ISSUE REPORT

Blueprint for a Healthier America 2016

POLICY PRIORITIES FOR THE NEXT ADMINISTRATION AND CONGRESS

Trust for America's Health
WWW.HEALTHYAMERICANS.ORG

OCTOBER 2016

Acknowledgments

Trust for America's Health is a non-profit, non-partisan organization dedicated to saving lives by protecting the health of every community and working to make disease prevention a national priority.

This report is supported by grants from the Robert Wood Johnson Foundation, W.K. Kellogg Foundation, The California Endowment and The Kresge Foundation. *TFAH thanks the foundations for their generous support. The opinions in this report are those of the authors and do not necessarily reflect the views of the supporters.*

TFAH BOARD OF DIRECTORS

Gail C. Christopher, DN
President of the Board, TFAH
Vice President for Policy and Senior Advisor
WK Kellogg Foundation

Cynthia M. Harris, PhD, DABT
Vice President of the Board, TFAH
Director and Professor
Institute of Public Health, Florida A&M University

Theodore Spencer
Secretary of the Board, TFAH
Senior Advocate, Climate Center
Natural Resources Defense Council

Robert T. Harris, MD
Treasurer of the Board, TFAH
Medical Director
North Carolina Medicaid Support Services CSC, Inc.

David Fleming, MD
Vice President
PATH

Octavio N. Martinez, Jr., MD, MPH, MBA, FAPA
Executive Director
Hogg Foundation for Mental Health at the University of Texas at Austin

C. Kent McGuire, PhD
President and CEO
Southern Education Foundation

Eduardo Sanchez, MD, MPH
Chief Medical Officer for Prevention
American Heart Association

TFAH STAFF

Richard Hamburg, MPA
Interim President and CEO

Anne De Biasi, MHA
Director of Policy Development

Latoya Gibson
Office Manager

Tiffany Henry
Financial, Human Resources and Compliance Manager

Tim Hughes
External Relations and Outreach Associate

Vinu Ilakkuvan, MPH
Health Policy and Communications Manager

Albert Lang
Senior Communications Manager

Dara Alpert Lieberman, MPP
Senior Government Relations Manager

Alejandra Martín, MPH
Health Policy Research Manager

Kevin McIntyre
Government Relations Associate

Genny Olson, MPH
Health Policy Fellow

Jack Rayburn, MPH
Senior Government Relations Manager

Rebecca Salay
Director of Government Relations

Laura M. Segal, MA
Director of Public Affairs

REPORT AUTHORS

Laura M. Segal, MA
Director of Public Affairs

Anne De Biasi, MHA
Director of Policy Development

Dara Alpert Lieberman, MPP
Senior Government Relations Manager

Genny Olson, MPH
Health Policy Fellow

Vinu Ilakkuvan, MPH
Health Policy and Communications Manager

REPORT CONTRIBUTOR

Alejandra Martín, MPH
Health Policy Research Manager

Table of Contents

Vision for a Healthier America 5
The Problem and Need for Action 6
Guiding Principles for Improving Health 7

Introduction 10
- Prescription Drug and Heroin Crises 10
- Future Health of America's Children 10
- Infectious Disease, Disaster and Bioterrorism Readiness 11
- Environmental Justice 11
- Reducing Substance Misuse 11
- Preventing Chronic Diseases 11
- Speeding Detection and Control of Infectious Disease Outbreaks 12
- Reducing Environmental Threats 12
- Addressing Social Needs that Impact Health 12
- Support in Early Childhood 13
- Priority Recommendations in the Blueprint .14
- Additional Public Health Policy Recommendation Initiatives . . . .

SECTION 1: Prioritizing Wide-Scale Implementation of the Most Effective Approaches for Improving Health in Communities Around the Country 15

A. Policy Priorities for Supporting Health Improvement Efforts Around the Country 19
- Supporting Local Health Improvement Partnerships to Address Community Priorities 19
- Implementing Evidence-Based, High Health Impact Strategies and Creating Academic/ Expert Health Improvement Institutes in Every Sate 19
- Fully Funding the Prevention and Public Health Fund and Other Community-Based Health Improvement Efforts 19
- Increase Strategic Aligning of Policies, Programs, and Other Factors to Improve Health and Other Factors that Influence Health – With a Focus on Improving Outcomes 20
- Incentivize Increased Support for Community-Based Health Improvement Efforts via Nonprofit Hospital Community Benefit Programs 21
- Increase Innovative Social Investments . . .22
- Provide Support to Medicare, Medicaid, and Private Healthcare Insurers and Providers to Expand the Use of Health Improvement Strategies and Services 22

B. A Place-based Strategy: Local Health – or Well-being – Improvement Partnerships . .24
- Key Local Health – Well-being – Partners Include: Public Health "Chief Health Strategist" Partners; Health Partners; Multi-sector Partners; Innovative, Social Impact Investors; Government Partners; and Community Partners 24

1. Lead Partner. 27
- Integrators and Example 28
- Intermediaries and Example 29
- Accountable Communities for Health and Examples. 30
- Needs Assessments and Measuring Success and Example 32

2. Financial Management. 33
- Certification for Financial Management of Local Health Improvement Partnerships . . .35

3. Government Leadership and Multi-Sector Collaboration: Examples of Strategies for Coordinating and Leveraging the Use of Health and Social Service Funds 36
- Examples of State Level Systems Coordinating and Leveraging the Use of Health and Social Service Funds 41

4. Health Sector Partners: Public Health Agencies, Providers, Insurers, Hospitals and Community Health Centers 42
- Public Health: Chief Health Strategists and Examples. 42
- Healthcare Providers and Insurers and Examples. 44
- Medicaid and Examples 46
- Accountable Health Communities 47
- Hospitals and Examples 48
- Community Health Centers/Federally Qualified Health Centers and Examples 49

5. Innovative and Social Impact Funding Strategies. 50
- Community Development Financial Institutions and Example 50
- New Market Tax Credits and Example 51
- Community Development Corporations . . .53
- Pay-for-Performance and Social Impact Bonds and Example 54
- Wellness Trusts and Example 56

6. Examples of Organizations and Efforts Advancing Place-Based Health Improvement Models 57
- The California Endowment: Building Healthy Communities 60

C. Creating an Expert Institute Network to Serve Communities in Every State 61
- Examples of Academic and Expert Assistance Models 62

D. Improving and Scaling Efforts to Address Unmet Social Needs that Impact Health 64

1. Potential Savings from Health and Social Service Coordinator Systems: Addressing Unmet Social Needs of High-Cost Individuals 66
- "Linked" Programs Yielding 10 percent to 20 percent Savings .69
- Healthcare Spending and Potential Savings . .70
- Levering Social Determinants of Health . . .75

E. Scaling High-Impact Community-Based and Clinical-Community Health Improvement Strategies 76
- Examples for Resources for Community-Based Health Improvement Programs. 76

Blueprint for a Healthier America

Table of Contents (continued)

- Community Guide to Prevention Services . . 76
- CDC's Health Impact in 5 Years (HI-5). 77
- The 6|18 Initiative: Accelerating Evidence into Action 78
- Example High-Impact 6|18 Initiative Strategy: Diabetes Prevention Program. 79
- Examples of High-Impact 6|18 Initiative Strategy: Child Asthma Prevention Programs. 82

F. Improving Use of Preventive Services. . . . 83

SECTION 2: A PUBLIC HEALTH AND HEALTHCARE SYSTEM PREPARED FOR EMERGENCIES 85

- Key Priorities for Achieving a More Prepared System 87
- Reforming Baseline Abilities to Diagnose, Detect and Control Health Crises: Foundational Capabilities 89
- Stable, Sufficient Funding for Ongoing Emergency Preparedness – and Funding a Permanent Public Health Emergency Fund to Support Immediate and "Surge" Needs During an Emergency . . . 92
- Outbreaks: Protecting American's from Infectious Disease 94
- National Health Security Preparedness Index 95
- Improved Federal Leadership Before, During and After Disasters. 96
- A National Blueprint for Biodefense: Leadership and Major Reform Needed to Optimize Efforts 96
- Report of the Independent Panel on the U.S. Department of Health and Human Services (HHS) Ebola Response 96
- Building an Ongoing, Focused Strategy to Support Scientific and Technological Upgrades, Including Wide Implementation of Faster Diagnostics, Biosurveillance and Medical Countermeasures. 97
- Upgrading to Modern Molecular Technologies 97
- Modernizing to Real-Time, Interoperable Disease Surveillance 100
- Incentivize and Support Medical Countermeasure Research, Development, Stockpiling, and Distribution 102
- Maintaining a Robust, Well-Trained Public Health Workforce 104
- Rebooting and Developing a New Strategy for Hospital and Healthcare Emergency Preparedness – Surge Capacity for Major Emergencies; Healthcare Associated Infections; and Integrated Public Health and Healthcare Response 106
- Supporting Community Resilience – for Communities to Better Cope and Recover from Emergencies – With Better Behavioral Health Infrastructure and Capacity. 109
- Example: Save the Children: Get Ready Get Safe 110

SECTION 3: PRIORITIZING MAJOR HEALTH TOPICS. 111

- Healthy Early Childhoods. 113
- Support Healthy Students and Healthy Schools 116
- Promote Healthier Aging for Seniors. 120
- Stop the Prescription Painkiller Misuse and Heroin Epidemics 123
- Prevent Obesity, Improve Nutrition and Increase Physical Activity. 123
- Eliminate Tobacco Use 127
- Prioritize Prevention in the Cancer Moonshot Initiative 129
- End the HIV/AIDS Epidemic. 131
- Stop Superbugs and Antibiotic Resistance . 133
- Support Environmental Health and Justice . 135
- Address the Health Impact of Climate Change and Extreme Weather 137
- Achieve Health Equity 141
- Reverse Rising Death Rates Among Middle-Aged White Adults 144
- Promote Positive Mental Health. 147

Vision for a Healthier America

All Americans should have the opportunity to be as healthy as they can be. Every community should be safe from threats to its health. All individuals and families should have a high level of services that protect, promote and preserve their health, regardless of who they are or where they live.

To realize these goals, the incoming Administration and Congress should make improving health a top priority. There is nothing more valuable to the nation than the health and vitality of the American people.

There has never been a better opportunity to shift the paradigm from a system that treats people after they become sick to a true health system, focused on keeping people healthier in the first place, while also lowering healthcare costs and increasing productivity.

Experts have identified top strategies and approaches for ways the public health and health systems can work better — which is important, but far from sufficient. Where we live, learn, work and play can have a bigger impact on health than medical care alone. Working together, the public health, healthcare and social service systems can achieve a much stronger collective impact. Moving forward, we must build partnerships and leverage assets across the health system, mental and behavioral health systems, social and public services, the private sector and communities to work together toward the common aim of a Healthier America.

The Problem and Need for Action

Communities across the country face serious, ongoing health problems — a majority of which are preventable, including by prioritizing stronger population health efforts. Some big challenges include:

- **Chronic Diseases:** Approximately half (117 million) of U.S. adults have at least one chronic health condition — ranging from cancer to diabetes to heart disease, but a majority of these could be prevented.[1] More than 85 percent of healthcare spending is for individuals with more than one chronic condition.[2]

- **Obesity:** More than one-third of adults and 17 percent of children are obese, putting them at increased risk for a range of health problems.[3] Seventy percent of nonprofit hospitals' assessments ranked obesity as the number one health concern in their community.[4]

- **Tobacco Use:** Tobacco use remains the leading cause of preventable death each year in the United States — responsible for more than 480,000 deaths and $170 billion in preventable healthcare costs. More than 16 million Americans are living with a tobacco-caused disease.[5]

- **Prescription Drug, Heroin and Other Substance Misuse:** Currently, around 21 million (8.1 percent of) Americans struggle with a substance use disorder.[6] More than 2 million people have a prescription painkiller dependence, which has contributed to a related rise in heroin use — with nearly half a million Americans addicted to heroin.[7] Prescription painkillers have resulted in more than 14,000 deaths in 2014, and deaths from heroin more than tripled from 2010 to 2014.[8] There is a need for an integrated and balanced strategy to fight chronic pain and addiction. Substance misuse and suicides are contributing to higher death rates among middle-aged White Americans.

- **Infectious Diseases and Health Security Threats:** Millions of Americans become unnecessarily sick or die each year from infectious diseases, which cost the country more than $120 billion each year.[9] The ongoing HIV/AIDS epidemic; the emergence of the Zika virus, Ebola, MERS-CoV, periodic foodborne disease outbreaks and threats of bioterrorism; and the resurgence of hepatitis C, measles and whooping cough underscore the need for more constant vigilance against ongoing threats.

- **Lead and Other Environmental Threats:** The contaminated water emergency in Flint, Michigan and other locations serves as a clarion call to renew our commitment to addressing the nation's environmental health challenges. The Surgeon General has identified a series of priorities for healthier air, water, homes and neighborhoods,[10] and global public health officials have stressed the need to address the health impacts of climate change and extreme weather events.

- **Injury and Violence:** One person dies from an injury or violence every three minutes in the United States, and injuries are the leading cause of death for children and for all Americans between the ages of 1 and 44.[11]

- **Mental Health:** Mental illness affects one in five adults and is the fourth biggest driver of medical expenses and the top medical cost for children.[12, 13, 14]

- **Adverse Childhood Experiences:** More than half of U.S. children — across the economic spectrum — experience an adverse event, such as physical or sexual abuse or substance use in the household — and half of children are in low-income families, putting them at increased risk for living in unsafe conditions and prolonged stress, often called "toxic stress," which can contribute to a range of physical and mental health conditions.[15, 16, 17, 18]

- **Disability:** One in five Americans has some kind of disability. The annual healthcare expenditures associated with disability are estimated at $400 billion.

Obesity Rates in the United States

More than one-third of adults are obese

17 percent of children are obese

Prescription painkillers have resulted in more than 14,000 deaths in 2014, and deaths from heroin more than tripled from 2010 to 2014.

Mental Illness Affects One in Five Adults

Guiding Principles for Improving Health

Achieving a healthier America requires a national commitment to:

- **Prioritize Health Care vs. Sick Care:** Effective, evidence-based health improvement strategies can lower healthcare costs and improve the vitality of neighborhoods — but have never been widely implemented. For instance, evidence-based community prevention programs to increase physical activity, improve nutrition and prevent smoking could save the country more than $16 billion annually within five years — a $5.60 return for every $1 spent. Strategic community-clinic based programs can show strong results, such as the Diabetes Prevention Program (DPP) which has cut disease rates by more than 50 percent. The Stanford Chronic Disease Self-Management Programs saved more than $300 per patient per year — if scaled to 10 percent of Americans with chronic diseases could yield around $6.6 billion annually in savings.[19, 20, 21] The shift to a value-based approach to health provides new opportunities and incentives to make staying healthy a higher priority — and to bring high-impact programs into action. A strong focus should be placed on early childhood policies and programs — which can have the highest impact for setting the course for lifelong health — as well as continued support through different life stages.

- **Better Meet Local Priorities:** Health improvement strategies must be flexible enough for local communities to be able to prioritize their shared goals — addressing prescription drug misuse to obesity to adverse childhood experiences and toxic stress — and bring key partners and assets from the community to work together to tackle those concerns. Effectively addressing health problems requires sustained engagement — through multisector collaborations of key leaders and institutions — with healthcare providers and payers, public health, social services, private businesses, philanthropies, schools and community groups — who have a vested interest in improving the health and vitality of a community. Different sectors bring different strengths and expertise — and a diversification of resources — to help achieve a stronger collective impact. Local collaboratives should have access to and support from a network of leading local, state and national experts to identify, implement, evaluate and continuously improve efforts.

- **Support for Health and Well-being Beyond the Doctor's Office:** Collective impact strategies provide increased ability to determine how to align and leverage the shared goals and resources of communities — along with federal, state and local investments — to improve health and related factors that impact health more efficiently and effectively. For instance, working together, cross-sector partnerships can better address key issues, such as affordable housing, quality education, income, transportation, the availability of affordable nutritious food, safe places to be physically activity and healthy conditions in neighborhoods. There is also an increased need and opportunity to better integrate healthcare, behavioral health and public health services with other available social services.
- **A Modern Public Health System that is Prepared for Emergencies and Ongoing Priorities:** Every community around the country should have a baseline, modern public health system capable of responding to emerging and ongoing threats — ranging from emerging infectious disease outbreaks and bioterrorism to ongoing concerns like obesity and diabetes — and that can serve as a Chief Health Strategist and advisor to the community for using the best available evidence to inform strategies and programs to achieve better health. Federal, state and local public health systems should be modernized to focus on a set of "foundational" capabilities, including the ability to quickly diagnose, detect and control epidemics, recognizing the needs of the entire population, including children, individuals with disabilities and other persons with access and functional needs. While emergencies and new threats are inevitable, the current system does not have built-in capacity to respond to new or surge needs. Instead, arising emergencies disrupt attention and funds from ongoing pressing priorities — and create cycles of relying on a series of emergency supplemental spending bills — instead of building a stronger baseline system with increased flexibility.
- **Support Better Health in Every Community:** Too often where people live determines how healthy they are. Disease rates and funding vary dramatically from neighborhood-to-neighborhood, zip-code-to-zip-code, city-to-city, county-to-county and state-to-state. Strategies must work to achieve health equity and improve the health of all Americans, regardless of race, ethnicity and socioeconomic status.

Sharing a Vision for a Healthier America

AcademyHealth • Academy of Nutrition and Dietetics • Advocates for Better Children's Diets • Alaska Public Health Association • Allen Temple Neighborhood Development Inc. • Allergy & Asthma Network • Alliance for the Prudent Use of Antibiotics • American Academy of Pediatrics • American Association of Colleges of Pharmacy • American Association of Occupational Health Nurses • American Cancer Society Cancer Action Network • American College of Preventive Medicine • American Council on Exercise • American Heart Association • American Lung Association • American Planning Association • American Public Health Association • American School Health Association • Antibiotic Resistance Action Center, Milken Institute School of Public Health, the George Washington University • Association of Accredited Public Health Programs (AAPHP) • Association of American Veterinary Medical Colleges • Association of Maternal & Child Health Programs • Association of Public Health Laboratories • Association of Schools and Programs of Public Health • Association of State and Territorial Health Officials • Association of State Public Health Nutritionists (ASPHN) • Asthma and Allergy Foundation of America • BCCH- Bonner County Coalition for Health • Big Cities Health Coalition • Boston Alliance for Community Health • Boston Public Health Commission • Boulder County Public Health • Campaign for Tobacco-Free Kids • Center for Science in the Public Interest • ChangeLab Solutions • Children's Environmental Health Network • Children's Mental Health Network • Coalition for Health Funding • Community Anti-Drug Coalitions of America (CADCA) • Creatinghealthycommuniies.org • Delaware Academy of Medicine / Delaware Public Health Association • Directors of Health Promotion and Education (DHPE) • Doctors for America • Dorchester County Health Department • Eat Smart Move More South Carolina • Ehrens Consulting • Emory Centers for Training and Technical Assistance • Family Resource Network • Fizika Group • FLIPANY (Florida Introduces Physical Activity and Nutrition to Youth) • Florida Public Health Association • Foundation for Healthy Generations • Fund for Public Health in New York City • Greater Philadelphia Business Coalition on Health • Green & Healthy Homes Initiative • Hawaii Public Health Association • Health Care Foundation of Greater Kansas City • Healthcare Leadership Council • Healthcare Ready • Health Care Without Harm • Health Promotion Advocates • Health Resources in Action • Healthy Homes Coalition of West Michigan • Healthy Schools Campaign • Healthy Teen Network • Hispanic Health Initiatives, Inc. • Idaho Public Health Association • Illinois Public Health Association • Illinois Public Health Institute • Indiana State Council of the Emergency Nurses Association Chapter 401 • Institute for Health and Productivity Studies • Institute of Social Medicine & Community Health • International Health, Racquet & Sportsclub Association • Iowa Public Health Association • IT'S TIME TEXAS • Jasper Newton County Public Health District • Johnson County Department of Health & Environment • Joy-Southfield Community Development Corporation • JPS Health Network • Kansas Association of Local Health Departments • Kickapoo Tribe in Kansas • Lawrence-Douglas County Health Department • LifeLong Medical Care • Logan County Health Department • Louisiana Public Health Institute • Lutheran Services in America • Madison Area Bus Advocates • Maine Public Health Association • Meade County Health Department • Mennin Consulting • Michael O. D. Brown We Love Our Sons & Daughters Foundation • Minnesota Public Health Association • MYZONE • National Alliance of State & Territorial AIDS Directors • National Association of Chronic Disease Directors • National Association of Counties • National Association of County and City Health Officials (NACCHO) • National Association of Pediatric Nurse Practitioners • National Association of School Nurses • National Athletic Trainers' Association • National Center for Weight and Wellness • National Coalition for Promoting Physical Activity • National Coalition on Health Care • National Environmental Health Association • National Forum for Heart Disease & Stroke Prevention • National Foundation for Infectious Diseases • National Health Foundation • National Housing Conference • National Indian Health Board • National Network of Public Health Institutes • National Recreation and Park Association • National WIC Association • Nemours Children's Health System • Nevada Public Health Association • New Jersey Public Health Association • NIRSA: Leaders in Collegiate Recreation • North Dakota Public Health Association • Ohio Public Health Association • Orange County Food Access Coalition • Oregon Public Health Association • Partnership for a Healthy Lincoln • Pawnee County Health Department • PinneyAssociates • Prevention Institute • Public Health Advocates • Public Health Association of New York City (PHANYC) • Public Health Foundation • Public Health Institute • Rails-to-Trails Conservancy • Regional Asthma Management and Prevention (RAMP) • Research!America • Respiratory Health Association • RiverStone Health • Safe Routes to School National Partnership • School-Based Health Alliance • SHAPE America - Society of Health and Physical Educators • Snohomish Health District • Society for Public Health Education • Society of Behavioral Medicine • Society of Infectious Diseases Pharmacists • Society of State Leaders of Health and Physical Educators • Southern California Public Health Association • Spokane Regional Health District • Stand2Learn • Stanton County Health Department • Tacoma-Pierce County Health Department • Texas Action for Healthy Kids • The Bronx Health REACH • The Food Trust • The National REACH Coalition • The Root Cause Coalition • The Society for Healthcare Epidemiology of America • Trust for America's Health • Truth Initiative • UNC Gillings School of Global Public Health • Universal Health Care Action Network of Ohio • Vermont Public Health Association • Washington State Public Health Association • Wisconsin Institute for Healthy Aging • WomenHeart: the National Coalition for Women with Heart Disease • YMCA of the USA

Blueprint for a Healthier America

Introduction

The United States faces a series of major health crises. Unfortunately, however, for decades, the health system has been set up to treat people after they are sick rather than keeping them well in the first place.

The health system has largely been driven by paying for treatment and doctor's care — and not focusing on overall health — yielding more of a sick-care system than a healthcare system.

Despite the $3 trillion spent annually on health, it has not translated into "buying" better health for the country.[22] To date, there has never been a concerted or long-term strategy to improve health in the United States.

But a different approach is possible. Much of the pain, suffering and cost of many health problems could be prevented or mitigated — with a greater focus on trying to stop problems before they happen. This new approach would improve quality of life for millions of Americans — while reducing disease rates and healthcare costs.

Experts have identified a growing set of high-impact, evidence-based strategies — but there has not been a significant effort to widely implement and sustain them.

In this Blueprint for a Healthier America, the Trust for America's Health (TFAH) presents key strategies for improving the health of Americans.

There has never been a better opportunity to align the objectives and resources of public health, healthcare, social services and community improvement efforts to advance the goal of improved health.

Over the next four years, the country should prioritize ensuring communities around the country can benefit from the most effective health improvement strategies.

The stakes could not be higher.

- **Prescription Drug and Heroin Crises:** Deaths from prescription painkillers have quadrupled in the past 15 years, and more than 2.1 million people misuse these drugs. The epidemic costs the country more than $55 billion a year in healthcare, workplace and criminal justice spending.[23, 24, 25, 26] This has also contributed to a major rise in heroin use. Fatal heroin overdoses have more than tripled since 2010 and nearly half a million people are addicted to heroin.[27, 28, 29] Heroin use among young White adults (18- to-25-year-olds) has more than doubled in the past decade, with large concentrations in some communities and states, including Indiana, Kentucky and New Jersey.[30, 31] Substance misuse is contributing to lower life expectancies — and higher death rates — among middle-aged Whites.[32]
- **Future Health of America's Children:** If things continue on their current track, one in three children will develop diabetes and four out of 10 will develop heart disease in their lifetime.[33, 34] This is preventable and not inevitable. Today's children are not as healthy as they could be or should be — one in four, between the ages of 17 to 24, are not even considered healthy enough to join the military.[35] Without stronger local health improvement programs, they are being resigned to serious health problems that could have been avoided.

- **Infectious Disease, Disaster and Bioterrorism Readiness:** Fifteen years after the September 11, 2001 and anthrax tragedies and 10 years after Hurricane Katrina, the country is still not as ready as it could or should be for major health emergencies — whether they are manmade attacks like aerosolized anthrax or emerging infectious diseases like the Zika virus or a major new pandemic. While emergencies and new threats are inevitable, the system does not have built-in capacity to respond to new or surge needs. Instead, arising emergencies disrupt attention and funds from ongoing pressing priorities — and create cycles of relying on a series of emergency supplemental appropriations — instead of building a stronger baseline system with increased flexibility. New diseases can have a significant economic impact. Seasonal flu alone costs the country $87 billion annually.[36]

- **Environmental Justice:** The contaminated water in Flint, Michigan and other locations serves as a call to renew our nation's environmental health policies. Around 434,000 children in the United States have lead poisoning — the most common source is from exposure to paint in older homes or apartment buildings among children in low-income families — putting them at high risk for serious developmental, behavioral and cognitive delays.[37] Millions of families live in neighborhoods that adversely impact their health and do not offer the same degree of protection from environmental and health hazards as those only a few zip codes away.[38, 39]

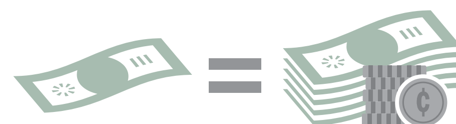
But strategies do exist to address the problems — but have not been broadly taken to scale across the country. For example:

- **Reducing Substance Misuse:** Five of the strongest school-based substance use prevention strategies have returns on investment (ROI) ranging from $3.8:1 to $34:1 — and have demonstrated results in reducing misuse of a range of drugs, alcohol and tobacco along with other risky behaviors — while improving school achievement and future career attainment.[40, 41, 42, 43]

- **Preventing Chronic Diseases:** An investment of $10 per person per year in proven evidenced-based community prevention programs that increase physical activity, improve nutrition and prevent smoking and other tobacco use could save the country more than $16 billion annually within five years — a return of $5.60 for every $1 invested.[44] In addition, the National Diabetes Prevention Program and strategies that link clinical and community resources have shown significant results — DPP has reduced diabetes incidence by 58 percent in persons with prediabetes and Stanford's Chronic Disease Self-Management Programs net more than $300 per patient in savings — and if scaled to 10 percent of Americans with chronic diseases, could yield an estimated $6.6 billion in healthcare savings annually.[45, 46, 47]

- **Speeding Detection and Control of Infectious Disease Outbreaks:** New scientific and technological breakthroughs — like genomics and real-time, interoperable disease outbreak tracking — are ready for use and could dramatically speed the ability to identify and respond to crises. However, these breakthroughs will only make a difference if they are scaled up and complemented with workforce training and reforms to address the gaps in the basic underlying health system.

Over Five Years the Return For Every $1 invested is $5.60



- **Reducing Environmental Threats:** Targeted strategies can significantly reduce the impact of adverse environmental problems on health. For instance, the Centers for Disease Control and Prevention (CDC), state and local initiatives have reduced lead poisoning by 70 percent since 1990 — and lead abatement programs have shown a return of $17 to $221 for every $1 invested.[48]

- **Addressing Social Needs that Impact Health:** An new analysis by TFAH and Healthsperien estimates that investing in Health and Social Service Coordinator Systems that address gaps between medical care and effective social service programs with a range of strategic and targeted interventions — through a "navigator-plus-support" approach — could yield between $15 billion and $72 billion in healthcare savings a year within 10 years, depending on how broadly these programs are supported (i.e., potentially reaching between 12 percent and 25 percent of low-income Americans — between 13 million and 28 million people).[49]

- **Support in Early Childhood:** Investing in good health and well-being for young children can yield lifelong benefits. For instance, quality early childhood education can provide a 7 percent to 10 percent annual return on investment based on higher school and career achievement and reduced costs in remedial education, health and criminal justice system expenditures.[50, 51] The Supplemental Nutrition Program for Women, Infants and Children (WIC) has found that each $1 spent leads to a reduction in healthcare costs of $1.77 to $3.13 in the two months after birth (between a 2:1 to 3:1 ROI).[52] In addition, infants born into low-income families receiving rental assistance were 43 percent less likely to have hospitalizations from serious illnesses compared to infants in low-income families not receiving any rental assistance.[53] And nurse family home visits for high-risk families with young children has shown a return of $5.70 for every $1 invested.[54]

EXAMPLES OF RETURN ON INVESTMENTS FOR PREVENTION EFFORTS

Program	Return
Five Strongest School-based Substance Misuse Prevention Programs	3.80:1 to 34:1
Community-based Nutrition, Activity and Tobacco Prevention Programs	5.60:1
Lead Abatement Programs	17:1 to 221:1
Supportive Housing Programs for High-Need Patients	2:1 to 6:1
Community Health Worker Navigator, Referral and Case Management Programs	2:1 to 4:1
Early Childhood Education Programs	4:1 to 12:1[55]
Child Asthma Prevention Programs	1.46:1 to 7:1
WIC Program Savings in Healthcare Costs for Infants	2:1 to 3:1
Nurse Home Visiting for High Risk Infant	5.70:1

Blueprint for a Healthier America

The Blueprint identifies key policies and strategies to move the country toward a more value-based approach to improving health.

Communities around the country have been developing successful efforts — resulting in better health and quality of life for millions of Americans and reducing healthcare costs. And, experts have identified high-impact policy levels and models that could be used to help scale the most effective programs.

The goal is to take the most effective, high-impact strategies and scale them around the country — to benefit and improve the health of more Americans.

Value-based healthcare is helping to support a shift from sick care once diseases have developed to helping keep people healthy in the first place — by creating new incentives and an increased emphasis on improving health. There is a strong emphasis on delivering quality care and reducing healthcare costs — but improving "population health" is also one of the top priorities of the Triple Aim.[56, 57] Improving health also requires addressing factors that influence health in people's daily lives, in their workplaces, schools, neighborhoods and homes.

It requires a more strategic approach — building a mutually beneficial integration of public health and healthcare as well attending to how different factors impact health including economics, education, housing, transportation and other sectors. This approach also focuses on making the most effective use of existing resources and assets, supporting the top priority goals of communities across the country, and leveraging opportunities to align resources to help achieve shared goals of improving health and well-being.

PRIORITY RECOMMENDATIONS IN THE BLUEPRINT INCLUDE:

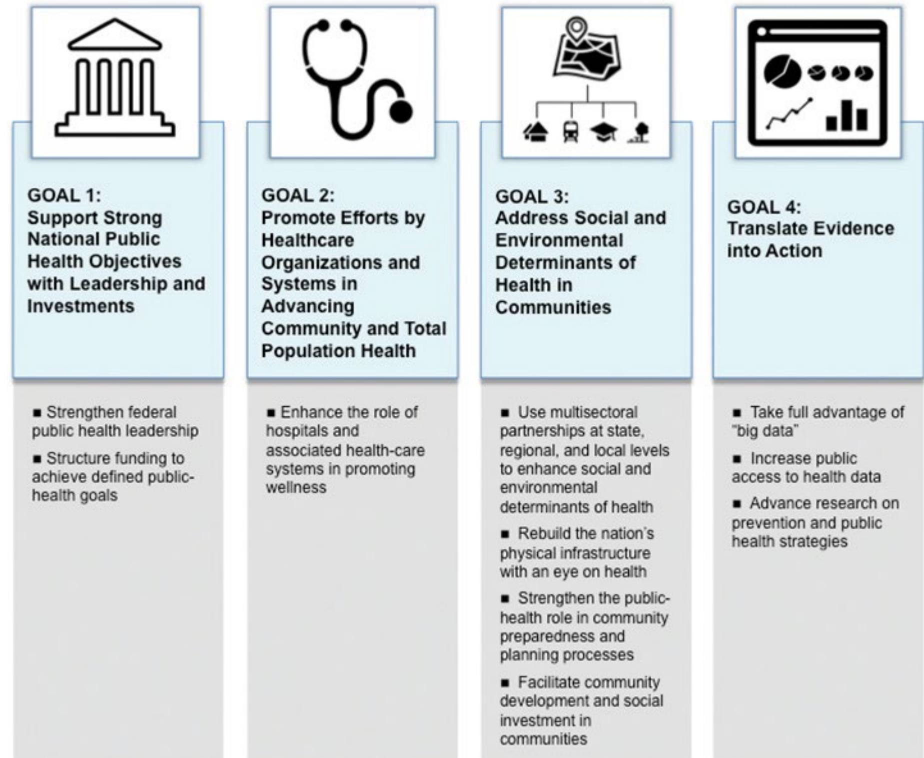
- **Wide-Scale Implementation of the Most Effective Evidence-based Health Improvement Strategies**
  - Fully support the Prevention and Public Health Fund
  - Support Place-based, Multisector Local Health Improvement Partnerships to Address Top Health Priorities in Communities Around the Country
  - Develop State Expert Research and Technical Assistance Networks
  - Support Greater Coordination of Federal Grant Programs Across Sectors for Better Efficiency and Outcomes
  - Nonprofit Hospitals to Use Community Benefit Programs to Support Community-based Health Improvement Efforts
  - Increase Innovative and Social Investment in Health Improvement Strategies
  - Support Medicare, Medicaid and Private Insurer Support of Health Improvement Strategies and Services — Including a "Navigator-Plus-Support" Model for Integrating Health and Social Services
- **Modernize the Public Health System to Be Prepared for Emergencies and Ongoing Threats**
  - Support Stable, Sufficient Funding for Emergency Preparedness — to Maintain Basic Readiness and a Public Health Emergency Fund to Ramp Up when a Crisis Strikes
  - Improve and Modernize Basic Public Health Capabilities in Communities Around the Country — Via Foundational Capabilities and State-of-the-Art Technology
  - Create a Special Assistant to the President for Health Security and Improve Federal Leadership and Coordination for Public Health Emergencies
- **Address Major Health Issues**
  - Prioritize Healthy Early Childhoods — Reduce Toxic Stress and Adverse Childhood Experiences
  - Support Healthy Students and Healthy Schools
  - Healthier Aging for Seniors
  - Stop the Prescription Painkiller Misuse and Heroin Epidemics
  - Prevent Obesity, Improve Nutrition and Increase Physical Activity
  - Eliminate Tobacco Use
  - Prioritize Prevention in the Cancer Moonshot Initiative
  - End the HIV/AIDS Epidemic
  - Stop Superbugs and Antibiotic Resistance
  - Support Environmental Health and Justice
  - Address the Health Impact of Climate Change and Extreme Weather
  - Achieve Health Equity
  - Reverse Rising Death Rates Among Middle-Aged White Adults
  - Promote Positive Mental Health

ADDITIONAL PUBLIC HEALTH POLICY RECOMMENDATION INITIATIVES

- **Advancing the Health of Communities and Populations, *Vital Directions for Health and Health Care* — from the National Academy of Medicine (NAM):** As part of a broad effort to identify policy recommendations for the next Administration and Congress, NAM brought together more than 100 health experts to help inform key policy recommendations in a collection of papers to advance the overarching goals of: better health and well-being; high value-healthcare; and strong science and technology.[58] The Advancing the Health of Communities and Populations paper focused on four key goals.[59]

- **Democratizing Health: The Power for Community, *Vital Directions for Health and Health Care* — from the National Academy of Medicine:** Another paper in the *Vital Directions* series highlights ways to better address community needs and engage community participation in health improvement efforts.[60] It highlights a people power approach supported by The California Endowment, which is supporting the development of change agents around their state, particularly in 14 low-income communities. They equip community residents with the skills — including through the use of technology and social media — to look for and identify the impacts of social and environmental conditions and to collaborate to advance common goals.

- **The Department of Health and Human Services as the Nation's Chief Health Strategist: Transforming Public Health and Health Care to Create Healthy Communities — from the Public Health Leadership Forum:** Over the past year, in preparation for a new Administration, the Public Health Leadership Forum (PHLF), supported by the Robert Wood Johnson Foundation, convened a high-level group of public health and private healthcare policy makers, to develop a vision and a series of recommendations for the "Federal Public Health Enterprise."[61] The overarching vision of the group is that, "everyone in America deserves to live in a healthy nation — and in healthy states, regions, cities, and neighborhoods. And America needs a healthy population to be competitive and secure in the 21st century." As Chief Health Strategist for the nation, the Department of Health and Human Services should lead a national initiative that assures "America's communities are places that provide every person with the opportunity to achieve optimal health and are served by a strong public health infrastructure."



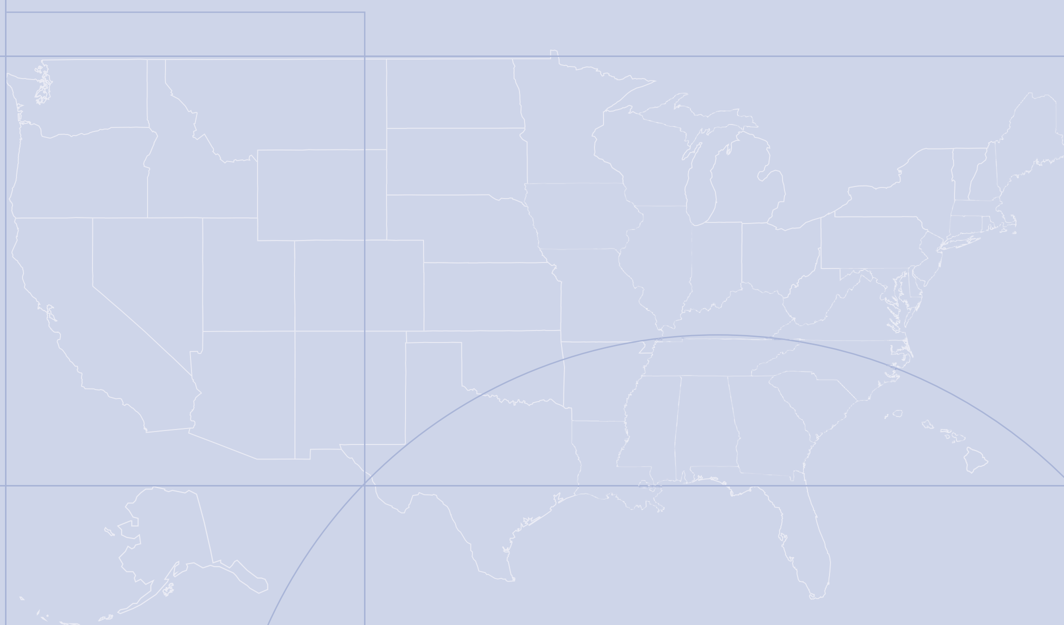
Source: Brookings Institute

The report recommends that the U.S. Department of Health and Human Services (HHS) embrace the role of Chief Health Strategist for the nation in order to:

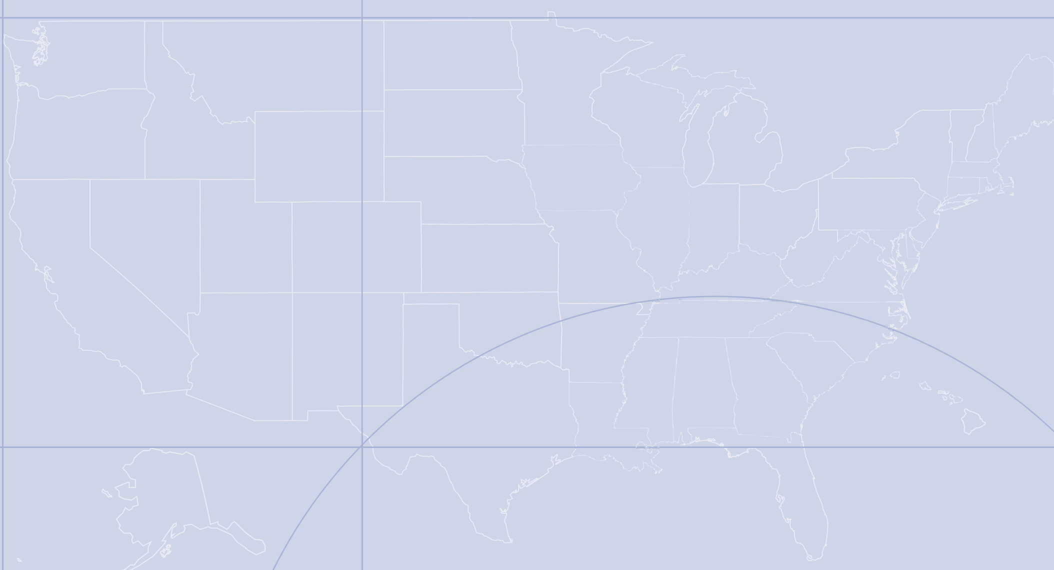
- Transform the healthcare and public health investments by the federal government into a Health Promoting System and adopt metrics that foster activities that support longer, higher quality life and reduce health inequities.
- Assure communities have the data, evidence, analytic capacity and flexibility they need to build healthy and resilient communities including supporting cross-sector collaborations at the federal, state and local levels.
- Assure every community is served by a well-resourced public health department that is accredited and able to provide foundational capabilities and respond to unanticipated emergencies.

Blueprint for a Healthier America

Prioritizing Wide-Scale Implementation of the Most Effective Approaches for Improving Health in Communities Around the Country



SECTION 1

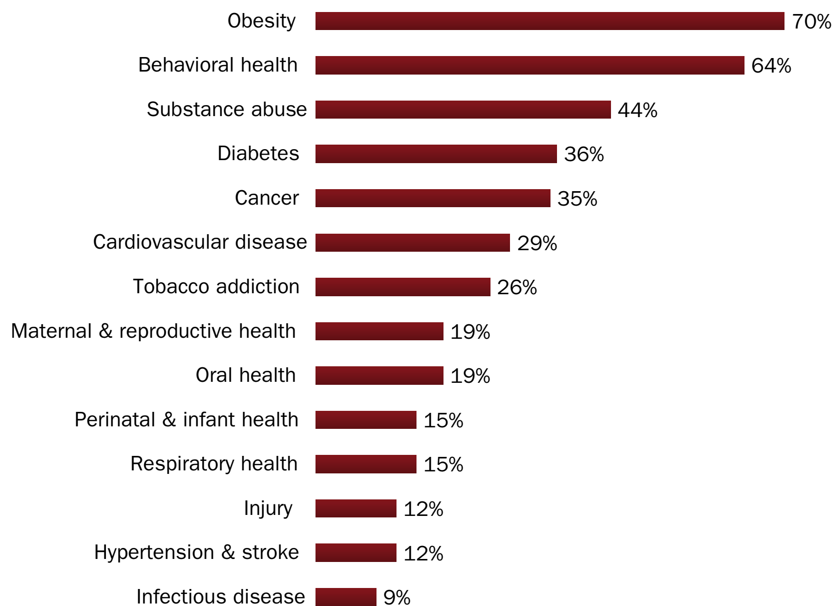


Prioritizing Wide-Scale Implementation of the Most Effective Approaches for Improving Health in Communities Around the Country

Communities across the country are struggling with health challenges that have consequences for the well-being of children and families and for the broader productivity, vitality and economic well-being of their neighborhoods, schools and workplaces.

Mental health, obesity, substance use, physical activity, nutrition, diabetes, heart disease, high blood pressure and access to medical care are consistently ranked as top health concerns.[62, 63, 64, 65, 66]

Priority Community Health Needs.

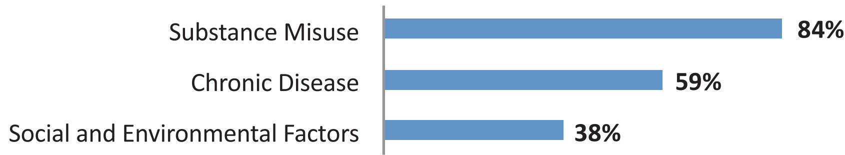


NOTE: Data compiled across surveys from the Association of American Medical Colleges (AAMC), the Health Research & Educational Trust (HRET), Catholic Association Member Hospitals (CAM), and the Health Policy Institute of Ohio.[62-66]

One category (Oral Health) from HRET review, AAMC survey and CAM survey only; one category (Cancer) from HRET review, CAM survey and Ohio review only; two categories (Social Determinants of Health and Health Insurance Coverage) from HRET review and AAMC survey only; one category (Physical Activity and Nutrition) from AAMC survey and Ohio Hospitals review only; and two categories (Preventive and Screening Services and Chronic Condition Management) from HRET review only. Only categories with at least one survey or review reporting greater than 30 percent included.

** AAMC and CAM reported Heart Disease and Hypertension/Stroke together as one category.*

Top Public Health Priorities among County Officials



Source: National Association of Counties Survey (n=154), April 2016[67]

Broad use of evidence-based and common sense strategies could reduce rates of these health problems and lower healthcare spending.

However, there is no mechanism to ensure that health improvement efforts can be sustained over time and supported at a sufficient level to achieve desired outcomes in communities around the country. Some past barriers have included that:

- Many "population health" efforts focus on the disease du jour and shifting priorities — pulling focus and resources away from ongoing needs. In addition, many public health initiatives are limited in duration and funding, supported by short-term grants. But there has not been sufficient investment to scale or sustain them over time to achieve results.
- Health improvement, especially community-based or population-level approaches, have not been widely prioritized or incentivized by the healthcare system, where expenditures have been driven by fee-for-service and individually-focused treatment and payment approaches. In addition, many healthcare decisions are made at the federal-state level (through Medicare and Medicaid) or through private healthcare plans — in decision making processes separated from many other state-local cost drivers, such as social services, public safety, criminal justice and education.
- Health services and community-wide health improvement initiatives have not generally been well integrated with other social service and community and economic development efforts. While many health systems and hospitals participate in local community and philanthropic efforts, such as mobile screening vans, health fairs and charity walks — or as anchor institutions, major employers and real estate holders in a community participating in broad community improvement initiatives — most have not often focused on developing strategies and partnering across sectors, leveraging their resources and expertise to synergetically achieve significantly better health outcomes.
- The structure of the competitive healthcare market typically does not incentivize health systems, hospitals, or health insurers to work across sectors or to collaborate within sectors to invest in health at the community level.[68] In addition health systems engaging in "population health" improvement efforts have often addressed the issue from the lens of managing the health of their patients or "patient pool," such as through care coordination "population health management," rather than by investing in broader community-wide approaches.[69]

Lessons learned from the most successful health improvement initiatives can serve as examples for national change and local execution. These lessons can be used to support a scalable, sustainable model to improve health, increase the vitality of communities across the country and bring down healthcare costs.

A. POLICY PRIORITIES FOR SUPPORTING HEALTH IMPROVEMENT EFFORTS AROUND THE COUNTRY

- **Support Local Health Improvement Partnerships to Address Top Priorities in Communities:** Health improvement strategies must be flexible enough for local communities to be able to prioritize shared goals — from prescription drug misuse to obesity to adverse childhood experiences and toxic stress — and bring key partners and assets from the community together to achieve them. Effectively addressing health problems requires sustained multisector collaborations among leaders and institutions from within and beyond the health sector. Groups representing healthcare, social services, private businesses, philanthropies, schools and faith and community groups all have a vested interest in improving the health and vitality of a community. In addition, state and local public health departments play an important role in partnerships as Chief Health Strategist and in some cases as lead partners in communities. Different sectors bring different strengths and expertise — and a diversification of resources — to help achieve a stronger collective impact.

  Federal public health programs and policies should focus on providing support to local communities to develop and manage these partnerships. A Local Health Improvement Partnership pilot program should be created — via community health and prevention programs at the Centers for Disease Control and Prevention, the Substance Abuse and Mental Health Services Agency (SAMHSA), the Health Resources and Services Administration (HRSA) and other agencies to support planning, capacity building and implementation grants to localities. Estimated costs for supporting a "lead partner" (often established, experienced institutions or intermediary nonprofits in communities) is around $250,000 to $500,000 per year.

- **Broaden Implementation of Evidence-Based, High Impact Strategies — And Create Academic/Expert Health Improvement Institutes in Every State:** Experts at the CDC, National Institutes of Health (NIH), SAMHSA, public health agencies, healthcare systems and expert organizations have been rapidly identifying a growing set of the strongest health improvement strategies — which allow local communities and health systems to determine which of the most effective available programs best match their needs. For instance, in 2016, CDC released a set of top community-wide Health Impact in 5 Years strategies and community-clinical approaches via the 6|18 Initiative: Accelerating Evidence into Action.[70, 71] In addition, the creation of an expert network in states would be an important new tool that would provide support and technical assistance to local communities in their selection, implementation and evaluation of programs and services. Some of the strongest examples of state and regional expert networks have helped support cross-sector youth development programs that reduce crime and drug misuse while improving health and academic achievement. These expert organizations would contribute to growing the evidence-base for programs — using their findings to inform and improve efforts.

  The federal government should support the creation of a network of state-based expert institutes — beginning with a pilot program for an initial set of states. These institutes should be developed building on and in consultation with state and local health departments and existing public health research centers, institutes and resources. Community-based programs at CDC, SAMHSA and other agencies could help support this effort — and states could provide additional funds to support and expand the institute's activities and scope. One model center in Pennsylvania with an annual budget of $1 million works across several related disciplines to address common risk factors associated with crime, poor health and low academic achievement. The federal government should expand funding for additional research and evaluation of community-based prevention and health improvement programs and strategies.

