when they make their comments, they should think about what awareness they came to in this workshop and what insights they found particularly useful for informing action that the Roundtable—or the country as a whole—might take.

David Kindig of the University of Wisconsin School of Medicine and Public Health reminded the workshop participants that research shows that environmental and social context plays a critical role in poor health and education outcomes, and he noted that the information that Orszag presented demonstrates that the contextual gap is growing. He then said that while there is not a great deal of overlap between education policy and health policy, the two do overlap to a certain degree and that this overlap offers fertile ground for the health and education communities to work with one another, both from a joint policy advocacy perspective and from a programmatic perspective. Referring to McGuire's disparity maps, Kindig wondered if understanding how those disparities developed might help inform approaches for addressing them.

Robert Kaplan of the Agency for Healthcare Research and Quality commented that the effect of education on health outcomes is "just so remarkably large that we have to address it." He said that it is time to develop a strategic plan to make progress. He also wondered what the appropriate manner is to deal with community input when community input may be in conflict with the goal of promoting health.

Captain Stephanie Zaza, director of the Division of Adolescent School Health at the Centers for Disease Control and Prevention (CDC), informed the workshop that her division not only focuses on sexual health in adolescents, but also operates all of the elements of school-based health surveillance. She said that data from those surveillance efforts are publicly available, with the 2013 data available on June 12, 2014. She encouraged the research community to make use of these data.

Zaza then commented on the recent recommendation from the Community Preventive Services Task Force to build a portfolio of educational interventions that includes full-day kindergarten for children in poverty, out-of-school enrichment programs, and high school completion pro-

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grams. "The real innovation in this work is that [the task force] allowed educational attainment outcomes to be their measure of success and not requiring specific health outcomes as measures," Zaza said. This step, she said, reflects the compelling evidence that educational attainment, in and of itself, is strongly correlated with long-term health outcomes. She said that she believes the acceptance of that evidence allowed the task force to move forward despite an inability to identify specific health outcomes to measure. She also said that she now believes, based on the presentations at the workshop, that high school completion programs may be one of the most important actions that the health care sector can support for changing the trajectories that lead to poor health in adulthood.

Zaza then spoke about the need for the health care sector to better understand the infrastructure that is available to students in this country and what needs to be done to fix that infrastructure as long as it is not providing school nurses and school-based health centers at every school. She noted that an evaluation of a school nursing program conducted by staff of CDC and the National Association of School Nurses provided the first cost–benefit analysis of school nursing that showed a clear beneficial ratio to having school nurses versus not having school nurses (Wang et al., 2014).

Sanne Magnan of the Institute for Clinical Systems Improvement made two points. First, she said that she is worried—a concern she shared in a side conversation with one of the speakers—that the transition from a fee-for-service model to an outcomes-based model is stalled, even though the outcomes-based model is good for population health and provides better value. She reported that in her side conversation with the speaker, he had told her that the problem is that there is no obvious path for people to see how to get from where we are to where we need to be. "I want us to think, as the Institute of Medicine and the Roundtable on Population Health Improvement, what role we can play in helping create and support an infrastructure to help with that glide path, to help with figuring out how to get from the kind of payment world and medical infrastructure that we live in now to a different kind," Magnan said. She also voiced her support for the idea that the health care community needs to develop principles to guide communication efforts between its members and those in the education community.

José Montero of the New Hampshire Division of Public Health Services said that while research can often help identify those areas that are ripe for progress, the nation cannot afford to spend the time to take a purely academic approach to the problem, with researchers trying to answer all questions conclusively through data and experimentation. His suggestion was to use the natural experiments that are already occurring to inform the agenda for moving the nation forward. He also

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stressed the importance of representatives of different sectors becoming advocates for research and action beyond the health care field. "If we are at a place where we can use our pulpit for any pieces of the spectrum that will help us with health outcomes," Montero said, "we should do that."

Montero said that accountable care organizations (ACOs) present a great opportunity to study how to mix the community health outreach workers and health coaches that the new ACO models are developing with the workforce in school health clinics in order to advance the nation's health outcomes goals. He also said that the Roundtable, as the representative of a wide range of interests in the health sector, needs to help identify the key points for advocacy.

Rear Admiral Sarah Linde of the Health Resources and Services Administration said that the National Prevention Strategy identifies education as an important component and an important sector to participate in that strategy, but it does not offer many concrete action items for linking the health and education sectors. She recommended reviewing the National Prevention Strategy as a starting point for developing a strategic action plan, particularly given that it attempts to address so many of the overarching themes that were discussed in this workshop.

Mary Pittman of the Public Health Institute said that this workshop and the previous day's workshop sponsored by the National Institutes of Health highlighted the interdependence of biology, health, and education. This interdependence needs to be reflected in a more sophisticated way in the interventions that are developed, particularly those for early childhood. She also remarked that it is clear that both the health and education sectors are concerned about addressing inequities and that equity can be a driving factor in every conversation between the health and education sectors. Pittman continued, "We are going to have to raise awareness about these issues, and we are going to have to talk about the complexity of these issues and identify ways to highlight the contextual gaps so that we can target our communications at multiple levels and stimulate the political will." Pittman added that there is also a need to communicate the fact that some of these interventions are not expensive and that they have been shown to work.

Debbie Chang of Nemours said that the two workshops got her to think more about intervention strategies and about the importance of developing a small set of metrics that are germane to both health and education. She said that the 2 days of presentations and discussions would prompt her to look at the effects of her obesity programs on a child's readiness to enter kindergarten and to look at metrics that will identify co-benefits. Chang also asked where the Roundtable can add value to these discussions. Her suggestion was that the Roundtable can play an

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important role in breaking down silos, facilitating conversations, and working on collective impact at the national level as well as in advocating for payment reforms and developing a glide path for those reforms.

Chang was not enthusiastic about the idea of producing a strategic plan, but she said that if it is needed, it should be very targeted in its goals. Peggy Honoré of the U.S. Department of Health and Human Services said that the Roundtable should heed Orszag's comment about being cautious about setting big lofty goals, such as having a specific goal for mortality. "I think a lot of times we wind up with a portfolio of recommendations that don't go anywhere because they are not realistic," Honoré said. Marthe Gold of the City College of New York suggested that the U.S. Preventive Services Task Force should look at the evidence base discussed at this workshop. It should then use that evidence base to make recommendations that will lead to major changes and that will inform the medical care system that there are learning experiences in different social environments that impact the plasticity of the brain and future health. Jeffrey Levi of Trust for America's Health said that the Bright Futures program as it functions under the Affordable Care Act could serve as a template for the sort of approach that Gold suggested. Gold added that a simple metric for success could be high school graduation rates, which, as the evidence presented at the workshop shows, are closely related to such health outcomes as life expectancy and morbidity.

Isham then read a few of the comments that came in from individuals who observed the workshop via the Web. Georges Flores of The California Endowment asked, "What remedies exist for poor performance of educational systems in preparing sufficient numbers of African American and Hispanic children to become qualified to apply for training as health professionals?"

Ann Armstrong in Omaha, Nebraska, wrote,

> Here in Omaha we are addressing oral health for various school-based initiatives within schools with high rates of poverty. If you could spend 1 hour going out into the field with us, you would be shocked to see the state of oral health and the impact that alleviating dental pain can have on a child's ability to concentrate and focus. While educators are often concerned with vision and hearing, oral health is equally as important as children often adapt to the increasing levels of pain that come with oral decay, which is the leading cause of chronic disease among children.

She then asked, "From a holistic perspective, how can we improve the status quo to incorporate oral health as part of comprehensive school health?"

The final comments came from Pamela Russo of the Robert Wood Johnson Foundation, who reiterated that there are many possible intervention points throughout the life course that are critical for improv-

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ing both educational attainment and health. She expressed surprise that among all the promising programs and interventions discussed at the workshop, Head Start was not mentioned despite its extensive national presence. She also noted that one statistic that McGuire did not present in his talk is that the same states where educational disparities are the highest are also the areas with the highest rates of infant mortality. "In other words, even from the very start, you get the sense that we are allowing all of these young brains to be damaged and are creating an epidemic of damaged brains," she said. "We have to find the interventions to stop that." In closing the discussion, Kindig said that the first 1,000 days are critical in the life course. "I think we have to pay attention earlier than in the school situation," he said, "though we need to do that as well."

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# Appendix A

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# Appendix B

# Workshop Agenda

Roundtable on Population Health Improvement
Workshop: Health and Education—
Working Together for Common Goals
June 5, 2014

Location: Keck Center, Room 100, 500 Fith Street, NW, Washington, DC

**AGENDA**

## WORKSHOP OBJECTIVES

1. Understand the complex relationship between education and health, and how this understanding could inform our nation's investments and policies
2. Explore how the health and education sectors can work together more effectively to achieve co-benefits (improvements in educational attainment and in health status) by:
    a. Learning from education leaders how the health sector could support their efforts at the level of students, families, and schools (e.g., addressing the health care needs, advocating for better health care for children and better connections between school and health care delivery systems)
    b. Learning from education leaders which education policy efforts could benefit most from health sector partners' contributions and what (education or other) policy and investment changes could contribute to co-benefits for health and education
    c. Highlighting state and local examples of successful collaboration between the health and education sectors