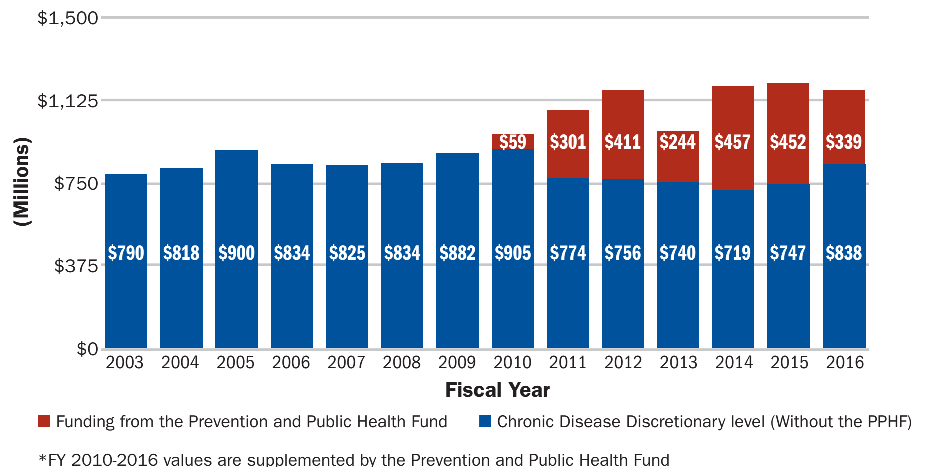
- **Fully Fund the Prevention and Public Health Fund and Other Community-Based Health Improvement Efforts:** There needs to be ongoing and sufficient funding to support health improvement efforts around the country. The Prevention and Public Health Fund has been used to support key chronic disease prevention efforts at CDC. It is scheduled to increase by $250 million in Fiscal Year (FY) 2018; and by another $250 million in FY 2020. These increased funds could be used to support a range of federal health improvement efforts, including chronic disease prevention programs at CDC; place-based multi-sector initiatives; and/or multi-agency efforts to address health factors and improve outcomes. It is important these increases are used to support new and innovative efforts and not be used to supplant existing programs and funds. The Fund was established to provide for expanded and sustained national investment in prevention and public health programs to improve health outcomes and help restrain the rate of growth in private and public sector healthcare costs. It innovates and builds support for efficient,

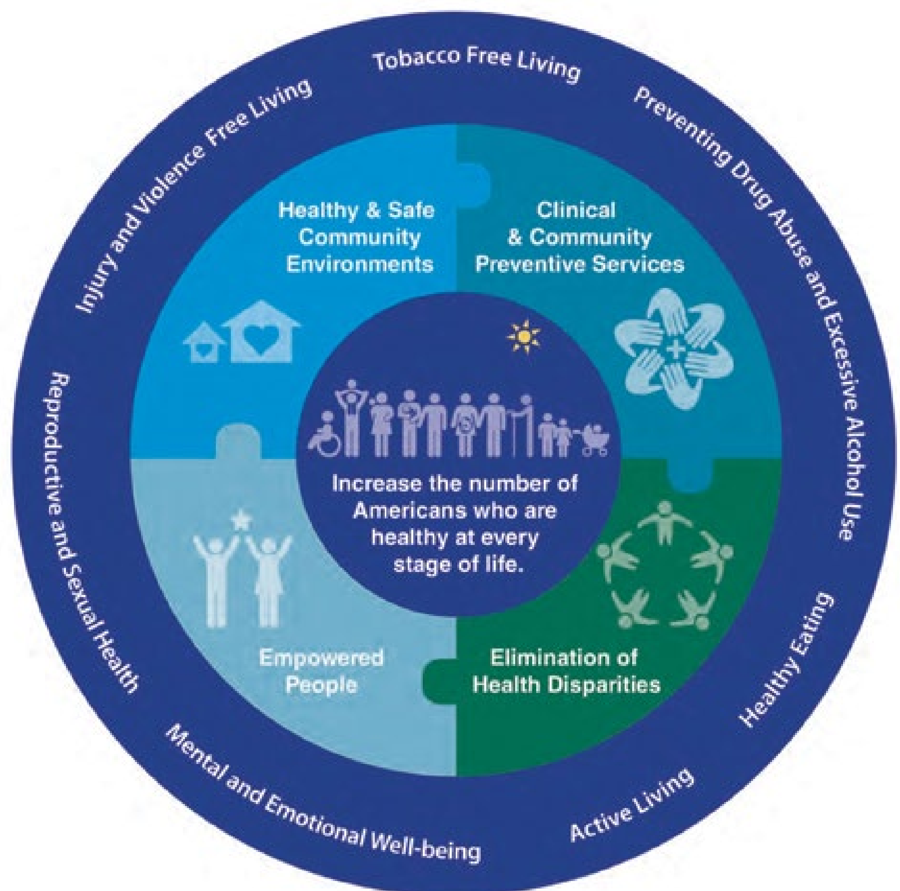
evidence-based approaches to improve health and reduce disease rates in communities across the country and should help support expanding the wide-scale implementation of evidence-based health improvement strategies by local coalitions across the country. The entire budget for all chronic disease prevention activities at CDC is around $1.2 billion (about $4 per person per year), while more than 80 percent of the annual $3 trillion in healthcare spending is spent on individuals with one or more chronic conditions (about $8,000 per person per year for chronic disease).[72]

In addition to CDC, SAMHSA has a Prevention and Treatment Block grant program funded at around $1.8 billion per year and there are Drug-Free Community Grants totaling around $86 million.[73] There are also new opportunities under the Every Student Succeeds Every Day (ESSA) to support healthy school initiatives via Title I fund from the U.S. Department of Education (ED).

- **Increase Strategic Alignment of Policies and Programs to Improve Health and Other Factors that Influence Health — With a Focus on Improving Outcomes:** Since health is impacted by a wide range of factors, it is important to have a more strategic approach to prioritizing goals and investments that can leverage better outcomes across federal, state and local governments.

The National Prevention Strategy, released in 2011, and other cross-agency efforts — such as issue-based task forces and working groups — have been an important step to help federal agencies identify many joint strategies for improving health and other goals. For instance, issues like drug prevention require efforts of multiple agencies — including the Department of Health and Human Services, Department of Justice (DoJ), Office of National Drug Control Policy (ONDCP) and ED.





Source: National Prevention Council Action Plan

The next step should be a much stronger purposeful approach to identifying and prioritizing ways agencies can better work together and invest in the most effective strategies to improve health and achieve other goals — across housing, food and income assistance, education, transportation and other areas. This should go beyond the most obvious areas of alignment — such as healthy housing programs — to the factors that influence health — such as housing assistance programs.

There should be increased leadership for developing and implementing the next stage of this approach and strategy — and should be a priority for the White House Domestic Policy Council and from the Secretary of HHS. This approach should include a review and process for coordinating aligned programs to focus on improving outcomes — and to maximize efficiency and effectiveness of efforts. Where appropriate, there should also be increased efforts to coordinate and align grant programs aimed at common goals — so funds can be leveraged to work together to better achieve these goals. For instance, the Sustainable Communities Initiative (SCI) is a partnership across the Department of Housing and Urban Development (HUD), Department of Transportation (DOT) and the Environmental Protection Agency (EPA), joining together in 2009, where they have identified shared goals and initiatives — and grantees can receive waivers for multiple grant requirements in exchange for demonstrating improved results.[74]

Within the federal government, there are a number of mechanisms for supporting improved cross-agency and program collaboration. For instance, the Office of Management and Budget (OMB) issued a Uniform Administrative Requirements, Cost Principles and Audit Requirements in Federal Awards (Uniform Guidance) in 2013 that permits more flexibility and innovative models for agencies to waive certain requirements in grants in exchange for demonstrated improved outcomes and cost-effective approaches.[75] Additional mechanisms should be developed that can support strategies and evaluations of the impact of programs across agencies, including of programs funded by one agency on the goals of another agency. Mechanisms that align these goals among public and private partners are also needed. For instance, the Association of Government Accountants' Intergovernmental Partnership initiative is one example of a coordinating mechanism which was developed to open lines of communications across all levels of government with the goal of improving performance and accountability.[76]

At the state and local level, a number of projects have identified strategies for coordinating health and social service investments and/or increasing investments in the social determinants that impact health — toward coordinating goals, programs and funding across sectors and agencies, such as the Milbank Memorial Fund's study of *Investing in Social Services for States' Health: Identifying and Overcoming the Barriers;* the Milbank Memorial Fund and New York State Health Foundations' *Medicaid Coverage for Social Interventions a Road Map for States;* the Commonwealth Fund's *A State Policy Framework for Integrating Health and Social Services* and the National Academy for State Health Policy's *Federal and State Policy to Promote the Integration of Primary Care and Community Resources* and the Center for Healthcare Strategies, Inc.'s *State Payment and Financing Models to Promote Health and Social Service Integration.*[77, 78, 79, 80, 81]

- **Incentivize Increased Support for Community-Based Health Improvement Efforts via Nonprofit Hospital Community Benefit Programs:** Many hospitals are expanding support for upstream community health improvement strategies by addressing key priorities such as obesity, prescription drug misuse and infant mortality and other factors that have a major impact on the health of their patients, such as housing, education and transportation. Nonprofit hospitals' community benefit programs totaled around $62.4 billion in 2011.[82, 83] In the past, only around 5 percent of the funds have been used to support community-based prevention activities, with the majority of the funds being used to support charity care. With expanded insurance coverage — reducing the need for as much charity care support — and value-based payment, hospitals can look at upstream approaches to improve the health of the patients and communities they serve. Since 2012, the Internal Revenue Service (IRS) has required all nonprofit hospitals to conduct regular community health needs assessments to better understand the top health concerns of the communities they serve and to develop implementation plans. Community benefit programs may be used to support health improvement initiatives. In addition, the IRS issued follow up guidance that "some community building activities may also meet the definition of community benefit," which may include addressing other factors that influence health.[84] Community improvement and "community building" have traditionally been reported separately, where many community building efforts have not been covered by community benefit programs, and cannot actually count the related expenses as community benefit funds. However, the IRS has not issued any official requirements for supporting community efforts.

The federal government should consider additional guidance, requirements and incentives for the use of community benefit programs to support upstream community health and other factors that impact health, similar to the Community Reinvestment Act requirements of banks and financial institutions to support community-based programs. In addition, the IRS should clarify what "community building" efforts can be considered for support through community benefit programs.

- **Increase Innovative Social Investments:** There is increasing use of social investments — including Community Development Financial Institutions (CDFIs) and social impact bonds — to support health improvement initiatives, such as healthy food financing initiatives, capital development of community health centers and co-located health-and-social service providers and family home visiting programs. (See page 50: Innovative and Social Impact Funding Strategies for more on these different investing mechanisms). Creating a financial management mechanism — to function like a CDFI for health improvement initiatives in communities — would provide a scalable way for communities to have an accountable and trusted structure for raising and managing the funds needed to support these efforts. Additional groups are exploring expanded use of "pay for performance" and other investment models for health improvement initiatives.

The federal and local governments should expand social investments — through CDFIs and New Market Tax Credits — into health improvement initiatives and programs — including through healthy food financing and community health center initiatives, as well as other programs that leverage collective benefits for improving health.

The federal government could also increase incentives for social investing by nonprofit hospitals by crediting differences in market returns as a community benefit. Nonprofit hospitals are increasingly investing in CDFIs and other social investments, but are not able to "count" the difference in earnings between a market rate return and the return from a socially responsible investment.[85]

- **Provide Support to Medicare, Medicaid and Private Healthcare Insurers and Providers to Expand the Use of Health Improvement Strategies and Services:** Value-based healthcare models are spurring many healthcare providers and insurers to invest in innovative strategies to keep patients healthier. Medicare and Medicaid should expand support for prevention — and help speed strong emerging programs into practice. The Centers for Medicare and Medicaid Services (CMS) should leverage existing authorities and initiatives — and create additional mechanisms as needed — to incentivize healthcare, public health and social service sectors to work together. Key areas that should be addressed include:
  - Incentives for increased use of covered preventive services and penalties where actual use and delivery rates remain low;
  - Expanding coverage and use of clinical-community programs, such as: services that use lower-cost alternatives, care coordination or community-based service, and evidence-based group diabetes and other chronic disease prevention counseling programs;[86]
  - Programs and systems that help connect patients to services that address unmet social needs, such as the Accountable Health Community (AHC) model being piloted by CMS that helps connect patients to services that address housing instability and quality; food insecurity; utility needs; interpersonal violence; and transportation needs — and other available mechanisms, such as state waivers, to support programs that help connect beneficiaries to social services as needed; and
  - Expanding coverage for community-based health improvements.[87, 88]

ROBERT WOOD JOHNSON FOUNDATION 2016 CULTURE OF HEALTH PRIZE WINNERS[89]

Every year, the Robert Wood Johnson Foundation highlights and honors communities that improve the health and well-being of neighborhoods and individuals. The winning communities receive $25,000 and serve as examples for other communities on how to ensure residents live longer, healthier and more productive lives.

The **Shoalwater Bay Indian Tribe,** located in Washington state, has improved the physical, social, emotional and spiritual health of Tribe members by promoting healthy behaviors and active living, funding a dental and mental health wellness center and focusing on emergency preparedness.

Santa Monica, California has, for four years, researched community aspects which were either helping or hindering health promotion — resulting in the creation of the Wellness Index, which provides a framework for ensuring municipal decisions are made with health in mind.

Columbia George Region, Oregon and Washington attempted to address food insecurity — 1 in 5 residents report running out of food regularly — by focusing on food access, job creation and improving transportation. One initiative, the Veggie Rx program, allows social service to issue a $30 monthly prescription for fresh fruits and vegetables to individuals.

24:1 Community, Missouri, through community collaborations, has joined 24 different communities located northwest of St. Louis to build strong neighborhoods, engaged families and successful children.

In 2003, the **Consortium for a Healthier Miami-Dade County** was formed to improve the health of neighborhoods, and, in just over a decade, has made public school menus healthy for the 340,000 children who attend school; installed free fitness equipment in all 16 community parks; reduced the homeless population; and offered routine HIV testing in all health facilities.

Manchester, New Hampshire has focused on creating strong, resilient neighborhoods by investing in neighborhood-based, health-focused programs, including, for example, Safe Station, which turned 10 of the city's fire stations into safe intake centers for those addicted to drugs.

In **Louisville, Kentucky,** 55,000 degrees, an innovative partnership, works to increase the number of residents who have higher degrees; Louisville's Bold Gold initiative, a collaboration led by Humana, aims to improve the health of the community by 20 percent by 2020; and YouthBuild Louisville, a vocational, education and community service program, provides ways for youth to learn skills, improve neighborhoods and break the cycle of poverty.

B. A PLACE-BASED STRATEGY: LOCAL HEALTH — OR WELL-BEING — IMPROVEMENT PARTNERSHIPS

Currently, there is no mechanism to ensure that health improvement efforts can be sustained over time and supported at a sufficient level to achieve desired outcomes in communities around the country.

Lessons learned from the most successful health improvement initiatives can serve as examples to build a scalable, supportable model that can be used across the country.

- Health improvement efforts must be better connected to the concerns of the local community — to demonstrate their value for improving health and lowering health costs while also contributing to the overall improved wellness and vitality of that community.
- A place-based approach provides a model that can be applied and scaled to address health problems around the country — while giving local areas the flexibility to select from and implement the evidence-based strategies that best match their needs and interests.
- Place-based approaches often focus on many different goals — and need to manage a balance of interests, goals, incentives, perspectives and assets of different partners and sectors.

One of the strongest local approach to address health problems is building partnerships of key stakeholders across a range of sectors. Local stakeholders understand the problems in their communities and have a vested interest in the health, wealth and vitality of their community.

Working together, key partners can identify shared goals, priorities and concerns — and then align their assets and resources to achieve a stronger collective impact. This has often been a practice in economic and community development — but this approach has been used narrowly in some areas of health management, such as by HIV Planning Councils and in some Community Health Needs Assessment processes, but not widely or systematically used to address health and well-being.

A partnership creates a mechanism to support a long-term, sustained commitment to improving the health of a community — leveraging its existing strengths, assets, expertise and institutions.

Local health improvement partnerships may decide to focus on specific health problems, such as infant mortality or obesity, or other factors that impact well-being, such as housing, education, transportation, the availability of affordable food or conditions in a neighborhood — or a combination of interrelated concerns.

In many cases, effective place-based partnerships could identify priorities and strategies — where improving health is one of a range of goals and outcomes, but may not be the lead or only priority issue. Therefore, partnerships must be able to reflect a range of participants' interests, goals, resources and perspectives. For instance, in many communities, place-based partnerships may be galvanized as broader "wellness" or "community improvement" collaborations — where improving health is one issue among many or may not be the "lead" partner in a coalition.

The local health — or broader well-being — improvement partnership model can help to align and integrate these different interests, while maintaining the flexibility to focus on a broader agenda with improved health representing one of many collective objectives. Key partners include:

- **Public Health "Chief Health Strategist" Partners:** Public health departments and experts are important for playing a lead role in helping communities identify their biggest health concerns and the most effective strategies to address them. They bring expertise in developing community-wide and population-based health programs — and can also help prioritize and evaluate ways to work with other sectors to improve health. In addition, there are federal, state and local resources dedicated to help support key public health capabilities and community health programs. While these funds are limited and not sufficient to fully fund local health improvement initiatives on a wide-scale basis, they can support some of the essential functions for developing and evaluating efforts.

- **Health Partners:** Many groups in the health and healthcare sector are exploring and investing in innovative and strategic approaches for improving health in the communities they serve, particularly incentivized by the movement toward value-based healthcare and the increased interest in expanding health promotion and prevention efforts by many nonprofit hospital community benefit programs. Health sector participants should include healthcare providers, insurers, hospitals, community health centers and behavioral health and public health agencies.

- **Multi-Sector Partners:** Health sector participants are important — but it is also important to engage a much broader set of partners, since many of the biggest factors that influence health are outside of the doctor's office, in workplaces, schools and neighborhoods. Social service agencies, philanthropies, economic and community developers, community and faith groups, schools, school systems, child care centers, transportation authorities, businesses and other employers bring different expertise, perspectives and resources toward advancing the health and well-being of a community. Housing, schools and universities, transportation, community and economic development, employers (large and small), philanthropic and community organizations have an impact and can make significant contributions to improving health — and also collectively benefit from the improved health of the community they serve. In many cases, effective place-based partnerships could identify priorities and strategies — where improving health is one of a range of goals and outcomes, but may not be the lead or only priority issue.

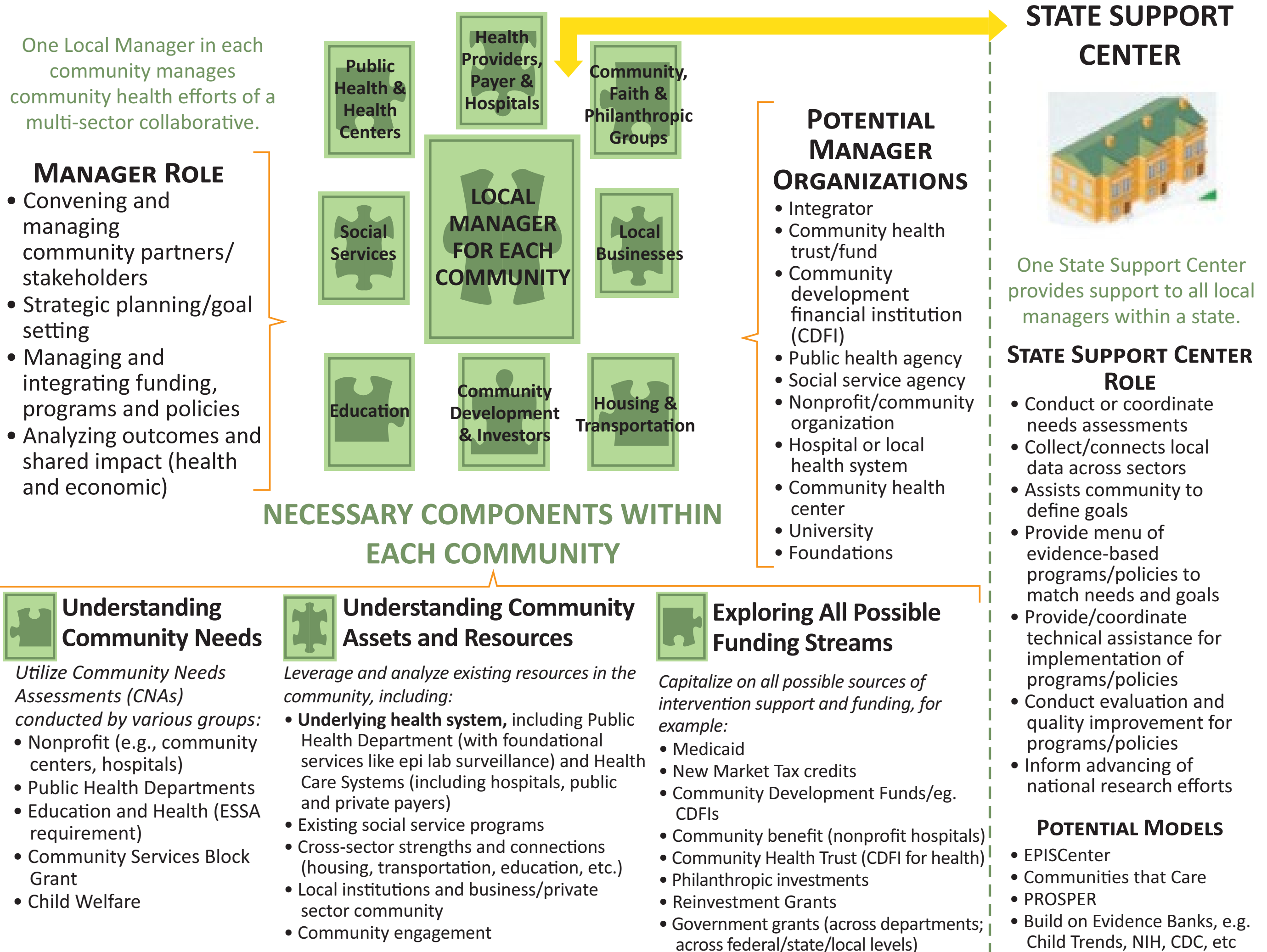
- **Innovative, Social Impact Investors:** A range of new outcome-based, "pay-for-performance" and social investing initiatives are also helping to bring increased attention to multisector collaborations in communities.

- **Government Partners:** Federal, state and local governments should play a role in helping to coordinate and incentivize local communities to establish and support these partnerships — such as through improved flexibility and aligning government programs to more efficiently and effectively work together to focus on the outcomes of policies and grants in exchange for improved performance. (See page 50: Innovative and Social Impact Funding Strategies for more on these different investing mechanisms). At the state and local government level, there is also a necessary step of addressing priority-setting, administrative and jurisdiction issues. For instance, Medicaid programs are administered at a state level (accounting for nearly $200 billion per year), while top county expenses are often in justice and public safety (around $93 billion per year) and health (community health, hospitals and public health at $83 billion per year).[90, 91]

- **Community Partners:** It is essential to have members of the community as key members of any local place-based partnerships. These efforts must effectively represent the interests and needs of the community being served, including the lived experience of community members as well as cultural factors and considerations. Partnerships should include community leaders as well as citizen participants.

One important component of a partnership is to have a lead partner — that is responsible for the ongoing management of the efforts — which can often be an already established organization in the community.

In addition, ongoing funding and financial management is necessary to support health improvement initiatives. Either the lead partner — or the lead partner in collaboration with a financial manager — must prioritize how to ensure sufficient, continuing funding for the initiatives.



The following section reviews some of the key roles and components of place-based, multisector local health improvement partnerships — and examples of existing efforts — including:

1. **Lead Partner**
2. **Financial Management**
3. **Government Leadership and Multi-Sector Collaboration**
4. **Health Sector Partners**
5. **Innovative Funding and Social Investment Strategies**
6. **Examples of Organizations and Efforts Advancing Place-Based Health Improvement Models**

1. Lead Partner

A lead partner is responsible for the strategic management of the partnership and effort. It can often be an already established community institution, health organization, social service agency or philanthropy. Key functions include the ability to bring partners together to develop, implement and invest in strategic planning, goal setting and needs assessments; oversee the implementation of programs; manage and integrate funding from diverse sources and programs; analyze shared impact; and ensure accountability and continuous quality improvement.

A range of different models or entities can serve as a lead partner of local health improvement — or broader focused wellness or vitality — partnerships. Some models for the lead role include serving as an "integrator" (hands-on manager) or an "intermediary" (coordinator, often grant-maker to other groups).[92, 93, 94] In some areas, major anchor institutions — as recognized leaders, employers and economic drivers in a community, such as hospitals and universities — should have a strong vested interest in serving as a lead or major partner.[95, 96, 97, 98] In addition, in some communities, there may be models with multiple leads working together.

In some cases, integrators may provide direct services — carrying out the community-programs and efforts of the health initiative — and/or they may act as an intermediary, supporting a set of different organizations in the community to work together. Integrators and intermediaries can play an important role in helping build capacity and providing expert assistance to other community organizations.

A number of communities and states are developing Accountable Communities for Health (ACH) — as locally-driven models or mechanisms that bring together key partners and stakeholders around the common goal of improving health. They typically address improving healthcare; coordination of health and social services; and facilitate policy changes and address environmental factors that can help improve health in the broader community.[99, 100] They often have a lead partner or set of lead partners who help integrate and intermediate efforts.

Regardless of the structure, a local health improvement partnership model should be designed with flexibility to support different structures that match different community's existing organizations and resources. In some communities, there may be a need to create an organization that can fill the lead partner function.

Federal, state and local government grants, philanthropic support, healthcare and hospital funds (including community benefit programs) and other community resources and assets are all sources to help fund the management costs of partnerships and for broader funding of the health improvement initiatives. Reviews of a range of local health initiatives have found the cost of the integrator/intermediary management function ranges from $250,000 to $500,000 annually. In some cases, the administrative or operating funds from broader grants can support the effort.

- **Integrators**

Integrator examples can include public health departments; hospitals; community health centers; healthcare providers (such as an Accountable Care Organization (ACO), Managed Care Organizations (MCOs), integrated health systems or health insurance companies); local non-profits (such as YMCAs or United Ways); community foundations; social service agencies; universities; community development corporations or Community Development Financial Institutions.

FOR EXAMPLE:

The Common Table Health Alliance, a non-profit regional health improvement collaborative, serves as the integrator for a Healthy Shelby initiative.[101, 102, 103] Healthy Shelby is part of Memphis Fast Forward, a collective impact strategy focused on economic prosperity and quality of life in the greater Memphis, Tennessee region.[104] The 35-member coalition brings together public health, hospitals, healthcare providers, social service providers, academic institutions, the faith community, local government, businesses, the Chamber of Commerce and funders to address infant mortality, chronic disease and end-of-life care. The Common Table Health Alliance serves as a backbone to identify shared goals, collects data from across stakeholders, carries out public education campaigns and supports the adoption of innovative care methods.[105] Core funding for the effort has been $300,000 from the health systems, city and county government. There were also additional grant funds won from United Way and Medtronic. Healthy Shelby tracks infant mortality rates, the percent of patients with controlled blood pressure, heart attacks or strokes and Medicare costs in a person's last six months of life.[106]

To address the increasing rates of mental illness, substance abuse, and poor chronic care management in the Northeast Hartford community, the Cigna Foundation partnered with the non-profit, Community Solutions, to support the Northeast Hartford Partnership (NHP)—an initiative aimed at addressing the social determinants of health and boosting economic security in the Northeast Hartford community. NHP serves as backbone organization and convenes community leaders to develop innovative ways to coordinate, integrate and align healthcare and social services. Key partnerships with local and state government, hospitals, universities and community non-profits are essential to NHP's success. To foster collaborative efforts, NHP is transforming the once abandoned gold-leafing factory into a community hub that can centrally house cross-sector partners and facilitate innovative collaborations. Initial results are promising. In a pilot intervention, Community Solutions observed a 57 percent drop in the emergency room use among the high utilizers.[107] Moving forward, the Cigna Foundation plans to use its experience in tool development to co-develop a neighborhood health risk assessment with Community Solutions in order to analyze the underlying social, economic, and environmental determinants of health in Northeast Hartford. In 2015, NHP received a $125,000 *World of Difference* grant from the Cigna Foundation to continue their work. NHP also receives funding from Fidelity Charitable, Rx Foundation, The Kresge Foundation, Newman's Own Foundation, Boehringer Ingelheim, and the John H. & Ethel G. Noble Charitable Trust to support the initiative, which had a budget of $760,000 in 2015.

- **Intermediaries**

Intermediaries help connect organizations that share common interests and goals — and help support the management of these organizations, including fundraising, grant and financial management support; enhance larger service networks; promote quality standards; implement evidence-based strategies; and monitor programs on behalf of funders.[108] They often serve as a role between funders — such as government agencies, foundations and businesses — and direct service providers.[109] Intermediaries can serve as a trusted organization that provides key management and fundraising skills and capabilities to help support a range of other local organizations and help to coordinate goals and activities across these organizations. They can also serve a key role in cross-agency and cross-sector data collecting and sharing — which is important for measuring evaluation and outcomes of efforts and support capacity building of local non-profits.[110]

FOR EXAMPLE:

The Family League of Baltimore is non-governmental local management board, established in 1991 by the Maryland General Assembly, to target government resources to local organizations and coordinate services for child and family services.[111] Family League partners with a variety of organizations, including My Brother's Keeper Baltimore and the Family Literacy Coalition, to fund and support capacity building; collaboration; the reduction of duplicate services among public and private stakeholders; wider implementation of evidence-based programs; and the promotion of policy and practice system changes. The program receives support from around 40 different funders to support a total budget of $29.6 million (in 2016), including around $13 million from state grants; $13 million from local government grants; $1.5 million in private grants; and $500,000 in federal grants. Around 93 percent of funds are from government grants. Eighty percent is distributed to local organizations, 10 percent supports technical assistance and 10 percent supports management and administration. As one example effort, through B'more for Healthy Babies, the Family League of Baltimore is working with the Baltimore Health Department to reduce infant mortality and improve the health of mothers and babies through fitness and nutrition for postpartum women, hosting breastfeeding support groups and conducting intensive community outreach to connect women with services. Infant mortality has been reduced by 28 percent since the start of the initiative and is at the lowest point in history.[112] And the disparity between White and Black infant deaths has been reduced by nearly 40 percent.

• Accountable Communities for Health

The ACH model helps galvanize partners from across sectors — including health organizations and agencies and broader sectors — and aligns roles and responsibilities to achieve better impact and long-term systems change to support better health.[113, 114, 115] A review by the National Academy for State Health Policies identified some key components of an ACH including:[116]

- Shared vision and goals among partners;
- Multi-sector partnerships;
- Established governance or leadership;
- Population-based prevention activities;
- Backbone or integrator organization;
- Community engagement activities/ interventions;
- Ability to perform basic financial and administrative functions; and
- Sustainability planning.

A report by JSI Research & Training Institute identified key principles of an ACH as:[117]

- Leadership — Create a Center of Gravity;
- Collaboration — Trust Built on Transparency;
- Measures — What Gets Counted Gets Measured; and
- Investment — "All in" for Mutual Benefit.

FOR EXAMPLE:

A number of states — such as California, Minnesota, Oregon, Rhode Island, Vermont and Washington — are developing ACH efforts.

The three-year California Accountable Communities for Health Initiative (CACHI), supported by The California Endowment, Blue Shield Foundation of California and Kaiser Permanente, will fund six ACHs in the state to focus on addressing a broad span of healthcare, unmet social services and broader factors that impact health. The goals of the effort include to 1) improve personal and community-wide health outcomes and reduce disparities with regard to particular chronic diseases or health needs; 2) control costs associated with ill health; and, 3) through a self-sustaining Wellness Fund, develop financing mechanisms to sustain the ACH and provide ongoing investments in prevention and other system-wide efforts to improve population health.[118] Accountability is also considered as a key driver of change, focusing on 1) health, wellness, equity, and prevention — not just care; and 2) on an entire community, as opposed to just an organization's enrollees or panel.[119, 120]

California ACH Five Key Domains

Clinical Services — Services delivered by the healthcare system, which includes primary and secondary prevention, disease management programs, and coordinated care that is provided by a physician, health team, or other health practitioner associated with a clinical setting.

Community and Social Services Programs — Programs that provide support to patients and community members are delivered by governmental agencies, schools, worksites, or community-based organizations and frequently target lifestyle and behavioral factors, such as exercise and nutrition habits; also include peer support groups and social networks.

Clinical Services

- Services delivered by the healthcare system
- Includes primary and secondary prevention, disease management programs, and coordinated care that is provided by a physician, health team, or other health practitioner associated with a clinical setting

Community and Social Services Programs

- Programs that provide support to patients and community members
- Delivered by governmental agencies, schools, worksites, or community-based organizations
- Frequently target lifestyle and behavioral factors, such as exercise and nutrition habits; also include peer support groups and social networks

Clinical -Community Linkages

- Mechanisms to connect community and social services and programs with the clinical care setting to better facilitate access to and coordination between healthcare, preventive, and supportive services
- Can help form strong bonds between community and healthcare practitioners and, ideally, involves bi-directional feedback systems between the two

Environment

- Social and physical environments that facilitate people being able to make healthy choices
- May include community improvements such as building parks or bike lanes, making farmers markets more available, or transforming corner stores to carry more fruits and vegetables

Public Policy and Systems Change

- Policy, regulatory, and systems changes that affect how the healthcare and other systems operate and influence the overall ability of people to be healthy
- Address environmental issues, school policies, health and social systems coordination, and financing to support prevention-related activities

Clinical-Community Linkages — Mechanisms to connect community and social services and programs with the clinical care setting to better facilitate access to and coordination between healthcare, preventive, and supportive services; and can help form strong bonds between community and healthcare practitioners and, ideally, involves bi-directional feedback systems between the two

Environment — Social and physical environments that facilitate people being able to make healthy choices, may include community improvements such as building parks or bike lanes, making farmers markets more available, or transforming corner stores to carry more fruits and vegetables

Public Policy and Systems Change — Policy, regulatory, and systems changes that affect how the healthcare and other systems operate and influence the overall ability of people to be healthy can address environmental issues, school policies, health and social systems coordination, and financing to support prevention-related activities

In **Washington State,** a Healthier Washington initiative is establishing multiple Accountable Communities of Health across the state aligned with regional Medicaid purchasing. These ACH's are working to leverage diverse and multi-sector partnerships to focus on common goals and strategies — and to shift for paying for value instead of volume in healthcare delivery.[121, 122] There are nine ACHs in the state, which are locally driven and are responsible for establishing their own governance structure and priorities from within broad state guidelines. For instance, a Cascade Pacific Action Alliance with partners from seven counties in the central Western area of the state are focusing on a Youth Behavior Health Coordination Project via healthcare, school and community efforts.[123]

In **Minnesota**, Accountable Communities for Health are focusing on meeting their communities' clinical and social needs via person-centered, coordinated care across a range of clinical and community providers. Each of Minnesota's 15 ACH partners with an Accountable Care Organization integrates clinical and community services through enhanced referrals, transitions management and implementation of new practice guidelines.[124] For instance, the Southern Prairie Community Care ACH is focusing on delaying and preventing type 2 diabetes for at-risk individuals in 12 counties through a combination of clinical and community approaches.[125]

Vermont is focusing on up to 14 ACHs to address a combination of traditional clinical preventions (focused on individual health improvement); innovative clinical prevention (linking individuals to community services); and total population or community-wide prevention (focused on improving the health of populations).[126] They have structured Unified Community Collaboratives to align with 14 health service areas and have required them to use a shared governance structure that includes leaders from ACOs, medical homes and a range of community organizations.

Rhode Island has created a Health Equity Zones initiative, as a different model, focusing on creating community capacity and engagement, and targets resources to support efforts in communities that experience economic disadvantage and poor health outcomes.[127] For instance, the Newport Health Equity Zone's backbone agency is the Women's Resource Center and is focused on mobilizing residents and resources of the Broadway and North End neighborhoods; improving transportation; increasing healthy food access; creating economic opportunity; securing open space, parks and trails; embracing arts and culture; and developing physical and emotional health through two way Wellness Hubs that house evidence-based, lifestyle change diabetes prevention and self-management programs.

ACH: Example of Measure with Diabetes as a Focal Point[128]

Categories	Example Measures
Clinical	» Emergency department and hospitalization rates » Diabetes and pre-diabetes prevalence rates
Linkage	» Percent of pre-diabetics and diabetics who have regular contact with a care coordinator » Number of community health workers employed in community
Social Services and Community Resources	» Percent of pre-diabetic population referred to and participating in Diabetes Prevention Program » Number of community members receiving food assistance
Policy, Systems, and Environment	» Retail Food Environment Index score » Local policies or organizational practices changed due to collective advocacy
Process/Capacity	» Number of partnership agreements established » Specific cost-savings/efficiency opportunity identified

Source: JSI Research & Training Institute, Inc.

Needs Assessments and Measuring Success

Local health improvement partnerships should be based on shared goals and definitions of success — and have the ability to measure performance to see if goals are being met.

Needs assessments are one important step in the process of identifying issues of concern, risk factors and assets within a community.

There are a number of existing needs assessment efforts than can be tapped into, but there is also an important opportunity to better align and integrate the process and findings of different community needs assessments — to help reduce duplication of efforts and to expand and share learning and coordinate programs and goals. Currently, there is no mechanism or incentive to coordinate these efforts. Local health improvement partnerships, integrators and expert academic institutes could help facilitate improved integration and collective learning.

A strong analysis of the needs and risks of a local area is important for identifying the most effective strategies that match the issues and existing structures within a community. For instance, this type of collaboration could help show the overlapping needs of health and unstable housing in segments of a community, or help to better identify and target risk factors that can contribute to substance misuse, depression or violence.

- All 2,900 non-profit hospitals are required by the IRS to conduct regular Community Health Needs Assessments — along with action plans for addressing concerns.[129] In addition, in some communities, a range of public health agencies and other community groups conduct other forms of needs assessments. For instance, local and state public health departments seeking formal voluntary accreditation must conduct a needs assessment.[130] community health centers, some state and local child welfare agencies, some affordable housing block grantees, fair housing assessments, Head Start grantees, Title 1 schoolwide programs, some school districts receiving Safe and Healthy Student funds and some EPA programs are required to conduct assessments, and some local private or philanthropic organizations, such as many United Way affiliates and community foundations conduct voluntary assessments.[131, 132, 133, 134, 135, 136, 137, 138]

There is also a need to improve data collection and integration — to help measure the impact of efforts, track changing needs and assets in communities and to ensure accountability and adjust for continued quality improvement of efforts.

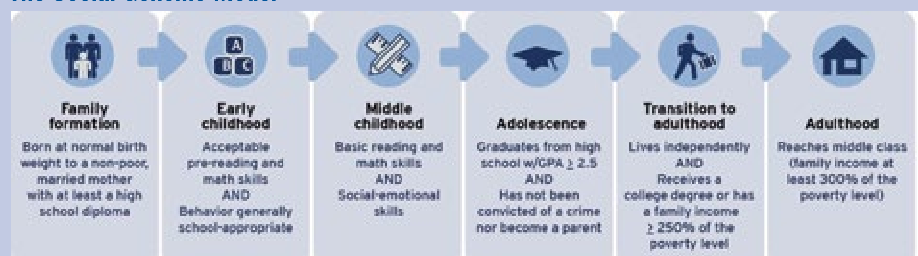
FOR EXAMPLE:

The North Carolina Community Health Improvement Collaborative (NC-CHIC) has focused on developing a model for conducting collaborative community health needs assessments among local public health agencies, hospitals and other partners. For instance, in Wake County, Wake County Human Services, WakeMed Health and Hospitals, Duke Raleigh Hospital, Rex Healthcare, Wake Health Services, United Way of the Greater Triangle and the North Carolina Institute for Public Health partnered to conduct a joint assessment for Wake County.[139]

The Health Impact Collaborative of Cook County, Illinois brought 26 non-profit organizations and public hospitals, seven local health departments and representatives of more than 100 community organizations together to conduct a collaborative community health needs assessment.[140]

Colorado and other communities are using the Social Genome Model — a partnership of The Brookings Institution, the Urban Institute and Children Trends — which is a life cycle framework that incorporates research of effective community-wide programs to help improve children's upward mobility with measurement tools that can help predict the potential impact of adopting different programs on the future outcomes of children, including cost-benefit analyses.[141, 142,143]

The Social Genome Model



Source: Brookings Institution

2. Financial Management

Financial management is another key component of the success of a local health partnership. If there is no existing mechanism for raising and managing the money to support local health initiatives on an ongoing basis, structures must be developed that have the ability to raise and manage money from a range of different funders to responsibly manage the funds and to provide accountability and oversight for the proper use of funds.

This includes developing strategies for bringing existing community assets together from a range of potential funding streams, such as:

- Federal, state and local governments, including grant programs;
- The healthcare system, including public and private providers and insurers, hospitals and community benefit funds;
- Social service, housing, agriculture, transportation and/or environmental agencies via cross-sector opportunities;
- Businesses;
- Community and philanthropic organizations; and
- Social impact financing mechanisms, such as Community Development Investment Funds, tax credits, revolving loan funds, program-related investment grants, social impact bonds and pay-for-performance initiatives. Another potential funding model or resource is a Wellness Trust or other formal structure where there is direct community investment, from government support, tax revenue or another ongoing source. (See page 50: Innovative and Social Impact Funding Strategies for more on these different investing mechanisms).

This can be complex, since different potential funders have a range of accounting and accountability requirements. A financial manager has to have the skills and credibility to engender trust across a range of public and private sector funders and be able to meet their application and reporting requirements.

For instance:

- Most federal, state and local grants have distinct application and reporting requirements — tapping into healthcare funding may require billing and reimbursement procedures;
- Developing mechanisms for "billing" or receiving funds from healthcare payment systems and evaluation metrics to show value for Medicaid and private managed care providers;
- Many community benefit programs, economic development funds and philanthropies have unique accounting and measurement structures;
- Private sector contributors may want access to shared savings and returns or measurement of the impact of funds used;
- Social investment instruments, such as Community Development Financial Institutions (CDFIs) and New Market Tax Credits, have different funding requirements and often require repayment or demonstration of return on their investment — financially and/or through "pay-for-success" outcomes; and
- Creating mechanisms for demonstrating returns and value across sectors and partners — including for dealing with the "wrong pocket" issue — where funds may come from one funder but the results may most directly benefit another. For instance, if funding for a housing initiative, supported by government housing agencies, yields

savings for a health system and lowered costs of other social services without a mechanism to evaluate or reinvest the savings accrued by the health system or social service agencies from them to the housing initiative.

The financial manager can also help collect the data needed to analyze the costs and potential shared savings or returns that health — or broader well-being — improvement initiatives achieve. This is important for evaluating the impact and benefit of the initiative — and understanding the value of the investment or contribution from the different funders.

Overall, the need is to provide stable, ongoing, responsible structures for financial management needs in some communities that can be served through existing entities.

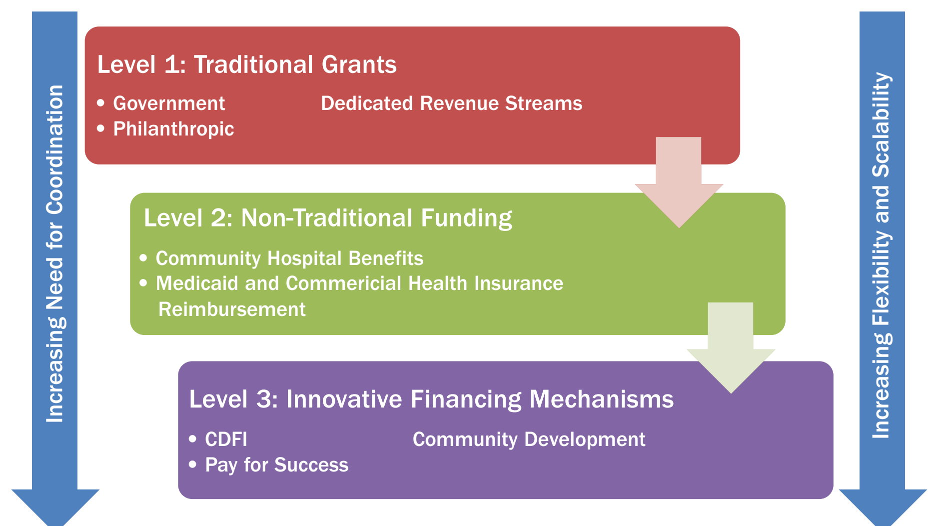
The financial management role can be taken on by the lead partner — or by a separate financial manager or trust, or other existing organizations like local community foundations, United Ways, other established intermediary non-profits, hospitals, community health centers or health systems, or community development corporations.

In other cases, it may be helpful to develop additional supporting mechanisms that can be scaled up for use across different communities, while being flexible enough to support the specific needs and combined resources of that community.

For instance, creating a version of a "CDFI for Health" could establish a mechanism to help set baseline standards and credential local entities that are qualified to take on this financial management role.

Just as CDFIs provide a recognizable, reliable system for groups like non-profit banks to use to help manage their Community Reinvestment Act (CRA) obligations, local or regional CDFIs for Health could help play that role for non-profit hospitals — as a scalable, reliable resource for advising the strategic use of community benefit programs to support upstream community-based programs — and providing the service of reliable financial management and fiduciary responsibility for the use of funds. It could also help leverage resources from other funders for stronger collective impact.

Sources of Funding for Local Health Improvement Partnerships



In the summer of 2016, TFAH and Monitor Deloitte conducted a series of interviews and workshops with experts to examine the potential for developing certification for financial management of local health improvement partnerships. For instance, building a model for certification — such as the role certification plays for CDFIs — supports baseline criteria for operation standards, supporting integrity and accountability — including ensuring funds are used for designated purposes. This gives the local communities the ability to focus on performance and delivering outcomes.

Some benefits of a certification process include: generating credibility and transparency; establishing accountability; creating standardized criteria and a uniform level of rigor; reassuring funders about the integrity of coordinated funds; providing a gateway to flexibility in exchange for demonstrated results; and facilitating a shift from reporting on compliance to reporting on outcomes.

The certification process could also entail benefits for financial managers. For instance, there could be mechanisms for streamlined or coordinated processes for certified integrators and intermediaries applying and reporting on related federal, state or local grants — demonstrating outcomes for defined shared goals across programs in exchange for increased flexibility and reduced bureaucracy.

Some potential criteria identified for local health improvement financial institutions include that they should:

- Be a legal entity, allowing them to enter into agreements and contracts, incur and pay debts and be responsible for actions;
- Meet fiscal accountability standards, including the ability to manage funds from multiple funders, monitor and track funds and have audit and evaluation capabilities;
- Have a defined mission, or partner with an organization with a defined mission, of advancing community health and wellness that aligns with identified community priorities;
- Demonstrates support from community stakeholders, such as funders, community organizations and political leaders; and
- Have mechanisms for ensuring transparency to the community it serves and funders.

There could be increased benefits for more advanced criteria — such as designations or "badges" for strong data capabilities and legal safeguards and use of evidence-based practices. Over time, financial managers with a proven track record for management and improved outcomes could have other benefits, such as the eligibility for simplified funding — such as coordinated or combined grants — from government, philanthropic and private funders.

The certifying body could be via the federal or state governments or a consortium of experts and affiliated entities that help provide similar local certifications for other sectors, such as the Association of Government Accountants. There would also need to be designated funding — through the government and/or a set of engaged stakeholders — to support the certification process.

3. Government Leadership and Multi-Sector Collaboration

Federal, state and local governments should make supporting local health improvement partnerships a priority nationally and locally.

The approach would help more efficiently and effectively leverage existing resources to improve health, expedite the implementation of evidence-based practices around the country and help improve outcomes across agencies and programs.

Initial steps to move from the current structure toward supporting local health improvement partnerships include providing seed funding for lead partner organizations and state expert institutes to launch pilot programs — potentially via prevention and community health funds from CDC and SAMHSA.

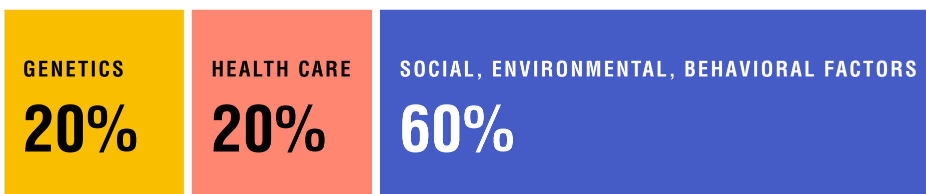
In addition, there should be a concerted effort to think about how to efficiently and effectively support local health improvement and well-being efforts across government programs and grants.

Health is impacted by a wide range of factors. Where people live, learn, work and play can have a bigger impact on health than genetics or medical care.[144] And, policies and programs across the government can have a major impact on helping to improve health, reduce rates of disease and lower healthcare costs.

The National Prevention Strategy began to identify programs across federal departments and agencies that impact health. There is an opportunity to build on that work — and to expand consideration of how a broader set of federal programs can be better leveraged to improve health while achieving other goals. For instance, income, education, housing and food assistance can have a major impact on improving health and health outcomes. Unmet social needs, associated with higher health spending — including emergency room use and hospital admissions and readmissions — can be reduced by connecting patients to the services they need.[145, 146]

Many government programs, however, are silo-ed, that is, not connected, and there are few ongoing interagency efforts that have aligned performance objectives and strategies for how funding streams or work streams can work together for better collective impact. There are a wide range of place-based grants, going to states and localities across the government, but they are typically managed, awarded and reported separately and disjointedly.

WHAT DETERMINES HEALTH?
(ADAPTED FROM MCGINNIS ET AL., 2002)



Source: Blue Cross Blue Shield of Massachusetts Foundation

More coordinated outcome-focused and place-based approaches are needed to better address key health problems in coordination with their root causes, often the same root causes that impact other social problems. Significant efficiencies might be gained through such alignment.

At the federal level, HHS and OMB should work in collaboration with other federal agencies to encourage and incentivize the development of policies and grants that provide communities with the ability to better address their health and related well-being priorities.