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8:00 a.m. **Welcome, introductions, and context**

David Kindig, professor emeritus of population health sciences, emeritus vice chancellor for health sciences, University of Wisconsin School of Medicine and Public Health; co-chair, Roundtable on Population Health Improvement; co-chair, workshop planning committee

Gillian Barclay, vice president, Aetna Foundation; member, Roundtable on Population Health Improvement; co-chair, workshop planning committee

8:30 a.m. **Report on the June 4 National Institutes of Health meeting on the evidence for education improving health**

Robert Kaplan, chief science officer, Agency for Healthcare Research and Quality, U.S. Department of Health and Human Services; former associate director for Behavioral and Social Sciences Research, National Institutes of Health; member, Roundtable on Population Health Improvement

8:50 a.m. **Keynote presentation I: Why educational attainment is crucial to improving population health**

Steven Woolf, professor, Department of Family Medicine and Population Health; director, Center on Society and Health, Virginia Commonwealth University

9:20 a.m. **Discussion**

9:50 a.m. **Panel I: How could the health sector support education sector efforts at the level of students, families, and schools** (e.g., addressing the health care needs, advocating for better health care for children and better connections between school and health care delivery system)

Moderator: Jeffrey Levi, executive director, Trust for America's Health; member, Roundtable on Population Health Improvement; member, workshop planning committee

Charles Basch, Richard March Hoe Professor of Health and Education, Teachers College, Columbia University

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Allison Gertel-Rosenberg, director, National Prevention and Practice, Nemours

David Nichols, senior program and policy analyst, Nemours Health and Prevention Services

10:35 a.m. **Break**

10:50 a.m. **Discussion**

11:15 a.m. **Keynote presentation II: How our nation's health care expenditures reduce education funding, and better ways to structure our nation's investments**

Peter R. Orszag, vice chairman, CitiGroup, Inc.; former director, Office of Management and Budget; former director, Congressional Budget Office

11:45 a.m. **Discussion**

12:00 p.m. **Lunch**

1:00 p.m. **Panel II: The potential of health sector partners in contributing to the implementation of the best evidence about what supports educational attainment**

Moderator: Holly Hunt, branch chief, School Health Branch, Division of Population Health, National Center for Chronic Disease Prevention and Health Promotion, Centers for Disease Control and Prevention

James Bender, executive director, National Education Association Health Information Network

Norris E. Dickard, Healthy Students group leader, Office of Safe and Healthy Students, U.S. Department of Education

Laurie Miller Brotman, director, Center for Early Childhood Health and Development, Division of Health and Behavior, Department of Population Health, New York University Langone Medical Center

2:00 p.m. **Discussion**

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2:30 p.m. **Panel III: State- and local-level collaboration between the health and education sectors**

Moderator: Loel Solomon, vice president for community health, Kaiser Permanente

Kent McGuire, president and chief executive officer, Southern Educational Foundation

Terri Wright, director, Center for School, Health, and Education, American Public Health Association

3:20 p.m. **Break**

3:30 p.m. **Discussion**

4:00 p.m. **Reactions to the day and significance for future action**

Moderator: George Isham, senior advisor, HealthPartners, senior fellow, HealthPartners Institute for Education and Research; co-chair, Roundtable on Population Health Improvement

5:00 p.m. **Adjourn**

For more information about the Roundtable, visit www.iom.edu/pophealthrt or email pophealthrt@nas.edu.

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# Appendix C

# Biographical Sketches of Workshop Speakers and Moderators

**Gillian Barclay, D.D.S., M.P.H., Dr.P.H.,** is the vice president of the Aetna Foundation. In her role she leads the development, execution, and evaluation of the foundation's national and international grant programs and cultivates new projects within its three focus areas: health equity, health care innovations, and healthy eating and active living. As part of her responsibilities, she is a frequent spokesperson for the foundation, presenting its work and the accomplishments of its grantees to various audiences. Prior to joining the Aetna Foundation, Dr. Barclay was an advisor at the regional office of the World Health Organization, the Pan American Health Organization. There, she managed a portfolio of initiatives that focused special attention on building health leadership, health care, and public health systems. Previously she was the evaluation manager of health programs for the W.K. Kellogg Foundation, where she was responsible for the impact of the foundation's investments to improve healthy equity, increase the quality of health and health care, and enhance community health and wellness. Dr. Barclay is a member of the Institute of Medicine's Roundtable on the Promotion of Health Equity and the Elimination of Health Disparities, its Roundtable on Population Health Improvement, and its Global Forum on Innovation in Health Professional Education. She is also a board member of the National Education Association/Health Information Network and the Walter Rodney Foundation. She has taught at the Harvard School of Public Health and at Hunter College of the City University of New York, has published in peer-reviewed journals, and has been a frequent presenter at health con-



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ferences in the United States and around the world. Dr. Barclay earned her doctorate of dental surgery at the University of Detroit Mercy and completed her residency at New York Hospital Medical Center. She holds a doctorate in public health from Harvard University and a master's of public health from the University of Michigan. Her undergraduate work was at the University of the West Indies in Jamaica.

**Charles Basch, Ph.D.,** is the Richard March Hoe Professor of Health and Education at Teacher College, Columbia University. He was born and raised in the Bronx (New York). He specializes in planning and evaluating health education programs for urban minority populations to reduce health and educational disparities. His work has been diverse with respect to population groups (ranging from young children to older adults), disease topics (AIDS, cardiovascular disease, cancer, diabetes, and eye disease), and behaviors (vision, diet, physical activity, and screening), but it has had a common theme of translating research into practice. The health education programs he has developed and evaluated are philosophically grounded in informed voluntary decision making and rely heavily on building strong interpersonal relationships. His evaluative research has been collaboratively conducted with self-insured unions, hospitals, community-based clinics, and schools. Dr. Basch's main scholarly interests are improving understanding about (1) health-related decision making, (2) the dissemination and implementation of effective health-related programs and policies, and (3) the influence of health factors on educational outcomes in urban minority youth. He teaches courses related to epidemiology, planning, and evaluation. During his past 25 years at Teachers College, he has directed approximately $20 million of grant-funded research and program development (primarily supported by the National Institutes of Health). His work has appeared in more than 100 publications.

**James Bender, M.H.S., M.F.A., CHES,** is the executive director of the National Education Association Health Information Network (NEA HIN). Prior to joining the NEA HIN, Mr. Bender served as senior associate at Booz Allen, where he led the marketing communications practice for the Centers for Disease Control and Prevention (CDC). Earlier in his career, he was deputy director for the Center for Health Communication at the Academy for Educational Development, where he helped direct the start-up and implementation of We Can! (Ways to Enhance Children's Activity & Nutrition), funded by the National Heart, Lung, and Blood Institute, a national effort designed to give parents, caregivers, and entire communities ways to help children 8 to 13 years old maintain a healthy weight. Mr. Bender also worked to create resources for diverse organiza-

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tions, including the School Nutrition Association, the CDC Division of Adolescent and School Health, and the National Coalition for Food-Safe Schools. A certified health education specialist, Mr. Bender holds a master of health sciences from the Johns Hopkins Bloomberg School of Public Health, a master of fine arts from Yale University's School of Drama, and a bachelor of science from Northeastern University. Mr. Bender was a secondary school classroom teacher for 2 years in the East African nation of Malawi and has been a long-time Sunday school teacher for elementary and middle school children.

**Laurie Miller Brotman, Ph.D.,** is the Bezos Family Foundation Professor of Early Childhood Development at New York University (NYU) Langone Medical Center and a professor of population health, child and adolescent psychiatry, and psychiatry. She is the director of the Center for Early Childhood Health and Development (CEHD) in the Division of Health and Behavior in the Department of Population Health at NYU Langone Medical Center. Dr. Brotman earned a B.S. in human development and family studies from Cornell University and a Ph.D. in clinical developmental psychology at the University of Illinois at Chicago. She completed a National Institute of Mental Health (NIMH) postdoctoral research fellowship in child and adolescent psychiatry at Columbia University and has been a tenured faculty member at NYU since 1998. At NYU, Dr. Brotman currently serves as a member of the School of Medicine's Committee on Appointments and Promotions, the Community Engagement and Population Health Research Faculty Steering Committee of the Clinical Translational Science Institute, and the Coordinating Council of the NYU Langone Medical Center's Community Service Plan. Dr. Brotman served two terms on the board of directors of the Society for Prevention Research and was awarded the society's prestigious 2009 Community, Culture, and Prevention Science Award. In 2009 Dr. Brotman was named to the YWCA Academy of Women Leaders. In 2014 Dr. Brotman was awarded the Helen Bull Vandervort Distinguished Alumni Award, the highest honor bestowed on a human ecology alumni of Cornell University who has attained outstanding success and distinction in his or her chosen profession and made significant contributions to his or her profession and community. Dr. Brotman's work focuses on promoting family engagement and high-quality home and classroom environments to support child self-regulation and early learning. Her work has the potential to contribute to national efforts to eliminate the achievement gap and health disparities for poor minority children. The National Institutes of Health has supported Dr. Brotman's prevention trials and follow-up studies since 1997. Dr. Brotman is currently principal investigator on grants from NIMH, the National Institute of Child Health and Human Development, the Institute

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of Education Sciences, and the New York State Office of Mental Health. Dr. Brotman is the developer of ParentCorps, a population-level, universal intervention that aims to attenuate the adverse effects of poverty on child health and development. She and her team within CEHD are working with local and state partners to support schools and early learning programs to implement ParentCorps with the aim of promoting academic achievement, mental health, and physical health among children living in disadvantaged communities.