MULTISECTOR PROGRAMS AND GRANTS	
National Housing Trust Fund	Community Development Block Grant
HOME Investment Partnerships Program	Community Services Block Grant (CSBG)
Emergency Solutions Grants	Child Care and Development Block Grant
Continuum of Care Program	Social Services Block Grant
Low Income Home Energy Assistance Program (LIHEAP) Block Grant	Temporary Assistance for Needy Families (TANF) Block Grant
Low Income Housing Tax Credit	Supplemental Nutrition Assistance Program (SNAP)
Mortgage Revenue Bonds	Special Supplemental Nutrition Program for Women, Infants, and Children
Medicaid	Child and Adult Care Food Program
Title V Maternal and Child Health Services Block Grant	Surface Transportation Program
Community Mental Health Services Block Grant	Federal Reserve Banks
Substance Abuse Prevention and Treatment Block Grant	Hospital Community Benefit Requirements
Preventive Health and Health Services Block Grant	Community Development Financial Institutions (CDFIs)
State and Local Public Health Actions to Prevent Obesity, Diabetes, Heart Disease, and Stroke	Community Development Financial Institutions Fund (Treasury)
Ryan White HIV/AIDS Program	New Markets Tax Credit Programs

The government should assess ways to create increased flexibility and incentives — and remove regulatory and reporting barriers — for grant programs across different programs and agencies, in exchange for demonstrated results and performance. There should be transparency and accountability measures included in these joint efforts to ensure the programs focus on and achieve the intended outcomes.

For instance, some strategies that can be used include interagency teams; solicitation of proposals from local communities; issuing common funding opportunity announcements (FOAs); competitive grant preferences; conducting joint peer review and decision-making on grant awards; streamlined grant requirements, timing and performance metrics; technical assistance aligned across programs; allowing the use of existing or shared community needs assessments; and sharing best practices to build capacity among grantees. The federal government should also support the ability and/or administrative costs of grantees/awardees in localities around the country (such as place-based partnerships) to manage funding from multiple sources or agencies, including assessing and developing more mechanisms that can leverage efforts and programs across agencies. This should include being able to

evaluate and account for the impact that funding by one agency or program can have on the goals of another — focusing on overall outcomes rather than bureaucratic goals and jurisdictions.

For instance, the OMB issued a Uniform Administrative Requirements, Cost Principles and Audit Requirements in Federal Awards (Uniform Guidance) in 2013 that permits waivers in grants to provide more flexibility in exchange for demonstrated outcomes and cost-effective approaches.[147]

A range of efforts have identified strategies for better coordinating and leveraging the use of health and social service funds to have a more collective, results-oriented impact at the state level.[148, 149, 150, 151]

For instance:

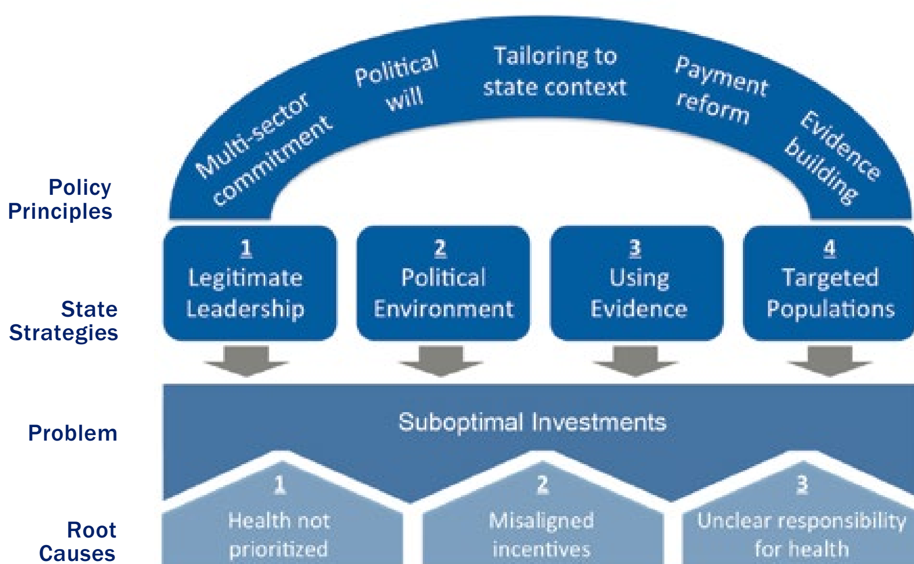
- The Commonwealth Fund's *State Policy Framework for Integrating Health and Social Services* identified three key components for an integrated system:[152]
  - A coordinating mechanism responsible for managing collaboration across services, such as an integrator;
  - Quality measurement and data-sharing tools to track outcomes and exchange information; and
  - Payment and financing methods that support and reward effective service integration.

They also identified an implementation planning framework consisting of: establishing goals; identifying gaps and opportunities; prioritizing opportunities for integration; and establishing an implementation roadmap.

- The Center for Health Care Strategies, Inc.'s *State Payment and Financing Models to Promote Health and Social Service Integration* looks at a continuum of financing options and payment mechanisms — such as leveraging federal grants, healthcare payments and value-based care incentives and use of global "community health" budgets — and how to phase-in integration over time.[153] Their findings include: flexibility is an asset; managed care organizations and accountable care organizations can be effective partners; reinvestment can help sustain a program; and geographic- or population-based models may have a bigger impact.
- The Milbank Memorial Fund's *Investing in Social Services for States' Health: Identifying and Overcoming Barriers* report identifies some key barriers to integration, including:[154]
  - The health of the state's population is not always prioritized relative to other societal goals in the states;
  - Incentives, including financial and political incentives, to improve health are misaligned. For instance, is the agency that is investing seeing returns or is there a "wrong pocket" problem where the outcomes would benefit a different agency or sector; state Medicaid systems are often most strongly motivated by Federal Medical Assistance Percentages (FMAP) policies; is there leadership that can build support across agencies with different cultures, goals and motivations; and Medicaid policies are often state-driven while many services are locally-driven or delivered; and
  - There is a lack of consensus regarding who is responsible for health.

The report identifies some key strategies for moving forward, including: cultivating legitimate public-sector leadership; navigating the political environment; using evidence to support decision making; and targeting populations with high medical and social needs.

Policy Principles for Improving the Health of Populations in the States

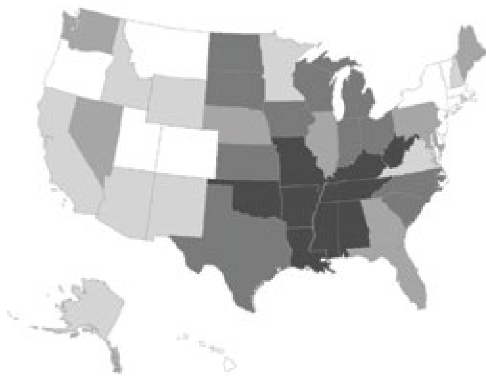


Source: Milbank Memorial Fund

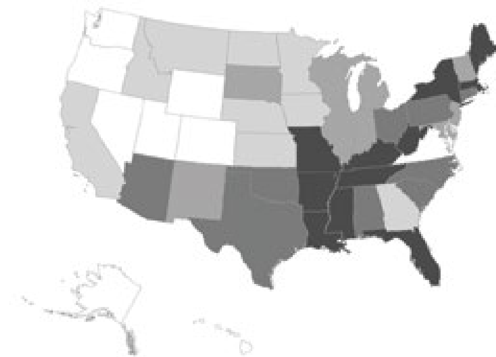
States with increased spending on social services (including education, income support, transportation, environmental programs, housing and public safety) and public health in comparison to spending on healthcare services (Medicare and Medicaid) for a 10-year period had better health outcomes, including obesity, asthma, mentally unhealthy days, days of activity limitations, postneonatal mortality and lung cancer mortality.[155] This held even when accounting for sociodemographic, economic and political differences.

State Social-to-Health Spending Ratio and Selected Health Outcomes, by Quintile (2009)

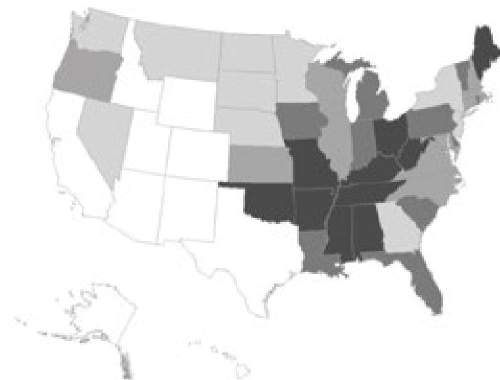
a) Percent of adult population that is obese



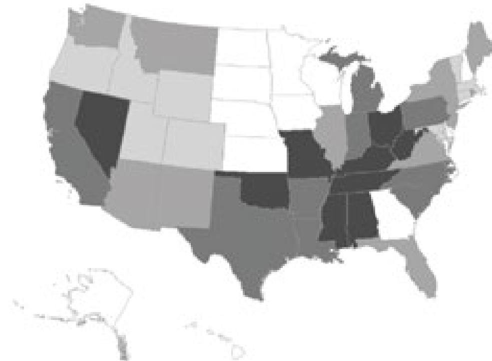
b) Percent of adults who reported 14 or more days in the last 30 days as mentally unhealthy days



c) Lung cancer mortality rate per 100,000 population

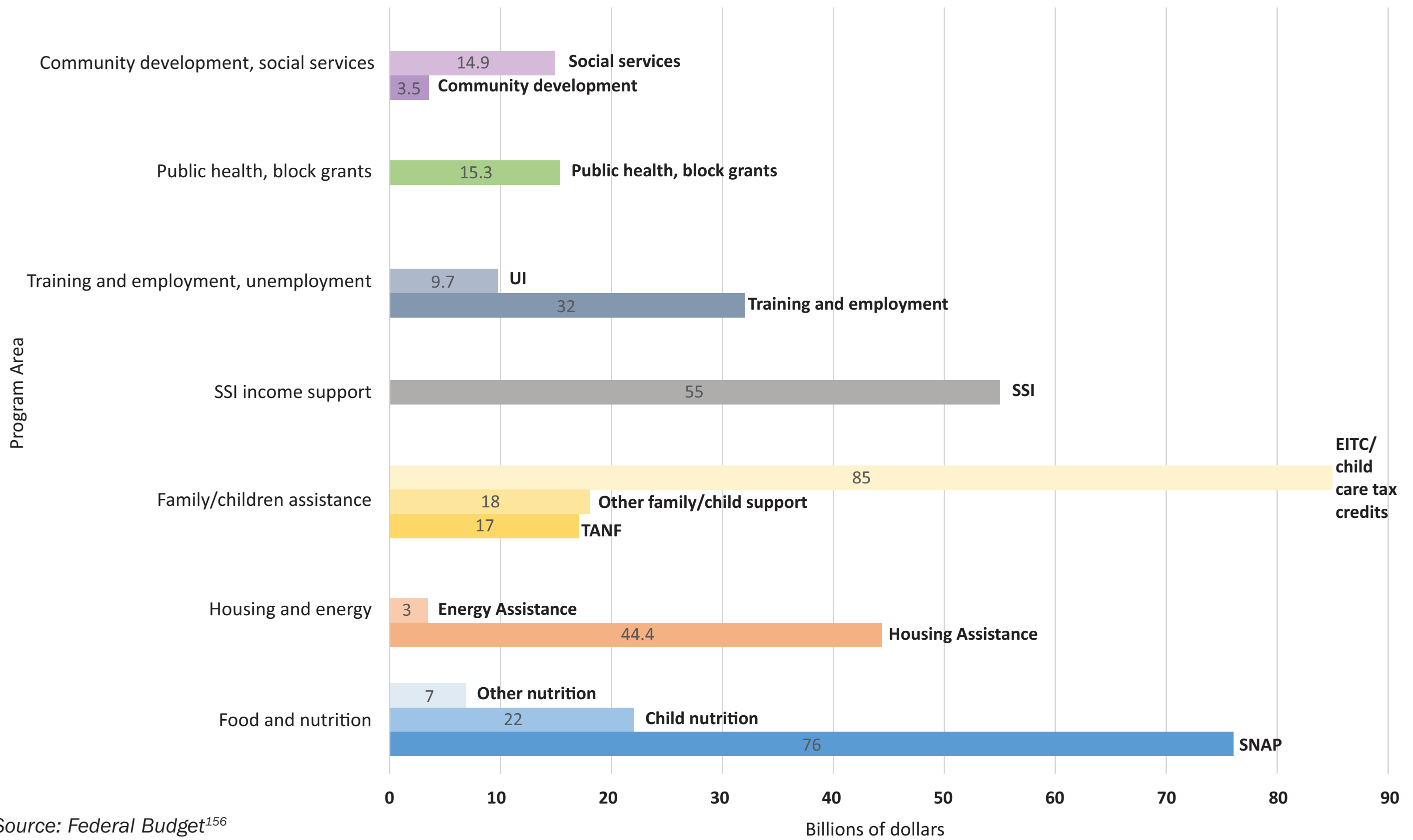


d) Social-to-health spending ratio

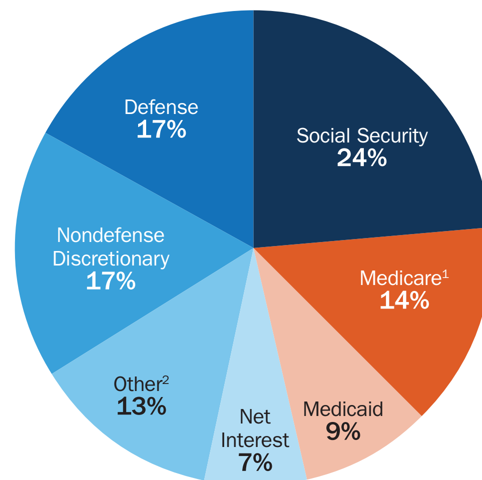


Legend (a,b,c): dark gray indicates highest quintile (i.e., poorest health outcomes) and white indicates lowest quintile (i.e., best health outcomes).
Legend (d): dark gray indicates lowest social-to-health spending ratio; white indicates highest social-to-health ratio.

Source: Milbank Memorial Fund



Source: Federal Budget[156]



NOTE: All amounts are for federal fiscal year 2014. [1]Consists of Medicare spending minus income from premiums and other offsetting receipts. [2]Includes spending on other mandatory outlays minus income from other offsetting receipts. SOURCE: Congressional Budget Office, Updated Budget Predictions: 2015 to 2025 (March 2015)

Source: Kaiser Family Foundation

FOR EXAMPLE:

The Sustainable Communities Initiative is a partnership across the U.S. Department of Housing and Urban Development, U.S. Department of Transportation and the Environmental Protection Agency — where grantees can receive waivers for multiple grant requirements in return for demonstrating achievement of outcome goals.[157]

Performance Partnership Pilots for Disconnected Youth (P3) allows states and communities to enter into Performance Partnership agreements across the Department of Education, Department of Labor, Department of Health and Human Services, the Corporation for National Community Service and the Institute of Museum and Library Services to bring resources and support together — waiving many individual program and grant reporting requirements — in exchange for achieving and demonstrating improved outcomes in programs serving disconnected youth (low-income 14- to-24-year-olds who are homeless, in foster care or the juvenile justice system, unemployed or not in school or college).[158]

At the state level, **Virginia's Children's Services Act** is a case management model that brings funding streams together across state agencies and allocates these funds to localities to support the needs of at-risk youth and families. At-risk youth are referred through a range of individuals or organizations or schools — and assigned to a local assessment and planning team who develop an individualized plan. A case manager helps the youth navigate and receive available services — ranging from education, healthcare, housing, transportation and food assistance. Through improved coordination of services and funding streams, case managers have the flexibility to focus on tailoring services to the youth's needs and avoiding unnecessary bureaucracy.[159]

The **U.S. Interagency Council on Homelessness** brings together 19 federal agencies — along with state and local governments, advocates, service providers and people experiencing homelessness — to coordinate the federal response to homelessness and achieve the goals of the federal strategic plan to prevent and end homelessness.[160]

The **Federal Council on Prescription Drug Abuse** — convened by the White House, Office of National Drug Control Policy and comprised of federal agencies — oversees and coordinates implementation of a national Prescription Drug Abuse Prevention Plan and engages private sector actors as necessary to meet the plan's goals.[161]

4. Health Partners: Public Health Agencies, Providers, Insurers, Hospitals and Community Health Centers

Health organizations are essential partners in place-based health and well-being collaboratives — bringing their mission, leadership, expertise and resources to advance health improvement goals they share with the broader community.

Traditionally, population-based and public health efforts have operated without much integration with healthcare providers and insurers. The individualized treatment and fee-for-service focus and market structure of the healthcare system has disincentivized investing in or developing strategies that focus on wellness beyond the doctor's office and ways to help people be healthier within their daily lives.

Recently, providers and insurers have been increasingly incentivized to support better health for their "patient pools" and reduce costs as part of value-based care models. By joining with wider community partnerships, different components of the healthcare system have the ability to better maximize and leverage their investments and to tap into the expertise and resources that other partners bring — and share in the returns of the collective impact.

Some key partnership strategies include: serving as the lead and/or a major partner in population health improvement projects; implementing community-wide health improvement (such as smoke-free air laws); leveraging and expanding healthcare reimbursement policies to promote effective approaches to support prevention and other factors that impact health; expanding the use of non-profit hospital community benefit programs to support upstream prevention and leveraging community health needs assessments and action plans to focus and galvanize community action; and utilizing the experience and expertise that community health centers have in serving high-need local community members, often including providing connections or coordination with other social services beyond healthcare.

• Public Health: Chief Health Strategists

Public health departments serve as the Chief Health Strategists in their communities. While they often do not have sufficient resources to support broad health and well-being improvement initiatives on their own, they are central to local health improvement partnerships — tracking health trends and problems in communities; identifying emerging programs; providing information about the most effective, evidence-based community-wide strategies; coordinating with national resources, research and experts; and evaluating the success of programs and ways to adapt them for continuous quality improvement.

Public health professionals can provide a "health improvement lens" to problems — understanding and evaluating the impact that other programs and policies can have on health. Experts can advise and assess leading strategies and approaches for addressing different health concerns, particularly in the context of the resources and needs of a particular community.

At a federal level, the community health and prevention divisions at CDC and SAMHSA are a strong resource to help support local communities as they develop partnerships by ensuring they are based on proven models and have access to evidence-based strategies, policies and programs. For instance, through Health Impact Assessments (HIA), public health and education experts are identifying ways to leverage requirements from the Every Student Succeeds Act of 2016 to work in concert to improve education, health and overall well-being of students. In addition, CDC and SAMHSA prevention programs can also be one source of "seed" funding to support piloting local health improvement partnerships, as well as state-based academic expert institutes.

At the state and local level, public health officials and agencies bring expertise and resources — with a priority focus on promoting better health and preventing diseases and other health problems — to place-based initiatives.

FOR EXAMPLE:

Seattle and King County's public health department created the **Steps to Healthy King County (Steps KC)** initiative that brought together more than 75 community organizations and agencies to focus on reducing the impact of chronic disease in the community — by preventing and controlling asthma, diabetes, obesity and other chronic diseases — and to reduce health inequities due to chronic disease. Steps KC achieved a 9.5 percent reduction in childhood asthma hospitalizations (compared with only a 2.1 percent reduction in the rest of King County) between 2003 and 2008; improvements were also seen in other youth nutrition indicators, such as eating more produce; and other goals were also met, including implementing a comprehensive physical education curriculum and improving accesses to healthier, competitive food and snacks sold in school, including in vending machines.[162]

Get Healthy Philly is an initiative of the Philadelphia Department of Public Health established in 2010 with CDC funding that brings together government agencies, community-based organizations, academia and the private sectors, including representation from government, transportation, education, business, and health insurers to make healthy choices easier — and has contributed to a 6.5 percent decline in childhood obesity, an 18 percent decline in adult smoking, and a 30 percent decline in youth smoking through city-wide policy and systems changes, including:[163, 164]

- Setting nutrition standards for over 22 million meals and snacks served through local government programs;
- Supporting over 900 corner stores and other food retailers to offer, promote, and sell healthier foods, including a particular program to reduce the sodium used at Chinese take-out restaurants;
- Incentivizing use of federal SNAP benefits at farmers' markets through coupons for low-income families that offer more value for purchase of fresh fruits and vegetables;
- Rewriting the city's zoning code and comprehensive plan to promote better health;
- Implementing a smoke-free policy for the nation's 4th largest public housing authority;
- Establishing a $2 per pack tax on cigarettes; and
- Integrating tobacco dependence treatment and smoke-free policies into the city's behavioral health system.

The city government is working with other related efforts, including the State Innovation Model grant, Promise Neighborhood, Choice Neighborhood, and metropolitan planning and transportation initiatives.

Live Well San Diego is a regional partnership, adopted by the San Diego County Board of Supervisors and led by the Department of Health and Human Services, around a vision of a "region that is Building Better Health, Living Safely and Thriving.[165] Nearly 200 recognized partners — from county government to businesses to schools to community organizations — are working together to promote policies and programs focused on a set of areas of influence (health, knowledge, standard of living, community and social factors) and indicators from cross-cutting key areas (life expectancy, quality of life, education, unemployment rate, income, security, physical environment, built environment, vulnerable populations and community involvement). Some efforts have included: workplace wellness initiatives, farm-to-cafeteria and safe routes to school programs, neighborhood watch programs, improving community parks and recreation facilities and extending smoke-free air protections.

Source: Live Well San Diego

• Healthcare Providers and Insurers

Value-based healthcare models are providing incentives — and penalties — based on the health status of a system's patients. As risk-bearing entities, healthcare insurers, and increasingly, healthcare providers, have strong incentives — and could face potential penalties — based on the status of their health systems' patients. The federal government is moving rapidly toward value-based care, with a goal of tying 90 percent of Medicare payments to value by 2018.[166]

These models — with incentivized payment structures and bundled payments for patients and/or global payments for patient pools — are motivated to improve health and lower costs. For instance:[167, 168]

- Global payments give providers a fixed sum for the care of a patient-group for a defined period of time — and if the care costs less, the system receives the difference;
- For bundled or episode-based payments, providers receive a payment for a defined episode of care, such as care for a particular condition;
- In pay-for-performance, providers receive increased or reduced payments if they meet specific, measurable cost, quality or access goals, such as via Accountable Care Organizations;
- Enhanced reimbursement or care coordination payment structures, such as Patient-Centered Medical Homes (PCMHs) and Chronic Health Homes, provide extra funding to improve coordination of care and social services and investment in prevention, focusing on improving the well-being of the patient, which can help reduce healthcare utilization and costs; and
- Penalties for readmissions are motivating hospitals to address the factors that can help reduce these occurrences by connecting patients to services and improving the underlying health of their patient pools, particularly their high-use patients.

A growing number of systems are driving toward better health outcomes and lower-cost health services by supporting initiatives that help their patients stay healthier in their daily lives. Some key approaches include:

- Case management — providing patients with managers to help them navigate the health and social service systems to ensure they are receiving available care and services;
- Lower-cost healthcare services, such as disease management programs provided by community health workers or health educators; and
- Broader community health programs, such as supporting active living initiatives or pantry food assistance programs — providing "food pantry" prescriptions for healthy, affordable meals to people with diabetes.

A review by Northeastern University's *Institute on Urban Health Research and Practice of the Population Health Investments by Health Plans and Large Provider Organizations — Exploring the Business Case* concluded that:[169]

- Business interests shape the magnitude, scope and duration of population health investments;
- Health plans and provider systems are willing to engage in promising interventions and understand that investments in certain population health strategies are necessary to improve quality and cost outcomes and to respond to payer performance expectations.
- It remains unclear to what extent value-based purchasing strategies will prompt effective population health investments; and
- Optimizing health improvements in geographic populations requires building shared strategies across plans and provider systems, as well as with other partners.

The American Hospital Association has also created a guide for creating effective hospital-community partnerships.[170]

littleny / Shutterstock.com

FOR EXAMPLE:

Dignity Health — formerly Catholic Healthcare West — has provided more than $88 million in loans to more than 180 non-profits at below market rate since 1992, which have helped finance a range of community development efforts in underserved communities, including affordable housing, job training, community facilities and medical services.[171, 172]

Molina Healthcare, which provides Medicaid managed care services, uses community health workers or other non-physician professionals as Community Connectors in 11 states to serve as liaisons between patients and clinicians, coach members to self-manage their chronic conditions, connect patients to community resources and help navigate services.[173] In New Mexico alone, these community health workers have achieved savings of $4,564 per enrollee through reductions in emergency department use, inpatient care and prescriptions.

The Heart of New Ulm Project, a collaborative partnership between the Minneapolis Heart Institute Foundation, Allina Health and the New Ulm community, is a 10-year population-based prevention demonstration project that aims to reduce the number of heart attacks that occur in New Ulm, Minnesota. Through a combination of evidence-informed health improvement practices, including a social media campaign, incentives and technical assistance for restaurants to provide healthier choices, school wellness programs such as cooking classes for young children and integrated nutrition curriculum, healthier concessions at sporting events, farmers markets, phone coaching, Complete Street policies and worksite wellness programs. The project has achieved measurable results. Since the project began in 2009, the percent of people who: get adequate exercise increased from 67 percent to 77 percent; eat the recommended serving of fruits and vegetables increased from 19 percent to 33 percent; have cholesterol levels within the recommended range increased from 68 percent to 72 percent; and have blood pressure within the recommended range increased from 79 percent to 86 percent.[174, 175]

Medicaid

Medicaid — as the government-supported health insurer for low-income families, covering nearly 70 million Americans — is also developing value-based strategies to lower healthcare costs and improve health for its patients.

A number of federal innovation strategies and state Medicaid programs are focusing on how to improve the health of beneficiaries — including by reimbursements for linking patients to social services that support better health and reduce their need for healthcare and supporting community-based prevention initiatives.

Connecting and coordinating local health improvement partnership strategies and initiatives with Medicaid efforts and reimbursement policies is a major potential source for significant support for local health improvement partnerships.[176]

In July 2016, the Milbank Memorial Fund's Reforming States Group, with support from the New York State Health Foundation, issued *Medicaid Coverage of Social Interventions: A Road Map for States* which identified a range of legal and regulatory authorities and approaches that states can use to support some social services via Medicaid, including:[177]

- State Innovation Models that help support population-health initiatives and an Accountable Health Community effort that provides support to connect patients to social services;
- Through State Plan Amendments (SPAs), states can expand support for case management approaches, which also can support connecting patients with other services; home health services; and expanded use of lower-cost community health worker and peer specialist led programs and services — as recommended by a physician or licensed practitioner;
- Via waivers, where states can use demonstrations to test new approaches to the delivery system, which can include efforts to connect people to social services. Waivers must be budget neutral;
- Managed care and alternative payment models — such as, where state agencies pay managed care organizations a set amount to cover a defined set of services, and the MCOs can provide additional services they believe will help benefit the patients and reduce costs, and the MCO benefits from the savings received. More than 75 percent of Medicaid beneficiaries are enrolled in MCOs;[178]
- Services for supportive housing, employment services and food assistance. For instance, for supportive housing, a number of Medicaid authorities can be used to support beneficiaries to find and stay in housing, clarified in a June 2015 Information Bulletin from CMS, but cannot be used to pay for room and board.[179] Or providing food to low-income beneficiaries; and
- Reimbursement policies have been expanded and clarified for community health workers and peer support services in Medicaid delivery systems. For instance, delivery of some preventive benefit services — such as community-based health promotion programs — as recommended by a physician or licensed provider are reimbursable.

FOR EXAMPLE:

State Innovation Models (SIM) and Health Care Innovation Awards from the Center for Medicare and Medicaid Innovation (CMMI) have supported value-based healthcare model demonstrations — including of patient-centered medical homes, Accountable Care Organizations, Chronic Health Homes and bundled payments.[180, 181, 182] In addition, SIM grantees have been required to develop and implement Plans for Improving Population Health — to enhance health in the given state, particularly focusing on tobacco use, diabetes and obesity.[183, 184] In total, 34 states, three territories and Washington, D.C. have received SIM grants.[185] While specific interventions of each plan varied across states, most of the programs included improving body mass index (BMI) percentile documentation, nutrition counseling and physical activity counseling.[186] For instance, since 2008, all three MCOs in Georgia have operated improvement projects focused on reducing childhood obesity.

Oregon's Coordinated Care Organizations use Medicaid dollars for a broadly defined set of health-related supportive services that aim to improve outcomes; quality and control costs of healthcare, including participation in postpartum depression programs; transportation to a gym; certain home improvements, such as installing an air conditioner; and referral to job training or other social services.[187]

New York's Medicaid Redesign Team Housing Subsidy Program invests state-share Medicaid dollars in supportive housing, including rental subsidies, tenant advocacy and a range of services for those at risk of becoming homeless; including counseling, case management, job development and clinical supervision.[188]

Accountable Health Communities

CMMI also launched an Accountable Health Community model pilot initiative in 2016 which focuses on bridging the gap between clinical medical care and community services — by systematically identifying and addressing beneficiaries' health-related social needs and assessing whether establishing those clinical-community linkages can reduce healthcare costs and improve quality of care and health outcomes. The model is based on emerging evidence that unmet social needs, such as inadequate or unstable housing or food insecurity, can increase the risk of developing chronic conditions while simultaneously reducing the ability to manage these conditions.[189, 190]

AHCs promote four key strategies: 1) screening beneficiaries to identify unmet health-related social needs; 2) providing information and referrals to increase beneficiary awareness of available community services; 3) providing navigation services to help high-risk beneficiaries access community services; and 4) encouraging clinical and community service alignment through the development of multi-sector coalitions, to identify and address gaps in community services. AHCs will aim to identify and address social needs in the areas of housing instability and quality, food insecurity, utility needs, interpersonal violence, transportation needs and others. CMS will be awarding successful applicants funding to implement and rigorously evaluate the AHC model, with awards expected to be announced in Fall 2016.

A number of states have also launched Accountable Communities for Health models or other initiatives to better integrate health and social services — and in some cases are also providing follow up support to ensure the services are carried out.[191, 192, 193] Some Accountable Communities for Health across the country are beginning to tap into healthcare dollars to fund initiatives, including Medicaid and innovation funds, such as State Innovation Models. As Accountable Communities for Health evolve to seek and manage these funds, they are finding the need to connect to or develop sophisticated financial management skills.

Some states are also using some Medicaid and innovation funding, such as SIM awards and/or philanthropic provisions, to help support broader state Accountability Communities for Health — to help support a backbone for connecting patients with services to support unmet social needs and to engage healthcare to support broader community-based efforts.

Hospitals

Hospitals are major anchor institutions in communities — they are tied to the area and population they serve, are often leading employers and real estate holders — and can help provide important leadership, expertise and resources to local health improvement partnerships.

In addition, non-profit hospital community benefit programs are an important source of funding for community health improvement efforts. Community benefit programs — from around 2,900 non-profit hospitals — totaled around $62.4 billion in 2011.[194, 195] Non-profit hospitals are required to maintain community benefit programs to qualify for exemption from federal income taxes. Traditionally, the large majority of these funds have been used to support uncompensated or charity care, while around 5 percent have been devoted to community-based prevention and improvement programs.

Community benefit investments are an important source of funding for community health improvement efforts across the country. And, the percentage of resources devoted to community-based health improvement programs, services and initiatives is expected to increase, as hospitals are evaluating newly required community health needs assessments and the number of uninsured and underinsured patients continues to drop.[196, 197, 198]

The IRS has provided increased guidance supporting the use of community benefit fund dollars for upstream prevention activities beyond subsidized access to healthcare — including community health improvement and some community building activities.[199]

Similar to direction provided to banks for the use of their community benefit programs via the Community Reinvestment Act, the federal government can continue to expand the guidance for hospitals and also consider increased requirements for the use of community benefit programs to support community-based prevention activities.

FOR EXAMPLE:

In **Columbus, Ohio, Nationwide Children's Hospital's "Healthy Neighborhoods, Healthy Families"** initiative is focused on improving housing quality, early childhood education and workforce development in the area surrounding the hospital. The initiative includes a home visiting program aiming to boost kindergarten readiness and a workforce development project which, in partnership with Columbus State Community College, links unemployed adults with training and job placement.[200]

Lancaster General Health, a healthcare delivery system in Pennsylvania, has been responsible for conducting community health needs assessments for the community since the mid-1990s. Responding to a needs assessment that identified obesity as a major problem and using Community Benefit funding, Lancaster General Health helped create Lighten Up Lancaster County, a coalition which has helped change a city ordinance to make it legal for mobile fresh food vendors to operate in residential neighborhoods, developed training sessions for school wellness council coordinators, created a healthy corner store initiative, conducted a food needs assessment, promoted complete streets policies, managed walkability and safe routes to school audits, and supported community gardens.[201]

• Community Health Centers/Federally Qualified Health Centers

Federally Qualified Health Centers (FQHCs) provide health services to around 20 million patients in low-income and underserved communities, regardless of a patient's ability to pay or insurance status. The number of community health center (CHC) patients is expected to grow to 40 million as healthcare access is increased by provisions in the Affordable Care Act (ACA).[202, 203] CHCs receive enhanced reimbursements from Medicare and Medicaid and other benefits to support the infrastructure needed to address the needs of the vulnerable populations they serve.

Many CHCs have a long history of providing additional "wrap around" services to their patients — including case management and connecting people to social and financial services — and have a majority of their board members consisting of members of the community they serve. CHCs can serve as key partners in local health improvement collaboratives — building on their status as a service provider and trusted resource to lower-income and many high need patients. In many communities, they are already engaged in collective impact efforts to improve the vitality and well-being of underserved communities and individuals and are able to tap into existing assets.

More than 98 percent of CHCs report providing referrals to programs including Temporary Assistance for Needy Families (TANF), Supplemental Security Income, Supplemental Nutrition Assistance Program, the Supplemental Nutrition Program for Women, Infant and Children, food banks and housing assistance. In addition, more than 80 percent have referred patients to Head Start programs, employment counseling and environmental health risk reduction services.[204] A number of CHCs are part of "one-stop" or "no wrong door" combined health and social service agencies.

FOR EXAMPLE:

Mary's Center is a FQHC providing a comprehensive and integrated set of healthcare, family literacy, education and social services in the Washington, D.C. region. The organization provides medical services including healthcare for all ages, mental health services, dental services, a community outreach van and health promotion — as well as social services (after school programs, domestic violence support, family support programs, home visiting, insurance enrollment and connecting participants to other community services such as housing and job resources) and education services (teen education program, child care licensing program, medical assistant training program and the Briya Public Charter School).[205, 206] The organization partners with a range of local community groups, state and federal agencies, hospitals, schools, managed care organizations and housing and employment resources. Briya students have demonstrated higher performance outcomes, and Mary's Center has healthy birthweights, hypertension control and child immunization rates above the local and national averages.[207] The organization's $39 million annual budget consists of 46 percent patient revenue; 35 percent government, foundation and corporate grants; and 19 percent fundraising, contributions and other revenue.

St. John's Wellchild and Family Center (SJWCFC), a FQHC network in California, has been working to reduce the negative impacts of substandard housing on health.[208] The organization partnered with Esperanza Community Housing Corporation to prevent lead poisoning by screening patients and conducting home visits. The program expanded over time, working with Healthy Homes Healthy Kids, to promote expanded home health visits, health program enrollment, medical homes and policy development. They have achieved a 100 percent decrease in asthma hospitalizations, 100 percent decrease in asthma-related missed work days by parents, 80 percent reduction in asthma emergency department visits, 69 percent reduction in asthma-related missed school days and 69 percent reduction in doctor visits due to acute asthma attacks. The effort is funded by British Petroleum Settlement/Air Quality Management District Funds, First 5 Los Angeles, EveryChild Foundation, Housing and Urban Development Agency and the Kresge Foundation.

5. Innovative and Social Impact Funding Strategies

In addition to support from health, social service, philanthropic and business funders, a number of financing models, including Community Development Financial Institutions and "pay-for-outcomes" approaches, such as social impact bonds and Wellness Trusts, are increasingly being used in communities to help support place-based initiatives in low-income communities that do not typically have access to capital — often focusing on providing "investments" and structuring systems to capture returns in the form of cost savings and/or improved outcomes. These new investments are providing the capital to scale up evidence-based programs and represent an exciting growing source of funding for public health and social service programs that should be brought to scale.

• Community Development Financial Institutions

Community Development Financial Institutions provide access to financial services, affordable credit and investment capital that are not available from conventional capital markets to help generate economic growth and revitalization of low-income and underserved communities.[209] They generally offer below-market and more flexible terms than conventional lenders, and pair their financial products with education, training and technical assistance to potential borrowers.[210] There are around 1,000 CDFIs, managing more than $30 billion in assets around the country.[211] The U.S. Department of Treasury CDFI Fund has provided more than $2 billion to CDFIs since its creation in 1994.[212]

There is growing interest in expanding CDFIs' investments to achieve improved health in low-income communities.[213, 214] A number of health-related investments have focused on more classic community development bricks and mortar projects — for instance, CDFI funds have been used to help support the development of community health centers and for healthy food financing initiatives, such as building more grocery stores in lower-income communities.[215] Some CDFIs are supporting community development projects that support "active living" efforts (such as parks, green spaces, sidewalks, parks, commercial/residential design and transportation alternatives).[216] Many broader economic development projects supported by CDFIs help improve health along with achieving other goals — such as by providing increased quality affordable housing and child care centers.[217, 218]

Local health improvement partnerships have an opportunity to access CDFI investments to support their capital investment needs and outcome-based efforts. Beyond the federal government, some funds that have helped support healthy food financing and community health center development or expansion include the Low Income Investment Fund, the Non-profit Finance Fund and the Lenders Coalition for Community Health Centers. [219, 220, 221]

FOR EXAMPLE:

The U.S. Department of Treasury's CDFI Fund launched a national Healthy Food Financing Initiative in 2010, providing financial assistance awards as well as technical assistance to more than 20 CDFIs to develop food retail financing programs. Many of these programs focus on financing full-service supermarkets in "food deserts", while others invest in smaller food retailers or other food systems projects, including distribution and small-scale farming.[222, 223] For instance, the South Carolina Community Loan Fund finances construction and renovation of a range of healthy food retail and wholesale outlets, including grocery stores, corner stores, farmer's markets, food hubs and mobile markets selling healthy food.[224]

Many CDFIs have financed the building and expansion of Community Health Centers, including through a Lenders Coalition for Community Health Centers (LCCHC).[225] LCCHC lenders have made a total of more than $1.4 billion in loans to improve primary care capacity.[226] For example, the Illinois Facilities Fund (IFF), the largest non-profit CDFI in the Midwest, has provided $78.2 million in total financing for community health centers, including the provision of 84 facilities loans to 42 community health centers across Illinois, Wisconsin, Indiana, Iowa, Missouri and Kansas.[227, 228] IFF also provides real estate development for healthcare centers and has helped establish 65 centers serving over 61,000 patients with $14.4 million in development costs.

• New Market Tax Credits

New Market Tax Credits are a vehicle to attract private investments into lower-income communities. The U.S. Department of the Treasury administers a New Market Tax Credit Program (NMTC Program), which gives individual or corporate investors a tax credit against their federal income tax (39 percent of their original investment claimed over 7 years) in exchange for making equity investments in specialized financial intermediaries called Community Development Entities (CDEs).[229] CDEs are required to have 20 percent of their governing or advisory board be representative of the lower-income community they serve, and are certified by the U.S. Department of the Treasury.[230]

A number of health-improvement related NMTCs have supported healthy food financing, community health centers or related projects that help support better health, such as affordable housing.

From 2000 through 2015, the NMTC Program has created or retained an estimated nearly 200,000 jobs, created 164 million square feet of manufacturing, office and retail space, financed over 4,800 businesses, and generated $8 of private investment for every $1 of federal funding.[231, 232] The NMTC program has distributed over $40 billion in federal tax credit authority and helped finance 49 supermarket and grocery store projects between 2003 and 2010, enhancing access to healthy food in low-income communities for over 345,000 individuals, including nearly 200,000 children.[233]

FOR EXAMPLE:

New Market Tax Credits have supported a wide range of healthy food financing initiatives, such as Grays Ferry Education and Wellness Center in South Philadelphia (projected to create 105 full-time jobs, serve more than 1,000 children and families and treat 6,000 patients through a health clinic);[234] the Shops at Park Village Shopping Center (including the only full-service grocery store in Ward 8 of Washington, D.C. generated 188 construction jobs and 172 full time jobs);[235] and the creation of a supermarket in a neighborhood in St. Louis, Missouri where 15 percent of the low-income population previously lived more than a mile away from the nearest grocery store.[236]

Healthy Futures Fund (HFF) is a $200 million initiative, formed by the Local Initiatives Support Corporation, Morgan Stanley and The Kresge Foundation, that builds cross-sector partnerships between healthcare centers and community partners (including affordable housing providers) that address the various upstream factors that impact the health of low-income communities. Through co-location of health centers, non-clinical services and affordable housing projects, HFF seeks to expand healthcare access and address other community needs, such as affordable housing, healthy food access, fitness and wellness services and education and job training.[237, 238] HFF offers New Market Tax Credits and loan capital at very low transaction costs to Federally Qualified Health Centers and other community-based health centers seeking to expand their facilities and services. HFF also offers competitive Low Income Housing Tax Credit equity for affordable housing projects as well as grants and other loan resources.[239] For example, in Toledo, Ohio, HFF invested $6.5 million to help the Neighborhood Health Association replace outdated clinics with a larger, state-of-the-art facility that houses a variety of primary care services, a credit union, a community garden and a low-cost pharmacy.[240]

The Strong, Prosperous, and Resilient Communities Challenge (SPARCC)[241] is a three year initiative aiming to spark community-driven investments in city and regional transit, infrastructure, climate resilience and health to promote more equitable communities. Ten cross-sector, multi-disciplinary SPARCC teams are working to develop local strategies to influence their community's health, economic and environmental outcomes. The six teams selected as national models in early 2017 will receive grant funding, technical assistance, programmatic support, and financing from SPARCC to bring their initiatives to scale (totaling $90 million in grants and financial capital). SPARCC is an initiative of Enterprise Community Partners, the Federal Reserve Bank of San Francisco, Low Income Investment Fund and National Defense Council and has received support from the Robert Wood Johnson Foundation (RWJF), the Ford Foundation and The Kresge Foundation.[242]

Equity with a Twist (EQT) is a social capital product out of the Low Income Investment Fund and JP Morgan Chase aimed at providing up to 10-years of flexible, low-cost financing to support innovative cross-sector solutions to poverty.[243] Each EQT investment will incorporate mixed-income housing, kindergarten (K)–12 education and early learning, as well as other fields of interest to the investee. By tracking social outcomes and demonstrating project impact, the EQT pilot programs aim to create models for future investors seeking social and financial returns. Pilot EQT investments will be directed towards transitioning dilapidated public housing in San Francisco and Los Angeles into mixed-income communities, as well as ongoing community revitalization efforts in New Orleans neighborhoods affected by Hurricane Katrina. The Low Income Investment Fund (LIIF) has also created a Social Impact Calculator that allows local areas to estimate the value of community development projects: http://www.liifund.org/calculator/.

• Community Development Corporations

Community Development Corporations are community-based, non-profit organizations with a focus on community revitalization. Generally serving low-income, underserved neighborhoods, Community Development Corporations often develop affordable housing, engage in a range of community health initiatives (including economic development and neighborhood planning) and contract for education and social services. Similar to community health centers, a substantial portion of the Community Development Corporations board is usually composed of community residents, enabling grass-roots participation and community empowerment. The Community Development Corporations also play a role in bringing capital to communities, generally by developing residential and commercial property.[244]

FOR EXAMPLE:

Chicanos Por La Causa (CPLC), a multi-state Community Development Corporation, focuses on economic development, education, housing development and delivering of social services.[245] CPLC serves over 200,000 low-income individuals annually through program sites in Arizona, Nevada and New Mexico. It provides a range of services, including youth and adult education, scholarships, behavioral health, domestic violence services, substance abuse treatment, parenting classes, HIV services, senior and immigration services, workforce development, real estate, housing and loans for entrepreneurs and small businesses. CPLC generates more than $50 million in revenue from the housing, health and other services it provides.[246] In Phoenix, Arizona, via a partnership with UnitedHealthcare (which has 25,000 members within a 3 mile radius of the center), all clients are screened for social needs and referred to social services including job training, housing, financial services and transportation. A new data system enhances communications between social service providers, including referrals. To finance the effort, UnitedHealthcare has committed to provide CPLC access to up to $20 million in capital to acquire, develop and operate multifamily housing units and to provide a variety of need-based services for residents.

• Pay-for-Performance and Social Impact Bonds

Pay-for-performance models are innovative mechanisms for addressing social challenges — where through contracts or loans, the government pays for the delivery of certain services based on positive, measured performance outcomes.[247, 248]

Social impact bonds are one form of a pay-for-success approach. The government identifies a challenge and contracts with a private-sector financing intermediary to issue a bond to obtain social services to address the challenge.[249, 250] The social service might be a local program that has demonstrated success and can be expanded, or one that has worked elsewhere and can be replicated.[251] The bond-issuing organization raises the funds to finance costs of the program from private investors. The government pays the bond-issuing organization back based on whether established performance targets are met — and the investors are repaid with a certain rate of return for taking on the risk.[252, 253] The goal is for successful programs to allow investors to get their money back and earn a return, for the government to address a policy priority and possibly achieve long-term savings and for the larger community to benefit from improved social outcomes.[254, 255]

Status of Social Impact Bonds with a Public Health Focus as of April 2015[256] from the National Governors Association

Status of Social Impact Bonds with a Public Health Focus as of April 2015[i]		
State	**Status of Operation[ii]**	**Focus Areas**
Arkansas	Considering	Recidivism
California	In Development	Maternal and Child Health
Colorado	Considering	Recidivism
Connecticut	In Development	Substance Abuse/Maternal and Child Health
Hawaii	Considering	Early Childhood Education/Development
Illinois	In Development	Recidivism/Youth Development
Massachusetts	Active	Recidivism/Chronic Homelessness/Supportive Housing
Michigan	In Development	Maternal and Child Health
Minnesota	In Development	Supportive Housing/Workforce Development
Nevada	Considering	Early Childhood Education/Development
New Mexico	Considering	Mental Health
New York	Active	Recidivism
New York	In Development	Diabetes/Maternal and Child Health
New York	Considering	HCBS/Supportive Housing
North Carolina	Considering	Early Childhood Education/Development
Oklahoma	Considering	Recidivism
Oregon	Considering	Preventive Health
South Carolina	In Development	Maternal and Child Health
Utah	Considering	Recidivism/Substance Abuse/Mental Illness
Virginia	Considering	Maternal and Child Health
Washington	Considering	HCBS/Supportive Housing/Early Childhood Education/Development

Note: SIBs that have a public health focus include those that target social determinants of health, including housing, education, and economic and job stability.

i Nonprofit Finance Fund, "Pay for Success U.S. Activity," http://payforsuccess.org/pay-success-deals-united-states#sc (accessed June 3, 2015).

ii Status of Operation: An "active" classification means that services are already being delivered. States that have identified a scope and are in the process of finalizing contracts are classified as "in development." States that have not defined scope and are in the process of soliciting stakeholder feedback are classified as "considering."

FOR EXAMPLE:

The **South Carolina Department of Health and Human Services** launched a pay-for-success initiative in February 2016 to improve health for mothers and children living in poverty.[257] They are expanding the evidence-based Nurse-Family Partnership to an additional 3,200 low-income mothers over six years. The program sends trained nurses to conduct home visits with vulnerable, first-time mothers from early pregnancy through a child's second birthday. The project is mobilizing $30 million in funds (including $17 million from private funders plus $13 million from South Carolina Medicaid) — and if positive results are found, South Carolina (state government) will make up to $7.5 million in success payments to sustain Nurse-Family Partnership's services.[258] Funding sources include a 1915(b) Medicaid waiver that will contribute approximately $13 million and a combined $17 million from the BlueCross BlueShield of South Carolina Foundation, The Duke Endowment, Greenville First Steps, Children's Trust Fund of South Carolina, Laura and John Arnold Foundation, the Boeing Company (which manufactures in the state) and a consortium of private funders, along with technical assistance from the Government Performance Lab at the Harvard School of Government and a randomized control trial evaluation by Massachusetts Institute of Technology. Evaluation metrics will include: reduction in preterm births, reduction in child hospitalization and emergency department use due to injury, increase in healthy spacing between births, and increase in first-time mothers who live in poverty served by the program.

The **Connecticut Department of Children and Families (DCF) and the Family-Based Recovery Services (FBR)** at the Yale Child Study Center and Social Finance launched a $12.5 million Family Stability Pay for Success Project in February 2016.[259, 260, 261, 262] The program is focused on serving families struggling with substance use by expanding an in-home Family-Based Recovery program to families currently receiving child welfare services, in an effort to reduce the need for foster care placements and keep children with their parents.[263] More than half of all child abuse and neglect cases investigated in the state are related to parental substance use, costing the state more than $600 million annually. The four-and-a-half year program will serve around 500 families with services including individual, couples and family therapy; positive parent-child interaction; parental awareness of child development; case management; and weekly relapse prevention and parenting group. Outcome payments to DCF are triggered by prevented out-of-home placements (foster care), prevented re-referrals to child welfare, reductions in substance use and Family-Based Recovery enrollments.[264, 265] The Harvard Kennedy School Government Performance Lab will provide technical assistance and the University of Connecticut Health Center will conduct a randomized controlled trial evaluation. Project funders include BNP Paribas, QBE Insurance Group Limited, Reinvestment Fund and others.

• Wellness Trusts

A number of groups have proposed the model of establishing a Wellness or Health Trust — a pool of funds set aside to finance evidence-informed community prevention in a strategic and coordinated way — that does not rely on federal grants or state general revenue — but rather provides a steady, predictable source of funding.[266, 267, 268] Funds for the proposed Wellness Trusts can be raised in different ways from various public and private sources, including taxes or fees on products with known health risks (such as tobacco), private or corporate philanthropy, fees charged to health insurers or hospitals, community benefit programs from hospitals, voluntary contributions or purchases and legal penalties or settlements.