**Norris Dickard, A.L.M.,** directs the Healthy Students Group at the U.S. Department of Education's Office of Safe and Healthy Students. The group administers a $134 million investment portfolio of grant programs and other activity related to school-based substance abuse and violence prevention, mental health and counseling services, health care, and physical education. He is also the education department's lead on numerous interagency working groups including the National Prevention Council, the National Forum on Youth Violence Prevention, and the Demand Reduction Group at the White House's Office of National Drug Control Policy. Mr. Dickard has more than 25 years of experience in public policy and public administration. Before rejoining the education department in 2008, after 7 prior years of service as a senior policy advisor during the Clinton administration, Mr. Dickard was a fellow at The Brookings Institution. He has also worked as an administrator at Harvard's John F. Kennedy School of Government, as the director of public policy at the Benton Foundation, and as a principal at the Lewin Group (then a management consulting division of the Fortune 1000 company Quintiles). Mr. Dickard started his career as a middle school science teacher and earned a master's degree in government at Harvard.

**Allison Gertel-Rosenberg, M.S.,** has spent her career addressing some of the most important and challenging issues in public health. As director of national prevention and practice for Nemours National Office of Policy and Prevention, she is responsible for leading the office's efforts to spread and scale promising practices and strategic prevention initiatives designed to curb childhood obesity on a national scale and for initiatives that involve the intersection of population health and clinical care. These efforts have included the highly successful Let's Move! Child Care; Healthy Kids, Healthy Future; and the National Early Care and Education Learning Collaborative initiative with the Centers for Disease Control and Prevention. Ms. Gertel-Rosenberg's involvement has run the gamut from securing funding for these collaborations, as she has leveraged $47 million in grants, to playing a critical role in planning and implementing the strategic and operational measures necessary to

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make them successful. Ms. Gertel-Rosenberg is widely recognized as an expert on public health and population health and has presented at numerous national conferences on the value of investment in childhood health, patterns of drug abuse, assessments of the efficacy of prevention programs, youth smoking cessation, and the development of statewide anti-tobacco media campaigns. In addition, she has published a number of articles on children's health issues. Before joining Nemours in 2006, Ms. Gertel-Rosenberg was the program manager for the Office of Policy Development for the Division of Addiction Services at the New Jersey Department of Human Services. In that position, she was responsible for supervising a staff of researchers engaged in addiction-related research and overseeing treatment-related data collection and analysis. Ms. Gertel-Rosenberg received her M.S. in health policy and management from the Harvard School of Public Health and her B.S. in public health from Rutgers College.

**Holly Hunt, M.A.,** is the chief of the School Health Branch in the Division of Population Health at the National Center for Chronic Disease Prevention and Health Promotion at the Centers for Disease Control and Prevention (CDC). The School Health Branch leads chronic disease prevention activities specific to children and adolescents in schools with a focus on obesity prevention, nutrition and physical activity, and tobacco prevention and control. With a long history of working across education and public health agencies, the School Health Branch provides rich partnerships and expertise for implementing public health practices in schools. Ms. Hunt leads innovative projects in research application, evaluation, and program and professional development. Prior to joining the branch, Ms. Hunt served as the deputy director of CDC's Division of Adolescent and School Health, where she was responsible for the overall management of division operations and establishing effective working partnerships with key national, federal, and nonprofit organizations working to improve the health of youth. Ms. Hunt joined CDC in 1997 and has served as the associate director for policy, evaluation, and legislation; director of science education; and the project officer to CDC-funded national, state, and local school health projects. Before joining CDC, Ms. Hunt served for 7 years as an HIV prevention education consultant in the Kentucky Department of Education, responsible for the development and implementation of statewide HIV prevention and school health programs, professional development, and community partnerships to promote the health of school-aged youth. Ms. Hunt holds a bachelor's degree in psychology from Valdosta State University and a master of arts degree in industrial and community counseling from Eastern Kentucky University.