Once community prevention efforts demonstrate savings, some models suggest that a portion of savings could be reinvested in the Wellness Trust, providing one source of funding. Having multiple funding streams can increase participation and flexibility, and reduces vulnerability to the loss of any single funding stream. Other considerations in establishing Wellness Trusts include administrative oversight and transparency; community engagement; deciding on priority activities and how funds will be distributed; creating a balanced portfolio of prevention investments that include interventions with short, medium, and long term returns on investment; assessing process and outcomes; and capturing and reinvesting savings in community prevention.[269, 270]

FOR EXAMPLE:

The **Massachusetts Prevention and Wellness Trust Fund** was the first established state-based trust — a four-year, $60 million commitment to community prevention and wellness efforts, financed via a one-time assessment on the state's large insurers and hospitals. The Trust was established by the passage of new cost containment legislation in 2012, and thus did not require annual approval through an appropriations process. Identified health priorities for the Trust included tobacco use, childhood asthma, hypertension and elder fall prevention. At least 75 percent of the funds were awarded in grants to local community-wide initiatives, up to 10 percent was used for workplace wellness efforts and up to 15 percent was spent on grant administration, including evaluation. The Department of Public Health oversees the fund, in consultation with an Advisory Board established specifically for the Trust. Public comment meetings were also held to facilitate public participation.[271] Through a competitive application process, four-year grants from the Trust were awarded to nine community partnerships in January 2014, in the amount of up to $250,000 for the first phase and a potential additional $1.5 million for each of the following three years. Applicants were required to demonstrate robust community-clinical linkages; as well as outline their plans to improve health outcomes and reduce costs related to at least two of the four priority health conditions, to reduce health disparities and to sustain their efforts.[272]

In an effort to coordinate the various streams of foundation funding available to the **Allegheny County Health Department (ACHD)**, foundations executives established a joint fund known as the **Public Health Improvement Fund (PHI Fund)**.[273] The PHI Fund is run out of the Pittsburgh Foundation and centralizes and combines funds from six different local foundations into a single fund to support public health infrastructure. The funds are available to ACHD and requests are made quarterly. In its initial phase, the PHI Fund has focused on public health infrastructure improvement and provided short-term funding to rebuild ACHD. Funds were directed towards information technology (IT) assessments, outreach, community health needs assessments and the development of the Plan for a Healthier Allegheny. Today, a shift is ongoing to redirect funds towards addressing specific focus areas within the county's Plan for a Healthier Allegheny. While Allegheny County benefits from its resources from local foundations, the county has had less luck attracting dollars from its two major healthcare systems. As such, the PHI Fund currently only incorporates foundation money and has yet to tap into available healthcare dollars. The county continues to investigate additional methods to increase PHI Fund participation and solicit additional dollars from existing members.

6. Examples of Organizations and Efforts Advancing Place-Based Health Improvement Models

ReThink Health has developed models and simulations to help communities examine different possible strategies and programs for improving health and wellness — and to view their potential impact.[274] The ReThink Health Dynamics Model is an empirically-based, analytical computer tool that brings formal modeling to health system change. The model is a simplified, realistic representation of a local health system that can track changes in population health, healthcare delivery, healthcare costs and workforce productivity under a variety of conditions. Health system planners can test the possible impact of several dozen different strategies and initiatives, either individually or in combinations, to study the likely consequences over time on health outcomes, quality of care, cost, productivity and return-on-investment. A range of communities around the country are using the tool — such as the Atlanta Regional Collaborative for Health Improvement and Pueblo, Colorado Triple Aim Coalition — to help determine priorities and consider the potential impact and return on investment of different strategies.

Healthy Cities/Healthy Communities is a framework — originally developed by the World Health Organization — for an inclusive, participatory process to improve the health and quality of life of a city or community. The framework rests on two basic premises: a comprehensive view of health and community issues — that includes education, shelter, food, income and social justice — and a commitment to the active promotion of a healthy community — not just treating health problems.[275] Some communities using this framework include:

- **Chicago:** Bethel New Life, a grassroots, church-based urban development effort in Chicago has used the Healthy Communities framework to select and pursue ten key initiatives including: expansion and enhancement of an industrial corridor to bring in new industry and livable-wage jobs; commercial development around an existing train stop; housing redevelopment; a campaign to boost neighborhood safety and cleanliness through reduction of liquor stores, youth employment and other efforts; and employment and training in the environmental field for high school students, in partnership with a national laboratory located in the area.[276]
- **Aiken, South Carolina:** The Healthy Communities Program in Aiken, South Carolina has successfully reduced infant mortality through a combination of strategies identified and implemented using the Healthy Communities Framework, including a mentoring program for at-risk girls; community policing; instant crime reporting via donated cell phones; demolition of unsafe homes; free installation of smoke detectors; and parental education on child brain development.[277]

Invest Health — a collaboration between The Reinvestment Fund and RWJF — incorporates health into community development by providing $60,000 grants and technical assistance and other support to new multi-sector partnerships in 50 mid-sized cities across the country. The goal is to increase and leverage private and public investment in neighborhoods facing the biggest barriers to health, particularly by helping these cities attract capital to advance systems-focused strategies and helping them use data as a driver for change. Grantees will bring together multiple sectors over 18 months to collect data, test solutions and advance strategies that address factors that drive health in low-income neighborhoods, including a lack of quality jobs, affordable housing and nutritious food, high crime rates and unhealthy environmental conditions.[278] At the end of the grant period, the cities are expected to have investment plans and interested investors. The Reinvestment Fund, one component of the project, is a Community Development Financial Institution that manages $946 million from over 850 investors to support low-income communities through investments, real estate development, data analysis and advocacy.[279] The Reinvestment Fund's investments have generated 71,550 jobs; 17 million square feet of commercial space; and 163 supermarkets, grocery stores and fresh food retail.[280]

The **Alignment for Healthy Equity and Development (AHEAD)**, a partnership by the Public Health Institute and The Reinvestment Fund, funded by The Kresge Foundation, works in communities where poverty and health inequities are concentrated. The partnership seeks to create balanced portfolios of aligned investments and interventions across hospitals, public health agencies, financial institutions, businesses and others, so resources are coordinated to create a sustainable infrastructure that includes quality housing and healthcare, and to increase job opportunities and access to healthy food and places to be physically active.[281] The effort will focus on developing health improvement strategies with a shared measurement system. It will focus resources in neighborhoods where health inequities are concentrated and build a field of practice that provides the tools, evidence and models to support local scaling and replication around the country. Five pilot site grantees (in Portland, Oregon; Boston; Atlanta; Dallas; and Detroit) are receiving $20,000 in direct funding and $60,000 of in-kind technical assistance.[282]

The **Building Healthy Places Network** aims to improve well-being in low-income communities by connecting leaders and practitioners in health and community development; curating examples of collaborative models with proven outcomes so these efforts can be replicated; and providing tools to build the capacity for health and community development sectors to partner together (e.g., a collection of directories to help users find the community development and health organizations closest to them; a virtual live discussion series connecting community development and health practitioners; and mapping and measurement tools to help identify community needs and assets).[283]

The **Healthy Communities Initiative** — a partnership of the Federal Reserve System and RWJF — brings together health practitioners and community development workers to share knowledge (about data collection, outcomes measurement, partnerships, etc.) and information on how to harmonize health funding streams with traditional community development programs (investment and lending motivated by the Community Reinvestment Act, New Market Tax Credits, Low Income Housing Tax Credits and other social funding efforts).[284, 285]

Pioneering Healthier Communities (PHC) initiative uses funding from CDC and corporate and foundation donors to support a collaborative community process to develop policy, system and environmental changes that promote healthy living.[286] Launched in 2004, PHC empowers communities with strategies and models to support sustainable change in their communities. Participating YMCAs, as a major partner, bring together a cross-sector team with leaders from the private, public and non-profit sectors. These teams each have two coaches to guide, support and facilitate the team through its process — including a coach from the YMCA, as well as one of the partnering institutions. There are currently 129 communities participating in PHC.

The **Blue Zones Project** is a community improvement initiative that brings together community leaders and citizens to impact the environment, policy and social networks to help make healthy choices easier.[287] Certified Blue Zones communities implement long-term, evidence-based policies and interventions to improve the built environment; create and enforce health-promoting municipal policies and ordinances; form and nurture social groups that support healthy habits; and build healthier options in schools, grocery stores and workplaces. Current project sites include California, Florida, Hawaii, Iowa, Minnesota, Oregon, Texas and Wisconsin.

The **BUILD Health Challenge**[288] brings together funding from The Advisory Board Company, the de Beaumont Foundation, the Colorado Health Foundation, The Kresge Foundation and RWJF to identify, accelerate and spotlight upstream initiatives and best practices working to give everyone a fair chance to be healthy. The BUILD Health Challenge promotes bold, upstream, integrated, local, data-driven (BUILD) initiatives. The BUILD Health

Challenge awards funding and technical assistance to communities who have built innovative collaborations between hospitals and health systems, community-based organizations and local health departments to address the social determinants of health and promote health equity in their community. The BUILD Health Challenge currently funds 18 communities across the country.[289]

The **Moving Health Care Upstream (MHCU) initiative**[290] identifies the most promising community health and health delivery innovators and provides them with a structured platform through which they can connect and share their efforts. MHCU works by developing and testing promising tools and strategies in communities, community health centers, and community health systems that have committed to work with MHCU to identify "what works." The organizations receive technical assistance, coaching, and facilitation from MHCU. Tested best practices are spread through a learning network of organizations and networks to stakeholders who are interested in adopting the innovative strategies. Through these platforms, MHCU creates partnerships among healthcare, public health and non-health sectors with the aim of addressing of Triple Aim. MHCU is a collaborative effort led by a team of collaborators from UCLA and Nemours with funding from The Kresge Foundation.

Purpose Built Communities[291] is a non-profit consulting firm that works with communities to develop tailored master plans to implement a holistic revitalization effort. Purpose Built Communities works to break the cycle of intergenerational poverty, unsafe environments, high crime and failing schools in neighborhoods through concentrated and sustained efforts with a special focus on cradle-to-college programs, mixed-income housing initiatives and community wellness. Their teams work with local leaders to assess their neighborhood's unique situation; identify and engage with key partners and residents; and develop, implement and evaluate strategic and operational plans. Each community establishes a single purpose non-profit Community Quarterback charged with building partnerships with cross-sector stakeholder and investors, coordinating sustainable funding streams and serving as a single accountability point for partners and funders.

The **Building Community Resilience (BCR)** collaborative is a national effort to create community integrated systems of care by joining public health, health systems and other cross-sector agencies and partners to address adverse childhood experiences in the context of adverse community environments. In Phase One of the project, these community-based networks will form a common governance and policy structure — local coalitions or collaborative networks — that guide collective and coordinated work carried out by each partner. In Phase 2 of the project, the local networks will coordinate efforts to address childhood and community adversity through specific programs and strategies that are collectively measured and monitored. BCR, a project of The George Washington University Milken Institute School of Public Health, is being tested in Cincinnati, OH; Dallas, TX; Portland, OR; Washington, DC; and Wilmington, DE. BCR is supported through funding from The Doris Duke Charitable Foundation, The Kresge Foundation and The Nemours Foundation.

THE CALIFORNIA ENDOWMENT: BUILDING HEALTHY COMMUNITIES

Building Healthy Communities (BHC) is a 10-year, $1 billion place-based initiative of The California Endowment working in 14 California communities to promote prevention policy, system and environmental changes through cross-sector collaborations and community engagement. Launched in 2010, BHC aims to reduce health inequities through improvements in neighborhood safety, unhealthy environmental conditions, access to healthy foods, education, housing and employment opportunities. Each BHC appoints a BHC Hub Host to act as the central coordinator for implementation of health improvement initiatives.[292]

A five-year review of BHC found some key achievements have included: improved coverage for the underserved; strengthened health coverage policy for the undocumented; school climate, wellness and equity improvements; prevention and reform support in the justice system; public-private investments and policy changes for boys and young men of color; and local and regional progress in "health in all policies."[293]

South Los Angeles

South Los Angeles (LA) has had a long history of community improvement initiatives, which provided a foundation for the South Los Angeles BHC (SLABHC) to build on — to use strong coalitions of community organizations and existing community ties to advocate for a wide-range of initiatives addressing the underlying social and economic causes of their community's health disparities. Through persistent advocacy efforts and a strong partnership with the Legal Aid Foundation of Los Angeles, SLABHC worked to secure a rent-free lease for a new South LA health clinic to help expand access to high quality preventive services for more than 30,000 patients.[294] The St. John's Well Child and Family Center's new Health and Wellness Campus also offers child dental services, a community garden and diabetes management services.[295]

SLABHC and its partners have also succeeded in securing over $30 million from the University of Southern California's community benefit agreement for affordable housing and local hiring requirements.

East Oakland

Located in Alameda County, East Oakland has high rates of health inequities perpetuated by economic decline and unhealthy living conditions. These inequities manifest themselves in a 10 to 15 year gap in the average life expectancy for an East Oakland resident compared with someone living less than just two miles away.[296]

In East Oakland, the Alameda County Department of Public Health (ACDPH) serves as the East Oakland BHC (EOBHC) Hub Host. ACDPH is the only public health department selected as a Hub Host across the BHC sites and is uniquely positioned to leverage funds made available through the Measure A Essential Health Care Services Tax to implement its local health improvement initiatives. The Measure A Essential Health Care Services Tax is a half-cent sales tax passed by California voters in 2004 that supports emergency medical, hospital inpatient and outpatient, public health, mental health and substance abuse services for low-income or uninsured individuals in Alameda County.[297]

ACDPH works with community-based organizations to utilize Measure A dollars to promote health equity through their Community, Assessment, Planning, Education, and Evaluation (CAPE) Unit established under EOBHC. Through the City County Neighborhood Initiative (CCNI), the CAPE Unit builds the capacity of residents in the Sobrante Park and Hoover Historic District in West Oakland to identify and take actions to address health inequities in their communities by helping residents understand and navigate the multi-sector systems affecting health. An evaluation of CCNI from 2004 to 2010 found improvements in resident-reported community involvement and neighborhood safety and reductions in reported drug dealing, use and violence.[298]

Fresno

The area served by the Fresno BHC is home to over 90,000 residents. Over 40 percent of these residents live below the poverty line, 22 percent are unemployed and more than 60 percent have less than a high school degree.[299] The community is also home to many immigrant and refugee populations. As such, one of the Fresno BHC's guiding missions is to provide equal access to preventive health services to all of its residents regardless of immigration status.

In 2014, the Fresno County Board of Supervisors voted to remove eligibility for Medically Indigent Services Program (MISP) for undocumented Fresnans which led to increased use of emergency room care rather than their usual safety net disease management services. In response, members of the Fresno BHC started an advocacy campaign, #Health4AllFresnans, to ensure their undocumented residents had access to safety net services. Through the campaign Fresno BHC secured $5.5 million in budget flexibility to provide short-term specialty healthcare to Fresno County's undocumented through April 19, 2016.[300]

In a separate initiative, the Fresno BHC successfully advocated for a $450,000 allocation from the Fresno City Council to update the City of Fresno Parks Master Plan. The Fresno BHC and its community partners brought attention to a noted disparity in park access for residents in two different zip codes in the City of Fresno. For those in the South Fresno zip code, one acre of park was available per 1,000 residents while in Northern Fresno, over 4.6 park acres were available per 1,000 residents. Since then, Fresno BHC and its partners have helped secure bids for the City Council to build several new parks in South Fresno — including a 15,000 square foot skate park that opened in May 2016.[301]

C. CREATING AN EXPERT INSTITUTE NETWORK TO SERVE COMMUNITIES IN EVERY STATE

Local communities should have access to the best available information — with expert guidance to help define their goals; assess their needs and assets; and understand their options for evidence-based strategies and programs to determine what best matches their needs and priorities — and technical assistance to help implement and evaluate their efforts.

This type of technical assistance has not been supportable on a national scale. Expert institutes, housed at academic institutions, public health institutes or qualifying non-profits, could serve this role — providing efficiencies of expert-assistance to help communities within the state meet their local needs. There should be institutes in every state that would be part of a collective network — to learn from and inform national research efforts, which advance the development and continued quality improvement of community and place-based prevention efforts. State and local health departments should be involved in the creating and supporting of the institutes — and the network should also be developed in coordination and consultation with existing public health research and support entities, such as Prevention Research Centers, the National Network of Public Health Institutes and Area Health Education Centers.

Pilot initiatives would help determine the best structures and needed capacities for scaling the model.

Prevention programs at CDC, SAMHSA, the Administration for Children and Families and other agencies can help provide national level support to these institutes — and connect networks of experts and information — and then analyze and disseminate the findings back to the field to continue to improve and expand programs — similar to NIH institutes or academy models or CDC research centers of excellence. Community health and prevention funds from CDC and SAMHSA could also be used to support the pilot state institutes.

While local health collaboratives provide communities with the ability to more effectively implement strategies to address their top priorities, state-based expert centers are needed to provide assistance and support to communities to help select, implement and evaluate their health improvement strategies. An example model approach is a private-public partnership housed at an academic institution or non-profit organization that serves to:

- Help conduct needs assessments to match the best policy and program choices to specific community needs, tapping into the latest research on the most effective, evidence-based programs;
- Ensure programs are adopted and implemented successfully by providing technical assistance and access to learning networks;
- Train and support a range of professionals from different backgrounds and sectors;
- Conduct regular evaluations — measuring results and ensuring accountability; and
- Perform continuous quality improvement and updates to improve programs.

Technical support and ongoing data collection and analysis at a community level can help identify patterns of concerns — including risk and protective factors — and help understand where and how to direct programs and efforts.

EXAMPLES OF ACADEMIC AND EXPERT ASSISTANCE MODELS

Evidence-based Prevention and Intervention Support Center (EPISCenter)[302]

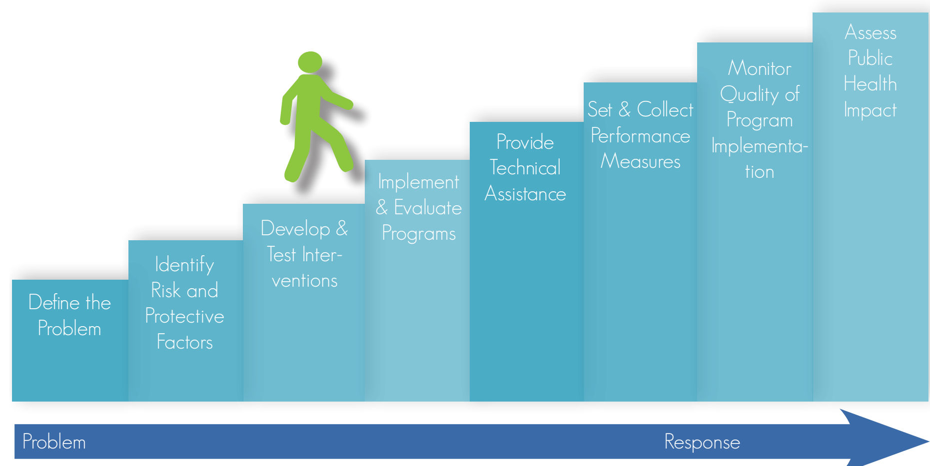
Evidence-based Prevention and Intervention Support Center (EPISCenter) is a state-level backbone organization that supports community-level infrastructure for prevention planning; evidence-based programs and practices; and continuous improvement of locally-developed juvenile justice and substance use programs, which also provide much broader support for positive childhood and youth development. EPISCenter helps communities identify and prioritize risk and protective factors and determine which interventions can best address the identified needs (many of which start in early childhood), as well as provides technical assistance and support for quality implementation of the programs. EPISCenter also supports the Pennsylvania Youth Survey — which helps communities collect data about rates of substance use, as well as underlying protective and risk factors to inform needs assessments and evaluations.

EPISCenter is a collaborative partnership between the Pennsylvania Commission on Crime and Delinquency (PCCD), the Pennsylvania Department of Human Services (DHS) and the Bennett Pierce Prevention Research Center, College of Health and Human Development at Penn State University.

The annual estimated cost for an EPISCenter initiative is around $1 million per year per state, depending on the structure and scope of the program.

Communities that Care[303]

Communities that Care (CTC) was developed by the Social Development Research Group at the University of Washington to provide a prevention-planning system and a network of expert support for the use of evidence-based approaches that promote the positive development of children and youth and prevent problem behaviors. Hundreds of U.S. and international communities have used the approach, which involves all parts of a community to target predictors of problems, rather than waiting



Source: EPISCenter

for problems to occur. It is grounded in research from public health, psychology, education, social work, criminology, medicine and organizational development.

A randomized controlled test of CTC programs in 24 communities across seven states that followed 4,407 fifth grade youth found that by the spring of eighth grade, significantly fewer students from CTC communities had health and behavior problems and were 25 percent less likely to have initiated delinquent behavior; 32 percent were less likely to have initiated alcohol use; and 33 percent were less likely to have initiated cigarette use.[304] The results were sustained through 10th grade. And, by the end of 10th grade, these students also had 25 percent lower odds of engaging in violent behavior. Similar results were demonstrated in a study of 12th graders who were part of CTC. A cost-benefit analysis found a $4.23 benefit for every dollar invested in the CTC operating system.[305]

Partnerships in Prevention Science Institute at Iowa State University[306]

Since the early 1990s, the Partnerships in Prevention Science Institute has been a large-scale research program focused on leveraging community partnerships to implement and scientifically test interventions designed to build family and youth competencies, which would likely prevent substance use and other behavioral problems.

Over the past few decades, 17 studies have been conducted, including six randomized controlled intervention outcome studies. The Institute has demonstrated that school:community:university partnerships are effective in delivering and evaluating evidenced-based interventions that reduce substance use; improve school engagement and academic outcomes; reduce conduct/behavior problems; build protective factors and skills; and demonstrate positive returns on investments, including:[307]

- Iowa Strengthening Families Program (ISFP) — estimated reduction of adult alcohol use disorder rates by 13 percent, returning $9.60 for every $1 spent in implementing;
- Preparing for the Drug Free Years (PDFY) — estimated reduction of adult alcohol use disorder rates by 6 percent, returning $5.85 for every $1 spent on the program;
- Life Skills training returned $25.61 for every $1 invested; and
- Project Alert returned $18.02 for every $1 invested.

PROSPER[308, 309]

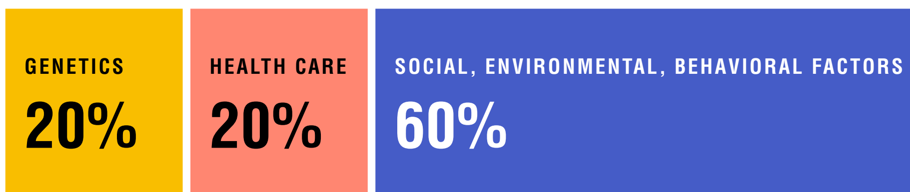
The PROSPER project (PROmoting School/community-university Partnerships to Enhance Resilience), developed by the Partnerships in Prevention Science Institute and the Cooperative Extension, is an evidence-based delivery system for supporting sustained, community-based implementation of scientifically-proven programs that reduce adolescent substance use or other problem behaviors and promote youth competence. The PROSPER delivery system has been shown to reduce a number of negative behavioral outcomes, including drunkenness, smoking, marijuana use, use of other substances and conduct behavior problems, with higher-risk youth benefiting the most.[310, 311, 312] PROSPER also demonstrates positive effects on family strengthening, parenting and youth skills outcomes and reduces negative peer influences.

D. IMPROVING AND SCALING EFFORTS TO ADDRESS UNMET SOCIAL NEEDS THAT IMPACT HEALTH

Factors and influences in people's daily lives can have a bigger impact on health than genetics or medical care.[313] There is wide recognition of the influence that other factors have on health — such as housing, income, education, transportation, the environment and other social determinants.[314]

For instance, a meta-analysis of nearly 50 studies found that social factors, including education, racial segregation, social supports and poverty accounted for more than a third of total deaths in the United States per year.[315, 316]

WHAT DETERMINES HEALTH?
(ADAPTED FROM MCGINNIS ET AL., 2002)



Source: Blue Cross Blue Shield of Massachusetts Foundation

Social Determinants of Health

Economic Stability	Neighborhood and Physical Environment	Education	Food	Community and Social Context	Health Care System
Employment Income Expenses Debt Medical bills Support	Housing Transportation Safety Parks Playgrounds Walkability	Literacy Language Early childhood education Vocational training Higher education	Hunger Access to healthy options	Social integration Support systems Community engagement Discrimination	Health coverage Provider availability Provider linguistic and cultural competency Quality of care

Health Outcomes
Mortality, Morbidity, Life Expectancy, Health Care Expenditures, Health Status, Functional Limitations

Source: Kaiser Family Foundation

Despite the understanding of the interplay between health and other factors, this has not broadly translated into developing policies and programs that consider how these factors interrelate or how to collectively leverage resources and expertise to generate better results.

There are a growing number of efforts to identify the most effective strategies for improving health by also addressing social needs — and to increase prioritization and investments to support them.[317, 318, 319, 320]

Addressing the social needs and factors that impact health are among the most important priorities for improving the health, well-being and quality of life of millions of Americans. It is important to expand these efforts — investing in the most effective strategies and continuing to develop additional approaches. Different strategies can help address different aspects of support — and are often complementary and should be considered synergistically.

Some key approaches include:

- Improving integration of healthcare and social services:
  - "Navigator and referral" models that identify unmet social needs and refer individuals to service;

- More comprehensive "navigator, referral and care coordination" models that not only identify needs but also support patients to access and receive services;
- "One stop" or "no wrong door" models where health and social services are highly integrated and/or co-located;
- Intermediaries — where an organization helps coordinate a number of community-based efforts and programs, including helping manage funding and accounting, evaluation and capacity building;

- A broader Accountable Communities for Health model that also works to address factors in the environment and policy changes — which can combine and coordinate the place-based local health partnership improvement model with the clinical-social service connection models. The referral and coordination elements are often supported through community health workers, social workers or other case coordinators;
- Increasing funding for key social programs to help improve health outcomes;
- Adjusting/increasing healthcare payments to pay more for low-income populations, such as risk-adjusted approaches for low-income patients and/or patients impacted by multiple factors. With guidance, this could help incentivize health organizations to invest in social support and prevention programs and offer better access and care for medically and/or socially complex patients and to help address the true needs of patients and disproportionaltely affected populations (perhaps, accompanied by reduced healthcare costs); and
- Expanding and increasing integration of community-based health and social support programs. Many of these programs go beyond addressing systems that support individualized-services to the broader factors that influence health, such as improving transportation systems or food financing initiatives to bring more affordable healthy options to underserved communities and addressing public safety issues to encourage physical activity and community connectedness.

Federal and state governments and private healthcare systems should adopt and expand the use of all of the models that increase integration and coordination of health, social services and broader community-based initiatives to help ensure people are connected to services that can help support their unmet social needs — and that help address the broader context of their environment — to support healthier communities and make healthier choices easier in their daily lives.

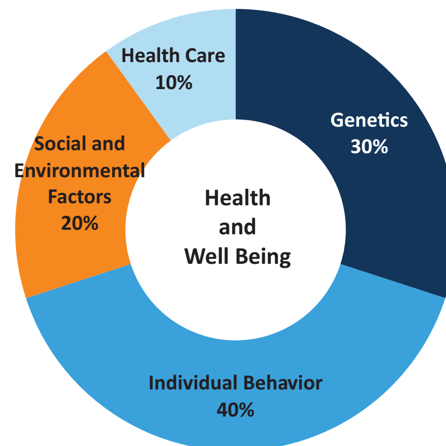
ADDRESSING HIGH NEEDS
Housing: 1.2 million people are homeless and 110,000 are chronically homeless.
Food and nutrition: 50 million people lack resources to purchase sufficient food and nutrition.
Energy and utilities: 44 percent of low-income families are economically energy insecure.
Transportation: 3.6 million people miss or delay care each year because of transportation barriers.
Safety: 200,000 ER visits per year are attributed to intimate partner violence injuries.

1. Potential Savings from Health and Social Service Coordinator Systems: Addressing Unmet Social Needs of High-Cost Individuals

An new analysis by TFAH and Healthsperien estimates that investing in Health and Social Service Coordinator Systems that address gaps between medical care and effective social service programs with a range of strategic and targeted interventions — through a "navigator-plus-support" approach — could yield between $15 billion and $72 billion in healthcare savings a year within 10 years, depending on how broadly these programs are supported (i.e., potentially reaching between 12 percent and 25 percent of low-income Americans — between 13 million and 28 million people).

Over the next decade, this represents the opportunity for a 1 percent to 4 percent reduction in healthcare spending for individuals living under 200 percent of the federal poverty level, with potentially greater savings over the longer term.

Impact of Different Factors on Risk of Premature Death

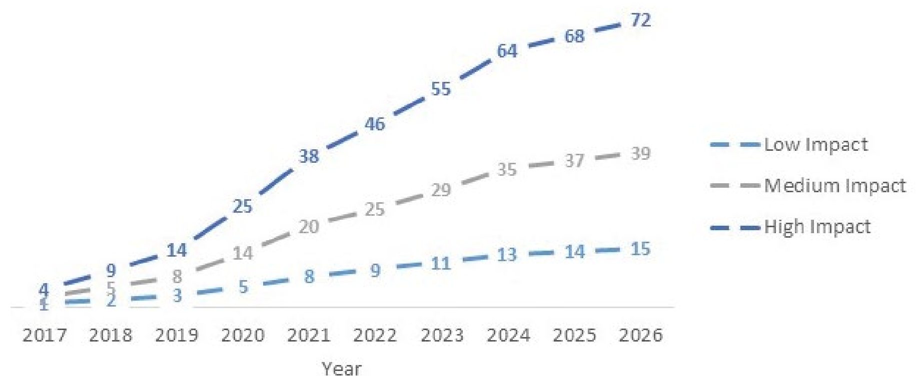


SOURCE: Schroeder, SA. (2007). We Can Do Better — Improving the Health of the American People. *NEJM*. 357:1221-8.

Source: KFF

Potential Health Care Savings Opportunity

10-year Scenarios, in billions of dollars



Source: Healthsperien analysis of Medical Expenditure Panel Survey (MEPS) data on concentration of health spending by income and CMS National Health Expenditure data

TFAH and Healthsperien developed these illustrative savings and cost scenarios based on current health spending in low-income populations and assumptions about potential adoption and program impact. This analysis provides ten year spending estimates for three scenarios that illustrate the impact of investments in this type of connector model that can establish mechanisms that identify patients with unmet social needs — and helps them navigate the system and receive services that address those needs.

For instance, case managers or community health workers help these patients navigate the system — providing referrals and follow up support to help them access key services — such as stable housing, adequate food, and needed non-emergency medical transportation services — which can help improve health and quality of life. These approaches also can serve as a platform to administer targeted social programs that address healthcare needs, collaborate with partner organizations, and identify ways to generate and share in program savings with the healthcare sector. Some of these models offer a pathway to a more integrated system that aligns health and social services in a manner that lowers costs and improves a person's well-being.

This analysis considers the impact that these connectors could have by focusing on identification, referral, system navigation and social service models that affect healthcare utilization and costs. It does not include the impact of the many healthcare delivery models or public health initiatives currently used today — for example, diabetes prevention initiatives, primary care medical homes, and asthma reduction — or broader policy change and community-wide approaches — for example, active living community development.

It is intended to be illustrative of the potential impact of this approach and also raises key considerations. For instance, the impact of targeting different populations (high cost, low income and/or broader focus); evaluating the existing evidence-base and the broader potential for increased programs; the need to increase research and sophisticated analyses of programs with multi-sector stakeholder/payers and potential "savers"; and considering total costs as well as net costs.

This analysis considered the current healthcare spending for low-income Americans (individuals living under 200 percent of the federal poverty level (FPL)) and reviewed research on targeted social service programs that have shown results in improving health and lowering healthcare costs. It then examined the potential for healthcare savings that could be achieved if more high-need individuals received targeted social services under a connector approach in their communities. Healthcare spending, primarily Medicare and Medicaid, for individuals living under 200 percent FPL is around $922 billion annually. More than half ($589 billion) of that is spent on the healthcare needs of 10 percent of that population (around 11 million "highest cost" individuals).

This approach helps identify the unmet needs of super-utilizers and the broader lower-income population and, connect them to relevant services in an organized way. Under more evolved forms of the model, which include partnerships with the healthcare sector, new models of social programs (e.g., supportive housing, meal delivery for chronic illness and transport to medical appointments) can address a range of community health needs and have an impact on a wider range of people. This analysis captures the potential opportunity for savings from super-utilizers, other high-cost individuals and the broader low-income population.

The analysis included three illustrative scenarios under which Health and Social Service Connector System models spread across the United States to different degrees in different parts of the country. In the scenarios, there were varied assumptions about the potential target population and the extent to which the programs run by the connector entity resulted in healthcare savings. A review of 15 leading health-and-social needs programs found healthcare spending could be reduced by 10 percent to 20 percent among the highest cost patients. The primary source of savings are decreases in avoidable emergency department visits, preventable hospitalizations and intensive and long hospital stays.

The analysis looked at gross savings, as a way of identifying the impact on the healthcare sector, and did not include costs (which are addressed in the discussion below).

- **A low-impact scenario:** If 12 percent of the low-income population were included in ACH programs, there would be an opportunity to save around $15 billion per year by 2026. This assumes the connector could help identify 20 percent of super-utilizers — around 2 million individuals that have the highest healthcare costs — and spending would decrease by 10 percent per capita for this group (by receiving services).
- **A medium-impact scenario:** If 19 percent of the low-income population were included in connector programs, the opportunity could increase to $39 billion in savings per year by 2026. This assumes the connector organizations could reach 35 percent of the super-utilizers and spending would decrease by 15 percent for individuals in this group.
- **A high-impact scenario:** If 25 percent of the low-income population were targeted by programs operated by connector entities, the opportunity could increase to $72 billion per year by 2026. This assumes the connector and services could reach 50 percent of the super-utilizers and spending could decrease by 20 percent per capita for this group.

"LINKED" PROGRAMS YIELDING 10 PERCENT TO 20 PERCENT SAVINGS

The program review identified 15 of the leading social determinant programs that have achieved improved health outcomes, as well as healthcare cost savings. Most of these programs focused on targeted programs that provided supportive housing services for homeless individuals with high healthcare costs and many showed savings that exceed the cost of running the program. For instance:

- A number of supportive housing programs have shown results in both health improvements and cost savings for high healthcare utilizer homeless patients with chronic conditions. These programs have demonstrated return on investments ranging from 2:1 to 6:1;
- A large-scale navigation and referral program for high healthcare utilizers delivered via community health workers shows a return of 4:1; and
- A program for "transportation disadvantaged" individuals demonstrated a ROI of more than 8:1.

See the following Results from *Studies and Initiatives Designed to Address the Social Determinants of Health* chart on pages 72-74 for the programs included in the review.

The analysis factored in potential savings in the range of 10 percent to 20 percent for individuals with the greatest healthcare needs (the top 10 percent of spenders) and assumed lower savings for low-income individuals with less complex needs. For instance, the review found savings for the supportive housing programs were between 45 percent to 75 percent for super-utilizer, homeless populations; those populations tend to have costs at the very high end of the distribution (closer to the top one percent). Other studies found a savings potential of 12 percent to 26 percent for the broader Medicaid population or homeless individuals with lower healthcare needs and costs. Relying on this range to inform our scenario development, this analysis incorporated the potential impact for the broader population (where the impact is the greatest for the high need population but still has an impact for the lower-need segment of this population).

The potential savings analysis also considered that in the coming decade, a broad and growing mix of programs and interventions could be implemented to address social determinants and these estimates assumed there would be a range of possible scenarios and evidence-based interventions, including supportive housing; transportation for the mobility-impaired; nutrition for people with chronic conditions; and general programs that keep complex patients out of the emergency room, hospital and nursing home. While most of the current programs that have been evaluated and demonstrated direct healthcare savings have been targeted to homeless populations, the opportunity curve was based on potential savings for the broader low-income, but still high-cost population.

In the studies reviewed, the primary sources of savings are decreased emergency department visits and inpatient hospitalizations. In the healthcare system overall, those categories of spending comprise a substantial share of spending; hospital spending comprises about 40 percent of total spending. For the highest cost individuals, facility costs play an even larger role. An analysis of the Medicare population showed that about 79 percent of inpatient costs and 33 percent of all emergency visits were for those individuals.[321] The studies reviewed commonly showed an impact on those facility-based services, but also on other high-cost services like specialty care. For example, in one of the studies, the impact of supportive housing on Medicaid enrollees in Oregon, emergency room utilization declined 18 percent, specialty care decreased by 22 percent, inpatient events declined (including inpatient behavioral health), while reported access to primary care increased 40 percent.[322]

High costs for emergency room and inpatient services often result from acute incidents that could have been avoided with upstream interventions, for example in primary care, chronic condition management or other interventions that addresses deficits in social factors (unmanaged diabetes, for example). Research shows that about 56 percent of emergency room visits are potentially avoidable.[323] Medicare-focused research found that for the highest-cost patients, almost 41 percent of costs associated with emergency room visits are preventable. For those same patients, research showed that about 10 percent of hospital costs are considered preventable.[324]

Social programs that can reduce high costs of care and prevent the need for utilization of high cost services are those that help patients access and engage more with primary care models, that identify and address upstream risk factors and that enable greater management of chronic conditions. Programs with the greatest potential identify and prospectively target individuals who tend to use high-cost services when they could more effectively have been treated in lower cost settings. Addressing social deficits faced by individuals in their homes and community is important for effective chronic condition management, prospective care planning, post-discharge condition monitoring and the establishment of stable primary care relationships for at-risk patients.

HEALTHCARE SPENDING AND POTENTIAL SAVINGS

Assumptions and Primary Outcomes from Scenario Analysis						
Units in billions of dollars, millions of people						
	Baseline (2014) by category of spending		Low-impact scenario			
	Spending	*People*	*% savings*	*% people*	*$ savings*	*people*
Top 10 percent	589	11	10%	20%	12	2
11% to 25%	231	17	8%	15%	3	2
26% to 100%	101	83	5%	10%	1	8
Total	**922**	**110**	**2%**	**12%**	**15**	**13**
			Medium-impact scenario			
	Spending	*People*	*% savings*	*% people*	*$ savings*	*people*
Top 10 percent	589	11	15%	35%	31	4
11% to 25%	231	17	13%	25%	7	4
26% to 100%	101	83	8%	15%	1	12
Total	**922**	**110**	**4%**	**19%**	**39**	**20**
			High-impact scenario			
	Spending	*People*	*% savings*	*% people*	*$ savings*	*people*
Top 10 percent	589	11	20%	50%	59	6
11% to 25%	231	17	15%	35%	12	6
26% to 100%	101	83	10%	20%	2	17
Total	**922**	**110**	**8%**	**25%**	**73**	**28**

In 2014, around $920 billion was spent on healthcare for Americans living below 200 percent FPL, based on Medical Expenditure Panel Survey (MEPS) data.[325] This is around $8,000 per person. The analysis assumes healthcare spending would increase each year at roughly the rate of National Health Expenditures (about 5.5 percent per year) and that system stakeholders would incrementally phase in adoption of those programs over the 10-year period.[326]

Research shows that about 53 percent of healthcare spending for low-income individuals is for 5 percent of that population (including super utilizers); 10 percent of the spending is for 64 percent of this population; and 25 percent of spending for about 90 percent of this population.

Because of the distribution of spending, the analysis assumed that the most meaningful interventions would address underlying social challenges for the higher cost group more than they would for the lower-cost segment of the low-income population. The analysis assumed in the low-impact scenario is that participation overall would be about 12 percent, and the highest scenario would be around twice that amount (25 percent). The estimates assume limits in scaling the model within a 10-year horizon.

The potential net savings described would accrue to both the Medicaid and Medicare programs, as well as other health programs, though they would have a greater impact on Medicaid. The analysis incorporated a long phase-in to reflect the early stage of endeavors today and the effort and evidence required to pursue robust initiatives at scale. As part of that phase-in assumption, it is anticipated

that programs only reach half of their full potential by the 10-year mark. New spending on some health services, such as higher use of primary care and prescription drug use that result from those initiatives is included in these estimates.

This analysis only looked at healthcare spending. It did not include costs of non-health services — such as housing, food or transportation programs. But, for instance, under the low-impact scenario, with close to $80 billion in 10-year savings, if there was an ROI of 3:1, it would result in a net of $53 billion savings if all program spending were taken into account.

Many of the programs reviewed showed ROIs from 2:1 to 6:1 (direct costs). However, others had a 1:1 return or did not show cost savings when all costs were taken into account. The healthcare savings component, however, remains important to consider in the development of program designs, the integration of partner organizations working with the connector and the need for external funding. Taken as a whole, innovations in the various aspects of those programs and resulting synergies might lead to net savings in the future. An example might include support from the Medicaid program for connecting to housing services plus direct rental assistance from other sources and broader resources for other supportive services.

It is expected that healthcare systems and other systems will look to support the most effective — including cost-effective — programs. As these types of efforts proliferate, there would be increased understanding and evaluation of their performance — and also increased consideration for how to determine the collective impact — and collective potential returns, across sectors (for instance, for linked housing and health programs).

All figures in billions of dollars		**Estimated 10-Year Costs Based on ROI Assumptions**			**Net 10-Year Savings Based on ROI Assumptions**		
Scenarios	**10-Year Estimated Savings**	**2 to 1**	**3 to 1**	**4 to 1**	**2 to 1**	**3 to 1**	**4 to 1**
Low	80	40	27	20	40	53	60
Medium	200	100	67	50	100	133	150
High	400	200	133	100	200	167	300

RESULTS FROM STUDIES AND INITIATIVES DESIGNED TO ADDRESS THE SOCIAL DETERMINANTS OF HEALTH			
INITIATIVE FOCUS	**INTERVENTION**	**FINDINGS**	**ANALYSIS/CONSIDERATIONS**
Supportive housing – Medicaid homeless **(Portland, Oregon)**	**Oregon Center for Outcomes Research and Education (CORE)** This pilot study analyzed relative Medicaid costs for 98 homeless individuals before and after receiving supportive housing with integrated health services in a project-based housing arrangement between 2010 and 2014. The study site was the Bud Clark Commons in Portland, Oregon (130 units), a "housing first" facility which has on site services for case management, substance abuse, mental health and employment counseling.	This analysis of Medicaid administrative claims data and survey responses (retrospective and longitudinal) found significantly lower overall healthcare spending for individuals after they moved into supportive housing.[a] Results indicate per member per month expenditure reduction of $727 (from $1,626 to $899 per month) for the Medicaid participants in the pilot in the first year after they received supportive housing. Sources of the **45 percent reduction in Medicaid costs** include reductions in emergency department use, inpatient care use, outpatient labs and specialty care. The study observed lower monthly costs in second year after moving in ($995 per member per month — a reduction of $631 per member per month).	Annual cost of supportive housing in the study was $11,600 (roughly $960 per member per month), so the **healthcare savings did not offset intervention costs.** Survey data indicate that the population had improved access to care and better health outcomes.
Supportive housing – Medicaid	**Oregon Center for Outcomes Research and Education (CORE)** This pilot study analyzed the impact of affordable housing on Medicaid spending for 1,625 individuals in 145 participating properties. Researchers joined with Health Share of Oregon, an Oregon coordinated care organization.[b]	The retrospective analysis of Medicaid claims data (2011 to 2015) showed the intervention reduced Medicaid spending **by 12 percent on average**, a decrease from $386 per member per month to $338 per member per month. Reductions in costs for individuals in permanent supportive housing, with case management and mental health/ substance abuse treatment, were 14 percent. For seniors and disabled individuals, costs declined 16 percent. Use of emergency services decreased by 18 percent; primary care service use increased by 20 percent.	The analysis noted that healthcare savings did not offset the cost of housing.
Supportive housing for high-cost homeless with chronic conditions **(Chicago)**	This cost analysis is from a randomized control trial (one of the first in this area) of 407 homeless adults with chronic conditions in Chicago, many of whom were post-hospitalization analyzed costs for medical, housing, legal and case management services. It analyzed the impact of the provision of housing (per a "Housing First" model) and case management during 2003-2007.	The study (a follow up to earlier JAMA research/ Housing for Health Partnership) showed net annual savings of $6,307 per person (roughly $500 per month) for all services, including housing.[c] **Net costs were about 17 percent lower than for the non-intervention population; healthcare costs were 26 percent lower (about $716 per month).** Primary savings came from reduced hospitalizations. Offsetting costs came from spending on housing and case management, which accounted for about half of the net savings and was $3,337 more (about $278 more per month) than for the non-intervention population.	Although the study results were **not statistically significant**, findings offer model for future investigations. Spending on housing and case management services was about one-third of health and legal savings, suggesting a potential **return of about 3:1**.
Supportive housing for homeless Medicaid population with high utilization **(Pittsburgh)**	**Pittsburgh (UPMC *for You*)** – In its Shelter Plus Care program, the health plan provided primary care clinical services and high-touch care coordination to a high-cost homeless population in partnership with a local human services agency and relying on federal rental assistance subsidies.	A pre-post study analyzed claims experience of 22 enrollees and found that the program **reduced per member per month healthcare costs by 23 percent**, decreasing from $4,100 to $3,200 in the first year after the program.[d] Additional analysis published in March 2016 showed average per member per month medical costs decreasing by 11.5 percent.[e]	The pilot project remains active and expects additional findings about the return on investment.
Supportive housing for high-cost homeless **(Los Angeles)**	This **Los Angeles 10th Decile Project** targeted supportive housing services to a high cost subset of the homeless population – in the highest tenth decile of spending. The pilot program covered 2011 -2013.	The study found current public spending on the target population (including health and other services) was $5,500 per month on average, 55 to 60 percent of which was for hospital services.[f] Service use reduction came from emergency rooms, hospital readmissions, and time in the hospital. Based on 2 years of observation, the project saw a **73 percent reduction in spending**, with average public and hospital costs (excluding housing) decreasing from $63,808 to $16,913.[g]	For every dollar spent, there were savings of $2 in the following year, and $6 in savings in subsequent years **(a return on investment of 2:1 to 6:1).**

RESULTS FROM STUDIES AND INITIATIVES DESIGNED TO ADDRESS THE SOCIAL DETERMINANTS OF HEALTH			
INITIATIVE FOCUS	**INTERVENTION**	**FINDINGS**	**ANALYSIS/CONSIDERATIONS**
Supportive housing for chronically homeless with severe substance abuse problems **(Seattle)**	This intervention analyzed public spending (including for prison, shelter, substance abuse treatment, and Medicaid) for a Seattle-based population in a "Housing First" facility (Downtown Eastlake Emergency Service Center).	The supportive housing intervention reduced monthly public spending **after six months from $4,066 per person a month to $1,492 and to $958 after 12 months in housing.** Savings per month over a year period were $3,108, or a **76 percent decrease in spending**. After accounting for housing costs of $659 per month, net savings per person was $2,499 per month.	Savings were not exclusively for healthcare spending. In this example, the return on investment for supportive housing was about **4.7:1.**
Supportive housing for chronically homeless **(Massachusetts)**	Massachusetts study focuses on chronically homeless and intervention effect on congregated and scattered site housing. The 2006 study analyzed the impact on Medicaid spending. Subsequently, the state implemented a "Housing First" program.	The study looked at Medicaid costs pre and 1 year post supportive housing. Average annual Medicaid costs per person decreased to $8,499 (from $26,124), a **67 percent reduction in spending**. Inclusion of housing costs yields net savings for housing and Medicaid of $8,949.[j] Recent estimates from a state-funded study suggest the program reduced per person annual spending from $37,525 to $9,955 **(a reduction of 73 percent)**. Savings primarily were for medical spending, but also for shelter and incarceration costs. Housing costs driving this savings were $15,468.[k]	Additional supportive housing costs offset about half of the healthcare savings in the original study; that equates to **a return on investment of 2:1**. The ongoing program shows a similar rate of return.
Supportive housing for homeless **(New York City)**	Intervention from 1989 to 1997 in **New York City** quantified costs of homelessness and supportive housing for 4,679 homeless and mentally ill individuals.	Public costs (including, but not exclusively health, for target population fell by $16,282 (from $40,451), **about a 40 percent reduction.**[l]	
Care management and supportive housing for high-cost Medicaid **(New York City)**	New York City Health and Hospitals Corporation 3-year pilot (ending in 2012) targeted high-cost Medicaid enrollees with complex conditions with supportive housing, care coordination and social services. Half of target population was homeless.	Preliminary analysis found that for the homeless patients, the intervention led to a **20 percent reduction in monthly Medicaid spending**. Factors driving that reduction include a 47 percent reduction in hospitalizations and more than a 50 percent reduction in emergency room visits. (Spending for hospital services decreased by 27 percent and for emergency room visits decreased by 30 percent.)[m]	
Community Health Worker Intervention for High Utilizers	Molina navigation and referral program connected community health workers (CHWs) with high-utilizer members to help them navigate the healthcare system and connect them with housing, education, and employment resources.[n,o] Joint financing came from Molina and the University of New Mexico: The University paid for CHW training with Kellogg Foundation; Molina paid salaries.	Early results collected in this retrospective study over a 25-month period from 2007 to 2009 indicated savings from reduced hospital use, including emergency department visits and inpatient days, improved patient outcomes, and a lower rate of substance abuse.	**Results indicate a return on investment of 4:1.** Estimated spending for the program was about $521,000 during the study period. Starting in 2014, the state included the program (Community Connectors) in its contracts with Medicaid managed care plans. Molina plans to expand the program into all states in which it operates.
Housing supports for members with behavioral health needs **(Chicago)**	Medicaid managed care organization Centene (IlliniCare/Cenpatico) collaborated with Thresholds, a provider organization, to coordinate care for plan members with behavioral health needs. The approach includes a comprehensive team consisting of psychiatrists, psychotherapists, nurses, and community support specialists.	A 12-month pilot demonstrated that the program lowered **hospital costs by 60 percent** and encouraged better outpatient care.[p] From those results, Centene decided to pay Thresholds a per member per month fee for their services with flexibility for housing services built into the rate. Assuming hospital spending is about 40 percent of total healthcare spending, **savings approximated 24 percent.**	