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**George Isham, M.D., M.S.,** is a senior advisor to HealthPartners, responsible for working with the board of directors and the senior management team on health and quality of care improvement for patients, members, and the community. Dr. Isham is also a senior fellow at the HealthPartners Research Foundation and facilitates forward progress at the intersection of population health research and public policy. Dr. Isham is active nationally and currently co-chairs the National Quality Forum–convened Measurement Application Partnership, chairs the clinical program committee of the National Committee for Quality Assurance (NCQA), and is a member of NCQA's committee on performance measurement. Dr. Isham is the chair of the Institute of Medicine's (IOM's) Roundtable on Health Literacy and has chaired three studies in addition to serving on a number of IOM studies related to health and quality of care. In 2003 Dr. Isham was appointed as a lifetime national associate of the National Academy of Sciences in recognition of his contributions to the work of the IOM. He is a former member of the Centers for Disease Control and Prevention's (CDC's) Task Force on Community Preventive Services and the Agency for Healthcare Research and Quality's U.S. Preventive Services Task Force, and he currently serves on the advisory committee to the director of CDC. His practice experience as a general internist was with the U.S. Navy; at the Freeport Clinic in Freeport, Illinois; and as a clinical assistant professor of medicine at the University of Wisconsin Hospitals and Clinics in Madison. In 2014 Dr. Isham was elected to the IOM.

**Robert Kaplan, Ph.D.,** became chief science officer at the Agency for Healthcare Research and Quality in May 2014. From February 2011 to April 2014 he worked in the National Institutes of Health Office of the Director as associate director for behavioral and social sciences and director of the Office of Behavioral and Social Sciences Research. Prior to working for government, Dr. Kaplan was a distinguished professor of health services at the University of California, Los Angeles (UCLA), and a distinguished professor of medicine at the UCLA David Geffen School of Medicine, where he was principal investigator of the California Comparative Effectiveness and Outcomes Improvement Center. He led the UCLA/RAND health services training program and the UCLA/RAND Centers for Disease Control and Prevention Prevention Research Center. He was the chair of the Department of Health Services from 2004 to 2009. From 1997 to 2004 he was a professor and the chair of the Department of Family and Preventive Medicine at the University of California, San Diego. He is a past president of several organizations, including the American Psychological Association Division of Health Psychology, Section J of the American Association for the Advancement of Science (Pacific), the International Society for Quality of Life Research, the Society for Behavioral

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Medicine, and the Academy of Behavioral Medicine Research. He is a past chair of the Behavioral Science Council of the American Thoracic Society. Dr. Kaplan is a former editor-in-chief of two academic journals, *Health Psychology* and the *Annals of Behavioral Medicine*. He is the author, co-author, or editor of more than 18 books and more than 500 articles or chapters. His work has been cited in more than 25,000 papers, and the ISI includes him in the listing of the most cited authors in his field (defined as above the 99.5th percentile). In 2005 Dr. Kaplan was elected to the Institute of Medicine of the National Academy of Sciences.

**David Kindig, M.D., Ph.D.,** received a B.A. from Carleton College in 1962 and M.D. and Ph.D. degrees from the University of Chicago School of Medicine in 1968. He completed residency training in social pediatrics at Montefiore Hospital in 1971. From 1980 to 2003 Dr. Kindig served as a professor of preventive medicine/population health sciences at the University of Wisconsin, where he developed a unique distance education graduate degree in medical management. He was the vice chancellor for health sciences at the University of Wisconsin–Madison from 1980 to 1985, the director of Montefiore Hospital and Medical Center from 1976 to 1980, the deputy director of the Bureau of Health Manpower at the U.S. Department of Health, Education, and Welfare from 1974 to 1976, and the first medical director of the National Health Services Corps from 1971 to 1973. He was the national president of the Student American Medical Association in 1967–1968. He served as the chair of the federal Council of Graduate Medical Education (1995–1997), the president of the Association for Health Services Research (1997–1998), a ProPAC commissioner (1991–1994), and a senior advisor to Donna Shalala, U.S. Secretary of Health and Human Services (1993–1995). In 1996 he was elected to the Institute of Medicine (IOM) of the National Academy of Sciences. He received the Distinguished Service Award from the University of Chicago School of Medicine in 2003. He chaired the IOM Committee on Health Literacy from 2002 to 2004, chaired Wisconsin Governor Doyle's Healthy Wisconsin Taskforce in 2006, and received the 2007 Wisconsin Public Health Association's Distinguished Service to Public Health Award.