RESULTS FROM STUDIES AND INITIATIVES DESIGNED TO ADDRESS THE SOCIAL DETERMINANTS OF HEALTH

INITIATIVE FOCUS	INTERVENTION	FINDINGS	ANALYSIS/CONSIDERATIONS
Accountable care organization with housing component - community level (Hennepin County, Minnesota)	Hennepin Health is a county-run accountable care organization in Minnesota that grew out of a Medicaid demonstration project and began enrolling patients in 2012. It is part of a partnership with the county human services and public health department, a provider system, a health center, and a Medicaid health plan. It integrates health and social services and shares risk with the partners in a capitated model.	A 2014 evaluation of Medicaid housing services commissioned by the federal Department of Health and Human Services reports that at the end of its first year, the Hennepin initiative achieved a **24 percent reduction in emergency department visits and a 29 percent decrease in inpatient hospitalizations.**[q] Hennepin Health expects that investments in social services will decrease healthcare costs further. For example, it assisted 200 patients with complex medical needs or a history of repeat hospitalizations to access housing.[r]	Researchers attribute reduction in utilization to the **proximity of the urgent care center and the emergency department**. Experts have also suggested that the **co-location of behavioral health services** may have contributed to the reduction in emergency visits. No information on the impact of the housing intervention is available.
Supportive housing and substance abuse treatment for homeless individuals (Federal)	This collaborative effort – the Collaborative Initiative to Help End Chronic Homelessness – is a federal program that provides multiple, coordinated services to homeless individuals.	Findings from the study showed improvements in healthcare outcomes and a reduction of 50 percent in total average quarterly health costs. **Spending per person per month decreased from $6,832 to $3,376, a 50 percent drop.**[s]	
Statewide approach for Medicaid (Vermont)	Vermont's Blueprint for Health relies on medical homes, practice facilitators and Community Health Teams that provide care coordination, counseling, substance abuse treatment support, health coaching and linkages to affordable housing.	Analysis of Medicaid members in pilot sites showed lower hospitalization rates, fewer visits with medical specialists and fewer surgical specialty visits. Per member per month costs for inpatient services decreased by 22 percent overall; emergency room costs declined 36 percent. **Overall, per member per month costs declined by 11.6 percent.**[t]	
Community wide approach for high utilizers (Camden, New Jersey)	The Camden Coalition for Health Care Providers targets high utilizers with intensive care management services and links individuals to appropriate medical and social services.	Research shows that monthly hospital charges for individuals in the intervention fell by 56 percent, with utilization declines in emergency room and hospital visits.[u] Research about the program's impact is ongoing.	Replication of the model is underway in other communities with foundation and CMMI funding.
Transportation (Florida)	Analysis calculated the return to the state of Florida for its investments in "transportation disadvantaged" programs in 2007 – that is, programs for individuals who because of age, disability or income do not have access to public transport options.[v]	Overall, Florida invested $372 million in transportation programs for disadvantaged individuals in five areas: medical, employment, education, nutrition and life sustaining. State savings related to those investments (including, but not exclusively health) were $3.2 billion. About one-third of the transportation investment was for medical-related trips, however.	The estimated **return on investment for transportation assistance programs was 8.5:1 overall.** The highest returns were in the area of nutrition (12.5:1) and medical care (11:1).
Food – Diabetes focus (Ohio)	CareSource of Ohio partnered with a local food bank to create a portable, diabetic-friendly food pack that cost less than 15 dollars each. The food pack allows the care management team to expand the member's understanding of diabetes basics, discuss diabetes self-management, support health goals, and connect members to relevant social services.	The Diabetic Food Pack Initiative is a 2-year pilot program supported by a grant of $140,000 to the food bank from the CareSource Foundation. The program is still new, but the program has delivered 1,350 diabetic food packs so far and CareSource is still collecting survey data. An initial survey of more than 80 participants shows a high level of program satisfaction.[x]	

a Wright BJ, Vartanian KB, Li HF, Royal N, Matson JK, "Formerly Homeless People Had Lower Overall Health Care Expenditures After Moving Into Supportive Housing," *Health Affairs,* 35, no. 1 (2016):20-27.

b "Health in Housing: Exploring the Intersection between Housing and Health Care," Center for Outcomes Research and Education (CORE) and Enterprise Community Partners, 2016.

c Basu A, et. al. "Comparative Cost Analysis of Housing and Case Management Program for Chronically Ill Homeless Adults Compared to Usual Care," Health Services Research, February 2012.

d Gottlieb, L, et. al, "Clinical Interventions Addressing Nonmedical Health Determinants in Medicaid Managed Care," *American Journal of Managed Care,* May 2016.

e "Population Health Investments by Health Plans and Large Provider Organizations – Exploring the Business Case," Institute on Urban Health Research and Practice, Northeastern University, March 2016.

f "In Focus: Using Housing to Improve Health and Reduce the Costs of Caring for the Homeless," Quality Matters Archive, The Commonwealth Fund, October/November 2014 Issue

g Taylor, L et. al, "Leveraging the Social Determinants of Health: What Works?" Yale Global Health Leadership Institute and the Blue Cross and Blue Shield Foundation of Massachusetts, June 2015

h Taylor, L et. al, "Leveraging the Social Determinants of Health: What Works?" Yale Global Health Leadership Institute and the Blue Cross and Blue Shield Foundation of Massachusetts, June 2015

i "In Focus: Using Housing to Improve Health and Reduce the Costs of Caring for the Homeless," *Quality Matters Archive,* The Commonwealth Fund, October/November 2014 Issue.

j "Summary of Studies: Medicaid/Health Services Utilization and Costs, Corporation for Supportive Housing, September 2009.

k "Home and Healthy for Good, Permanent Supportive Housing: A Solution-Driven Model," Massachusetts Housing and Shelter Alliance, *Progress Report,* June 2015.

l "In Focus: Using Housing to Improve Health and Reduce the Costs of Caring for the Homeless," *Quality Matters Archive,* The Commonwealth Fund, October/November 2014 Issue.

m Evans, M., "Residential therapy: Hospitals take on finding housing for homeless patients, hoping to reduce readmissions, lower costs," *Modern Healthcare,* September 22, 2012.

n D Johnson, et. al, "Community health workers and Medicaid managed care in New Mexico," *J Community Health,* 2012 Jun; 37(3):563-71.

o "Population Health Investments by Health Plans and Large Provider Organizations – Exploring the Business Case," Institute on Urban Health Research and Practice, Northeastern University, March 2016.

p "In Focus: Using Housing to Improve Health and Reduce the Costs of Caring for the Homeless," *Quality Matters Archive,* The Commonwealth Fund, October/November 2014 Issue.

q Burt, Martha et. al, "Medicaid and Permanent Supportive Housing For Chronically Homeless Individuals: Emerging Practices From The Field," Office of the Assistant Secretary for Planning and Evaluation (ASPE), August 2014.

r Sandberg SF, Erikson C, Owen R, Vickery KD, Shimotsu ST, Linzer M, Garrett NA, Johnsrud KA, Soderlund DM, DeCubellis J, "Hennepin Health: A Safety-net Accountable Care Organization for the Expanded Medicaid Population," *Health Affairs,* 2014 Nov;33(11):1975-84.

s Taylor, L et. al, "Leveraging the Social Determinants of Health: What Works?" Yale Global Health Leadership Institute and the Blue Cross and Blue Shield Foundation of Massachusetts, June 2015

t Gottlieb, L, et. al, "Clinical Interventions Addressing Nonmedical Health Determinants in Medicaid Managed Care," *American Journal of Managed Care,* May 2016.

u Bachrach, D et. al., "Addressing Patients' Social Needs: An Emerging Business Case for Provider Investment," *Manatt Health Solutions,* May 2014.

v Cronin, JJ et. al, Florida Transportation Disadvantaged Programs, Return on Investment Study, The Marketing Institute, Florida State University College of Business, March 2008.

w HK Seligman, et. al., "A Pilot Food Bank Intervention Featuring Diabetes-Appropriate Food Improved Glycemic Control Among Clients in Three States," *Health Affairs,* 34(11):1956-63, November 2015.

x Association for Community Affiliated Plans, "Positively impacting social determinants of health: How safety net health plans lead the way," June 2014

Leveraging Social Determinants of Health

The Blue Cross Blue Shield of Massachusetts Foundation and Yale Global Health Leadership Institute reviewed a range of programs and studies in *Leveraging the Social Determinants of Health: What Works?,* and some key findings included that:[327]

- There is strong evidence that increased investment in selected social services as well as various models of partnership between healthcare and social services can confer substantial health benefits and reduce healthcare costs for targeted populations, including:
  - Housing support for low-income individuals and families;
  - Nutritional assistance for high-risk women, infants and children, as well as older adults and people with disabilities;
  - Case management and community outreach for high-need, low-income families and older adults, as well as for children with asthma;
  - Integrated healthcare and housing services for at-risk individuals and families;
- Investment in some other social service programs result in improved health outcomes, although their impact on health-care costs has not been adequately examined, including income support and early childhood education; and
- Additional research on the return on investment is needed to fully appreciate and quantify the value of these types of programs.

In addition, the Commonwealth Fund, Skoll Foundation and Pershing Square Foundation's *Addressing Patient's Social Needs: An Emerging Business Case for Potential Investment* report identified a number of techniques for addressing patients' social needs, including: housing, food, public benefits and employment.[328]

TECHNIQUES FOR ADDRESSING PATIENTS' SOCIAL NEEDS	
Social Need	**Technique to Address it**
Housing	Assess home safety • Connect individuals to housekeeping services • Connect individuals to pest extermination services • Connect individuals to appliance repair services • Assist individuals with legal needs related to housing, such as housing code violations and utility shutoffs
Food	Connect individuals to food supports, such as the Supplemental Nutrition Assistance Program, a food bank, the Women, Infants and Children Program, and Meals on Wheels • Connect individuals to a home care agency that can prepare meals • Provide prescriptions for healthy foods
Public Benefits	Help individuals apply for Medicaid and overturn wrongful denials • Help individuals apply for Social Security Disability Insurance and Supplemental Security Income, and overturn wrongful denials • Provide counseling on available public benefits
Employment	Offer workshops to improve professional qualifications

FOR EXAMPLE:

As one example of the types of policies that can impact health, in 2015, TFAH released *A Healthy Early Childhood Action Plan: Policies for a Lifetime of Well-being* report, which included a review of broad range policies beyond direct health policies and programs that can help improve the lives of young children, such as:

- **Food Assistance:** Supplemental Nutrition Assistance Program (SNAP); Women, Infants and Children Program; Healthy Food Financing Initiatives (HFFI); New Markets Tax Credits (NMTC);
- **Housing:** Federal rental assistance programs — Housing Choice Vouchers, Section 8 Project-Based Rental Assistance, Public Housing; National Housing Trust Fund;
- **Safe, Stable and Nurturing Relationships:** The Maternal, Infant and Early Childhood Home Visiting Program (MIECHVP); Child Abuse Prevention and Treatment Act (CAPTA);
- **Income Support Programs:** Earned Income Tax Credit; Temporary Assistance for Needy Families (TANF) program; State Minimum Wage Levels; State Payday Loan Caps; Unemployment Insurance; Child Support; Family and Medical Leave Act (FMLA);
- **Affordable Quality Child Care:** Child and Adult Care Food Program (CACFP); Child Care and Development Block Grant Act of 2014 — Child Care and Development Fund (CCDF); Social Services Block Grant (SSBG or Title XX); Child and Dependent Care (CADC) Tax Credit; Dependent Care Flexible Spending Accounts; and
- **Early Childhood Education:** Head Start & Early Head Start; Race to the Top Early Learning Challenge; Preschool Development Grants.

E. SCALING HIGH-IMPACT COMMUNITY-BASED AND CLINICAL-COMMUNITY HEALTH IMPROVEMENT STRATEGIES

A number of government and other expert groups have identified leading health improvement strategies — that, if scaled, could have a dramatic impact on improving health.

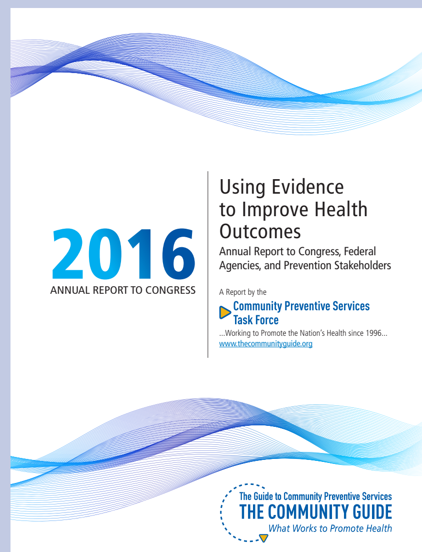
Efforts like local health or well-being improvement partnerships; Accountable Communities for Health; Medicare, Medicaid and private insurance reimbursement policies; strategically aligning federal, state and government programs to focus on health and other outcomes; social impact financing and improving core public health systems are all foundations and mechanisms to help support the proliferation of these programs around the country.

Examples for Resources for Community-Based Health Improvement Programs

Some resources that identify high-impact community-based health improvement programs include:

CDC's *Guide to Community Preventive Services,* a compendium review of prevention programs by The New York Academy of Medicine (NYAM), series of reviews by evidence-based research at NIH, SAMHSA's National Registry of Evidence-based Programs and Practices (NREPP), the Coalition for Evidence-based Policy, Communities that Care, Child Trends, The Institute of Education Sciences' What Works Clearinghouse, County Health Rankings and Roadmaps' What Works for Health and CDC's Health Education Curriculum Analysis Tool (HECAT).[329, 330, 331, 332, 333, 334, 335, 336, 337, 338]

COMMUNITY GUIDE TO PREVENTIVE SERVICES[339]



PRIORITY AREAS FOR FUTURE COMMUNITY GUIDE REVIEWS
Cardiovascular Disease Prevention and Control
Environmental Health
Injury Prevention
Mental Health: Improving
Obesity Prevention and Control (also includes Nutrition: Promoting Good)
Older Adults
Physical Activity: Increasing
Sleep Health
Social Determinants of Health Substance Abuse (e.g., Prescription Drug Overdose)
Violence Prevention

20 TOPICS ADDRESSED BY TASK FORCE REVIEWS*
Adolescent Health: Improving
Alcohol: Preventing Excessive Consumption
Asthma Control
Birth Defects: Preventing
Cancer Prevention and Control*
Cardiovascular Disease Prevention and Control*
Diabetes Prevention and Control*
Emergency Preparedness and Response
Health Communication and Social Marketing
Health Disparities—Health Equity*
HIV/AIDS, Sexually Transmitted Diseases, and Teen Pregnancy: Preventing
Mental Health: Improving
Motor Vehicle–Related Injury Prevention
Obesity Prevention and Control* (includes Nutrition: Promoting Good)
Oral Health: Improving
Physical Activity: Increasing*
Tobacco Use and Second-Hand Smoke Exposure: Reducing
Vaccination: Increasing Appropriate*
Violence Prevention*
Worksite Health Promotion

*Asterisks and dark blue text indicate topics with active systematic reviews in FY 2015.

CDC's Health Impact in 5 Years (HI-5) Initiative highlights top evidence-based community-wide approaches that can help improve health within five years — and reduce costs beyond five years.[340] Public and private organizations can use this list to assess the scientific evidence for short-term health outcomes and overall cost impacts of these community-wide approaches.

Strategy	Outcomes and ROIs
CHANGING THE CONTEXT	
School-based Efforts to Increase Physical Activity	Elementary or middle school programs that added additional physical activity to the school day for students were estimated to result in a benefit to cost ratio of approximately $33:$1 (in 2015 dollars) over time (decreased healthcare costs and increased labor market earnings).[341]
School-based Violence Prevention	A review of 53 school-based violence prevention program studies found reduced violence rates of 29.2 percent among high school students, 7.3 percent among middle school students, 18 percent among elementary school students and 32.4 percent among pre-kindergarten and kindergarten students — and led to decreased substance misuse and increased academic performance.[342] In addition, evaluations of three of the programs found ROIs ranging from $15 to $81 for every $1 spent.[343, 344, 345]
Safe Routes to School	An evaluation of projects in four states found increases in overall active school travel (13 percent to 18 percent), walking (10 percent to 14 percent) and bicycling (3 percent).346 In New York City, Safe Routes to School roadway modifications (e.g., installing new traffic and pedestrian signals) were projected to result in a net benefit of $230 million due to reductions in injuries.[347]
Motorcycle Injury Prevention	Motorcycle helmet laws increase helmet use from around 50 percent or less to more than 90 percent.[348, 349, 350, 351] A National Highway Traffic Safety Administration analysis found that helmets saved an estimated 1,630 lives, $2.8 billion in economic costs and $17.3 billion in overall costs including health and lost quality of life.
Tobacco Control Interventions	Studies of mass media campaigns have found a 6.7 percentage point decrease in initiating tobacco use among youth and a ROI ranging from $7 to $74 saved per $1 spent.[352] Increasing the price of tobacco products by 20 percent was associated with a 15 percent reduction in demand for tobacco and a 19 percent increase in quitting among youth and young adults, and healthcare cost savings ranging from -$0.14 to $90.02 per person per year.[353] Smoke-free policies were associated with a 5 percent reduction in cardiovascular and a 20 percent reduction in asthma-related hospital admissions. Estimates for nationwide smoke-free policy would result in net savings ranging from $700 to $1,297 per person not currently covered by a smoke-free policy.[354]
Access to Clean Syringes	Estimates that an additional U.S. investment of $10 million to $15 million per year to expand access to clean syringes could avert 194 to 816 HIV infections annually with an ROI of $7.58 to $6.38 per $1 spent.[355]
Pricing Strategies for Alcohol Products	Across all alcoholic beverages, a 10 percent increase in price is estimated to reduce consumption by 5 percent.[356] Current alcohol tax rates implemented over 10 years in the North American region could avert 1,224 disability-adjusted life years at a cost of $395 per year of disability avoided.[357]
Multi-Component Worksite Obesity Prevention	A study of ROI to employers found that a 5 percent weight loss among overweight and obese employees would reduce employer expenditures by $90 per employee (due to reductions in medical costs and costs of missed work days).[358]
SOCIAL DETERMINANTS OF HEALTH	
Early Childhood Education	Benefits to cost ratio estimates range from $3 to $5 for every $1 invested in early childhood programs, including Head Start, Child-Parent Centers and state and district level programs.[359, 360, 361]
Clean Diesel Bus Fleets	Retrofitting existing buses with clean diesel technology can reduce diesel emissions by up to 85 percent — and in Washington state, retrofitted school buses helped decrease pediatric asthma and bronchitis by 23 percent and pneumonia by 36 percent by month.[362, 363] According to the Environmental Protection Agency, every federal dollar invested in clean diesel projects yields $5 to $21 in public health related savings.[364]
Public Transportation Systems	Public transportation systems has less than one death per billion passenger miles traveled compared to more than seven in cars and trucks — and produces only 5 percent as much carbon monoxide and 50 percent as much carbon dioxide than cars and trucks.[365, 366] Public transport is associated with 8 minutes to 33 minutes of additional walking per day.[367] For a city with a million residents, an increase from 10 percent to 20 percent in households located in transit-oriented developments produces health benefits ranging from $71 million to $216 million annually and saves travel time and costs.[368, 369]
Home Improvement Loans and Grants	The overall ROI from improvements to health and energy efficiency due to insulation is estimated to be $1.50 to $2 per $1 of installation costs (including better respiratory and mental health and fewer missed school and work days.[370, 371]
Earned Income Tax Credits	Infant mortality drops by 23.2 per 100,000 for every 10 percent increase in Earned Income Tax Credits (EITC).[372] A $1,000 increase in ETIC income for single mothers with limited education income has been associated with a 7 to 11 percent reduction in rate of low birthweight babies.[373] EITC payments to eligible California residents contributed over $5 billion in business sales and nearly 30,000 jobs to the state economy.[374]
Water Fluoridation	Fluoridating the water supplies lead to a 15 percent decrease in dental cavities — and can lead to a return of $1.01 to $135 for every $1 invested .[375, 376]

THE 6|18 INITIATIVE

Accelerating Evidence into Action

CDC is taking a lead role in partnering with healthcare purchasers, payer and providers to identify some key high-impact, evidence-based strategies for addressing high-burden health conditions that support better patient health beyond traditional medical care practices — to expand the use and support for these approaches by the healthcare system. These initiatives help identify top initial priority areas of focus and align evidence-based prevention practices with value-based healthcare models.

The 6|18 Initiative: Accelerating Evidence into Action targets six common and costly health conditions with 18 proven intervention strategies. CDC is providing technical assistance and collaborating with employers, private insurers and Medicaid programs to implement priority 6|18 strategies.[377] With support from the RWJF, CDC, the Center for Health Care Strategies (CHCS), the Association of State and Territorial Health Officials and the National Association of Medicaid Directors are working with state Medicaid and public health agencies to help with the implementation of 6|18 tobacco, asthma and unintended pregnancy efforts in nine states: Colorado, Georgia, Louisiana, Massachusetts, Michigan, Minnesota, New York, Rhode Island and South Carolina.[378]

HIGH-BURDEN HEALTH CONDITIONS AND EVIDENCE-BASED INTERVENTIONS

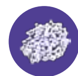
The following is a list of six high-burden health conditions with 18 effective interventions that CDC is prioritizing to improve health and control health care costs.

REDUCE TOBACCO USE

- Expand access to evidence-based tobacco cessation treatments, including individual, group, and telephone counseling and FDA-approved cessation medications—in accordance with the 2008 Public Health Service Clinical Practice Guideline.
- Remove barriers that impede access to covered cessation treatments, such as cost sharing and prior authorization.
- Promote increased utilization of covered treatment benefits by tobacco users.

CONTROL HIGH BLOOD PRESSURE

- Promote strategies that improve access and adherence to anti-hypertensive and lipid- lowering medications.
- Promote a team-based approach to hypertension control (e.g., physician, pharmacist, lay health worker, and patient teams).
- Provide access to devices for self-measured blood pressure monitoring for home-use and create individual, provider, and health system incentives for compliance and meeting of goals.



PREVENT HEALTHCARE-ASSOCIATED INFECTIONS

- Require antibiotic stewardship programs in all hospitals and skilled nursing facilities.
- Prevent hemodialysis-related infections through immediate coverage for insertion of permanent dialysis ports.

CONTROL ASTHMA

- Promote evidence-based asthma medical management in accordance with the 2007 National Asthma Education and Prevention Program guidelines.
- Promote strategies that improve access and adherence to asthma medications and devices.
- Expand access to intensive self-management education for individuals whose asthma is not well-controlled with guidelines-based medical management alone.
- Expand access to home visits by licensed professionals or qualified lay health workers to improve self-management education and reduce home asthma triggers for individuals whose asthma is not well-controlled with guidelines-based medical management and intensive self-management education.

PREVENT UNINTENDED PREGNANCY

- Reimburse providers for the full range of contraceptive services (e.g., screening for pregnancy intention; tiered contraception counseling; insertion, removal, replacement, or reinsertion of long-acting reversible contraceptives (LARC) or other contraceptive devices; and follow-up) for women of child-bearing age.
- Reimburse providers or health systems for the actual cost of LARC or other contraceptive devices in order to provide the full range of contraceptive methods.
- Reimburse for immediate postpartum insertion of LARC by unbundling payment for LARC from other postpartum services.
- Remove administrative and logistical barriers to LARC (e.g., remove pre-approval requirement or step therapy restriction and manage high acquisition and stocking costs).

CONTROL AND PREVENT DIABETES

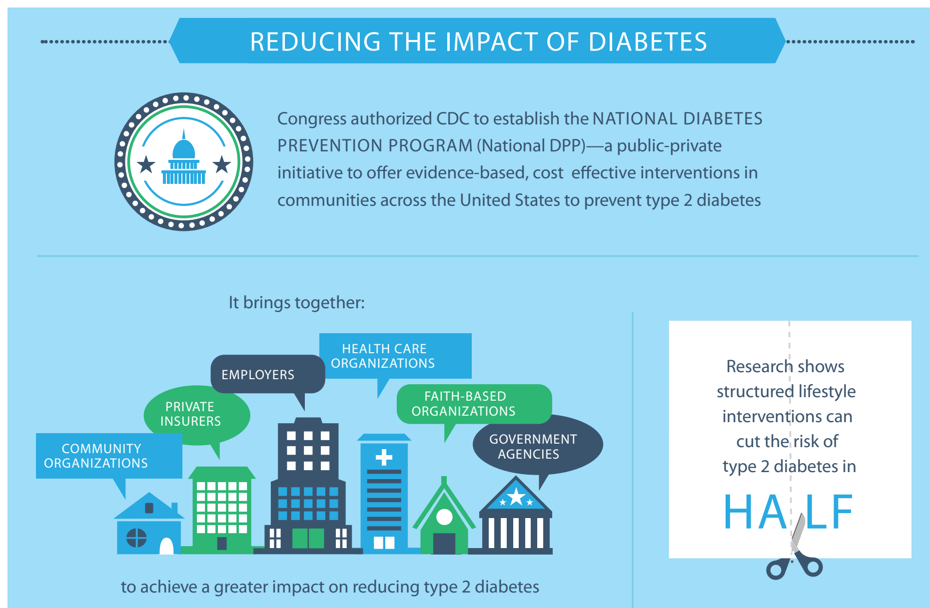
- Expand access to the National Diabetes Prevention Program, a lifestyle change program for preventing type 2 diabetes.
- Promote screening for abnormal blood glucose in those who are overweight or obese as part of a cardiovascular risk assessment.

Source: Centers for Disease Control and Prevention

EXAMPLE HIGH-IMPACT 6|18 INITIATIVE STRATEGY: DIABETES PREVENTION PROGRAM

The Diabetes Prevention Program can cut participants' risk for type 2 diabetes by more than half.[379, 380] DPP is an example of how improved integration of medical care and support in daily life can improve health.

- The program reduced the risk for developing diabetes by 58 percent.[381] Even after 10 years, people who completed a diabetes prevention lifestyle change program were one-third (34 percent) less likely to develop type 2 diabetes. For people over 60 years of age, the program reduced risk by 71 percent.[382]
- The lifestyle intervention was even more effective — and lower cost — than using the diabetes drug Metformin, which lowered risk by 31 percent.[383]
- DPP has resulted in average savings of $600 to $2,200 annually;[384] and over 10 years ranging from $5,280 to $6,300 per participant.[385, 386, 387]
- A review of the cost-benefits of the program to insurance payers found a private payer could reimburse $655 (24 percent) of the $2,715 in DPP costs during the first three intervention years and still recover all of these costs in the form of medical costs avoided. If Medicare paid up to $2,136 in intervention costs over the 15-year period before participants reached age 65, it could recover those costs in the form of future medical costs avoided beginning at age 65.[388]



Source: Centers for Disease Control and Prevention

In addition to being a top evidence-based strategy in the 6|18 Initiative, in March 2016, the independent Office of the Actuary in the Centers for Medicare and Medicaid Services certified that expansion of DPP would reduce net Medicare spending and improve the quality of patient care without limiting coverage or benefits. Specifically, results indicated statistically significant savings of $2,650 for each enrollee, sustained weight loss of approximately 11.7 pounds after one year and reductions in inpatient hospital admissions and Emergency Department visits.[389] This marks the first time a preventive service model from the CMS Innovation Center has become eligible for expansion into the Medicare program.[390]

The American Medical Association (AMA) also adopted a policy, in June 2016, calling for private and public health insurance plans to include diabetes prevention programs as covered benefits and to leverage their community benefit dollars to develop or improve diabetes prevention programs.[391]

DPP is an evidence-based lifestyle change program that supports healthier eating, incorporating physical activity into daily life and improving problem-solving and coping skills. The program, developed by NIH and CDC, is now offered by more than 625 organizations, including many local YMCAs, employers and health plans, and is recommended by the AMA. Physicians and specialists refer patients to the program, which is managed by trained educators, community health workers or other providers — supporting "lifestyle coach" case management, behavior self-management training and group sessions and supervised physical activity sessions as well as clinical support.[392]

Diabetes: Health and Cost Impact

- Nearly 10 percent of Americans (9.3 percent, 29 million people) have type 2 diabetes.[393]
- More than one-third of adults (86 million) have prediabetes and could be eligible for and benefit from DPP.[365]
- Blacks, Latinos and American Indian/Alaska Natives are around twice as likely to have diabetes as Whites.[365]
- Diabetes costs the country $245 billion a year (including $176 billion in direct medical costs; diabetes patients have 2.3 times higher medical costs).[365]
- One in three adults could have diabetes by 2050, according to CDC projections.[394]

Examples of DPP in Action

- CMS supports a DPP-demonstration program among 10,000 Medicare beneficiaries with prediabetes that runs through 2016. YMCA and a subsidiary of United-Health Group are working with a number of states and communities to examine the effectiveness of the program in improving health and reducing healthcare costs.[395]
- Prevent by Omada Health in San Francisco, California is using an online/digital enhanced version of DPP for patients at risk for heart disease — with a simulated ROI of more than $1,500 for people with prediabetes and heart disease — and reduction in diabetes rates by more than 30 percent and reduction in stroke rates by 11 percent to 16 percent — within five years.[396]
- A number of state health departments and healthcare coalitions are encouraging DPP coverage and programs for employers:
  - The Montana Department of Public Health found that if 700 Montanans with prediabetes enrolled in DPP, it could yield an annual return of $1,132,394 and a 58 percent risk reduction in Type 2 diabetes rates over three years.[397] The state's Medicaid program opted to provide DPP as a covered benefit starting in 2012.[398]
  - The School District of Palm Beach County reported a 9 percent reduction in total net costs from offering DPP as a covered benefit to employees — saving about $2.9 million.[399]
  - The Florida Health Care Coalition, a group of employers representing nearly 2 million insured individuals, is encouraging its employers to work with insurers to provide coverage for DPP. They estimate the ROI for a company that offers eligible employees a DPP program is about $55,000 over 10 years for each employee with prediabetes who does not eventually develop diabetes. One Florida employer offering the program, the Orange County government, made an investment of $57,185 in preventive wellness claims that is projected to result in over $2.5 million in savings over 10 years.[400]

Diabetes Self-Management Education/ Training (DSME/T): There are also programs that help individuals with diabetes manage their disease and avoid escalating health problems or conditions — with support to develop knowledge, skills, problem solving strategies and behaviors needed to control their glucose levels and diabetes.[401] Economic analyses indicate net savings of $0.44 to $8.76 for every $1 spent on DSME/T and commercially insured members using diabetes education cost on average 5.7 percent less than members who do not participate in diabetes education.[402, 403]

Additional Self-Management Programs

Self-management strategies help bridge the divide between care inside and outside the doctor's office. The strategies often provide group workshop or counseling series led by trained facilitators, health educators or community health workers that include support for issues from pain management and medication to nutrition and exercise to mental and behavioral health to communicating with doctors.[404, 405]

- Stanford's Self-Management Programs have been found to result in $714 per person savings in emergency room visits and hospital utilization ($364 net savings). If scaled to 10 percent of Americans with chronic diseases, the estimated savings would yield $6.6 billion annually. More than 20 studies have shown improved health results from these programs, and they have been endorsed and/or supported by CMS, CDC, Agency for Healthcare Research and Quality, HHS Administration on Aging, the Surgeon General, the Arthritis Foundation and the American College of Rheumatology.[406, 407, 408]

The AMA has developed an ROI calculator for employers to calculate potential medical savings from providing DPP as a covered benefit (potential cumulative and net savings over a 3-year period), available at: https://ama-roi-calc ulator.appspot.com/

AMA DPP COST SAVING CALCULATOR
Your organization type: Employer
Your insured population size (age 18-64): 2600
Your cost of program per participant: $ 450
Prevalence of prediabetes: 37 %
Your anticipated enrollment: Low range 10 % / High range 50 %
Your anticipated completion: Low range 40 % / High range 70 %
RESET VALUES | CALCULATE

Your potential 3 yr ROI: -19% to 42%
Your potential 3 yr net savings: $-8,142 to $91,096

Upper range : 81%
Lower range : 3%

For your population:
Potential individuals with prediabetes in your population: 962
Potential enrollment in DPP: Lower 96 / 481 Upper
Potential completion of DPP: Lower 38 / 337 Upper
Potential number of diabetes cases prevented by DPP over 3 years: Lower 6 / 49 Upper

SEE HOW TO IMPROVE YOUR ROI | DOWNLOAD YOUR RESULTS

© 2015 American Medical Association. All rights reserved. Calculator is for informational purposes only.

EXAMPLE HIGH-IMPACT 6|18 INITIATIVE STRATEGY: CHILD ASTHMA PREVENTION PROGRAMS

In Boston, Massachusetts, **Boston Children's Community Asthma Initiative (CAI)** employs a nurse and community health worker model to provide support to improve the health of children with moderate to severe asthma in targeted Boston neighborhoods who have visited emergency departments or who were hospitalized. The initiative provides a home environmental assessment and asthma management and medication education, while working with the family and the child's healthcare providers to remove barriers to improve asthma control. A nurse also works with community organizations, day care centers and schools to provide asthma education in the community. CAI led to a return of $1.46 to insurers/society for every $1 invested; an 80 percent reduction in the percentage of patients with one or more asthma-related hospital admission; and a 60 percent reduction in the number of patients with asthma-related emergency department visits in FY 2011.[409]

The Asthma Network of West Michigan (ANWM) is a grass-roots coalition that addresses the high rates of pediatric asthma morbidity and mortality, with initial funding from three acute care hospitals and two local foundations, and partners with the Healthy Homes Coalition.[410] The coalition implements home-based asthma case management programs for young and school-aged children and adults with uncontrolled asthma. The model includes: home visits, care conferences and school/daycare visits and social worker services. Over the past 20 years, the efforts have contributed to significant reductions (64 percent) in the number of hospitalizations, days hospitalized for children and emergency department visits (from 60 percent to 35 percent). The program results in around $800 in net healthcare savings per child per year (and an estimated $1,625 in savings from reduced hospital charges among low-income children with moderate to severe asthma). The social benefit-cost ratio for asthma case-management services over a two-year period is $1.53 for every dollar spent.

The Asthma Starts program, supported by the Alameda County Public Health Department in California, includes home visiting by social workers to help with medication adherence; addressing potential asthma triggers (including HEPA-filter vacuum cleaners and non-bleach mold cleaners as needed); and referrals and case management to other needs that increase risk for asthma-related problems (including housing, job referral, food, access to medical care and insurance). The program has an ROI of $5 to $7 for every $1 spent; has reduced emergency department visits and hospitalization; maintained or reduced symptoms for 95 percent of participating children; and results in savings of up to 50 percent for the Alameda Alliance of Health Medicaid managed care organization.[411]

F. IMPROVING USE OF PREVENTIVE SERVICES

Another key component of improving health is through preventive healthcare services.

While the ACA required most health insurers to cover the evidence-based preventive services recommended by the U.S. Preventive Services Task Force (such as seasonal flu vaccines and screenings for cancers, obesity and tobacco use) without out-of-pocket co-payments, millions of Americans are still not regularly receiving these benefits.[412]

Preventive services have been shown to improve health outcomes and reduce costs by identifying illnesses earlier, managing them more effectively and treating them before they develop into more complicated conditions.[413, 414] Simulation models suggest that increasing use of clinical preventive services could avert up to 100,000 deaths and save $3.7 billion in medical costs annually.[415, 416]

However, the delivery of these services remains low. For instance:

- Only 21 percent of children aged 10 to 47 months undergo recommended developmental screenings.[417]
- Among children ages 19 to 35 months, only 46.5 percent of uninsured, 68.9 percent of those with public health insurance and 76.1 percent of those with private health insurance receive all recommended vaccinations.[418]
- Only 20.9 percent of 11- to 21-year-old tobacco users receive tobacco cessation assistance during outpatient visits, and more than a third (37.3 percent) of adult outpatient visits have no documentation of tobacco use status.[419, 420]
- Among adults, fewer than half with cardiovascular disease are prescribed aspirin or other preventive medication; one in four below age 65 receive a flu vaccine; and only two thirds have had cholesterol levels checked during the past five years.[421]
- 33 percent of children ages 1 to 2 years are screened and reported for lead poisoning.[422]
- 14 percent of those under 21 receive dental preventive services (topical fluoride, sealant or both) in a given year.[423]
- 25 percent of 50- to 64-year-olds and less than 50 percent of those 65 and older are up to date on recommended clinical preventive services, including cancer, obesity, diabetes and other screenings and preventive medication and counseling for those with cardiovascular risk.[424, 425]

- Less than 1 percent of Medicare enrollees — 120,000 — have participated in obesity counseling since it became available in 2011, although more than 15 million Medicare enrollees are obese and would be eligible for the benefit.[426]

There are a number of reasons for the low-usage rates.

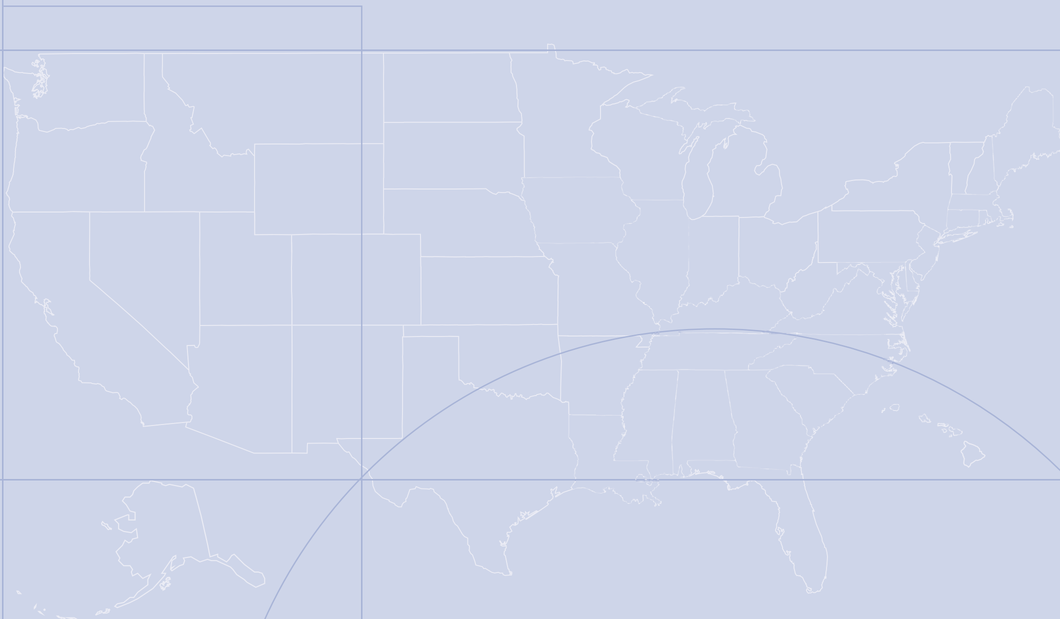
Many insurance plans and providers interpret the guidelines in different ways — including in terms of what type of provider can provide a service, in what setting and how often the service is provided. For instance, some plans may restrict tobacco use screening to primary care providers, some may restrict frequency of screening and others may restrict the types of FDA approved cessation medications that are covered. The National Commission on Preventive Priorities will be releasing updated rankings of clinical preventive services by health impact and cost effectiveness in 2017.

CDC, the Office of the Surgeon General and others have highlighted strategies that can increase use of preventive services: [427, 428, 429, 430, 431, 432]

- Clearly define preventive services in health plan benefit language and ensure consistent implementation and eligibility criteria, as well as clear communication of benefits to consumers and providers.
- Increase payment and reimbursement for preventive services to encourage providers to deliver them. For example, the Million Hearts Cardiovascular Risk Reduction Model for Medicare patients identifies patients with high cardiovascular risk and offers providers financial incentives for improving their care via preventive and other services.
- Include recommended clinical preventive services in electronic medical records and clinical reminder systems to improve delivery and tracking of these services.
- Expand and enhance delivery of preventive services by allowing non-physician healthcare providers to provide preventive services, encouraging use of preventive services via case management and delivering preventive services in community settings beyond the clinic.
- Reduce barriers to accessing preventive services, especially among populations at risk, by expanding hours of operation, providing child care, using linguistically and culturally appropriate communication and reminder systems and coordinating care among diverse providers.
- Educate the public and providers to increase awareness of insurance coverage of preventive services and promote their delivery.

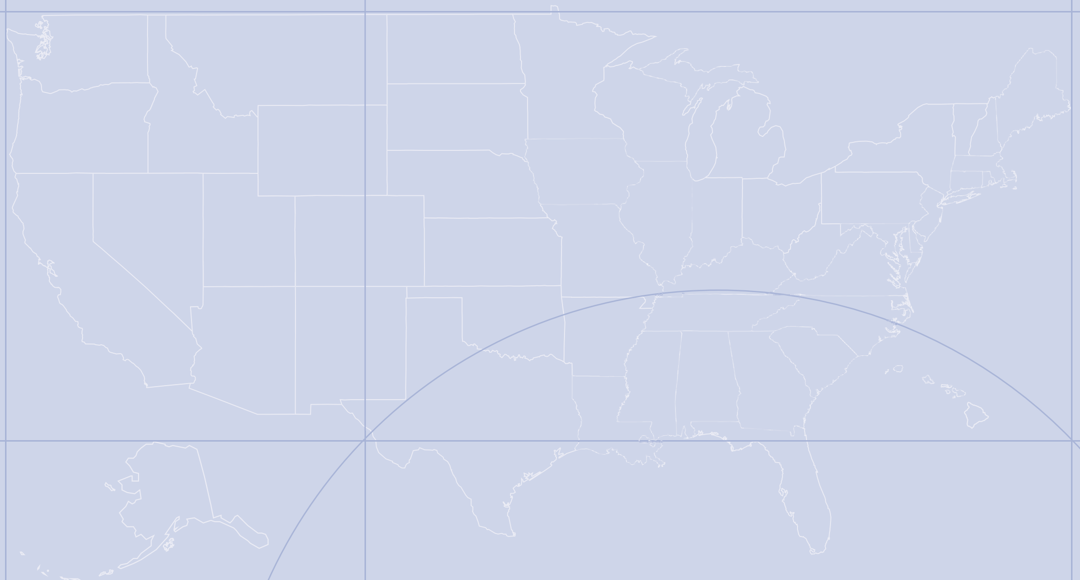
Blueprint for a Healthier America

A Public Health and Healthcare System Prepared for Emergencies



SECTION 2

SECTION 2



A Public Health and Healthcare System Prepared for Emergencies

Health emergencies are unpredictable, but regularly arise.

America's public health system, however, cannot consistently respond effectively and efficiently when major new crises occur, largely because periods of important investment were followed by significant budget cuts. Instead, the country becomes complacent, and is often caught "off guard" when a new threat arises — whether it is Zika, Ebola, a pandemic flu, a natural disaster or a bioterrorist threat.

Reasons for this situation include:

- Reliance on unpredictable and delayed emergency supplemental funds rather than steady investments to be ready to respond to emergencies before they become serious problems and that provide insufficient resources to backfill longstanding gaps in the nation's public health system, particularly when core programs have been gutted by funding cuts;
- Lack of clear, consistent core preparedness, response and recovery capabilities that each state or region should be able to maintain — which means that the abilities of the public health and health system range dramatically from zip-code to zip-code and community to community; and
- Disjointed response planning between the public health sector, healthcare providers and other emergency first responders and between federal agencies.

In the following section, TFAH reviews recommendations from public health experts for how to improve the nation's emergency response system to ensure stronger foundational capabilities are in place and more flexibility is possible when emergencies arise.

Some key priorities for achieving a more prepared system include:

- Requiring strong, consistent baseline public health abilities in regions, states and communities around the country. Communities should maintain a key set of **Foundational Capabilities** and focus on performance outcomes in exchange for increased flexibility and reduced bureaucracy.
- Stable, sufficient **emergency preparedness** funding to maintain a standing set of core capabilities so they are ready when they are needed. In addition, a complementary **Public Health Emergency Fund** is needed to provide immediate surge funding for specific action for each new emerging threat. The current process of insufficient funding means there are long-standing gaps in the baseline system. Emergency supplementals are often delayed and not able to backfill ongoing vulnerabilities in the response system.
- Improving **federal leadership before, during and after disasters** — including at the White House level, such as by creating a permanent Special Assistant to the President for Health Security — to provide leadership, coordination and expertise for a government-wide approach to preparedness, response and recovery efforts. Clear federal leadership and an agreed upon framework of responsibilities — including fully utilizing authorities in existing laws — can clarify roles particularly in health emergency responses that cross federal agencies and involve domestic and international actions.

- A more focused investment strategy to support **science and technology upgrades** that leverage recent breakthroughs and hold the promise of transforming the nation's ability to promptly detect and contain disease outbreaks and respond to other health emergencies. For example: advances in genomics; near real-time, interoperable surveillance; and developing the next generation of medical countermeasures, including antivirals and vaccines.
- Recruiting and training a **new generation public health workforce** with expert scientific abilities to harness and use technological advances, critical thinking and management skills to serve as Chief Health Strategist for a community. The workforce should be able to lead health investigations; build plans to address problems; bring partners and resources together across health and other sectors impacted by health for increased collective impact; and communicate and effectively educate the public on how to reduce risk and better protect themselves, their families and their neighborhoods.
- Reconsidering **health system preparedness for new threats and mass outbreaks**. Develop stronger partnerships among providers, hospitals, insurance providers, pharmaceutical and health equipment businesses, emergency management and public health agencies to help support private-public partnerships and regionalized health models. Engage all of the partners to invest in building a broader community response strategy since all partners in a community are at risk and stand to benefit from more effective preparedness and response abilities.
- **Support a culture of resilience** so all communities are better prepared to cope with and recover from emergencies, particularly focusing on those who are most vulnerable.

The *Bipartisan Report of the Blue Ribbon Study Panel on Biodefense,* a 2015 report, concluded that: "Simply put, the Nation does not afford the biological threat the same level of attention as it does other threats: There is no centralized leader for biodefense. There is no comprehensive national strategic plan for biodefense. There is no all-inclusive dedicated budget for biodefense. The Nation lacks a single leader to control, prioritize, coordinate and hold agencies accountable for working toward common national biodefense. This weakness precludes sufficient defense against biological threats."[433]

A modern and stable biodefense ability requires refocusing public health departments and resources to be able to effectively use workforce, emerging technology and strategies to achieve better outcomes and results — and better protect Americans from new and ongoing threats.

Reforming Baseline Abilities to Diagnose, Detect and Control Health Crises: Foundational Capabilities

Americans deserve and should expect basic health protections, no matter where they live.

Yet, while there have been many improvements in national health security in the 15 years since the anthrax and terrorist attacks of 2001 and 11 years since the landfall of Hurricane Katrina, funding has been unstable and insufficient to maintain baseline capabilities. As a result, fundamental public health services intended to protect our health and the funding of these programs often vary dramatically from state-to-state and among communities and territories. And disease and death rates vary significantly from city to city and region to region.

TFAH's 2015 report, *Outbreaks: Protecting Americans from Infectious Diseases,* found that more than half (28) of states scored a five or lower out of 10 key indicators related to preventing, detecting, diagnosing and responding to outbreaks.[434] And the latest *National Health Security Preparedness Index* found that, despite progress over the past few years, the nation's health protections are not distributed evenly across the United States, with a preparedness gap of 36 percent between highest and lowest states in 2015.[435] So while public health is now able to prepare for and respond to many small scale emergencies, such as isolated foodborne outbreaks and some types of natural disasters, this instability leaves first responders without adequate tools and systems to respond and an unsteady foundation to build upon when significant emergencies arise. At the same time, unstable funding means that public health must reorient its resources and operations when a major disaster hits, resulting in gaps in basic public health functions.

A leading recommendation by the Health and Medicine Division of the National Academies of Science, Engineering and Medicine (formally the Institute of Medicine) and other experts is to establish and maintain a clear, consistent set of key foundational capabilities — that focus on performance outcomes in exchange for increased flexibility and reduced bureaucracy.[436, 437]

The expert-defined foundational services should include: 1) communicable/infectious disease prevention; 2) chronic disease and injury prevention; 3) environmental public health; 4) maternal, child and family health; and 5) access to and linkage with clinical care.[438, 439]

In addition, 19 state, 130 local and one tribal health department have been accredited through the voluntary national accreditation program (as of August 2016) — a measurement of health department performance against a set of nationally recognized, practice focused and evidence-based standards.[440] The Public Health Leadership Forum has recommended that there should be financing mechanisms to help all states and localities achieve accreditation and the ability to deliver foundational public health services, either directly or through cross-jurisdictional collaboration.[441]

VISION FOR A BASELINE PUBLIC HEALTH SYSTEM: To Address Emergencies and Ongoing Health Concerns		
Laboratory Capacity	Epidemiology/Investigations	Surveillance & Data/ Information Systems
Trained Expert Workforce + Research/Evidence-Informed Strategies		
Accountability & Continuous Quality Improvement		
Sustained, Stable Funding		

This approach means changing siloed grant and budget structures that often fund different aspects of these core capabilities separately and do not focus on performance, capabilities or outcomes for the overall integrated, coordinated system.

For instance, many current grants for epidemiological, laboratory and surveillance support are administered separately and for specific diseases. A foundational capabilities model includes the ability and flexibility for communities to build upon foundational capabilities to meet their specific needs and concerns, contingent on additional available resources. Jurisdictions that could demonstrate their ability to meet the foundational capabilities could be given greater flexibility in their use of federal support for core public health functions. Ensuring the workforce is well trained to carry out these capabilities and that a mechanism for continuous quality improvement and stable, sufficient funding are in place are all inherent to the success of this model.

The defined foundational capabilities include:

- Assessment (surveillance, epidemiology and laboratory capacity);
- Developing policy to effectively promote and improve health;
- Using integrated data sets for assessment, surveillance and evaluation to identify crucial health challenges, best practices and better health;
- Communicating with the public and other audiences to disseminate and receive health-related information in an effective manner, including health promotion opportunities, access to care and prevention;
- Mobilizing the community and forging partnerships to leverage resources (including funding);
- Building new models that integrate clinical and population health;
- Cultivating leadership — along with organization, management and business — skills needed to build and sustain an effective health department and workforce to effectively and efficiently promote and improve health;
- Demonstrating accountability for what governmental public health does directly and for those things that it oversees through accreditation, continuous quality improvement and transparency; and
- Protecting the public in the event of an emergency or disaster, as well as responding to day-to-day challenges or threats, with a cross-trained workforce.

More than perhaps any other role of health departments, the foundational capabilities model is key to strengthening preparedness for public health emergencies. These core functions of modern public health — such as modernized laboratory, workforce, and surveillance capabilities — are the cornerstone to a community's capacity to track and contain disease outbreaks or respond to disasters.

EXAMPLES OF STATES ADOPTING FOUNDATIONAL CAPABILITIES

A number of states, including Colorado, Oklahoma and Washington, have taken steps to move toward a foundational capabilities approach within the state and local public health departments.