**Jeffrey Levi, Ph.D.,** is the executive director of Trust for America's Health (TFAH), where he leads the organization's advocacy efforts on behalf of a modernized public health system. He oversees TFAH's work on a range of public health policy issues, including implementation of the public health provisions of the Affordable Care Act (ACA) and annual reports assessing the nation's public health preparedness, investment in public health infrastructure, and response to chronic diseases such as obesity. TFAH has led the public health community's efforts to enact—and now

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defend—the prevention provisions of the ACA, including the Prevention and Public Health Fund and the new community transformation grants. In January 2011 President Obama appointed Dr. Levi to serve as a member of the Advisory Group on Prevention, Health Promotion, and Integrative and Public Health. In April 2011 Surgeon General Benjamin appointed him chair of the advisory group. Dr. Levi is also a professor of health policy at George Washington University's School of Public Health, where his research has focused on HIV/AIDS, Medicaid, and integrating public health with the health care delivery system. In the past he has also served as an associate editor of the *American Journal of Public Health* and the deputy director of the White House Office of National AIDS Policy. Beginning in the early 1980s, he held various leadership positions in the LGBT and HIV communities, helping to frame the early response to the HIV epidemic. Dr. Levi received a B.A. from Oberlin College, an M.A. from Cornell University, and a Ph.D. from George Washington University.

**Kent McGuire, Ph.D.,** is the president and chief executive officer of the Southern Education Foundation (SEF), a public charity headquartered in Atlanta, Georgia. SEF focuses on public policy and educational practice from pre-kindergarten to higher education in the southern United States. In its variety of programs and services, SEF has been particularly concerned with questions of equal access to quality education for children and youth and with the participation and success of poor and minority students in postsecondary education. Prior to joining SEF, Dr. McGuire was the dean of the College of Education at Temple University and a professor in the department of educational leadership and policy studies. Before working at Temple, Dr. McGuire was senior vice president at MDRC, where his responsibilities included leadership of the corporation's education, children, and youth division. From 1998 to 2001 Dr. McGuire served in the Clinton administration as assistant secretary of education, in which job he served as the senior officer for the department's research and development agency. As the education program officer for the Philadelphia-based Pew Charitable Trusts from 1995 to 1998, he managed Pew's K–12 grants portfolio. From 1991 to 1995, Dr. McGuire served as education program director for the Eli Lilly Endowment. Dr. McGuire's current research interests focus on the areas of education administration, education policy, and organizational change. He has been involved in a number of evaluation research initiatives on comprehensive school reform and education finance and school improvement. Dr. McGuire has written and co-authored various policy reports, monographs, book chapters, articles, and papers in professional journals. Dr. McGuire received his doctorate degree in public administration from the University of Colorado Boulder, his master's degree in education administration and policy from

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Teachers College, Columbia University, and his bachelor's degree in economics from the University of Michigan.

**Peter R. Orszag, Ph.D.,** is the vice chairman of corporate and investment banking and the chairman of the Financial Strategy and Solutions Group at Citigroup, Inc. He is also a contributing columnist at *Bloomberg View*, a distinguished scholar at the New York University School of Law, and an adjunct senior fellow at the Council on Foreign Relations. Prior to joining Citigroup in January 2011, Dr. Orszag served as a distinguished visiting fellow at the Council on Foreign Relations and a contributing columnist at the *New York Times*. He previously served as the director of the Office of Management and Budget in the Obama administration, a Cabinet-level position, from January 2009 until July 2010. From January 2007 to December 2008, Dr. Orszag was the director of the Congressional Budget Office (CBO). Under his leadership, the agency significantly expanded its focus on areas such as health care and climate change. Prior to CBO, Dr. Orszag was the Joseph A. Pechman Senior Fellow and the deputy director of economic studies at The Brookings Institution. While at Brookings, he also served as the director of The Hamilton Project, director of the Retirement Security Project, and co-director of the Tax Policy Center. During the Clinton administration, he was a special assistant to the president for economic policy and before that a staff economist and then senior advisor and senior economist at the President's Council of Economic Advisers. Dr. Orszag has also founded and subsequently sold an economics consulting firm. Dr. Orszag graduated summa cum laude in economics from Princeton University and obtained a Ph.D. in economics from the London School of Economics, which he attended as a Marshall Scholar. He has co-authored or co-edited a number of books, including *Protecting the Homeland* (2006), *Aging Gracefully: Ideas to Improve Retirement Security in America* (2006), *Saving Social Security: A Balanced Approach* (2004), and *American Economic Policy in the 1990s* (2002). Dr. Orszag serves on the board of directors of the Peterson Institute for International Economics, the Mount Sinai Medical Center in New York, the Robert Wood Johnson Foundation, ideas42, and the Partnership for Public Service. He is also a member of the Institute of Medicine of the National Academy of Sciences, the Trilateral Commission, The Hamilton Project Advisory Council, and the Marshall Scholarship Alumni Advisory Board, and he holds an honorary doctorate from Rensselaer Polytechnic Institute.