For instance, Washington State has: engaged stakeholders (such as hospitals, community health organizations, service providers and laboratories) to partner with public health departments and improve or increase health information exchange; reviewed state public health laws to identify governing power and regulations across jurisdictions; reviewed funding streams to determine what mandatory services may or may not be attached to funding; identified which services can be provided by state health departments versus local health departments; and engaged with policy makers to gain support of legislative changes needed to fully develop and implement foundational public health services. The state's Department of Health estimated it would require an additional $21.8 million and local health jurisdictions in the state would need an additional $78.0 million (2013 dollars) (total $99.9 million statewide) to fully and effectively implement foundational capabilities.[442]

Ohio has also been developing strategies for implementing foundational capabilities, and has moved forward to consolidate some local health departments and cross-jurisdictional services and programs and to prioritize funding streams.[443, 444] Colorado legally defined foundational "minimum quality standards," and within two years has shown significant increases in the delivery of several programs and service areas.[445]

The Public Health Cost Estimation Work Group has developed a methodology to help state and local health departments determine the cost of adopting foundational capabilities, and the data will be used to generate national estimates.[446, 447]

Stable, Sufficient Funding for Ongoing Emergency Preparedness — and Funding a Permanent Public Health Emergency Fund to Support Immediate and "Surge" Needs During an Emergency

The country has not provided sufficient funds to maintain an adequate and stable level of preparedness for public health emergencies — whether an act of bioterrorism, major disease outbreak, natural disaster or an accidental man-made incident (such as a chemical spill).

Federal funding for state and local preparedness has been cut by about one-third (from $940 million in FY 2002 to $651 million in FY 2016) and hospital emergency preparedness has been cut in half (from $515 million in FY 2004 to $255 million in FY 2016).[448] The Zika outbreak has illustrated how the erratic nature of funding for infectious disease capacity impacts our ability to respond, such as the initial ramp-up of funding for vector-borne diseases after West Nile Virus outbreaks, followed by a decline in that capability at many health departments.[449]

There have been a series of emergency supplemental funds appropriated as new threats have emerged, but they are often delayed and they are inadequate to backfill gaps or to support ongoing needs. As a result, when the next emergency arises, many basic competencies and capabilities are not in place to respond effectively. Another challenge is that state and local governments are reluctant to hire new personnel using short lived, one-time funding. In the past 15 years:

- **Some major areas of accomplishment include:** Emergency operations planning and coordination; public health laboratories; vaccine manufacturing; development of the Strategic National Stockpile (SNS), a federal repository of medical countermeasures, as well as an improved system to develop MCMs more quickly; pharmaceutical and medical equipment distribution and administration; surveillance and epidemiologic investigation; information sharing and communications; legal and liability protections; increasing and upgrading public health staffing trained to prevent and respond to emergencies; and limited improvements in medical surge capacity.
- **Some significant, never-well-addressed gaps include:** Coordinated, interoperable, near real-time biosurveillance; maintaining a stable medical countermeasure strategy and funding to continue research, development and purchase of vaccines, antiviral medications and antibiotics; chemical and radiation laboratory services; surge capacity within the healthcare system for a mass influx of patients — along with standards of care and in-place tiered systems of care for a range of threats; and the ability to help communities, and especially their special need populations, become more resilient to cope with and recover from emergencies.

Like police, firefighters and Federal Emergency Management Agency (FEMA) personnel, public health professionals are first line responders. However, they do not currently have the ongoing support — resources, supplies and training — needed to be able to effectively manage crises. Maintaining a steady public health system is analogous to having a ready military defense —

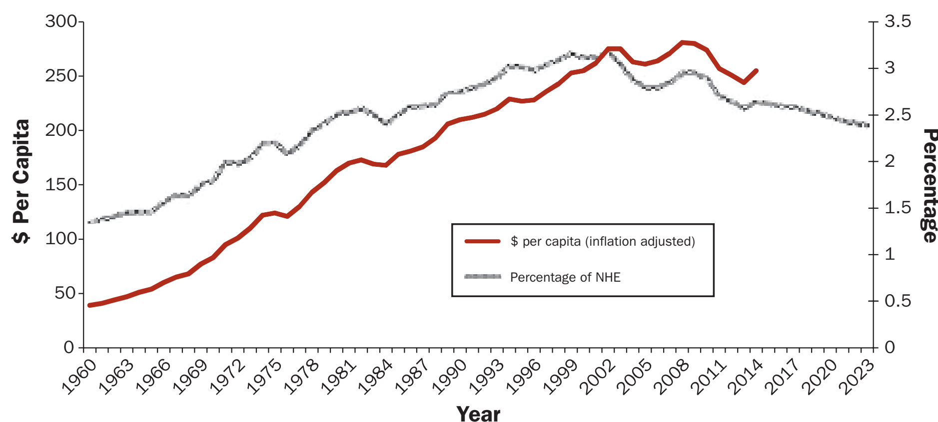
where the country maintains a standing, trained force on a consistent basis, but additional resources and support are needed to fight a war.

And once there is a perception that a widespread threat has been averted, the funding falls back, even though funds are often still needed to support the measures that were taken to contain it, such as providing continued support to prevent and contain Ebola in West Africa. This cycle puts the nation at unnecessary risk when new threats emerge and hampers the ability to tackle ongoing problems — like HIV, antibiotic-resistant infections or even the seasonal flu. Currently, without sufficient support for emergencies, funds and personnel end up being diverted from other public health priorities to respond to a new problem, like the Zika outbreak.

In addition to ongoing investments, the federal government needs immediate, flexible funds to respond to significant crises. Delays in appropriation of emergency funds for Zika, for example, has meant health departments, healthcare providers and researchers were ill-equipped to respond to a complex, multipronged outbreak, while federal agencies were forced to reprogram funds from other important health programs, like the Ebola response and the all-hazards Public Health Emergency Preparedness cooperative agreement. Supporting a standing Public Health Emergency Fund as a complement to ongoing funding streams is an important step to be able to provide "surge" resources and immediately and effectively respond to a new serious threat when it emerges. A Public Health Emergency Fund is currently authorized that allows the Secretary of Health and Human Services to access funds when a public health emergency is declared — however it has not received resources since FY 1999. Such a fund would need to be maintained and replenished at a funding level sufficient to respond to an emerging public health threat. Providing contingency resources for a public health emergency fund would bridge the gap between the smaller-scale emergency response that public health conducts on a day-to-day basis and the arrival of supplementary emergency appropriations, if the crisis rises to the level of an Ebola, H1N1, Superstorm Sandy, or similar event. Federal agencies could release the emergency funds to aid the immediate state and local response, jumpstarting research and development until additional funds arrive. And such a contingency fund, if deployed early in a crisis, could help prevent an event from becoming a disaster.

A standing Public Health Emergency Fund would complement ongoing preparedness, but cannot replace ongoing funds to support baseline preparedness. This Fund would need to be paired with ongoing support for preparedness through programs like the Public Health Emergency Preparedness and Hospital Preparedness Programs and funding for medical countermeasures development, as well as cross-cutting programs that support capacity. Without this base of support, the cost of ramping up quickly during an emergency is significantly higher than if a solid foundation is maintained. And in major disasters, supplemental funds are often still needed to support the long-term needs — such as vaccine development — to contain an emergency after the initial response has concluded.

U.S. Public Health Expenditures in Dollars per Capita and as Percentage of National Health Expenditure (NHE): 1960-2023

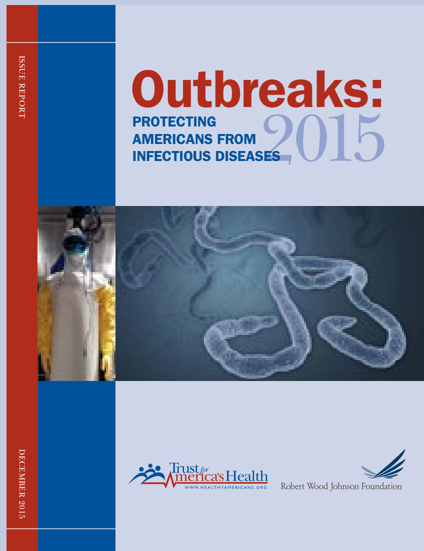


Source: American Journal of Public Health, 2016

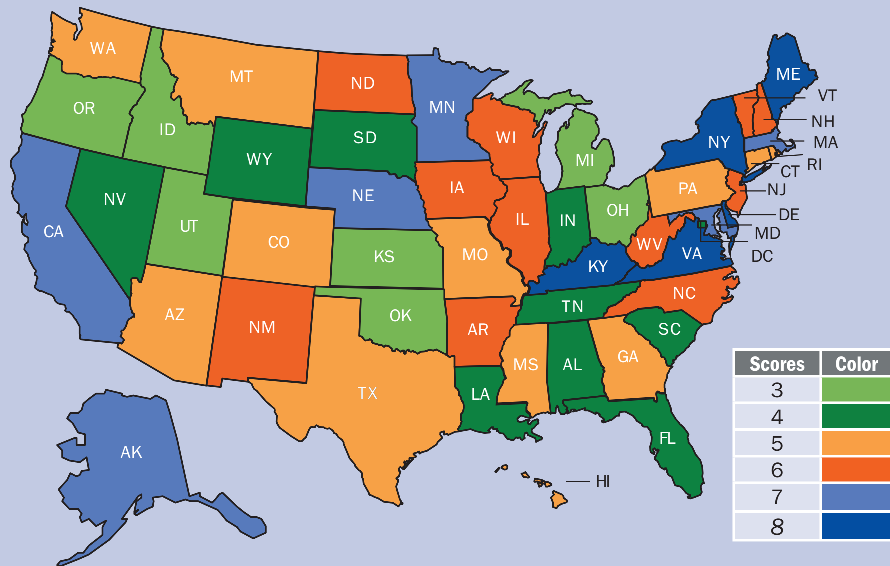
OUTBREAKS: PROTECTING AMERICANS FROM INFECTIOUS DISEASE

In December 2015, TFAH and RWJF released the *Outbreaks: Protecting Americans from Infectious Diseases* report, which found that more than half (28) of states scored a five or lower out of 10 key indicators related to preventing, detecting, diagnosing and responding to outbreaks.[450] Five states — Delaware, Kentucky, Maine, New York and Virginia — tied for the top score, achieving eight out of 10 indicators. Seven states — Idaho, Kansas, Michigan, Ohio, Oklahoma, Oregon and Utah — tied for the lowest score at three out of 10.

The report concluded that the United States must redouble efforts to better protect the country from new infectious disease threats, such as MERS-CoV and antibiotic-resistant superbugs, and resurging illnesses like whooping cough, tuberculosis and gonorrhea.



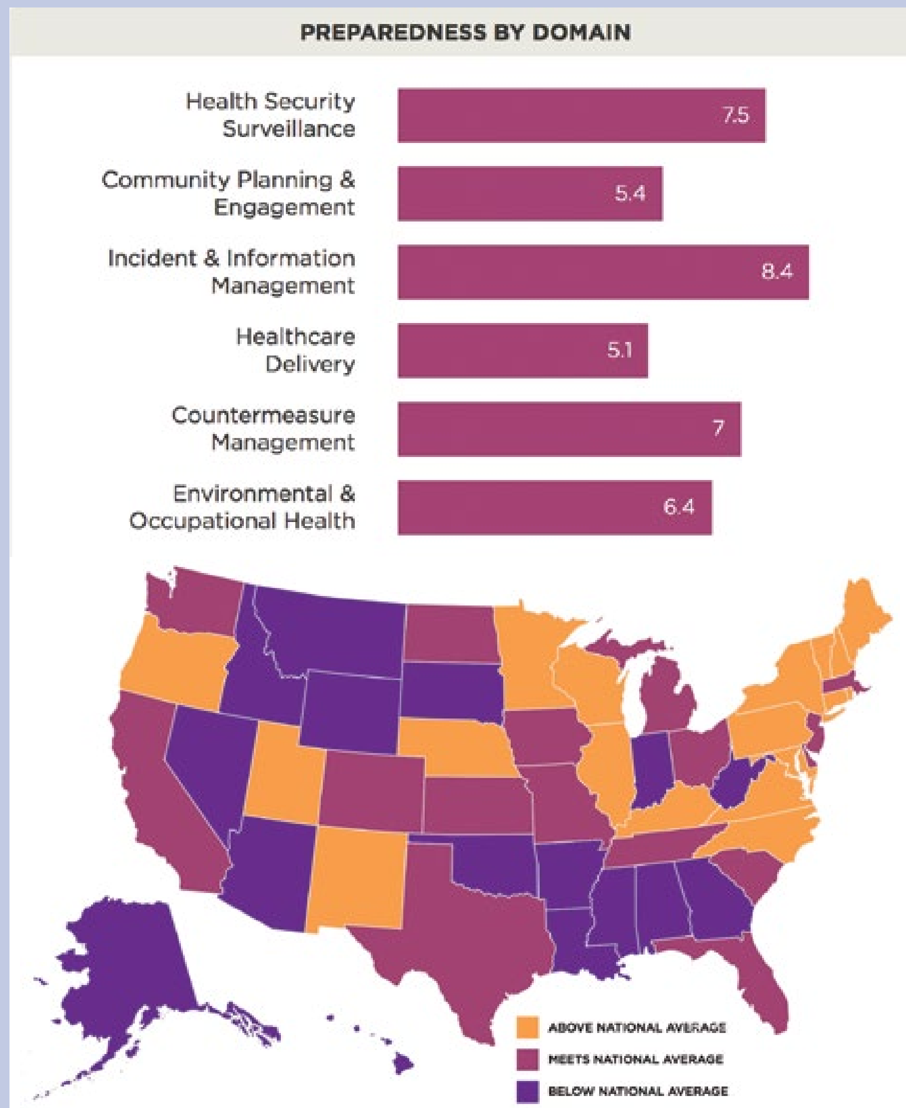
MAJOR INFECTIOUS THREATS AND KEY FINDINGS



SCORES BY STATE					
8 (5 states)	**7 (6 states)**	**6 (11 states)**	**5 (12 states)**	**4 (9 states & D.C.)**	**3 (7 states)**
Delaware	Alaska	Arkansas	Arizona	Alabama	Idaho
Kentucky	California	Illinois	Colorado	D.C.	Kansas
Maine	Maryland	Iowa	Connecticut	Florida	Michigan
New York	Massachusetts	New Hampshire	Georgia	Indiana	Ohio
Virginia	Minnesota	New Jersey	Hawaii	Louisiana	Oklahoma
	Nebraska	New Mexico	Mississippi	Nevada	Oregon
		North Carolina	Missouri	South Carolina	Utah
		North Dakota	Montana	South Dakota	
		Vermont	Pennsylvania	Tennessee	
		West Virginia	Rhode Island	Wyoming	
		Wisconsin	Texas		
			Washington		

NATIONAL HEALTH SECURITY PREPAREDNESS INDEX

The National Health Security Preparedness Index™ (NHSPI) was developed in 2013 as a new way to measure and advance the nation's readiness to protect people during a disaster — including major infectious disease outbreaks caused by nature or acts of bioterrorism.[451] The NHSPI measures the health security preparedness of the nation by looking collectively at existing state-level data from a wide variety of sources. Uses of the Index include guiding quality improvement, informing policy and resource decisions and encouraging shared responsibility for preparedness across a community. NHSPI aims to provide an accurate portrayal of how prepared our nation is to both prevent health incidents and effectively respond should an incident occur. The Index was developed by the Association of State and Territorial Health Officials (ASTHO) in partnership with CDC and more than 20 developmental partners as a tool for advancing health security preparedness — the ability to serve and protect the nation's greatest asset, its people. In 2015, the National Coordinating Center for Public Health Services and Systems Research at the University of Kentucky, with support from RWJF, took the lead for managing and maintaining the Index. The Index consists of six domains, including Health Security Surveillance, Community Planning and Engagement, Incident and Information Management, Healthcare Delivery, Countermeasure Management and Environmental and Occupational Health. In 2016, the total national average for the indicators was a 6.7 out of a possible 10.



Source: National Health Security Preparedness Index

Improved Federal Leadership Before, During and After Disasters

In addition to funding, recent disasters have illustrated gaps in federal leadership.

In particular, emergencies that cross federal agencies and/or have both an international and domestic component, such as the Ebola and Zika outbreaks — have demonstrated the lack of clarity of roles and responsibilities as well as the need for cross-cutting national leadership as well as coordinated national/state/local leadership. There is a need for a permanent Special Assistant to the President for Health Security to provide leadership and coordination for a government-wide approach to preparedness, response and recovery efforts. While the appointment of emergency coordinators — such as the Ebola or pandemic flu response coordinators — has been important, there is an ongoing gap in the permanent structure of the White House to respond effectively to emerging and ongoing threats. A White House-level leader would be able to trigger and coordinate a multi-agency response, identify the lead agency and be the ultimate arbiter for contested decisions. A permanent position would also ensure a major focus on the national security risks posed by health emergencies and bring health expertise to the role. Additionally, there must be better use of existing authorities, such as roles outlined in the Pandemic and All-Hazards Preparedness Act,[452] and an agreed-upon framework for response — including the use of a Public Health Emergency Fund.

In addition, there is a need to review the roles and responsibilities across the federal agencies (with national, state and local stakeholder participation) involved in emergency health response — including Office of the Assistant Secretary for Preparedness and Response (ASPR), CDC, CMS, the agencies within the U.S. Department of Homeland Security (DHS), FDA, NIH and USAID — to ensure efforts are as efficient and effective as possible and bureaucracy is limited. This should include better alignment and leveraging public health programs and efficiencies across federal, state and local efforts.

A NATIONAL BLUEPRINT FOR BIODEFENSE: LEADERSHIP AND MAJOR REFORM NEEDED TO OPTIMIZE EFFORTS[453]

In October 2015, the bipartisan Blue Ribbon Study Panel on Biodefense issued a Blueprint identifying the need for increased leadership to elevate coordination and collaboration and drive innovation to improve the nation's preparedness for biological threats. Panel members included: former Senator Joseph Lieberman (co-chair), Governor Thomas Ridge (co-chair); former U.S. Secretary of HHS Donna Shalala, Senator Thomas Daschle, Representative James Greenwood and former U.S. Homeland Security Advisor Kenneth Wainstein. *The Blueprint for Biodefense* recommendations included: centralized biodefense leadership at the national level, having a strong comprehensive national biodefense strategy and plan, modernizing and updating biosurveillance and information systems, improving and incentivizing the medical countermeasures enterprise, providing support to build and maintain coordinated and functional hospital preparedness and maintaining sufficient and ongoing support for state and local preparedness capacity.

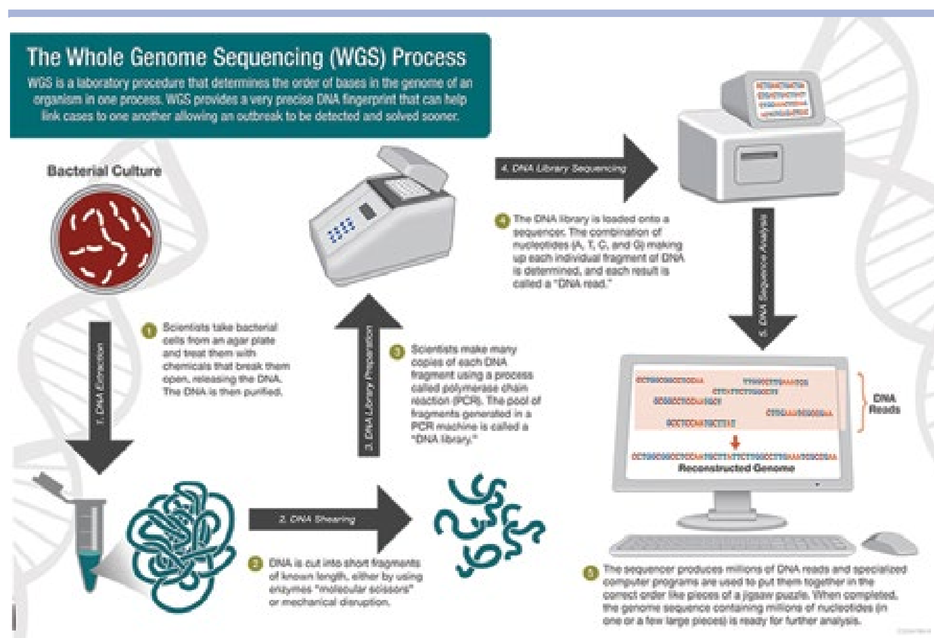
REPORT OF THE INDEPENDENT PANEL ON THE U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES EBOLA RESPONSE[454]

In June 2016, an independent panel of experts, led by Jonathan Fielding, MD, published its review of the HHS response to the Ebola outbreak. The report found the U.S. government was not well prepared to respond to a crisis that had both domestic and international elements and did not effectively use existing plans during the outbreak. Among the recommendations were: implement the Global Health Security Agenda; improve coordination between HHS and other government partners, including clarifying roles and responsibilities; ensure effective communications with the public; and provide sustained funding for emergency preparedness, as well as contingency funding for initial response activities.

Building an Ongoing, Focused Strategy to Support Scientific and Technological Upgrades, Including Wide Implementation of Faster Diagnostics, Biosurveillance and Medical Countermeasures.

New technologies, such as whole genome sequencing, are increasingly used by CDC, the military and other state-of-the-art national laboratories to more quickly and effectively identify the reason for and extent of a disease outbreak. The leading current use of these technologies is in the area of foodborne illnesses — in some cases speeding up investigations by several days or being able to determine the cause of an outbreak that would not have been possible using the last generation of investigative tools.

Scientists are working on similar technologies for other pathogens. Other emerging technologies, such as metagenomics, hold the potential to advance the ability to better diagnose and track patients for diseases ranging from Zika to Ebola to new strains of antibiotic-resistant Superbugs.



Source: Centers for Disease Control and Prevention

Being able to use and scale these advances around the country will require an investment to upgrade the technology, as well as training for how to use the technology and to conduct these different types of epidemiological (disease detective) investigations. The underlying public health system would also need to adapt to match a faster pace and different types of investigations and containment strategies.

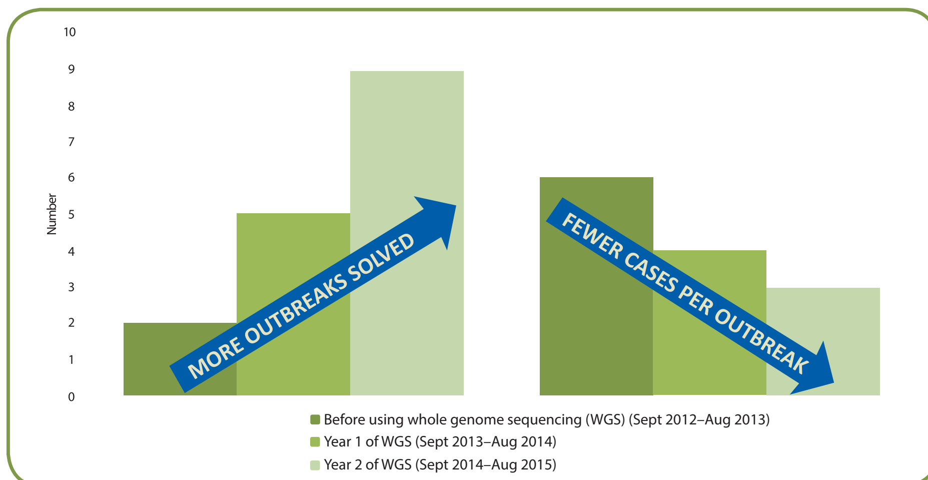
These scientific changes provide an important new opportunity to "leap frog" to overcome longstanding gaps and problems within the system.

Upgrading to Modern Molecular Technologies

Advances in diagnostic technologies allow scientists to identify the causes of outbreaks and connections between different cases much faster. This helps identify how widespread an outbreak may be and how to treat it. In public health, the revolution in DNA sequencing technologies over the past decade is having a dramatic impact on the detection of, and response to, infectious disease outbreaks. However, historically the public health system has not had built-in mechanisms to support and incorporate developments in science and technology. For many years, there had not been a meaningful investment toward upgrading many of the basic systems used by public health laboratories — which hampered the ability to incorporate new technology, identify both emerging and ongoing health problems in a community and track patterns to better discover the causes and cures of diseases.

CDC's Advanced Molecular Detection (AMD) program was established in 2014 to bring DNA sequencing ("next-generation sequencing" (NGS) which enables "whole-genome sequencing" (WGS)), bioinformatics, and related technology into public health in the United States. With funding through the AMD program, these technologies are now being brought to bear against a wide range of infectious disease threats across the United States and are rapidly transforming the monitoring of these threats, as well as the response to outbreaks. Whereas U.S. public health agencies three years ago were behind in the adoption of these technologies, they are now leading the world in many areas.

Whole genome sequencing prevents *Listeria* illness



Source: Centers for Disease Control and Prevention

To explain the technology in general terms, CDC has said, "imagine doing a 10,000-piece jigsaw puzzle in the time it takes to finish a 100-piece puzzle. Apply that to infectious disease control, and that is AMD at work. Now imagine putting together that 10,000-piece puzzle when key pieces are missing, disease is spreading and people are dying. AMD gives CDC scientists the 'key pieces' to protect people from ever-changing infectious disease threats."[455]

AMD technologies are now being applied in many areas, such as food safety, influenza prevention and tuberculosis control. While CDC has this technology, it is starting to scale broader use to targeted public health labs to be able to test for certain pathogens. With assistance from CDC, many state health laboratories are now acquiring the technology and applying it to detect outbreaks and improve health. With improved funding and reduced price points, the technology could be used to support disease investigations around the country. While this means that more outbreaks are being detected and detected earlier, it has also increased the need for epidemiologic "boots on the ground" to investigate possible sources of illness. On top of this, the revolution in sequencing technology and analysis is continuing, with sequencing costs decreasing, automation increasing, and analytic methods improving, all of which are continuing to open up opportunities to prevent disease, intervene earlier in outbreaks, and ultimately to save costs. Scaling these and other emerging technologies requires a long-term strategy and an investment in the technology and the training of scientists to use equipment effectively.

New diagnostic technologies; changes in data-management capabilities to more quickly identify and track outbreaks and problems; and the ability to develop new vaccines, diagnostics and antivirals — particularly for emerging diseases — and to counter growing antibiotic-resistant threats all hold tremendous promise, but will not be realized unless there is continued investment and a fundamental change in how the country thinks about and invests in public health.

EXAMPLES OF CDC INVESTIGATIONS USING ADVANCED MOLECULAR DETECTION (AMD)

AMD Helps Trace Connections in HIV Outbreak[456]

In January 2015, there were 11 confirmed cases of HIV in one county in rural southeastern Indiana — by May there were 135 HIV-infected people connected to this community, which had a large number of injection drug users. In addition to traditional epidemiological approaches, CDC scientists helped Indiana by using AMD methods — combining demographic data gathered from labs and genetic sequences of each individual's HIV strain — to find the links between the infected and how the virus was spreading. This enabled researchers to quickly, in near real-time, identify where the most transmissions were occurring, thereby allowing public health workers to target prevention efforts and researchers to use additional AMD tools to predict how fast the outbreak could grow. Going one step further, scientists used the technology to ascertain the overlap of hepatitis C virus (HCV) and HIV transmission, which helped public health officials strategically assign additional resources to reduce further HCV and HIV infections.

Identifying Enterovirus D68 in Children with Respiratory Illness[457]

In summer 2014, hospitals in Missouri and Illinois were experiencing increased admissions of children with severe respiratory illness — some children were so ill they needed intensive care and ventilators to breathe. The hospitals quickly tested specimens from the children and found enterovirus. After being notified, CDC confirmed the finding and identified enterovirus D68 (EV-D68) in most specimens. Soon thereafter, CDC began to test specimens from across the country, discovering EV-D68 in almost every state. Along with some state public health labs, CDC used AMD methods to gain more information on the virus. As a result, in little over three months, CDC and the state labs had identified 1,116 people across 47 states who had suffered respiratory illness that was caused by EV-D68. With the AMD program's resources, CDC was able to quickly map the entire genomic sequence of the virus along with six other viruses representing the three known strains. The program also helped develop a rapid lab test. This work improved the capacity of public health laboratories to perform molecular typing tests that more rapidly identify and detect enteroviruses and thus enhance outbreak investigations and response.

Whole Genome Sequencing Pinpoints Source of Listeriosis Outbreak[458]

In the fall of 2014, seven people died and 34 were hospitalized during a multi-state Listeriosis outbreak. Since the outbreak was spread over several states, researchers needed to quickly identify which cases were related. Using the traditional laboratory technique, scientists found the DNA of the germs, identifying two different strains. In addition, scientists began using WGS and other AMD methods, allowing them to investigate one cluster a week earlier than if they had used only traditional methods. Researchers soon found one individual infected with both strains, leading them to conclude that there was a common source of the outbreak. Through patient interviews, it became evident that most had eaten caramel apples before becoming ill, tracing the apples back to a single supplier. AMD methods and whole genome sequencing helped quickly identify that the source of the outbreaks were contaminated Granny Smith and Gala apples and likely prevented many additional illnesses.

Modernizing to Real-Time, Interoperable Disease Surveillance

One of the most fundamental components of disease prevention and control is the ability to identify new outbreaks and threats and track ongoing ones.

But, U.S. health surveillance systems on many levels are often disjointed and out-of-date. Public health departments tend to have different, unconnected systems tracking different health problems, which often contributes to a significant time lag in the collection, analysis and reporting of information, including of new infectious or foodborne illness outbreaks. Health departments are often burdened with redundant, siloed disease reporting systems.

There are around 300 different health surveillance systems or networks supported by the federal government.[459] Most of the systems are not interoperable and serve an array of different purposes. The lack of cross-cutting surveillance capacity has led to serious gaps in visibility on pressing health crises. For instance, there has been a lag in a number of communities in tracking and recognizing hepatitis C outbreaks — stemming from a rise in heroin use — which has exacerbated the spread of the disease and constrained the ability to use early containment and prevention strategies. A foundational capabilities approach could help address these types of gaps.

Health information technology is transforming the way healthcare is delivered, and public health must adapt just as quickly to take advantage of these advancements. These transformations mean public health must also envision public-private partnership in new ways. New data systems and sources, electronic health records, electronic laboratory reporting, mapping systems, cloud-based disease reporting systems and relational databases have the ability to significantly improve the dissemination of real-time, interoperable and interactive information across public health, healthcare providers and other systems.

In addition, there is growing capability to connect health trend information with risk factor data sources — to look at the impact of different factors on health and better identify outbreaks or the potential causes of health problems in particular neighborhoods or regions. Any new system should be able to identify health trends at a neighborhood or zip code level — to be able to effectively identify trends and contributing factors to many health inequities, which cannot be discerned through county or state level data.

Achieving a modern biosurveillance system would help faster, more effective identification and tracking of outbreaks and other health problems, while making surveillance less burdensome on state and local public health departments. It will require upgrading hardware and software; maintaining these technologies around the country; standardizing efficient reporting standards; and hiring and training staff with computer science and information technology skills, including in how to use systems and to interpret data. In addition, there will need to be effective integration with electronic health records and electronic laboratory reporting. Supporting and incentivizing real-time and two-way communications between healthcare providers and health departments are critical components. There are also significant barriers in changing the culture and practice of

how disease surveillance is conducted at all levels of public health. Agencies may have to let go of legacy systems, while public health may have to work with state lawmakers to address barriers in electronic disease surveillance while maintaining patient privacy.

To help overcome fragmentation in health information systems, reduce the burden in reporting and better analyze existing data, CDC, ASTHO and other groups explored the creation of a Public Health Community Platform based on shared infrastructure and services. The goal is to provide a forum where common data can be exchanged, analyzed and visualized through an interoperable system.[460] With RWJF leadership, public health departments (including CDC) have partnered with the healthcare industry and developers of electronic medical records to begin implementing a scalable demonstration in a few states to notify state health departments automatically when cases of reportable diseases are detected in the healthcare system. This first electronic case reporting service (on a community public health platform) in a few states sets the way forward for a host of needed services to exchange data between healthcare and public health for prompter action.

Funding — at the federal, state and local level — remains a significant challenge. From 2012 to 2014, the federal government released a series of biosurveillance strategies and road maps to help consolidate systems, eliminate redundancies and reduce unnecessary reporting burdens. These focus on the ability to integrate with electronic health record systems and other emerging health information technologies — including calling for partnerships across private and public healthcare systems and state and local public health departments.[461, 462, 463] However, most of these plans do not include funding estimates for the coming years. There is not sufficient funding currently to carry out all of the aspects of these plans. Implementing a modern disease surveillance system will require up-front investments in technology and a trained workforce, as well as the political will to let go of legacy systems. There must also be a long term funding strategy for federal, state and local public health to achieve the goal of a modernized system. An investment in modernization would save money in the longer term by reducing duplicative and work-intensive legacy systems and preventing avoidable outbreaks. There are also significant barriers in changing the culture and practice of how disease surveillance is conducted at all levels of public health. Agencies may have to let go of legacy systems, while public health may have to work with state lawmakers to address barriers in electronic disease surveillance while maintaining patient privacy.

NAM's *Vital Directions for Health and Health Care* paper on Information Technology Interoperability and Use for Better Health Care and Evidence identified that "if managed more effectively, federal investment in HIT (whether through the [Office of National Coordinator for Health Information Technology (ONC)] or through CMS, which is now actively encouraging states to develop all-payer data systems) and public-health surveillance… could achieve better outcomes without necessarily requiring new resources."[464] To help improve the integration and alignment of public health and healthcare surveillance, they identified policy initiatives including that:

- Public health departments should have the right workforce and technology to advance surveillance and epidemiological functions, including by aligning CDC programs to support foundational capabilities; and
- ONC should set standards for the nation's HIT system that ensure better coordination with public health departments as they develop the capability to work in the HIT system, and that ONC should work with CDC and other public health agencies to ensure interoperability of their systems.

Incentivize and Support Medical Countermeasure Research, Development, Stockpiling and Distribution

The government is often the only real customer for most MCM products, such as anthrax and smallpox vaccines. As a result, the U.S. government has invested in the research, development and stockpiling of emergency medical countermeasures for a pandemic, bioterror attack, emerging infectious disease outbreak, or a chemical, radiological or nuclear event.

A successful domestic MCM enterprise is an important aspect of preparing for new threats, expected or unexpected, by building the science, policy and production capacity in advance of an outbreak.

Congress created Project BioShield (in 2004) and authorized the Biomedical Advanced Research and Development Authority (BARDA, in 2006). HHS created a multi-agency Public Health Emergency Medical Countermeasures Enterprise (PHEMCE) partnership (in 2006) to speed the development of MCMs by supporting advanced research, development and testing; working with manufacturers and regulators; and helping companies devise large-scale manufacturing strategies.[465] The Project BioShield Special Reserve Fund (SRF) was originally established as a $5.6 billion fund, over 10 years, to guarantee a market for newly developed vaccines and medicines needed for biodefense that would not otherwise have a commercial market. The investment has supported 190 new candidate projects and 16 new MCMs for purchase under Project BioShield.[466] After the initial investment was depleted, Congress began funding BioShield by an annual appropriation for purchase of products, appropriating $520 million in FY 2016. The FDA also launched the Medical Countermeasures Initiative (MCMi) in 2010 to coordinate research, set deployment and use strategies and facilitate access to MCMs, which has led to greater transparency and efficiency for MCM developers.[467]

Ebola supplemental funding also helped BARDA to develop 12 potential Ebola vaccine and therapeutic candidates.[468] Thus far in 2016, some promising areas under development with HHS investments include: assisting Zika vaccine advancements, a new anthrax vaccine and diagnostic, new broad spectrum antibiotics and pathogen reduction technologies for blood products.[469] Once a new MCM is developed, the FDA can expedite the ability to use the product if needed and if there is no other alternative available under the Emergency Use Authorization (EUA) authority.

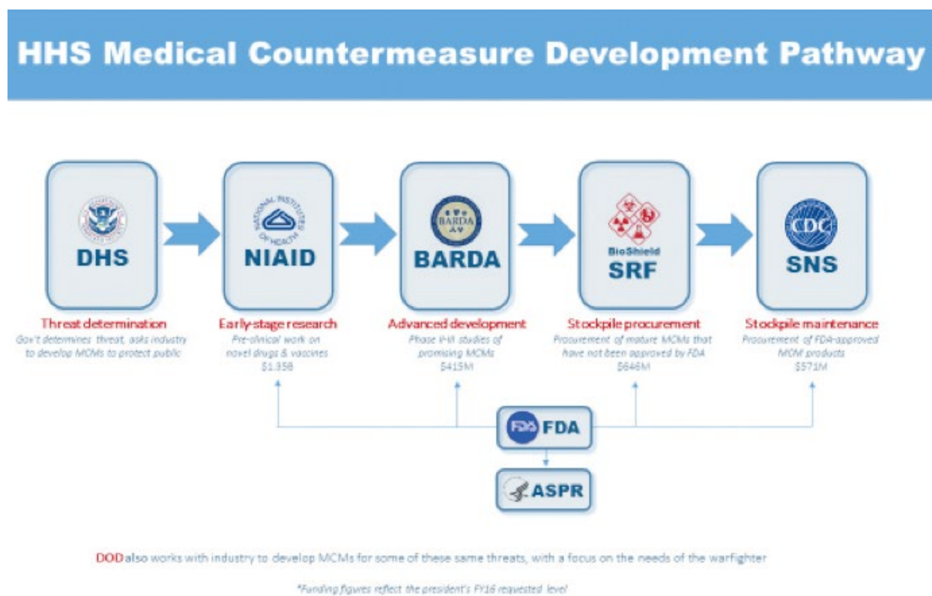
In 2015, ASPR released an updated

PHEMCE Strategy and Implementation Plan for the next five years, and federal law requires them to send a five-year spending plan to Congress for the enterprise based on anticipated needs. However, recent budget requests and funding levels have not kept up with estimated needs, including replenishing expiring products already in the Strategic National Stockpile.[470]

Achieving a strong MCM strategy in the United States that continues to support research and development of vaccines, antivirals and other countermeasures requires continued support for incentives for biopharmaceutical companies to invest in the research and development of MCMs, particularly due to the limited funding for purchase under Project BioShield. Unpredictable funding, such as the delayed funding to respond to the Zika outbreak, could discourage potential innovation if researchers do not feel the government will be a reliable partner.

In addition, there needs to be ongoing funding to support the Strategic National Stockpile — to restock and upgrade — so MCMs are available and not expired in the event they are needed. Also, there must be better established systems to support public-private partnerships for distributing and administering vaccines and medicines, including insurer support for MCM payment when appropriate and possible. And, without a robust public health infrastructure to ensure SNS and other MCM products reach the individual patient, research and development on its own is not enough to ensure products are used effectively.

Source: Bavarian Nordic



Source: Alliance for Biosecurity

Maintaining a Robust, Well-Trained Public Health Workforce

Many leading experts — including initiatives led by the Association of State and Territorial Health Officials, the National Association of County and City Health Officials (NACCHO), the Association of Public Health Laboratories (APHL), the de Beaumont Foundation, schools of public health and other expert groups — are focused on the need to recruit and retain a next generation of public health workforce.

The public health workforce is experiencing major challenges. The current state and local public health workforce is not large enough nor professionally diverse enough to meet community needs, and there are major gaps in the training and capabilities of the existing workforce to meet modern health problems.

The size of the workforce has been cut over the past 35 years — and there needs to be greater training to match the skills of the workforce to the most pressing, current public health needs.[471]

- The public health workforce experienced significant job losses during the Great Recession, resulting in more than 51,000 job losses from 2008 to 2014;[472]
- From 1980 to 2000, the ratio of public health workforce to the U.S. population has decreased dramatically from 220 per 100,000 population to 158 per 100,000 population;
- 38 percent of state and local public health professionals plan to leave governmental public health by 2020 — 25 percent of state public health employees plan on retiring and 13 percent plan on leaving their job;[473] and
- 48 percent of state and local public health professionals are over 50 years old; 15 percent are over 60.

Some key issues raised in the Public Health Workforce Interests and Needs Survey (PH WINS) conducted by ASTHO and the de Beaumont Foundation to highlight the need for cross-cutting skills include that:[474]

- Retirements and high turnover rates present challenges in maintaining experience, leadership and continuity in core capabilities;
- Many public health jobs require highly-trained, specialized scientific skills — such as laboratorians and epidemiologists — and it is important to build career tracks that attract a new generation of experts and retain expert professionals. Only 17 percent of the public health workforce has any kind of degree in public health; and
- A need to expand training related to and strategies for how to effectively address principal factors that influence health — such as for systems changes that incorporate health into housing and economic development and working effectively across diverse populations.

Public health departments need to recruit and retain appropriately trained and experienced public health and health professionals with the abilities to detect, diagnose and track health problems — but also need to build a workforce that can develop strategies to improve health and reduce chronic and persistent problems, which requires being able to work with a wide range of

partners and sectors to implement the strategies. Some priorities for workforce development include: systems thinking; communicating persuasively within and outside of public health; influencing and developing policy; business and financial management; the ability to be flexible and manage a changing environment; analytic and technical skills and informatics; information technology and computer science experts of various levels; and being able to work with diverse populations.[475] As technological and informatics needs of health departments increase, it will be especially challenging to sustain a public health workforce when public health funding remains unstable.

To help better train and maintain the workforce, NACCHO and ASTHO have recommended the implementation of a workforce development plan tied into quality improvement that is updated on a regular basis based on training needs assessments and changing agency and community needs.[476] Assessing optimal public health workforce needs should be considered as part of Community Health Needs Assessment reviews.

A 2013 *CDC Public Health Workforce Summit Report* identified multiple factors that lead to the public health workforce crisis, including the insufficient number of current workers across public health disciplines and insufficient investment in training and training evaluations.[477] Summit leaders called for public health agencies to develop a plan to recruit professionals to enter the public health workforce, including those with backgrounds in informatics, business and finance management and law; and for agencies to encourage mentorship between those in supervisory and non-supervisory positions to prepare mid-level staff for leadership positions.

Rebooting and Developing a New Strategy for Hospital and Healthcare Emergency Preparedness — Surge Capacity for Major Emergencies; Healthcare Associated Infections; and Integrated Public Health and Healthcare Response

One of the major persistent gaps in public health emergency preparedness is the ability of the healthcare system to rapidly respond to a mass influx of patients or to contain a serious new outbreak.

The healthcare system is structured to match regular demands in a community, and does not maintain a "surge" capacity to quickly ramp up the additional staff, medicine, equipment, beds and other types of resources that may be needed — and needed quickly — to respond to a major emergency. In addition, many supplies are ordered on a "just-in-time" basis, so most healthcare facilities and hospitals do not have extra equipment or large quantities of supplies on hand when mass casualty events occur. Many outpatient facilities, emergency medical services (EMS), and long-term care organizations have also been left behind in planning for disasters, both for their own patients and to help community coordination efforts. Rebooting healthcare preparedness will require collaboration and planning between the public health, healthcare delivery and payment systems.

The Hospital Preparedness Program (HPP), administered by ASPR, was created after September 11, 2001, to help build capabilities in health system preparedness for major emergencies.[478, 479] The program's peak funding was $515 million in 2004 and has been cut over time to about $255 million in 2016. The program originally provided small grants to individual hospitals — which were often not sufficient to cover much beyond the cost of maintaining the grant — and shifted over time to provide some support for the coordination and management of regional healthcare coalitions (HCCs).[480] There are currently nearly 500 HCCs nationwide, with over 26,000 members, including hospitals, long-term care facilities, outpatient facilities, emergency medical services, local health departments and others.[481] These coalitions vary in size and capacity. HHS has identified capabilities these coalitions should achieve, such as medical surge planning, emergency operations coordination and information sharing.[482] There is wide variation and limited transparency in how well states and the coalitions within them are doing in achieving capabilities defined by HHS. While some have achieved notable successes, other coalitions are in nascent stages or lack buy-in from healthcare administration within the region.[483] HPP must receive stable, robust funding to ensure the program can achieve its goals. HPP should prioritize performance measures and focus funding and technical assistance on meeting gaps identified in those measures. Coalitions should also ensure they are formulated to reflect how healthcare is really delivered in their region, leveraging existing affiliations and assets among facilities and providers.

With its limited funding base (current total hospital spending is around $971 billion per year), HPP cannot be the only driver of health system preparedness. While HPP should continue to play an important leadership, coordination and standard setting role, there needs to be new models and additional resources to support and augment the program's basic functions and to engage the health delivery system and broader community in building and investing in better emergency health plans and strategies. One potential lever is the recently finalized CMS emergency preparedness requirements for all Medicare and Medicaid providers.[484] Facilities that may have never prepared for disaster could now have an incentive to participate in healthcare coalitions and to ensure their staff is well-trained for a crisis. CMS and ASPR should work together to ensure coordination between healthcare coalitions and facilities within the coalition's region in order to meet both CMS requirements and HPP capabilities. CMS could also pilot bonus incentive payments for performance outcomes around preparedness.

Another important preparedness asset could be value-based healthcare models, such as Accountable Care Organizations.[485] Healthcare Ready has proposed ACOs — collaboratives of doctors, hospitals and other healthcare providers that join together and coordinate high quality care to Medicare patients — have a preparedness function by directing and providing some care away from a centralized location (thus reducing surge in a disaster), promoting wellness and helping in coordinating care and tracking of vulnerable patients in an emergency.[486]

A number of additional levers can be further explored for engaging the health system — such as tax incentives, Medicare shared savings program and Merit-Based Incentive Payment System, Joint Commission standards and National Quality Forum measures

to help support preparedness and healthcare coalition participation. Potential support mechanisms from broader community institutions, such as universities, economic and community development agencies and other prominent partners that benefit from stability and vitality of their neighborhoods can also serve as levers.[487] Non-profit hospitals should consider incorporating community-wide disaster planning participation into their community benefit efforts to reflect a recent change in Internal Revenue Service rules that allows community resilience to count for community benefit.[488] And, communities could also investigate incorporating local health improvement partnerships into healthcare coalition planning efforts to ensure health needs and assets of communities are being considered in disaster planning.

Not every individual hospital or facility requires the same preparedness capabilities, but a community should know its health needs will be met during a major emergency. The tiered Ebola response system demonstrated one model of creating regional hubs for care, although that has proven to be a difficult system to maintain over time with only initial start-up funding.[489] A standing regional network system would require continuous incentives and reimbursement to maintain supplies, workforce and ensure buy-in of hospital leadership. The Report of the Independent Panel on the U.S. Department of Health and Human Services Ebola Response also recommends HHS maintain a national network of identified treatment centers for urgent public health threats, including standardized requirements and protocols.[490] A standing system of regionalization could help to overcome barriers to meaningful preparedness planning — such as concerns over liability, loss of profit and competition between healthcare systems.

A number of examples of health emergencies have shown the importance of developing better collaborations between the private sector, including hospitals, pharmacies, health systems and public health agencies. For instance, during the H1N1 pandemic

flu outbreak, the distribution and administration of the vaccine and the antiviral Tamiflu medication were through combinations of public and private distribution, insurer and provider systems. Often the private sector — such as large or community-based pharmacies — will better be able to distribute medical countermeasures in some communities in the midst of a crisis than overstretched public health agencies, but collaboration is key to ensuring equity of distribution and reach into underserved communities.

For instance, since 2012, ASTHO and CDC have been assessing best practices for coordinating pandemic vaccination preparedness activities between public health programs and pharmacies. Successful strategies, tactics and operational components, identified through stakeholder interviews and workshops, were incorporated into a template memorandum of understanding (MOU). The MOU is intended to formalize responsibilities between state-level public health programs and pharmacies during pandemic vaccination planning and response. ASTHO is now working to implement this MOU template in pilot states (Tennessee, Arkansas and Georgia). The best practices from these states will be incorporated into a toolkit.

Both public and private sector health organizations are also exploring the use of nurse triage lines to reduce the strain on the healthcare system during a pandemic or other event. Public health, healthcare and insurers should collaborate on these models before the next event to ensure questions of credentialing, payment and risk communications are addressed.

In addition, healthcare facilities still do not routinely carry out standard infection control procedures on every patient so that when new serious outbreaks occur, they are able to safely diagnose and treat patients, and to ensure that other patients and the healthcare workers themselves are protected from exposure. For instance, the lack of adherence to best practices led to initial mistakes in not admitting the first initial presenting Ebola patient in the United States. Every hospital should have: minimum baseline screening, including travel history; isolation capabilities to ensure patients and healthcare workers are safe from a potential threat; regular training on infectious control practices and use of protective gear; and procedures for removal and disposal of protective gear and waste.

Another example of the need for public health and healthcare collaboration is in the area of healthcare-associated infections. One out of every 25 people who are hospitalized each year contracts a healthcare-associated infection (HAI), leading to around 75,000 deaths a year.[491] But each healthcare facility working alone cannot prevent, track or contain the spread of Superbugs. Public health needs to be the backbone organization in a state or region to coordinate prevention among competing or disparate healthcare systems and contain potential outbreaks.[492] And healthcare facilities — ranging from large hospitals to long-term care and outpatient facilities — must have effective antibiotic stewardship programs in place to tamp down on inappropriate antibiotic prescribing and share information with CDC, local public health and laboratory networks. HAIs and antibiotic resistance constitute an ongoing health emergency — and efforts should be made to fully and swiftly implement and fund the National Action Plan for Combating Antibiotic-Resistant Bacteria.[493]

• Supporting Community Resilience — for Communities to Better Cope and Recover from Emergencies — With Better Behavioral Health Infrastructure and Capacity

Another of the most difficult challenges in emergency health readiness is how to better prepare communities to mitigate impact and more quickly be able to recover when a disease outbreak, natural disaster or other emergency strikes.

Hurricane Katrina provided one of the most enduring examples of how vulnerable members of a community — such as children, the elderly, people with underlying health conditions or who are lower-income and those with limited-English proficiency — are often the most impacted and least prepared and protected during emergencies.[494]

The next phase of preparedness efforts must prioritize how to improve the resilience of all communities. While building resilience is one of two overarching goals identified by HHS in the *Biennial Implementation Plan for the National Health Security Strategy* — there is not sufficient funding or other resources available to provide broad support for efforts.[495] Local health improvement partnerships could be one mechanism for helping to scale and diffuse strategies — and engage additional funding support from the broader health, business and community sectors themselves. Experts recommend some key components to improving resilience, including:[496, 497]

- Improving the overall health status of communities so they are in better condition to weather and respond to emergencies. Initiatives and programs supported by the Prevention and Public Health Fund can assist in these efforts by promoting health and addressing underlying causes of health disparities;
- Providing clear, accurate, straightforward guidance to the public in multiple languages via trusted sources respecting different cultural perspectives — and delivered via multiple media, beyond the Internet, such as radio, racial and ethnic publications and television;
- Developing ongoing relationships between health officials and members of the community so they are trusted and understood when emergencies arise;
- In addition to building ongoing behavioral health resources for communities, both mental health first aid and long term mental health treatment should be integrated into disaster response and recovery strategies; and
- Engaging members of the community and community-based organizations directly in emergency planning efforts.

In addition, community resilience considerations should be incorporated into other resilience efforts at the local level — such as climate change adaptation, infrastructure resilience and transportation and housing planning following a Health in All Policies Approach. Communities should leverage various funding streams, such as from the Federal Emergency Management Agency, HUD, EPA and private grants to ensure resilience and planning efforts consider the health equity needs of the most vulnerable residents. For example, New York City held a competition with HUD disaster recovery funds to make the city more capable

of withstanding future storm surges and sea level rises.[498, 499] The winning designs would not only protect against flooding but would provide health and environmental benefits to the community with green, social and recreational spaces.[500] These kinds of cross-sector collaborations are a model for creating resilience for people and communities.

Supporting health improvement efforts around the country — such as through local health partnerships and other approaches (discussed in Section I of the Blueprint document) would help advance the underlying health of communities to be more resilient during times of emergencies.

SAVE THE CHILDREN: GET READY GET SAFE

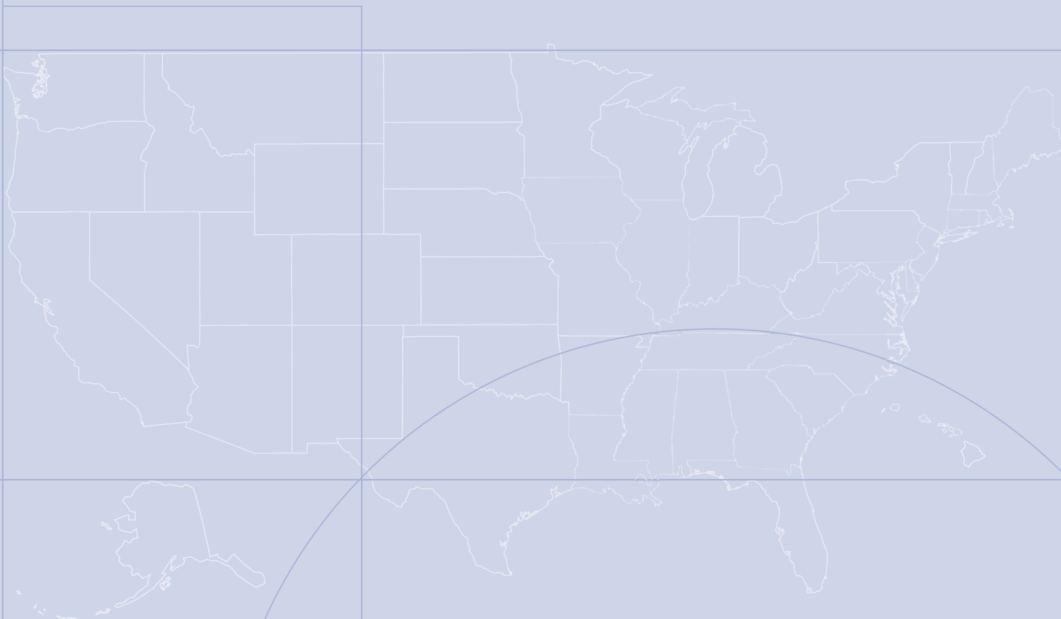
Save the Children launched the Get Ready Get Safe initiative to help U.S. communities and families prepare to protect and care for children in times of crisis. They help generate child-focused emergency plans, provide emergency training and ensure emergency resources are in place before crisis strikes.[501]

In addition, in their 2015 report, *Still at Risk: U.S. Children 10 Years After Hurricane Katrina,* they found that only 17 of the 81 the recommendations in the 2010 report by the National Commission on Children and Disasters have been fully implemented; 44 are in progress; and 20 have not been addressed at all, and only 32 states have met minimum recommended emergency planning standards at schools and childcare.[502]

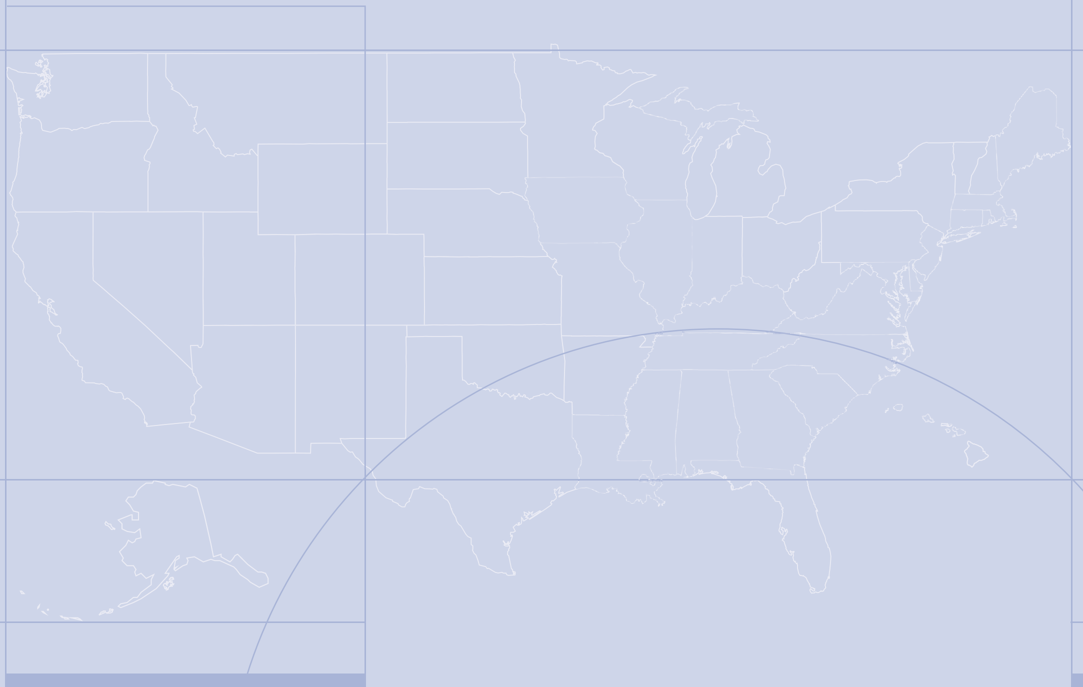
Source: Save the Children, Still at Risk: U.S. Children 10 Years After Hurricane Katrina

Blueprint for a Healthier America

Prioritizing Major Health Topics

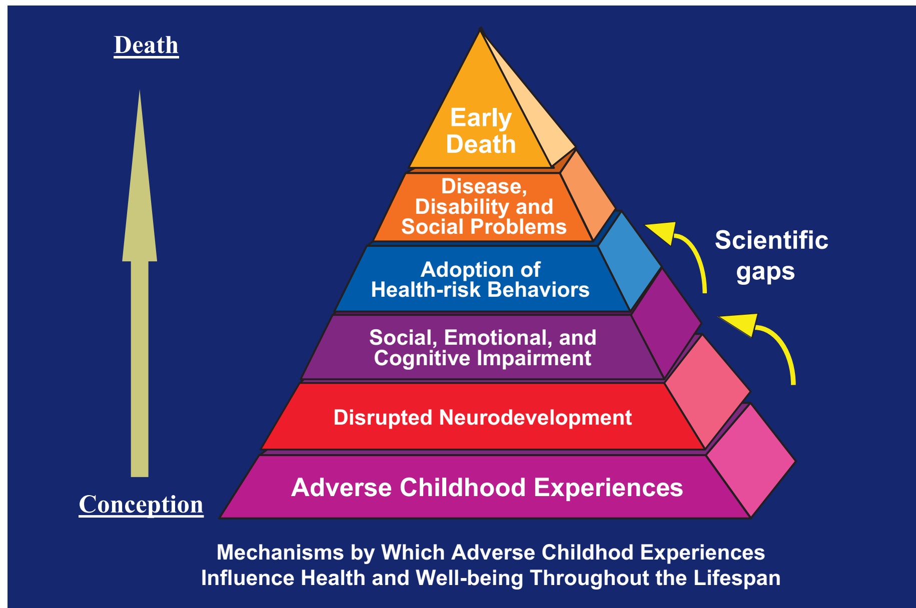


SECTION 3



Prioritizing Major Health Topics

A HEALTHY EARLY CHILDHOOD



SOURCE: Centers for Disease Control and Prevention[503]

More than half of U.S. children — across the economic spectrum — experience an adverse event during their childhood, such as physical or sexual abuse or substance abuse in the household.[504, 505, 506] **In addition, 21 percent of children live below the poverty line and 44 percent live in low-income families — which can increase their risk for living in unhealthy conditions or experiencing severe or prolonged periods of stress, often called "toxic stress."**[507, 508]

When young children, whose bodies and brains are rapidly developing, experience adverse childhood experiences (ACEs) and toxic stress, they are at increased risk for cognitive and developmental delays, depression, anxiety, aggression and other mental and behavioral health problems — along with higher risk for hypertension, diabetes, heart disease, stroke and many other forms of chronic diseases as they age.[509, 510, 511]

Nurturing, stable caretakers and relationships; positive learning experiences; and safe homes, neighborhood and environments can mitigate against these factors.

Investing in good health and well-being for young children can yield lifelong benefits. For instance:

- Quality early childhood education can provide a 7 percent to 10 percent per year return on investment based on increased school and career achievement and reduced costs in remedial education, health and criminal justice system expenditures; and nurse family home visits for high-risk families with young children has shown a return of $5.70 for every $1 invested.[512, 513, 514, 515, 516]

- Every $1 spent to support good nutrition and early health for infants in the two months after birth through the Supplemental Nutrition Program for Women, Infants, and Children has been shown to lead to a reduction in healthcare costs of $1.77 to $3.13 in the two months after birth (a 2:1 to 3:1 ROI).[517]
- Babies born into food-insecure families who had been receiving rental assistance during pregnancy were 43 percent less likely to be hospitalized after birth compared to infants in families of similar status not receiving rental assistance.[518]

These types of investments in early childhood health and well-being have been shown to reduce the risk for: chronic illnesses, shorter and less healthy lives, obesity and eating disorders, difficulty in maintaining healthy relationships, poor school performance, behavioral problems in school, dropping out of high school, the need for special education and child welfare services, mental and behavioral health problems like depression and anxiety, alcohol and drug abuse, exposure to harmful environmental hazards, suicidal thoughts and attempts, teen pregnancy, sexually transmitted diseases (STDs), aggression and violence, domestic abuse and rape, not acquiring key parenting skills or support for when they have children themselves and difficulty in securing and maintaining a job.[519, 520, 521, 522]

However, currently few of these proven strategies are sufficiently supported at the level needed to deliver them broadly.

RECOMMENDATIONS

- **Ensure required routine screenings — and follow up services — are delivered for health problems and other risks.** Even though most public and private insurers require all covered children to receive regular screenings, many children do not receive them. Increased incentives and penalties for improving screenings and referrals to follow up care and services; along with building regular, coordinated care and case worker systems can help ensure children and their families access and receive the care and services they need. Pediatricians should screen children for poverty and related risk factors as well as for adverse childhood experiences, as recommended by the American Academy of Pediatrics.

- **Increase support for families with young children through expansion of home visiting programs.** Evidence-based home visiting programs have demonstrated strong results in improving health and broader support for low-income families with young children — to ensure their needs are identified and they are connected with healthcare, mental health and social services, including financial, employment and food assistance services.

- **Support health and social-emotional learning in child care and early education programs.** Federal, state and local policies should focus on promoting good health in safe and healthy environments in all child care, daycare and early childhood education programs. This should include an emphasis on good nutrition, opportunities to be physically active, positive cognitive experiences and the implementation of evidence-based social-emotional programs, which can all help build protective factors, reduce the future risk of substance misuse and other risky behaviors, and improve educational achievement outcomes, particularly among low-income children. For instance, states can strengthen licensing requirements for child care settings and utilize new opportunities available through the Every Student Succeeds Act of 2015 to use a portion of Title I funds for early childhood education and the transition from pre-kindergarten to elementary school. In 2016, the Aspen Institute launched the National Commission on Social, Emotional and Academic Development with support from the Robert Wood Johnson Foundation to outline and widely promote an evidenced-based action plan to accelerate efforts to integrate the social and emotional development of children into educational settings and facilitate alignment and coordination of education stakeholders toward a shared vision of change in policy and practice.

- **Improve services and care coordination for children and youth with special healthcare needs.** There should be extra emphasis on addressing the challenge of navigating the range of healthcare, social services, mental health, education and other systems for families with children with special needs (approximately 15.1 percent of U.S. children).[523, 524, 525, 526]

- **Expand a trauma-informed approach across federal, state and locally supported services for children and families.** Policies should promote the use of trauma-focused screening, functional assessments and evidence-based practices to improve social-emotional-behavioral health among children. In addition, Medicaid can be used to support services that meet children's trauma-related behavioral health needs, including cognitive behavior therapy, crisis management services, alternative benefit plans, home and community-based services, health homes, managed care, integrated care models and research and demonstration projects.[527, 528]

- **Reduce infant mortality, preterm births and low-birthweight babies by expanding and improving prenatal and preconception care.** Preconception care can help address the stagnant rate of infant death (about 23,440 infant deaths per year or 5.96 per 1,000 live births) and troubling premature birth rate (one in ten children in the United States.)[529, 530, 531, 532] Potential policy levers include expanding Medicaid coverage to more women of childbearing age, supporting community-based programs to support better health and increasing public education outreach, particularly in underserved communities.

- **Support financial, food and housing assistance and family and medical leave.** Research supports that increased financial, food and housing assistance can help many families move out of poverty and help lower the risk and impact of toxic stress. In addition, policies to increase access to family and medical leave can positively impact the early childhood environment by promoting nurturing caregiver relationships that improve a child's social, emotional and cognitive development and reducing toxic stress produced from economic hardships (e.g., unpaid leave or unpaid sick days).[533]

HEALTHY STUDENTS AND HEALTHY SCHOOLS

Educators and parents know that healthy students are better prepared to learn and succeed in school. Healthy students are more likely to attend school, are better able to focus and are more ready to learn.

Good nutrition, physical activity, basic safety, clean air and water, education about making healthy choices, a supportive school environment and access to physical, behavioral and mental healthcare services allow children to thrive. The long-term success of children requires that they are healthy, safe, engaged, supported and challenged.

Currently, however, health and education policies often miss key strategies that can help improve both the academic achievement and health of the nation's 55 million children who are in kindergarten through high school.

While there has been a sea change in the past several years toward recognizing that health is central to helping students thrive, there is still much more that must be done to build on this momentum. Helping every student succeed will require acting on important opportunities to advance the vision for healthier students at heathier schools, which includes:

- A safe, healthy environment in which to learn — where parents can feel confident their children will be safe and supported every day;
- A positive culture and climate where students and educators are encouraged to do well and are given the tools they need to succeed;
- Promoting social and emotional learning as well as academic instruction;
- Taking a "trauma-informed" approach supporting students who may be experiencing toxic stress or other adverse childhood experiences, including more effective and supportive discipline approaches;
- Early identification of children's needs — and connecting and providing students with programs and services to help them thrive (e.g., physical, mental and behavioral health, special education, oral health, optometry, social services and others);
- Opportunities to be physically active throughout the day and having attractive, accessible and sufficient spaces and facilities to engage in activity and encourage physical education;
- Promoting good nutrition — making safe drinking water and healthy school meals and snacks readily available to all students regardless of family income or school location;
- Broadening parent- and community-engagement to better understand assets, concerns and obstacles promoting academic performance and health — and developing effective strategies that engage all stakeholders, including local youth advocates and community leaders who contribute to children's success — inside and outside school and at home; and
- Strong, ongoing professional development and support for educators in ways to promote health and positive conditions for learning — and providing a healthy and respectful work environment for educators and other staff.

WHOLE SCHOOL, WHOLE COMMUNITY, WHOLE CHILD

U.S. Students — Some Pressing Health Concerns

- **Poverty, Toxic Stress and Food Insecurity:** More than half of U.S. public school students live in poverty.[534] Three out of four public school students regularly come to school hungry.[535]
- **Adverse Childhood Experiences:** More than half of children experience an adverse childhood experience — such as physical abuse (28.3 percent), substance abuse in the household (26.9 percent), sexual abuse (24.7 percent for girls and 16 percent for boys) and parent divorce or separation (23.3 percent).[536, 537, 538] One-quarter of children experience two or more ACEs, 14 percent experience three or more and 7 percent experience four or more. The more ACEs experienced, the higher likelihood for a range of health and behavioral risks and negative consequences.
- **Obesity:** One third of children and teens are obese or overweight.[539]
- **Special Education:** Around 13 percent of students receive special education services; 20 percent of education spending is for special education needs.[540]
- **LGB Youth:** More than 40 percent of lesbian, gay and bisexual youth consider suicide, 34 percent experience bullying and 18 percent experience physical dating violence.[541]
- **Asthma:** More than 8.6 percent of children have asthma.[542]
- **Sexually-Transmitted Diseases:** Nearly half of the 20 million new cases of sexually transmitted diseases each year are among teen and young adults (ages 15 to 24).[543]

Source: U.S. Centers for Disease Control and Prevention

- **Teen Pregnancies:** Around 249,000 teens (15 to 19 years old) give birth annually (as of 2014).[544]
- **Oral Health:** 17.5 million children and teens experience untreated tooth decay or cavities.[545]
- **Mental Health Disorders:** As many as one in five children and teens, either currently or at some point in the past, have had a serious debilitating mental disorder.[546] More than 25 percent of teens are impacted by at least mild symptoms of depression.
- **ADHD:** Around 10.2 percent of children and teens have diagnosed Attention Deficit Hyperactivity Disorder (ADHD).[547]
- **Substance Use:** More than 7.4 percent of teens report regular marijuana use, 4.7 percent of teens misuse prescription drugs, 10.8 percent smoke cigarettes, 16.0 percent use e-cigarettes, 32.8 percent of high schoolers drink alcohol and 17.7 percent report binge drinking.[548, 549, 550] More than 90 percent of adults who develop a substance use disorder began using before they were 18 years old.[551]
- **Treatment for Substance Use Disorders:** Only around one in ten teens with a substance use problem gets recommended professional treatment.[552]
- **Bullying:** Around 20 percent of high school students report being bullied on school property and 15.5 percent report being bullied through electronic or social media.[553]
- **Expulsions/Suspensions:** More than 3.3 million students are suspended or expelled from U.S. public schools annually, even though these practices are tied to lower school achievement, higher truancy and dropout rates, behavior problems and more negative school climate.[554] Black students (kindergarten to high school) are almost four times as likely to receive one or more out-of-school suspensions as White students.[555]
- **Chronic Absenteeism:** Chronic absenteeism rates — where students missed more than 10 percent of the school year — are often a warning sign of health, family, financial or other concerns. Thirteen percent of U.S. public school students (6.5 million) missed 15 or more school days in the 2013-2014 school year. Eighteen percent of high school students (3 million) and 11 percent of elementary students (3.5 million) are chronically absent.[556] Rates vary significantly across communities — for instance, ranging from 6 percent to 23 percent in six states — with high poverty urban schools reporting up to one-third of students as chronically absent.[557]

RECOMMENDATIONS

- **Prioritize a healthy, positive school climate.** State and local school districts and schools can conduct needs assessments and adopt wellness plans to identify school or community specific concerns and the best strategies for addressing them. Many schools are also adopting Positive Behavior Interventions and Supports (PBIS) models that emphasize strategies to support social and behavioral improvement, such as character education, social skill instruction, bullying prevention, behavior support and building consultation teams.[558, 559] The 2015 Every Student Succeeds Act also provides a number of new opportunities to support district and/or school wide health improvement and to support more health-related professional development.

- **Support safe, clean and health-promoting physical facilities.** Ensuring schools are well maintained; regularly cleaned in ways that promote health and reduce spread of germs; have quality air quality control systems; have good lighting; have quality outdoor play areas, sports areas, indoor gyms and recreation spaces can all help improve student achievement, reduce truancy and suspensions, improve staff satisfaction and retention and raise property values.

- **Increase early identification and provide support for concerns.** Identifying concerns early and connecting children with care or support can help prevent, mitigate or effectively manage issues. School systems can ensure at-risk students are screened for physical, behavioral and mental health concerns and special education needs via tools from the American Academy of Pediatrics (AAP) and special education programs. In addition, tracking chronic absenteeism is an important way to help identify physical, emotional or behavioral health or family concerns.

- **Prevent and reduce health risks.** State-based expert institutes can help districts and schools by 1) conducting needs assessments to match effective, evidence-based policy and program choices to specific community needs; 2) ensuring programs are implemented successfully by providing technical assistance and access to learning networks; 3) training and supporting professionals from different sectors; 4) conducting regular evaluations — measuring results and ensuring accountability; 5) supporting sustainability; and 6) enhancing continuous quality improvement.

- **Expand obesity prevention by promoting better nutrition and increasing physical activity before, during and after school.** This includes improving access to healthy, affordable breakfast, lunch and snacks and providing increased opportunities to be physically active during the school day — including by implementing nutrition standards in line with the Dietary Guidelines for Americans. School district wellness programs can ensure children are more engaged in the classroom and ready to learn. There are a number of innovative programs to promote improved nutrition and activity, such as reducing red tape and increasing access to free- and reduced-meals for all students at

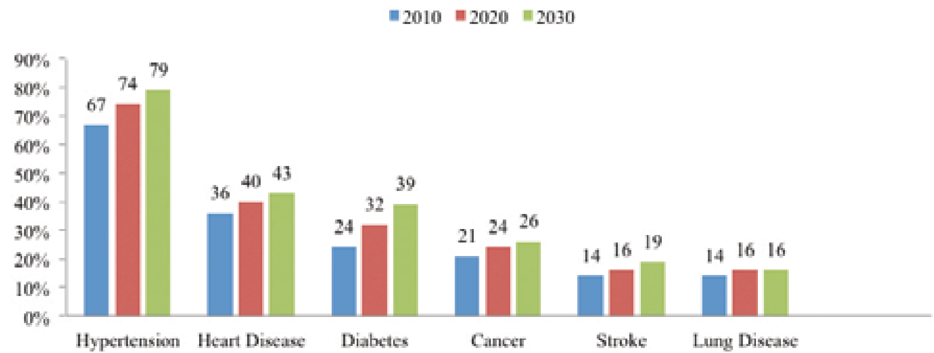
low-income schools, flexible breakfast offerings to promote uptake, increased access to summer meals, having shared-use policies making school recreation spaces available to the community during non-school hours and ensuring facilities are safe and clean.

- **Ensure availability of safe, free drinking water.** Only around 10 percent of schools with their own water systems are required to test for lead (350 of which failed lead tests from 2012 to 2015), and federal law does not require schools using local public water suppliers to test the water.[560] Policies are needed to fill these lead-testing gaps to ensure all students are drinking safe, clean water.

- **Increase school health services — including mental, behavioral and oral health — and improve coordination across education, health and other social services.** A number of models — including increased ability for Medicaid to pay for health services in schools under the new free care policy — are emerging to better support children's health needs in schools and/or to connect them to care.[561] Efforts range from increasing the number and functions of school nurses to full on-site school-based health centers to mobile health centers to designated case workers to creating strong partnerships with local providers such as hospitals, Community Health Centers, behavioral health centers and social service providers.[562] In addition, there are increasing efforts to increase the availability and scope of mental health and behavioral health professionals within schools and/or referrals to systems of support.

- **Support and increase funding for Full Service Community Schools.** A growing number of states and communities are deploying the community school model, effectively using public schools as hubs for community partners to offer a range of services and supports to students, families and communities. The U.S. Department of Education currently funds 21 grantees with $10 million in FY16. Expanded funding would help improve and scale this proven model to additional school sites across the country.

AGING WELL AND INDEPENDENTLY



Source: Goldman & Gaudette, 2015[563]

By 2030, almost 20 percent of Americans (72 million) will be 65 years or older — up from the current 14.5 percent — due to longer lifespans and the aging Baby Boomer population.[564,565]

As people are living longer, the number of older seniors is also growing exponentially. Currently, around 6.2 million people are ages 85 or older in the United States — by 2040, the number will grow to around 14.6 million (a 135 percent increase).[566]

The aging population has a major impact on healthcare spending — which is projected to grow by 25 percent by 2030 — as Baby Boomers age into increased numbers of diseases and disabilities and new treatments and technologies expand to meet those needs.[567, 568, 569] The healthcare costs of an individual over age 65 are three to five times as high as those for someone under age 65 years.[570]

Medicare spending is expected to reach $903 billion by 2020 and more than double — to $1.2 trillion — by 2030.[571, 572]

It is important to develop strategies that support improved health and quality of life for Americans as they age — including supporting prevention efforts before people reach their senior years. Many health problems could be prevented, mitigated or delayed with a stronger focus on improving health throughout a person's lifetime.

- **Chronic Disease:** By 2030, estimates are that 79 percent of seniors will have hypertension, 43 percent heart disease, 47 percent obesity and 39 percent type 2 diabetes.[573]
- **Arthritis:** More than 50 percent of seniors have doctor-diagnosed arthritis.[574]
- **Falls:** One in three seniors experience a serious fall each year — which often leads to other complications and deterioration of health. Falls are the leading cause of injury death in adults ages 65 and older (more than 27,000 deaths), and contribute to around 250,000 hip fractures a year and over $31 billion in Medicare spending.[575, 576, 577]

- **Dementia:** One in three seniors die with Alzheimer's or some other form of dementia.[578] Nearly one in five Medicare dollars is spent on dementia — which is expected to grow to one in three by 2050. Medicare spending for individuals with dementia is three times higher than for those without, and Medicaid costs are 19 times higher.
  - ***Alzheimer's Disease:*** 5.2 million seniors have Alzheimer's Disease (nearly two-thirds of cases are women); the rates are expected to reach 7.1 million by 2025 and 13.8 million by 2050.[579] Alzheimer's is the sixth leading cause of death, and costs $236 billion in medical costs, half of which is paid by Medicare.[580]
- **Dental/Oral Health:** One in four Medicare beneficiaries has no natural teeth — and around one in four adults ages 65 to 74 have gum disease.[581, 582] Medicare does not cover routine dental care, many restorative dental services, dentures or tooth extractions.
- **Hearing Loss:** 45.6 percent of those ages 70 to 74 and 80.6 percent of those 85 or older suffer from hearing loss. Currently, an estimated 67 percent to 86 percent of adults who may benefit from hearing aids do not have or are not using them. [583]

Fewer than 50 percent of seniors ages 65 and older receive recommended clinical preventive services.[584] Less than 1 percent of Medicare enrollees had participated in obesity counseling between 2011 (when it became available) and 2014.[585] Moreover, around one-third of seniors do not receive a flu shot and nearly a third have not received a one-time vaccine against pneumonia — despite the fact that roughly 71 percent to 85 percent of flu and pneumonia deaths are among seniors.[586, 587, 588]

Eighty-eight percent of seniors want to remain in their homes and 80 percent want to remain in their communities as along as possible, according to a 2014 survey by the American Association for Retired Persons (AARP).[589] However, approximately one in every three seniors will enter a nursing home before they die.[590] A growing population of seniors will increase demands for caregivers and nursing home and long-term assisted care.

RECOMMENDATIONS

- **Increase coverage and delivery of prevention services to seniors.** Medicare should encourage greater clinical-community coordination by covering a range of supportive services. This can be supported through models like patient-centered care, increased use and coordination of Electronic Health Records and improvements in provider education and patient outreach programs. In addition, Medicare policy changes are needed to increase coverage for high-need services among seniors, such as better dental care and hearing aids, which improve quality of life and also can help prevent or mitigate escalation of some additional health problems.

- **Expand senior-focused local health improvement initiatives.** Assessments are needed to measure the aging-friendliness of communities and track outcomes of community-based services and programs.[591] Policymakers should also support cross-sector collaborations between aging, health, transportation and other social support agencies to promote planning for senior-focused local health initiatives.

- **Expand community-based prevention programs.** Many community-based programs can help provide increased support for seniors to stay active, improve nutrition and be healthier at any age and help them stay well and independent for as long as possible. One of the most effective community-based health efforts for seniors has been fall prevention programs, which have been shown to help reduce the number of falls by as much as half.[592]

- **Support mental health and healthy brain initiatives.** Support should be given to community programs and services that improve prevention, early intervention and treatment and long-term care support for Alzheimer's and other dementias. Policymakers should support states in developing state plans for Alzheimer's that include components of the Healthy Brain Initiative's *Public Health Road Map for State and National Partnerships.*[593]

- **Enable aging in place.** Potential policy recommendations include increasing and preserving affordable housing for older people through housing trust funds, rental subsidies or tax incentives; and incorporating universal design into community planning to make the built environment accessible to aging adults.[594] Policymakers need to consider the underlying systematic and environmental barriers — such as unsupportive community design, unaffordable and inaccessible housing and a lack of services — when designing policy solutions and using technologies to support aging in place.

- **Promote strategies to encourage healthy aging before age 65.** CDC, AARP and the American Medical Association issued a guide to *Promoting Preventive Services for Adults 50-64: Community and Clinical Partnerships,* which identifies a range of successful strategies — focusing on early detection and lowering risk factors for health problems.[595] CMMI should also explore options for paying for these services for the pre-Medicare population — to keep the cohort healthier and costs downs for when they age into Medicare.

STOPPING THE PRESCRIPTION PAINKILLER MISUSE AND HEROIN EPIDEMICS

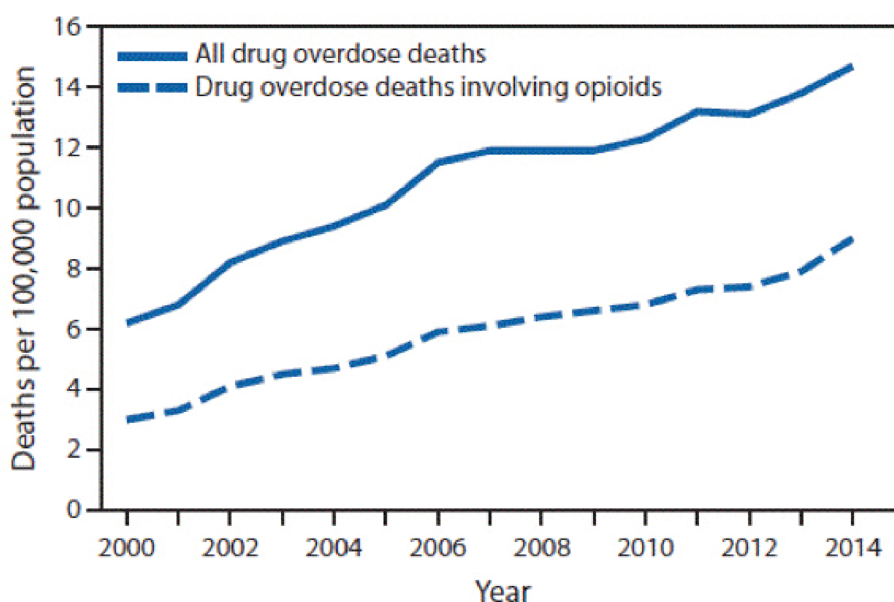
America is in the midst of an opioid misuse epidemic. In 2014, more than 24,000 individuals died from prescription painkillers and heroin, representing the deadliest year on record.[597] Drug overdoses have surpassed motor vehicle crashes as the leading cause of injury deaths.

In the past 15 years, prescription painkiller overdoses more than quadrupled.[598] Every day, 3,900 Americans initiate nonmedical use of prescription opioids, contributing to the almost 2 million individuals currently addicted to opioids.[599, 600, 601]

Since 2000, the number of prescription painkillers sold has nearly quadrupled.[602, 603] Currently, approximately 650,000 opioid prescriptions are dispensed every day.[604, 605] Medicaid beneficiaries are prescribed opioid painkillers at twice the rate of non-beneficiaries, and are three to six times more likely to suffer an opioid overdose.[606, 607, 608] The rate of pain reported by Americans, however, has remained constant during this same time period.[609, 610, 611] Only about one in ten individuals with a substance use disorder receive recommended treatment.[612]

The use of prescription painkillers is also driving the rise in heroin use, since it is often cheaper and easier to access in some places in the country. Heroin initiation is 19 times higher among people with a history of prescription painkiller misuse.[613, 614] Heroin overdoses have increased six-fold since 2001 and have more than tripled since 2010.[615, 616] Each day, 580 individuals try heroin for the first time.[617] Over the last decade, heroin use doubled among adults aged 18-25 years and women.[618]

Age-adjusted rate of drug overdose deaths and drug overdose deaths involving opioids— United States, 2000–2014[596]



Source: CDC National Vital Statistics System

Prescription opioid misuse costs the United States over $55.7 billion annually. Healthcare costs related to opioid abuse make up $25 billion of the sum.[619] Workplace costs associated with prescription painkiller misuse total $25.6 billion—including $11.2 billion in lost earnings due to premature death and $7.9 billion in lost employment/reduced compensation.[620]

RECOMMENDATIONS

- **Expand prevention efforts.** Evidence-based approaches to reducing substance misuse should be expanded across communities and in schools — focused on programs that have demonstrated effective results in reducing risk factors. Each state should have an end-to-end network of experts and resources to support the effective community-based selection, adoption, implementation and evaluation of evidence-based programs. The National Institutes of Health, Communities that Care (CTC) network and other experts have identified a strong set of evidence-based school and community prevention programs that have shown strong returns in reducing drug misuse, but have not been widely implemented throughout the country. Efforts should be integrated across school-based and wider community efforts, via multisector collaborations. Screening, Brief Intervention and Referral to Treatment (SBIRT) should be routine practice in middle and high schools and healthcare settings — since even brief counseling and interventions can have a positive impact.

- **Improve opioid prescription and dispensing practices through provider education.** Several states have implemented requirements for physicians to receive Continuing Medical Education (CME) credits in pain management.[621] Additional action is needed to mandate physician training on the risks of prescription opioids and to disseminate CDC guidelines for prescribing opioids for chronic pain. Training for all medical providers should include best practices for pain management, responsible prescribing of pain medication, methods of diagnosing, treating and managing substance use and the use of management and diversion tools, such as Prescription Drug Monitoring Programs (PDMPs).

- **Expand the use of Prescription Drug Monitoring Programs.** States that mandate providers to use PDMPs see reductions in opioid prescriptions.[622] Medical providers should be required to enroll and participate in their PDMPs in order to maximize the benefits of the system. PDMPs should be fully funded to allow real-time communication across providers and incorporation into electric heath records.

- **Encourage evaluation of prescription opioid misuse interventions.** Additional emphasis and federal funding is needed to support rigorous evaluations of practices and interventions addressing prescription opioid misuse—including overdose education and naloxone distribution programs, pharmacy benefit managers and community-based prevention strategies.

- **Improving guidance from FDA.** It is critical that prescribers have the information they need to reduce the risk of opioid misuse while still safely and effectively treating patients suffering from chronic pain. FDA recently acted to require stronger warnings on the dangers of combining opioids and benzodiazepines, and they should continue to aggressively implement their Opioids Action Plan. FDA should establish clear and reasonable pathways for both branded and generic products, ensuring doctors and patients have the widest array of abuse deterrent options.

- **Make "rescue drugs" regularly available and provide legal immunity to those experiencing overdose, bystanders and providers who prescribe naloxone.** Naloxone should be available over the counter or co-prescribed to high risk patients and/or their family, friends and caregivers and should be commonly available to first responders, in schools and other targeted locations. Liability and legal concerns serve as prominent barriers to effective naloxone use and distribution. States should amend current naloxone distribution laws to 1) include "Good Samaritan" provisions to allow timely summons of emergency responders without fear of negative legal consequences, and 2) allow prescribers to distribute naloxone in good faith to those other than the person to whom the drug will be administered (i.e. friends, family).[623]

- **Expand access to treatment and prevention programs:** Core programs to treat and prevent substance misuse disorders have been underfunded for years and have not kept up with inflation, let alone the growing need for services. The Comprehensive Addiction and Recovery Act, passed by Congress in July 2016, authorized $181 million in new federal money to address this crisis. To be effective, this money must be fully appropriated and also expanded to support existing core programs to treat and prevent substance misuse, such as the Substance Abuse Prevention and Treatment Block Grant.

PREVENTING OBESITY, IMPROVING NUTRITION AND INCREASING PHYSICAL ACTIVITY

Nearly 38 percent of adults and 17 percent of children in the United States are obese.[624, 625] Over the past 25 years, rates have more than doubled among adults and more than tripled among children.

Obesity is one of the biggest health threats in the country, putting Americans at increased risk for type 2 diabetes, heart disease, high blood pressure, some forms of cancer and a range of other health problems.[626, 627, 628] And it contributes to more than $147 billion to $210 billion in preventable healthcare spending.[629]

Through increased awareness and policy efforts, rates have begun to stabilize in the past decade, but remain high. In some communities, there have been signs of progress — where childhood rates have decreased in more than 30 communities — and overall they have significantly declined among 2- to 5-year-olds.[630] And the rate of increase among adults has slowed.[631]

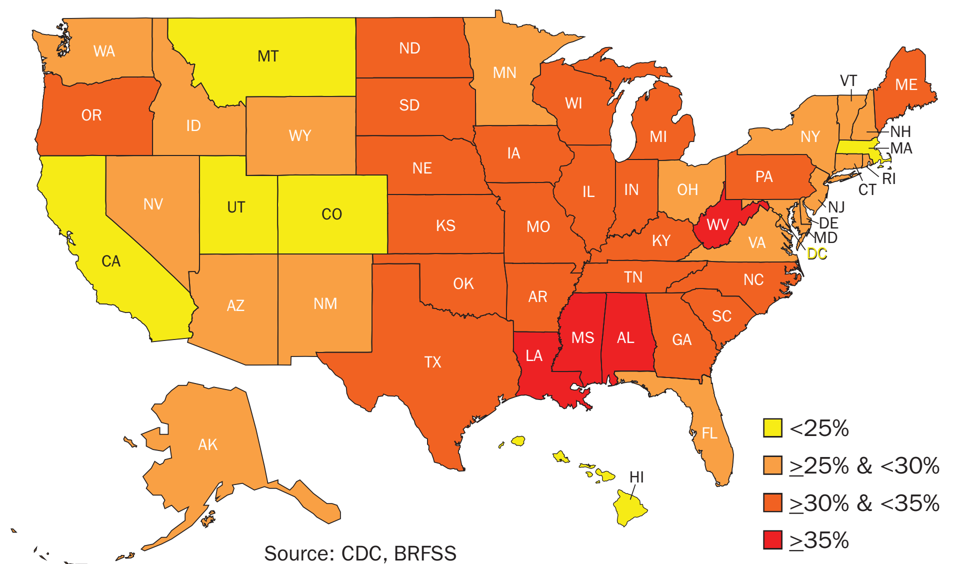
Reversing the epidemic — and ensuring that all children have the opportunity to grow up at a healthy weight — will require intensifying investments in the most effective programs and policies.

Evidence about what works to help curb the epidemic is growing and some key lessons have emerged.

First, prevention should be a top priority, especially among young children and pregnant women. It is easier and more effective to prevent unhealthy weight gain than it is to reverse it later. Strategies that focus on helping every child maintain a healthy weight are critical. By giving children a healthy start, they will be on a much better trajectory for lifelong health as they age.

Second, making healthy choices an easier part of people's daily lives is essential. While personal responsibility is an important consideration in obesity prevention, the choices families and youth make are impacted by where they live, learn, work and play. In many neighborhoods, healthy foods are scarce and more expensive, while cheap processed foods are widely available and heavily marketed. And, finding safe, accessible places to be physically active can be a challenge for many.

Adult Obesity Rate by State, 2015



Third, it is essential to target more intense efforts in areas where there are the greatest challenges. Obesity rates are highest among racial and ethnic minorities, people who live in low-income communities and those living in the South. These groups are more likely to have limited access to healthy options, and progress in addressing the inequities has been limited.

- More than 29 million Americans have diabetes, and if current trends continue, by 2050, one in three will have type 2 diabetes.[632]
- One in four Americans has some form of heart disease and one in three have hypertension.[633, 634]
- Approximately one in four young adults — ages 17 to 24 — are too overweight to join the military. Being overweight or obese is the leading medical reason why young adults cannot enlist.[635, 636] The military spends more than $1.5 billion on healthcare costs and on recruiting replacements for those who are too unfit to serve.
- There are significant regional and socioeconomic inequities:
  - Adult obesity rates are higher among Blacks (48.4 percent) and Latinos (42.6 percent) than among Whites (36.4 percent) and Asian Americans (12.6 percent).[637]
  - Childhood rates are higher among Latino (21.9 percent) and Black (19.5 percent) children than among White (14.7 percent) and Asian (8.6 percent) children (ages 2 to 19) — and the rates are higher starting at earlier ages and increase faster.[638]
  - More than 33 percent of adults who earn less than $15,000 per year are obese compared with 24.6 percent of those who earned at least $50,000 per year.[639]

RECOMMENDATIONS

- **Invest in healthier eating and safe physical activity initiatives and obesity prevention.** Providing adequate funding for the Prevention and Public Health Fund and for CDC's National Center for Chronic Disease Prevention and Health Promotion/Division of Nutrition, Physical Activity, and Obesity (DNAPO) would increase support to state, local health departments, tribal organizations and community partners. DNAPO's annual budget is only around $50 million annually, in contrast to the $147 to $210 billion spent each year on obesity-related healthcare costs.

- **Focus on early childhood policies and programs.** This includes supporting better health among young children through healthier meals, physical activity, limiting screen time and connecting families to community services through Head Start; prioritizing early childhood education opportunities under the Every Student Succeeds Act; and implementing the updated nutrition standards covering the Child and Adult Care Food Program. Programs should be supported starting pre-birth and continued throughout childhood.

- **Extend school-based policies and programs.** School meals have been transformed in the past several years — bringing them up-to-date with the current nutrition standards in Dietary Guidelines for Americans. Efforts should be continued to support better nutrition and increased activity in schools, such as through wellness policies; expanding options for flexible breakfasts and community eligibility programs; implementing the final "Smart Snacks" rule for improved nutrition for snacks and beverages sold in schools; eliminating in-school marketing of foods that do not meet Smart Snacks nutrition standards; and leveraging opportunities to support health, physical education and activity under ESSA.

- **Expand community-based policies and programs.** This includes prioritizing health in transportation planning to help communities ensure residents have access to walking, biking, and other forms of active transportation and promoting innovative strategies, such as tax credits, zoning incentives, U.S. Department of Transportation grants, improved transportation planning, low-interest loans and public-private partnerships to increase access to healthy, affordable foods.

- **Support integrated community health and healthcare approaches to obesity.** This includes covering the full range of obesity prevention, treatment and management services under all public and private health plans, including nutrition counseling, medications and behavioral health consultation, along with encouraging an uptake in services for all eligible beneficiaries.

ELIMINATING TOBACCO USE

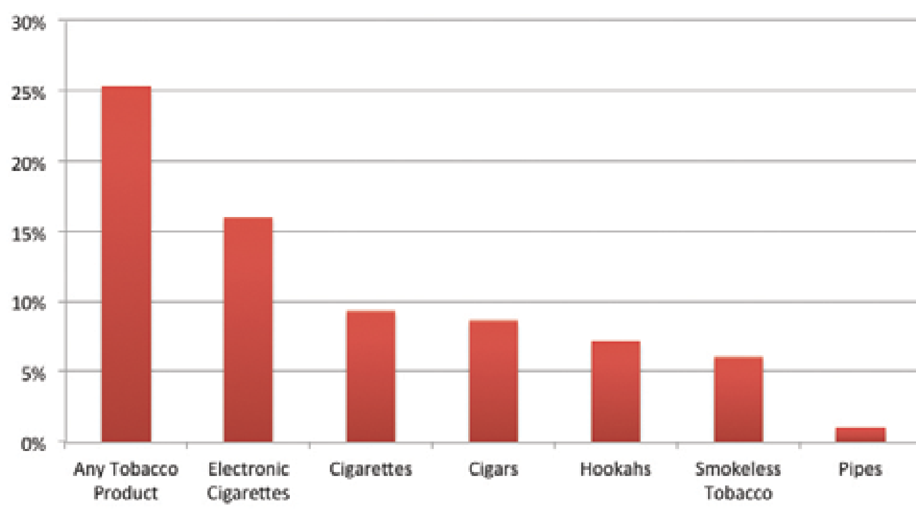
Tobacco remains the leading cause of preventable diseases, disability and death in the United States, killing more people each year then alcohol, AIDS, car accidents, illegal drugs, murders and suicides combined.[641] It is responsible for one in five deaths and nearly one-third of cancer deaths in the country.[642]

Approximately 40 million adults — roughly one in six — are current smokers.[643] High school cigarette smoking rates are at historic lows, at around 9 percent, but overall rates of teens using any form of tobacco remain around 25 percent.[644] In addition, there has been a dramatic rise in the use of e-cigarettes — around 16 percent of high school students now report using e-cigarettes, up from 1.5 percent in 2011.[645, 646, 647]

Tobacco-related health problems cost the country approximately $170 billion per year, including $39.6 billion by Medicaid and $45 billion by Medicare, and another $151 billion in lost productivity.[648]

- Nearly 90 percent of adult smokers began smoking as teenagers.[649] At current rates, 5.6 million children alive today will die from smoking-related illnesses.[650]
- Nearly one-third (31.8 percent) of teens do not perceive smoking one or more packs of cigarettes per day as risky.[651]
- Each year, more than 41,000 deaths result from secondhand smoke exposure.[652] Annual healthcare expenditure on secondhand smoke exposure alone is over $6 billion.[653]
- Each one percentage point decline in adult and youth smoking rates in the country results in 2.4 million fewer adult smokers, over $1.3 billion in savings from heart attack and stroke reductions over 5 years, and $393.2 million in savings from reductions in smoking-affected births over 5 years.[654]

High School Students Reporting Using Tobacco Products at Least 1 Day During the Past 30 Days, United States 2015



SOURCE: Centers for Disease Control and Prevention, 2016[640]

- Adults with mental health or other substance use disorders smoke cigarettes more than adults without these disorders; approximately 25 percent of U.S. adults have some form of mental health or substance use disorder, and these adults consume almost 40 percent of all cigarettes smoked by adults.[655]
- Smoking among lesbian, gay, and bisexual adults in the United States is much higher than among heterosexual/straight adults. Nearly 1 in 4 lesbian, gay or bisexual adults smokes cigarettes compared with roughly 1 in 6 heterosexual/straight adults.[656]

RECOMMENDATIONS

- **Support increases in taxes on tobacco products.** Tobacco tax increases are effective ways to reduce smoking rates among adults and prevent children from beginning smoking, while also providing revenue to fund tobacco control programs. Nationally, every 10 percent increase in the price of cigarettes results in a 4 percent reduction in overall consumption and reduces smoking among young adults by 3.5 percent and among youth by 6 to 7 percent.[657]

- **Support raising the minimum legal sales age for tobacco products to 21.** Roughly half (47 percent) of adult smokers become daily smokers before the age of 18; however, four out of five adult smokers become daily smokers before the age of 21.[658] A 2015 study from the National Academy of Medicine shows that raising the tobacco sale age would significantly reduce smoking initiation among youth, resulting in reductions in smoking-related deaths.[659] Currently, two states (California and Hawaii) and 200 localities have raised the tobacco sale age to 21.[660]

- **Expand comprehensive smoke-free laws to all 50 states.** Currently 25 states, Washington, DC, Puerto Rico and the U.S. Virgin Islands have enacted smoke-free laws that include all workplaces, including restaurants and bars. Five more states have smoke-free laws that include restaurants and bars, but not all other workplaces. To eliminate secondhand smoke in all workplaces and public places, comprehensive smoke-free laws should be adopted in the remaining states.

- **Sustain investments in tobacco prevention and cessation programs.** Federal, state and local funding for preventing tobacco use and tobacco cessation should be preserved, including protecting the Prevention and Public Health Fund, which enables communities around the country to invest in proven strategies to improve health, including those targeted at the reduction of tobacco use. These funds should also support continuation and expansion of Tips from Former Smokers, the Centers for Disease Control and Prevention's highly effective media campaign to reduce tobacco use.

- **Expand access to and use of evidence-based tobacco cessation services.** Use of FDA-approved tobacco cessation medications and counseling are effective ways for tobacco users to increase their ability to quit successfully. Expanding coverage of tobacco cessation services in Medicaid and increasing awareness of this coverage among enrollees and providers would help reduce tobacco use in a high-risk population. Ensuring that private health insurers cover evidence-based tobacco cessation services would also help more tobacco users to quit.