**Loel S. Solomon, Ph.D.,** is Kaiser Permanente's vice president for community health. Previously, he served as the national director of community health initiatives and evaluation at Kaiser Permanente's Community Benefits Program, a philanthropic venture that sought to improve the

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health of communities through partnerships, education, sharing clinical expertise, research, grants, and services to vulnerable populations. Since he joined the program in 2003, Dr. Solomon has been responsible for a national effort to improve health outcomes in Kaiser Permanente communities by focusing on environmental and policy change. Earlier, Dr. Solomon served as deputy director of the California Office of Statewide Health Planning and Development for Healthcare Quality and Analysis, where he oversaw hospital outcomes and analyses of racial and ethnic health disparities. Dr. Solomon was also a senior manager at Lewin Group, where he helped design and facilitate community health initiatives sponsored by the United Auto Workers and the automobile industry. Dr. Solomon's policy experience includes service on U.S. Senator Edward Kennedy's health staff and former President Bill Clinton's Task Force on National Healthcare Reform. Dr. Solomon received his Ph.D. in health policy from Harvard University and his master's in public policy at the University of California, Berkeley. He is the author of several journal articles and a book chapter.

**Kelli O. Thompson, J.D.,** serves as the director of the Department of Capacity and Knowledge Development (CKD) at Nemours in its Health and Prevention Services division in Delaware. She has more than 20 years of experience in nonprofit management and children's issues, including leadership with United Cerebral Palsy of Central Pennsylvania as director of childhood programs, Pennsylvania's Early Childhood Mental Health Project, and other health-related initiatives for children. Ms. Thompson, who joined Nemours in 2008, earned her bachelor's degree in child development and family resources at West Virginia University and her law degree at Widener University. Ms. Thompson is a past president of the Pennsylvania Early Intervention Providers' Association. As the director of CKD, she leads a multidisciplinary team of evaluation and research scientists and population health specialists to ensure that their interventions, research, and evaluation work are well-coordinated, useful, ethical, and rigorous. Above all, Ms. Thompson strives to ensure that their work and its results are accessible to the company's major constituencies. Ms. Thompson holds a leadership role on the evaluation team of the newly received $25 million Delaware-CTR ACCEL grant. In addition, Ms. Thompson serves as an advisory board member on KIDS COUNT in Delaware and as a member of the Delaware Readiness Teams Advisory Committee and the Delaware Early Childhood Council. Most recently she was asked to join the verification and assessment committee within the Delaware Stars for Early Success program. Ms. Thompson's entire career has revolved around children and providing them the opportunity to reach their fullest potential.

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**Steven H. Woolf, M.D., M.P.H.,** is the director of the Center on Society and Health and a professor of family medicine at Virginia Commonwealth University. He is board certified in family medicine and in preventive medicine and public health. His work has focused on promoting effective health care services and on highlighting the importance of behavioral and social determinants of health, particularly with regard to the role of poverty, education, and racial and ethnic disparities, in determining the health of Americans. In addition to his work as a researcher, he has also been involved with health policy issues. Dr. Woolf recently chaired the National Research Council and the Institute of Medicine (IOM) committee that authored the report *U.S. Health in International Perspective: Shorter Lives, Poorer Health*. He has served as science adviser, member, and senior adviser to the U.S. Preventive Services Task Force. He is a member of the IOM. He has an M.D. from Emory University and an M.P.H. from Johns Hopkins University.

**Terri D. Wright, Ph.D., M.P.H.,** is the director of the Center for School, Health, and Education in the Division of Public Health Policy and Practice at the American Public Health Association (APHA). She provides leadership related to the strategic development and integration of public health in school-based health care and education. Prior to joining APHA in 2010, she served as a program director for health policy for the W.K. Kellogg Foundation in Battle Creek, Michigan, for 12 years. In that capacity Dr. Wright developed and reviewed the foundation's health programming priorities and initiatives, evaluated and recommended proposals for funding, and administered projects and initiatives. She also assisted in public policy analysis and related policy program development, and she provided leadership to the foundation's school-based health care policy program. Previously, Dr. Wright was the maternal and child health director and the bureau chief for child and family services at the Michigan Department of Community Health in Lansing, Michigan. In that role, she managed policy, programs, and resources with the goal of reducing preventable maternal, infant, and child morbidity and mortality through policy and programming. She received her bachelor's degree in community and school health as well as her New York State certification in secondary school education from the City University of New York. Dr. Wright obtained her master of public health degree in health policy and administration and her doctor of philosophy in public health from the University of Michigan in Ann Arbor. Dr. Wright takes an active leadership role in several professional associations and community organizations, including APHA and the Institute of Medicine's Roundtable on the Promotion of Health Equity and the Elimination of Health Disparities.

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