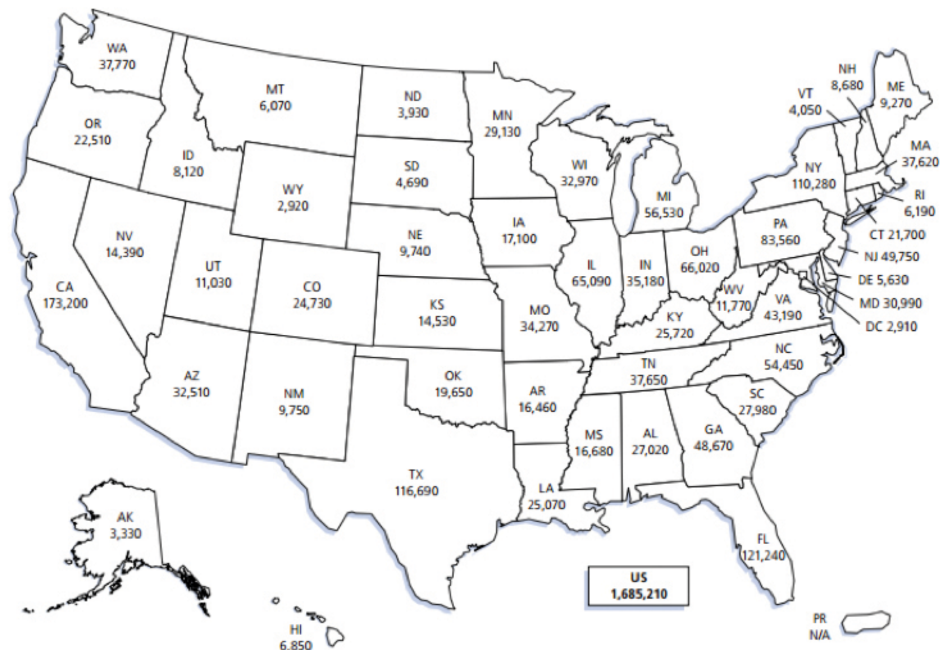
- **Make public and subsidized housing smoke-free.** Banning smoking in subsidized or public housing is a key strategy for reducing children's exposure to secondhand smoke. The U.S. Department of Housing and Urban Development and a set of partners issued a guidance and toolkits for public housing and multi-unit family housing owners, managers and residents for ways to establish and implement smoke-free policies and practices and has proposed rulemaking to make public housing smoke-free.[661] CDC estimates nearly $497 billion could be saved each year if smoking was universally banned in subsidized and public housing.[662]

- **Effectively regulate tobacco products.** In 2009, Congress gave FDA the authority to regulate the manufacturing, marketing and sale of tobacco products in order to protect public health and protect youth from tobacco-caused disease and premature death. FDA, for example, can require changes in tobacco products to make them less addictive, less appealing to youth and less harmful; review new products to ensure they are not detrimental to public health; and improve public awareness of health risks such as by implementing graphic warning labels and preventing manufacturers from making misleading health claims.

- **E-cigarettes should be regulated by FDA and included in smoke-free laws.** FDA finalized a rule in August 2016 to extend its regulatory authority to all tobacco products, including e-cigarettes. This authority should not be infringed, as it gives FDA the opportunity to evaluate the safety of e-cigarettes by reviewing ingredients, product design, health risks and appeal to youth and non-tobacco users.[663] Studies have shown that e-cigarettes emit probable carcinogens, and not simply water vapor. As a result, e-cigarettes should be included in state and local smoke free laws in order to protect the public's health.

PREVENTION AS A PRIORITY OF THE NATIONAL CANCER MOONSHOT INITIATIVE

Cancer is responsible for one in every four deaths in the United States, roughly 1,630 per day.[665] In addition, around 14.5 million Americans have a history of cancer[666] — roughly equivalent to the populations of New York City, Houston and Los Angeles combined.[667] In 2016, more than 1.6 million more Americans are expected to be diagnosed with cancer.[668]



Estimated numbers of new cancer cases for 2016, excluding basal cell and squamous cell skin cancers and in situ carcinomas except urinary bladder. Estimates are not available for Puerto Rico.
Note: State estimates are offered as a rough guide and should be interpreted with caution. State estimates may not add to US total due to rounding.

Source: American Cancer Society[664]

By 2025, the number of new annual cancer diagnoses is predicted to grow by 31 percent and cancer deaths are expected to grow by 37 percent.[669] By 2020 medical expenditures related to cancer are expected to increase 27 percent to approximately $158 billion a year.[670]

According to researchers, however, a majority of cancer cases could be prevented. For instance, this year, cigarette smoking will be responsible for nearly one-third of all cancer deaths.[671] One in five cancer deaths will be attributable to other health behaviors such as physical inactivity, excess alcohol consumption and/or poor nutrition.[672] Cancer prevention initiatives such as targeted behavior changes, screenings or vaccinations serve as a key component for reducing cancer rates and mortality.[673]

For example, by 2030, obesity is expected to lead to an additional 500,000 cases of cancer in the United States.[674, 675] A one percent decrease in individual BMI among all American adults, however, would prevent about 100,000 new cases of cancer.[676, 677]

Preventive measures can drastically help lessen the health and economic burden of cancers. Reducing risk factors for colorectal cancer, such as by reducing smoking, obesity and red-meat consumption, could contribute $12.4 billion in savings by 2020.[678]

In 2016, President Obama announced a $1 billion initiative to eliminate cancer known as the National Moonshot Initiative. Headed by Vice President Joe Biden, the Cancer Moonshot Task Force examines mechanisms to support cancer research and enable progress in treatment that makes the most of federal dollars.[679] While much of the Moonshot effort is focused on cures and treatment, an increased emphasis on prevention would provide a cost-effective, evidence-based means for advancing the Task Force's goals.

RECOMMENDATIONS

- **Support investments in tobacco prevention and cessation.** Tobacco is responsible for nearly one-third of all cancer deaths.[680] To achieve significant progress, an initiative to reduce cancer must include increased investment in tobacco control. More funding and research resources should be devoted to reducing disparities in tobacco use and identifying and implementing innovative local, state, federal and private sector policy approaches to tobacco control.[681]

- **Support investments in interventions that work to increase physical activity,** improve nutrition and prevent obesity. Given the high impact that increasing physical activity and good nutrition can have on preventing or reducing the risk for a number of types of cancer, there should be a high and deliberate priority placed on developing programs that address these factors explicitly.

- **Expand research and development of additional interventions to address environmental and behavioral factors related to the major noncommunicable diseases including cancer, cardiovascular diseases and diabetes.** In addition to obesity and tobacco related prevention programs and policies, there should be an increased investment in additional research into strategies to address the relationship between cancer risk and key health behaviors and environmental exposures. The Moonshot Task Force should dedicate resources to reviewing the existing literature and developing new strategies for addressing these determinants of cancer though policy, system and environmental changes.

- **Invest in research and interventions addressing health, disease and mortality disparities among population groups.** Additional funding is needed to ensure preventive cancer initiatives are implemented within populations with the highest documented disparities. National Moonshot priorities should include increased funding for interventions already rooted in the evidence-base, such as preventive screenings, as well as funding for intensified research specifically related to exploring causes of existing cancer disparities.

- **Improve existing preventive vaccination initiatives through provision of communication strategies for providers.** While research strongly supports HPV vaccines' effectiveness in reducing the roughly 39,000 annual HPV-associated cancer cases,[682] vaccination rates remain low, with only about 40 percent of adolescent girls and 30 percent of adolescent boys receiving all doses.[683] Missed clinical opportunities to discuss and recommend the HPV vaccine serve as a driving force for low vaccination.[684] As a part of its prevention efforts, the National Moonshot Initiative should develop, test and disseminate comprehensive communication strategies for providers to encourage HPV vaccination for all adolescents.

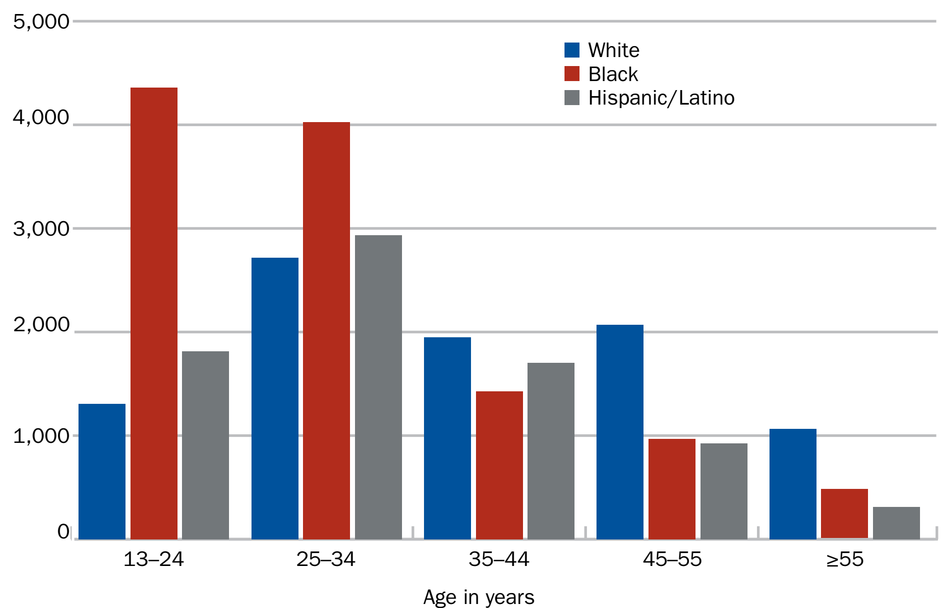
ENDING THE HIV/AIDS EPIDEMIC

Successful treatment regimens have led to complacency and a belief that HIV/AIDS is under control. But, HIV/AIDS is still a significant health concern — with more than 1.2 million Americans living with HIV, and around 44,000 new HIV diagnoses a year.[686]

A number of promising policies and practices are renewing efforts in communities around the country to reach the goal of ending HIV/AIDS. An increased focus on preventing HIV — with particular emphasis on prevention in high-risk communities, a full continuum of care and treatment as prevention — could help eliminate the epidemic in a generation. Some key concerns to help focus efforts include that:

- Nearly one in eight people living with HIV do not know they are infected.[687] More than 90 percent of new infections could be averted through diagnosis, and ensuring people receive prompt, ongoing care and treatment.[688]
- There has been a significant increase in new infections among young gay men — a 6 percent increase between 2012 and 2014 among men who have sex with men (MSM) — with an 87 percent increase among young Black and Latino MSM between 2005 and 2014.[689]
- For decades, the country has approached the HIV/AIDS epidemic focused on individual behavioral risk, but the research shows that is only one part of the equation. More effective strategies include focusing on prevention and improving the overall well-being and health of members of the lesbian, gay, bisexual, transgender, queer (LGBTQ) community. This includes developing supportive and respectful policies that help reduce stigma, discrimination and bullying.[690, 691, 692]
- A rise in opioid and heroin addiction is contributing to a major rise in hepatitis C virus (HCV) infections, and there is concern this will also lead to an escalation in HIV rates, particularly in places where HIV rates have traditionally been low, such as in Appalachia.[693, 694] HCV infections have increased by 158.1 percent in reported cases from 2010 to 2014 (with nearly 30,500 new infections in 2014), with new cases predominantly among young adults and middle aged adults (ages 20 to 39), who are White and live in rural and suburban areas.[695] In Kentucky, Tennessee, Virginia and West Virginia, acute HCV infections increased by 364 percent from 2006 to 2012 — a majority of those infected have been White adolescents and adults under 30 who inject drugs.[696]

Estimated HIV Diagnoses Among Men Who Have Sex With Men, by Race/Ethnicity and Age at Diagnosis, 2014 — United States[685]



Source: CDC, HIV Surveillance Report 2015

RECOMMENDATIONS

- **Implement a full continuum approach to eliminating AIDS — including prevention, reducing HIV risk behaviors, ensuring access to sustained treatment (and treatment as prevention) and supporting access to pre-exposure prophylaxis (PrEP).**[697] There should be increased focus on prevention programs, support and education among young MSM — with particular emphasis on young Black MSM. In addition, there should be a strong emphasis on "test and treat" and "treatment as prevention" initiatives. Expanded screening initiatives are important to help individuals know their status since HIV-positive individuals with full viral suppression are unlikely to transmit infections. Finally, PrEP therapy can also help prevent non-infected individuals from infection.[698]

- **Reduce the impact of social determinants of HIV among adolescent MSM — including stigma and discrimination — through the creation of a culture of acceptance and integration in families, schools and communities.** Federal, state and local policies should prioritize support for education and programs for parents and families of youth who are sexual minorities and gender non-conforming; school environments that are supportive of all students; and community-based services for LGBTQ youth. To reduce stigma experienced by adolescent MSM, local and state policymakers should provide comprehensive sexuality education in schools, implement policies to ensure that all students are safe from violence (such as S.A.F.E Classrooms) and training for teachers and administrators to support LGBTQ students and to discern harassment or abuse.[699] Supportive programs during youth have shown strong results in helping to build protective factors and resiliency that reduce risk for a wide range of health and social concerns.

- **Coordinate prevention strategies and treatment when appropriate for HIV/AIDS, hepatitis and tuberculosis.** Since the at-risk populations often overlap for these conditions, it is important to coordinate strategies, surveillance and treatment programs for these conditions, which also helps to efficiently use available resources.

- **Expand Medicaid coverage of routine HIV screening.** All state Medicaid programs should cover routine screening of HIV, regardless of risk (consistent with CDC guidelines).[700] Providing screening services for Medicaid beneficiaries is particularly important since these Americans include many of the lowest-income and most vulnerable in terms of quality of health and risk for HIV infection.

- **Remove all restrictions on syringe exchange programs — and support public safety campaigns and syringe exchange programs to help prevent HIV and viral hepatitis.** One of the most effective, scientifically-based methods for reducing HIV/AIDS and viral hepatitis is syringe exchange programs.[701, 702, 703] CDC has found syringe exchange programs lowered the incidence of HIV/AIDS among people who inject drugs by 80 percent in the last decade.[704, 705] There should be increased state, local and private support for syringe exchange programs and campaigns to inform the public about the effectiveness of syringe exchange programs for limiting the spread of disease — including for protecting first-responders and healthcare workers. While action has been taken recently to lessen restriction on syringe exchange programs at the federal level and in some states as part of addressing the rising heroin and prescription drug epidemics to limit the spread of HIV/AIDS and HCV infections, it is not at a level that is sufficient.

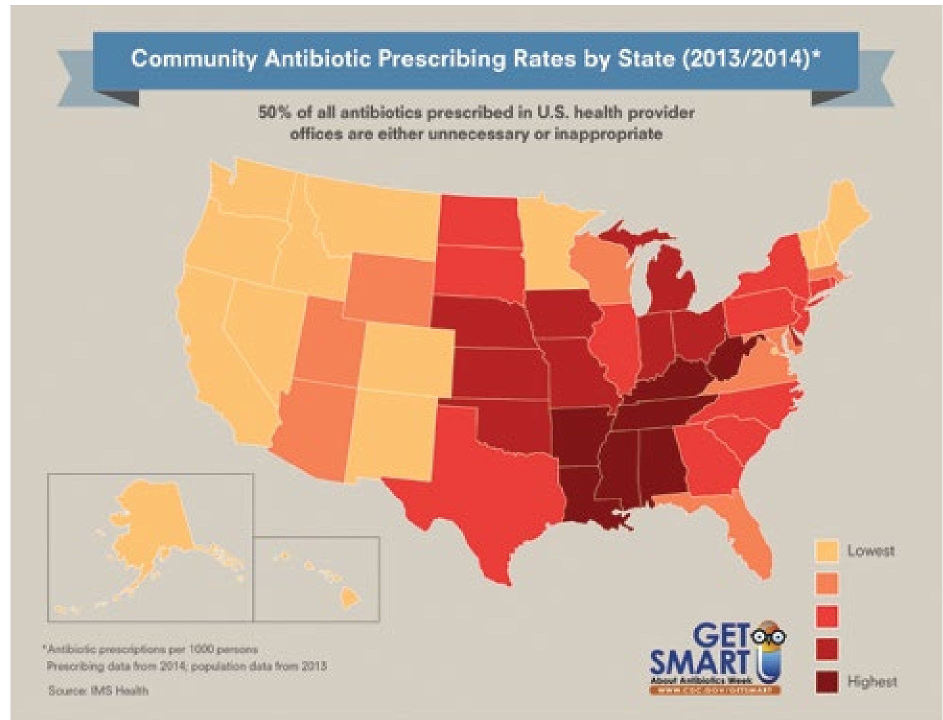
- **Improve real-time surveillance to monitor and contain hepatitis outbreaks.** Recent clusters of outbreaks show the urgent need for improved and real-time measurement of infections to allow for interventions to prevent the spread of HCV. Disease surveillance needs to be dramatically improved to become a true real-time, interoperable system, able to quickly identify outbreaks and threats and implement containment and treatment strategies. The federal government should work to upgrade systems to the latest technologies to allow for real-time and interoperable tracking of diseases — to more efficiently collect and analyze data, to better identify threats and to understand how threats can be interrelated.

STOPPING SUPERBUGS AND ANTIBIOTIC RESISTANCE

Overuse of antibiotics has contributed to one of the biggest threats to public health: antibiotic resistant pathogens or "superbugs."[706] Superbugs are turning infections that were once easily treated — like E. coli and salmonella — into deadly pathogens. More than 2 million people in the United States are annually infected by superbugs and at least 23,000 die.[707] Superbugs cause $20 billion in annual direct costs and an additional $35 billion in productivity losses.[708]

CDC has warned that superbugs are expected to continue to grow dramatically — and has prioritized 18 organisms that are an urgent, serious or concerning antibiotic resistant threat — ranging from *Methicillin-resistant Staphylococcus aureus* (MRSA) to antibiotic-resistant gonorrhea. Six of those urgent or serious antibiotic-resistant threats, plus *C.difficile*, can cause healthcare-associated infections.[709]

- Experts have found that nearly one-third of the 154 million annual antibiotic prescriptions written in doctor's offices and emergency departments are unnecessary. Many are prescribed for viral respiratory illnesses that inherently will not respond to antibiotics.[710]
- In addition, more than 80 percent of antibiotics sold in the United States are used in agriculture (including ionophores not used in human medicine).[711] Pathogens can develop antibiotic resistance when food animals — such as poultry, cattle or swine — are exposed to antibiotics.[712] They can spread to humans through consumption of food animal products, direct contact with infected animals or contact environmental sources, such as water and soil contaminated by animal waste runoff.[713]



Another factor contributing to the rise is that there are few market incentives for pharmaceutical companies to invest in new antibiotic research and development. As of March 2016, only 37 new antibiotics were in development, 13 of which had reached phase 3 testing.[714] Historically, only 60 percent of phase 3 drugs will be approved by the FDA.[715]

RECOMMENDATIONS

- **Fully fund and implement CDC's Antibiotic Resistance Solutions Initiative.** The initiative is designed to fully implement the priority actions identified in the *National Action Plan for Combating Antibiotic Resistant Bacteria.*

- **Incentivize development of new antibiotics and new diagnostic tests for resistant bacteria.** The FDA should be able to approve drugs for a limited population of patients with serious or life-threatening infections and for drugs that fill an unmet need based upon more limited data (e.g. smaller clinical trials). Limited Population Antibacterial Drug (LPAD) approval provides a mechanism to do so.

- **Reduce overuse of medically-important antibiotics in agriculture.** The FDA should fully implement and strengthen guidance to industry regarding the nontherapeutic use of antibiotics in food animals. Important measures include enforcing requirements for the collection and publishing of species-specific use data, requiring valid veterinary oversight on the farm, promoting antibiotic stewardship programs and tracking the impact of these policies on resistance.

- **Reduce over-prescription of antibiotics through implementation of antibiotic stewardship.** The Centers for Medicare and Medicaid Services should finalize and implement requirements for all CMS-enrolled facilities to have effective antibiotic stewardship programs and work with public health to track progress in prescribing rates and resistance patterns. The U.S. Department of Health and Human Services should help develop quality measures that assure appropriate prescribing of antibiotics. HHS, CMS, accrediting organizations, healthcare facilities, medical schools and others should educate providers and patients about the harm of inappropriate prescribing.

- **Prevent and stop the spread of infections and improve antibiotic use in every state.** CDC should continue expanding implementation of public health-healthcare prevention networks in every state to improve identification and response to all emerging threats and implement proven strategies in healthcare facilities to prevent infections and transmission across healthcare settings.

- **Strengthen surveillance and tracking of resistant bacteria.** Congress and CDC must continue to invest in our public health infrastructure to enable the detection and control of drug resistant outbreaks. National programs to identify emerging patterns of both resistance and antibiotic use will quantify the magnitude of antibiotic use in the U.S. and inform new interventions. Sustained funding and continued support to state and local health departments implementing CDC's Antibiotic Resistance Laboratory Network (AR Lab Network), next generation surveillance in PulseNet laboratories and whole genome sequencing to rapidly uncover foodborne drug-resistant bacteria as well as effective dissemination of data collected will be critical for realizing the impacts of this initial federal investment in antibiotic resistance surveillance.

- **Prevent infection by improving vaccination rates for children and adults.** Despite their effectiveness, vaccination rates remain low in many communities across the U.S. — even among adult populations.[716] In 2014, 80 percent of U.S. adults did not receive recommended tetanus, diphtheria and pertussis (whooping cough) vaccinations.[717] Federal, state and local health officials, in partnership with medical providers and community organizations, should conduct assertive campaigns about the importance of vaccines. Targeted outreach should be made to high-risk groups and to racial and ethnic minority populations where the misperceptions about vaccines are particularly high.[718]

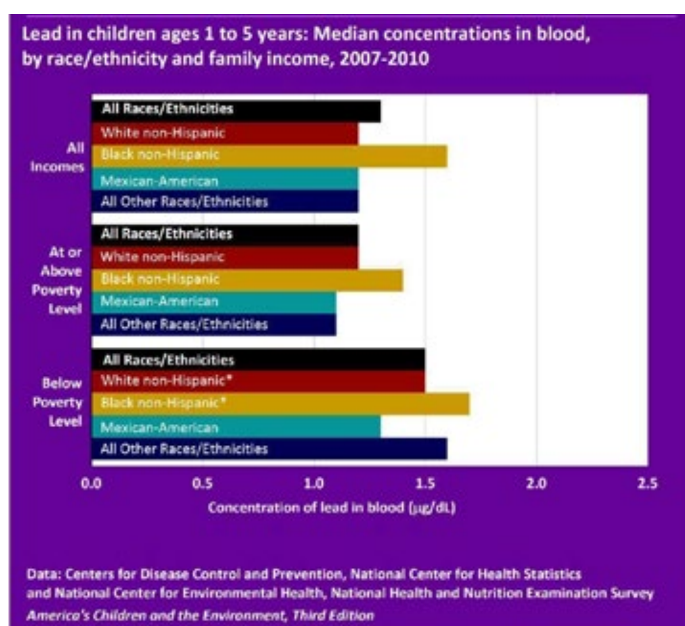
ENVIRONMENTAL HEALTH AND JUSTICE[719]

From the food and water people consume to the air they breathe, the physical environment can have profound effects on individual health. An estimated 13 percent of diseases could be prevented through improvements in the environment.[720] The economic impact of the health effects of environmental factors among children alone is more than $76.6 billion per year.[721]

The recent contaminated water crisis in Flint, Michigan helped highlight the continued environmental health threats in homes and communities around the country — and threats are significantly higher in low-income and minority communities.

Young children also have higher risk due to harmful environmental elements — including pollution, toxic chemicals, contaminated water or food and waste from landfills. Even relatively low levels of exposure to pollution and environmental hazards can adversely impact the health of children — contributing to lower birth weights, lower test scores and lower earning potential as adults.[722, 723]

A vast majority of environmental health threats could be prevented — and renewed strategies should focus on promoting environmental justice. Renewed efforts should be made to ensure every community has safe and clean water, air and food — and every American can live in a healthy, safe home and neighborhood.



- More than half a million children ages 1 to 5 still suffer from lead poisoning.[724] Rates of lead poisoning are highest among children living in poverty (4.4 percent) and Black children (5.6 percent).[725, 726, 727] A majority of cases are from exposure to lead paint in older homes: around 4 million homes with young children are estimated to still contain lead threats; but there are also cases of exposure through contaminated water and exposure to lead paint through schools or commercial buildings. Medical and special education needs per year per child with lead poisoning are around $5,600.[728]
- More than 12 percent of children in families living in poverty have asthma, compared to 8.2 percent of middle and higher income families. In the past decade, asthma rates have increased by nearly 15 percent overall and by more than 50 percent among Black children. Children living in low-income housing have higher exposure to indoor environmental triggers such as pollen, mold, animal dander, cockroaches, rodents and dust mites.[729, 730, 731, 732, 733] Asthma is the second most costly medical condition among children, at more than $8 billion.[734]
- Many children and pregnant women living in multi-unit housing (such as apartment complexes) have a 45 percent increased level of exposure to secondhand smoke.[735, 736] Secondhand smoke has been known to cause asthma attacks, bronchitis and pneumonia, ear infections among children, and has been linked to sudden infant death syndrome.[737]
- Lower-income housing is more likely to be located close to sources of pollution and toxins. For instance, Black and less educated women are more likely to live within 200 meters of Superfund hazardous waste sites or factories emitting toxic releases.[738] In addition, the highest concentration of brownfields — lands formerly used for commercial or industrial purposes but are no longer in use — are disproportionately in low-income communities.[739]

The return on investment for many environmental health interventions can be significant. For lead control programs, for example, for every dollar spent, $17 to $221 is returned in health benefits, increased intelligence quotient (IQ), higher lifetime earnings, tax revenue, reduced spending on special education and reduced criminal activity — resulting in a potential net benefit of $181 billion to $269 billion.[740] And, a Boston Community Asthma Initiative led to a return of $1.46 to insurers/society for every $1 invested.[741]

RECOMMENDATIONS

- **Prioritize environmental health and justice efforts.** Federal, state and local governments should place a high priority on programs to eliminate and reduce environmental threats to the nation's health, with a particular emphasis on addressing inequities. Efforts like CDC's environmental health services programs and the Federal Interagency Working Group on Environmental Justice — which works to improve access to affordable, safe, housing while safeguarding the environment — should be extended.

- **Eliminate lead poisoning in children through primary prevention.** Public health efforts — including improving water systems, lead paint remediation and required screening of lead exposure in children — have helped reduce lead poisoning levels by 70 percent since 1990. Policies that provide much-needed services after a child screens positive for elevated blood lead levels are addressing a serious problem too late. Instead, local and state policies need to implement primary prevention strategies to eliminate childhood exposure to lead. The strategies recommended by the CDC's Advisory Committee on Childhood Lead Poisoning Prevention include data-sharing between local and state housing and health authorities, prenatal parental counseling, enforcement of lead-safe housing standards and identification of funding for lead hazard remediation.[742] The American Academy of Pediatrics identifies roles and recommendations for EPA, CDC, HUD, CMS, providers, public health officials and other stakeholders.[743]

- **Reduce asthma through expansion of the National Asthma Control Program and environmental trigger management:** Home-Based Multi-Trigger, Multicomponent Environmental Interventions can greatly reduce the number of asthma attacks and recurring emergency room visits among children and adolescents.[744] In order to expand access to these evidence-based interventions, the CDC's National Asthma Control Program should be further expanded to all 50 states and Washington, D.C. In addition, Medicaid programs in every state should support and prioritize recommended asthma home visiting support and remediation programs.

- **Make public and subsidized housing smoke-free.** Banning smoking in subsidized or public housing is a key strategy for reducing children's exposure to secondhand smoke. The U.S. Department of Housing and Urban Development and a set of partners issued a guidance and toolkits for public housing and multi-unit family housing owners, managers and residents for ways to establish and implement smoke-free policies and practices.[745] CDC estimates nearly $497 billion could be saved each year if smoking was universally banned in subsidized and public housing.[746]

- **Expand actionable research on the connection between the environment and health, including a Nationwide Health Tracking Network (NHTN).[747]** While there are clear connections showing the negative impact of lead, mercury and many other toxins on health, more research and surveillance is needed to better understand and locate the impact and scope of different environmental factors on health. A better tracking system could provide "early warning" information about environmental-exposure emergencies, such as the lead water crisis in Flint, Michigan. Additional resources are needed to build out the NHTN system to better identify connections and causes of many diseases, and to expand to all 50 states.

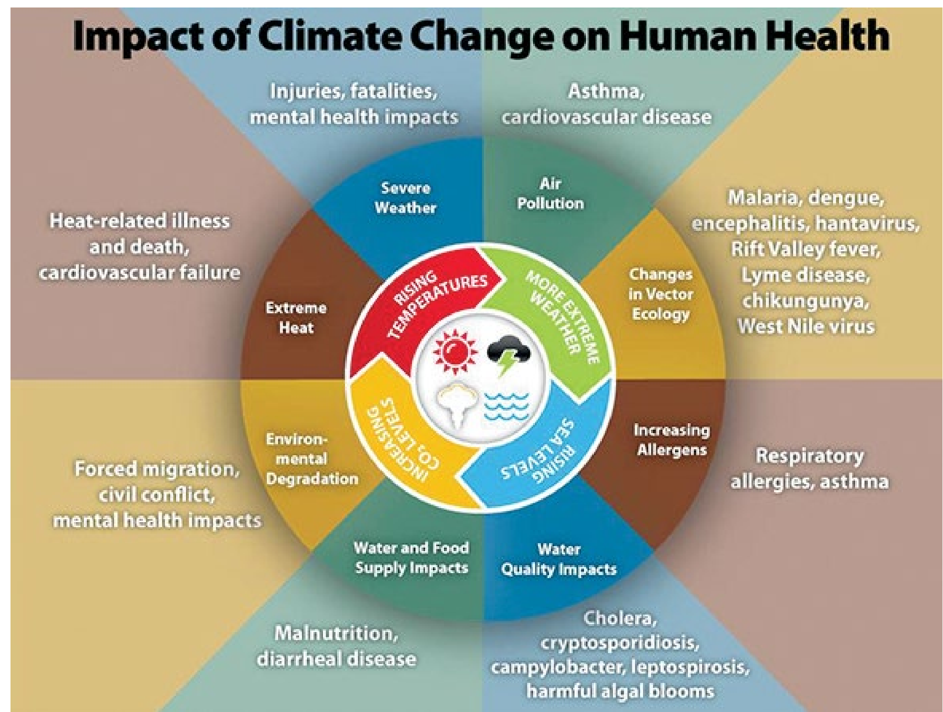
HEALTH, CLIMATE CHANGE AND EXTREME WEATHER

Climate change and extreme weather events have health consequences in the United States.[749]

Shifts in temperatures, storms, sea level rise, flooding, droughts, air quality and pollution, insect control and other climate and weather changes can lead to:

- A rise in new insect and other vector-borne disease threats, ranging from Zika to dengue fever; [750,751]
- Increased heat-related deaths and sicknesses, particularly among the elderly and children; [752]
- Aggravating triggers for asthma; [753,754]
- Increased allergens and extended allergy seasons; [755]
- More injuries and difficulties accessing medical care during major storms;[756]
- Water shortages because of droughts and/or water contamination after heavy rainfall;[757]
- Mental health impacts such as depression and post-traumatic stress disorder (PTSD);[758] and
- Malnutrition due to extreme weather affecting agricultural yields and crop production.[759]

Experts estimate that ozone and particle health effects associated with climate change could contribute to 1,000 to 4,300 additional premature deaths nationally per year by 2050.[760,761,762] Climate change is expected to have a growing adverse economic impact. A recent study found between 2002 and 2009, climate change-related factors, such as flooding, vector-borne illnesses, and extreme weather events resulted in about $14.1 billion in health costs, including the value of lives lost prematurely.[763,764]



SOURCE: CDC Climate and Health Program[748]

Health departments have an important role to play in helping communities prepare for the adverse effects of climate change, given their role in building healthy communities. Public health workers are trained to develop communication campaigns that both inform and educate the public about health threats and can use these skills to educate the public about climate change-related disease prevention and preparedness. In addition, public health departments are also on the frontlines when there is an emergency, whether it is a natural disaster or an infectious disease outbreak. These types of emergency preparedness and response skills are essential as extreme weather events and other effects of climate change become more common.

RECOMMENDATIONS

- **Prevent and prepare for the adverse impact of climate change on infectious disease outbreaks, including Zika.** Every state should have a comprehensive climate change adaptation plan that includes a public health assessment and response, including developing sustainable state and local mosquito control programs. Public health and environmental agencies should work together to implement strategies that help track concerns, coordinate risk management and communications and prioritize key public health capabilities needed to address environmental health concerns. Climate change needs assessments should include an examination of what additional capacities are needed and identify vulnerable populations and communities.

- **Build resilience to climate-related health effects at the federal, state and local level.** Climate change preparedness should be a required element of Public Health Emergency Preparedness (PHEP) and Hospital Preparedness Program plans and grants. Funding should be significantly increased to expand CDC's Climate Ready States and Cities Initiative nationwide and to build capacity at the federal, state and local level to understand the impact of climate change and apply this to long-range health planning.

- **Increase funding for prevention and preparedness measures that promote health equity and help protect vulnerable populations from adverse climate effects.** Initiatives addressing the underlying causes of climate change can simultaneously provide important health equity benefits to vulnerable populations. Projects aimed at reducing greenhouse gas emissions through city planning initiatives promoting active transportation options, for example, can play an important role in reducing existing health inequities by increasing resilience, physical activity levels and social cohesion in communities most at-risk.[765] Urban planning policies can also help vulnerable populations adapt to the predicted impacts of climate change. Policies ensuring buildings are constructed to resist extreme weather events, for example, could help mitigate the negative impacts for vulnerable populations located in areas heavily impacted by hurricanes or heavy rain.[766]

- **Restore funding for the CDC's Climate and Health Program at the National Center for Environmental Health.** The program was created in 2009 to translate climate change science to inform states and communities, create tools to build state and local capacity to handle extreme events happening today and in the future and lead efforts to mitigate the public health impacts of climate change and extreme weather. For each additional $1 million in funds, CDC would be able to fund approximately three additional states or cities under their Climate Ready States and Cities Initiative.[767] A larger, long-term investment will be critical to building nationwide resilience.

- **Implement the Clean Air Act (CAA) in an effective and timely manner.** The CAA protects American health against dangerous levels of air pollutants, and investments to comply with the CAA have provided $4 to $8 of economic benefits for every $1 spent on compliance.[768] Four major rules of the CAA alone would yield more than $82 billion in Medicare, Medicaid and other healthcare savings for America through 2021.[769]

- **Develop sustainable state and local mosquito and other vector control programs.** A review by ASTHO found that many states and local communities are challenged to develop and maintain vector control programs, especially in tight budgetary times and when emergency situations have quieted, but that these programs are a vital public health strategy to help control vector-borne diseases.[770]

- **Increase funding for the National Environmental Public Health Tracking Program at the National Center for Environmental Health at the CDC.** Health tracking is important to identify the link between environmental factors and their impact on health. The program should be expanded and fully funded to cover every state.

- **Improve coordination and move to integration across medical care, public health and environmental agencies.** Public health agencies at all levels must work with environmental, homeland security and other agencies to undertake initiatives to reduce known health threats from extreme weather, food, water and air and educate the public about ways to avoid potential risks.

Investing in a Robust Environmental Health System

PARTNERS:

Top 10 Focus Areas

- Safe Drinking Water
- Clean Air
- Vector Control
- Food Safety
- Chemical Safety
- Healthy Community Design
- Healthy Housing
- Climate Effects
- Emergency Preparedness
- Environmental Equity

Background and Need for Action

Environmental Health is the branch of public health that focuses on the interrelationships between people and their environment, promotes human health and well-being, and fosters healthy and safe communities. As a fundamental component of a comprehensive public health system, environmental health works to advance policies and programs to reduce chemical and other environmental exposures in air, water, soil and food to protect residents and provide communities with healthier environments.

Environmental health protects the public by tracking environmental exposures in communities across the United States and potential links with disease outcomes. To achieve a healthy community, homes should be safe, affordable, and healthy places for families to gather. Workplaces, schools, and child care centers should be free of exposures that negatively impact the health of workers or children. Nutritious, affordable foods should be safe for all community members. Access to safe and affordable multimodal transportation options, including biking and public transit, improves the environment and drives down obesity and other chronic illnesses. Outdoor and indoor air quality in all communities should be healthy and safe to breathe for everyone. Children and adults alike should have access to safe and clean public spaces such as parks. When a disaster strikes, a community needs to be prepared and should have the tools and resources to be resilient against physical (infrastructure and human) and emotional damage. All these activities require the participation of federal, state, local, and tribal governments.

Building a Robust Environmental Health System

Investing in essential governmental environmental health services through dedicated resources will create an effective environmental health system that proactively protects communities and helps everyone attain good health. Federal, state, local, and tribal governments should adopt standard approaches to ensuring environmental health equity, protections and access for all, particularly vulnerable and at-risk populations.

The federal government can help build an effective and strong environmental health system by:

- **Creating an integrated infrastructure to collect and track crucial information.**
- **Developing a well-trained and highly skilled workforce.**
- **Providing ample and sustainable funding from diverse sources.**
- **Ensuring that policy and programs are grounded in existing and up-to-date evidence-based research.**
- **Encouraging/incentivizing cross-sectoral partnerships to support consideration of health impacts.**
- **Assuring environmental health services are equitably accessible.**

A cohesive environmental health system monitors and measures diseases, hazards, exposures, and health outcomes; can collect data over time; and can present real-time data to quickly respond to emergencies and to identify problems for program planning. All government agencies should assess the environmental health impacts of their programs and policies across all sectors to improve health of all communities and people.

Recommendations

Governmental environmental health services are not a luxury; they are essential to providing basic needs to the public such as safe drinking water, clean air, lead poisoning prevention, climate change adaptation, and more. Everyone should have the opportunity to achieve the highest possible level of health at all stages of life, which encompasses physical, mental, and social well-being and extends beyond the absence of disease. As such, the following recommendations support the uncomplicated right to environmental health:

Prevention: Enable federal, state, local, and tribal governments to promote resilient, equitable, and healthy communities for all Americans, especially those who are most vulnerable and most at risk.

Response: Build and support the governmental environmental health system, including workforce needs as well as tracking disease outcomes and environmental exposures.

Real-life solutions: Strengthen environmental health protections and support peer-reviewed research to inform environmental health decision making and practice.

Case Examples that Demonstrate the Need for a Strong and Equitable System

Environmental health professionals work every day to ensure that the air we breathe, the water we drink, and the food we eat are safe and secure. No one would want a person without a medical degree performing surgery, nor should anyone want the safety of their food or water being determined by a person who is not a highly skilled professional. Offering collaboration early on, enhancing their capabilities to detect and respond to threats, grounding policy and actions in evidence-based research, and ensuring that their services reach everyone are critical tenets of a system that can create resilient communities after a disaster.

Recent major emergencies demonstrate the need for a strong governmental nationwide environmental health system. The Zika virus outbreak, Flint water crisis, and Hurricane Katrina are three examples with stark environmental health implications. These emergencies will not be the last, so we must prepare by investing in a robust environmental health system.

Zika Virus Outbreak

Mosquito-borne diseases have and continue to threaten the public's health with such illnesses as Encephalitis, West Nile Virus Disease, Dengue, Chikungunya, and now Zika Virus Disease. Zika infection - passed from an infected pregnant woman to her fetus and capable of causing devastating birth defects - also can have significant economic consequences on affected communities. There is no vaccine to prevent Zika. The best way to prevent disease-carrying mosquitoes is through community-based mosquito control and public education programs. **Environmental health actions are mobilized through Integrated Mosquito Management Programs that provide mosquito monitoring and surveillance, remove places where mosquitos lay eggs, and carefully apply pesticides to significantly reduce mosquito populations while protecting water systems and minimizing undue human and animal exposure.** These actions, coupled with public education and promoting healthy housing, will undoubtedly result in reduced illness and suffering.

Flint Water Crisis

Due to recent, highly visible events, the safety of, and trust in our nation's drinking water systems have been called into question. The drinking water crisis associated with lead contamination in Flint, MI, sheds a national spotlight on an issue that is occurring across the country. In Flint, due to a change in the source of the city's drinking water without taking the necessary corrosion control steps, the safety of approximately 100,000 people's drinking water was threatened. This resulted in the leaching of lead from the plumbing causing an increase in the blood lead levels in children consuming the water. This was a preventable situation. **Strong policy with sufficient oversight and accountability supported by a skilled and resourced environmental health system is essential to monitor drinking water systems.** The presence of chemical and microbial contaminants must be detected, source waters must be protected, regulations must be enforced, and surveillance systems must be in place that monitor and link water quality to human health data for rapid detection of potential public health problems.

Hurricane Katrina & Super Storm Sandy

Unforgettably, Hurricane Katrina flooded the city of New Orleans in 2005, damaging more than 100,000 homes and Super Storm Sandy hit New York, New Jersey and other neighboring states in 2012, also causing devastating damage to homes and businesses, power supply systems, and other critical infrastructures such as roads. Storms like these have both acute and longer term environmental health impacts capable of causing physical, emotional, and economic harm. Understandably, the victims' focus was on mere survival and not necessarily whether the water coming from their kitchen sink was safe to drink, whether residual mold growth in their home would impact the health of their children, or whether the reconstruction of their home would cause harmful exposures to lead or other building materials or contaminants. **A strong environmental health system provides the necessary safeguards to measure, track, and respond to such concerns and mitigate the adverse health consequences.**

This document was made possible through cooperative agreement 1U38OT000131 between the Centers for Disease Control and Prevention and the American Public Health Association. The contents of this document are solely the responsibility of the authors and do not necessarily represent the official views of the Centers for Disease Control and Prevention.

ACHIEVING HEALTH EQUITY

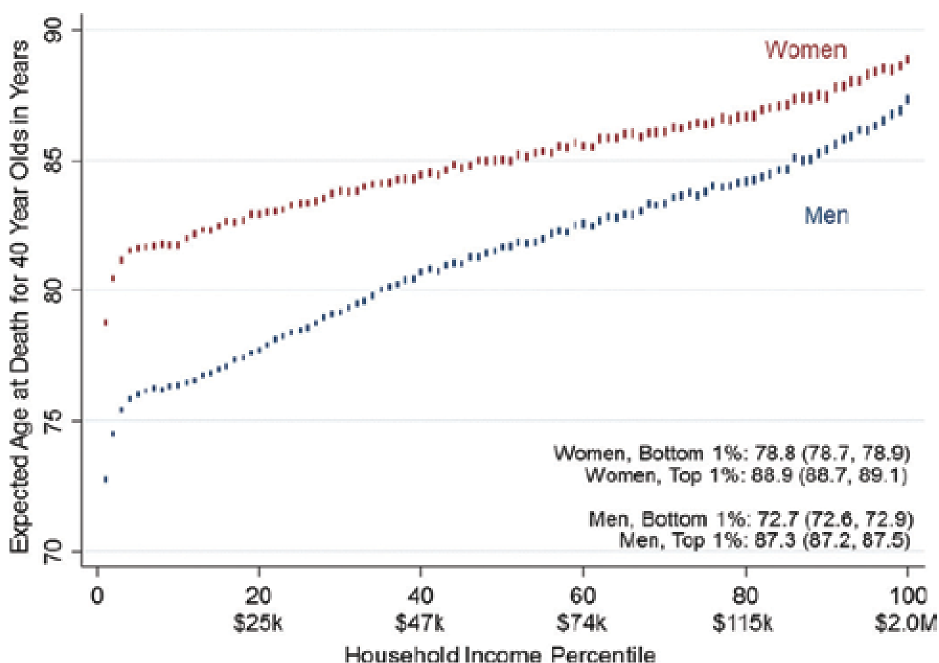
A person's health, and ability to make healthy decisions, is impacted dramatically by where they live, their income, their educational attainment and their racial and ethnic status.

Americans in the top 1 percent of household income live 10-15 years longer than those in the bottom 1 percent.[772] Adults without a high school diploma are three times more likely to die before the age of 65 than those with a college degree.[773] On average, the life expectancy for Black men is 4.5 years shorter than for White men; and 3 years shorter for Black women than White women.[774]

The causes of health inequities are multifaceted and often intertwined with lower socioeconomic status and differential access to opportunities and factors that influence health, such as quality healthcare, income, education, housing, transportation and others. For instance, access to safe parks, supermarkets and quality housing provide significant opportunities to be healthier.[775]

Blacks and Latinos have lower median household incomes than Whites and are more likely to live in poverty.[776] Black men earned 70 cents for every dollar earned by White men in 2014 and Hispanic men earned 60 cents on the dollar.[777, 778] People living in neighborhoods with high levels of poverty have a higher risk of less healthy behaviors — such as smoking, physical inactivity or poor nutrition — related to inequities in the physical and social environment.[779] Low-income neighborhoods, for example, are less likely to have places where children can be physically active or have access to fully-stocked supermarkets with healthy, affordable foods — contributing to higher rates of obesity and poor nutrition in these communities.[780, 781, 782] Low-income and minority communities also experience higher air pollution, which affects respiratory and cardiovascular health, as well as birth outcomes.[783]

THE RELATIONSHIP BETWEEN LIFE EXPECTANCY AND INCOME BY GENDER, U.S. 2001-2014 [771]

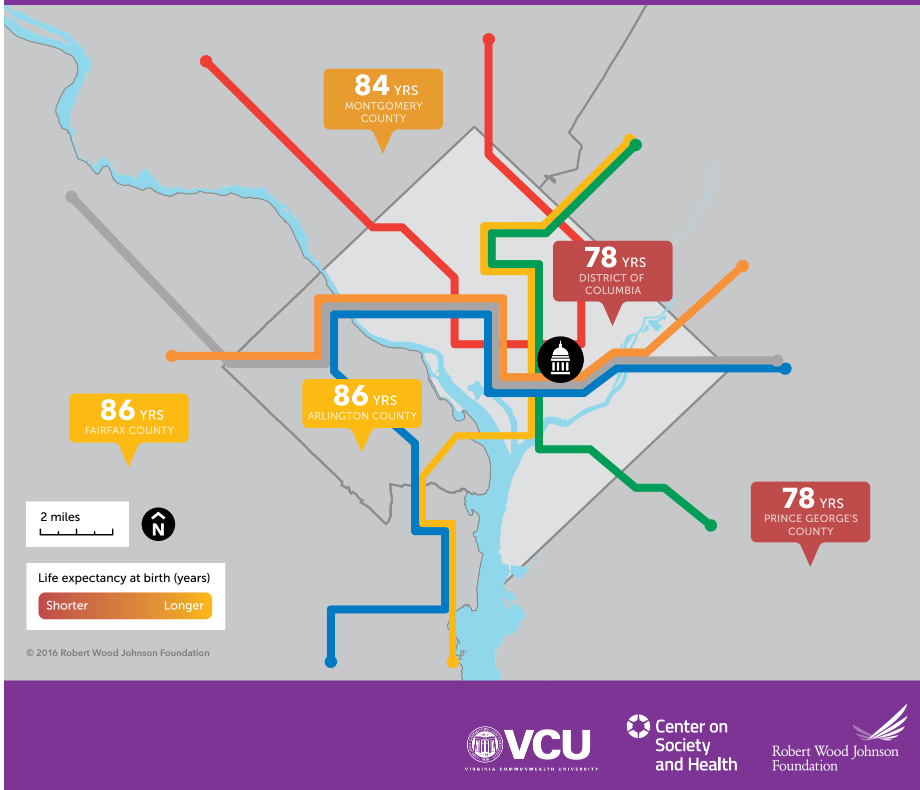


Source: Chetty et al., 2016

Health inequities have a high economic cost. A study by the Urban Institute found that the differences in rates among Blacks, Hispanics and Whites for a set of preventable diseases (diabetes, heart disease, high blood pressure, renal disease and stroke) cost the healthcare system $23.9 billion annually.[784] By 2050, this is expected to double to $50 billion a year.[785] Eliminating health inequalities could lead to reduced medical expenditures of $54-61 billion a year, and recover around $13 billion annually due to work lost by illness and around $240 billion per year due to premature deaths (2003-2006 spending).[786, 787] According to CDC, the rate of preventable hospitalizations for Blacks is almost double that of Whites — which contributes to over a half million hospitalizations and $3.7 billion in hospitalization costs annually.[788]

Examples of some health inequities include:

- American Indians and Alaska Natives are twice as likely to have diabetes as Whites, and diabetes rates among Blacks and Hispanics are over 1.5 times higher than for Whites.[789]
- Blacks have the highest death rate and shortest survival of any racial and ethnic group in the United States for most cancers.[790]



- Black women with breast cancer are 40 percent more likely to die than White women with breast cancer, despite similar incidence rates of the disease.[791, 792]

- Black men are about twice as likely to die from prostate cancer as Whites.[793]

- Hispanic women are more than 1.5 times as likely to have cervical cancer as Whites.[794]

- Infants born to Black women are 1.5 to almost 3 times more likely to die than infants born to women of other races/ethnicities regardless of education level.[795] American Indian and Alaska Native infants die from Sudden Infant Death Syndrome (SIDS) at about twice the rate of White infants.[796]

- Asthma rates for Black children grew by 50 percent between 2001 and 2009, while the overall asthma rates increased 15 percent.[797] Disparities in asthma rates between Black and White children reached a peak in 2011 (with Black children twice as likely as White children to have asthma).[798] And, asthma-related hospitalizations and deaths are over twice as high among Blacks as Whites.[799, 800]

- Black and Latinos have less access to regular healthcare and receive lower quality care on about 40 percent of core healthcare measures.[801]

- In addition, Blacks and Hispanics were more likely than Whites to report poor communication from healthcare providers.[802] Some examples of implicit bias in healthcare identified by The Joint Commission, Division of Health Care Improvement include: non-White patients receive fewer cardiovascular interventions and renal transplants; Black women are more likely to die after being diagnosed with breast cancer; non-White patients are less likely to be prescribed pain medications; Black men are less likely to receive chemotherapy and radiation therapy for prostate cancer; and patients of color are more likely to be blamed for being too passive about their healthcare.[803]

RECOMMENDATIONS

- **Create strategies to optimize the health of all Americans, regardless of race, ethnicity, income or where they live.** The country must invest in first understanding the systematic disparities that exist and the factors that contribute to these differences, including poverty, income, racism and environmental factors. Resources must then be devoted to implement community-driven approaches to address these factors, including using place-based approaches to target programs, policies and support effectively.

- **Expand cross-sector collaborations addressing health equity.** Improving equity in health will require supporting and expanding cross-sector efforts to make communities healthy and safe. Efforts should engage a wide range of partners, such as schools and businesses, to focus on improving health through better access to high-quality education, jobs, housing, transportation and economic opportunities.[804]

- **Fully fund and implement health equity, health promotion and prevention programs in communities.** Partner with a diverse range of community members to develop and implement health improvement strategies. Federal, state and local governments must engage communities in efforts to address both ongoing and emergency health threats. The views, concerns and needs of community stakeholders, such as volunteer organizations, religious organizations and schools and universities must be taken into account in this process. Proven, effective programs, such as REACH (Racial and Ethnic Approaches to Community Health) should be fully-funded and expanded.

- **Collect Data on Health and Related Equity Factors by Neighborhood:** Improving data collection at a very local level to make connections between health status and equity concerns can help identify concerns and inform the development of strategies to address them. Collecting and reporting data by neighborhood at a zip code or even more granular neighborhood level are essential to understanding inequity concerns.

- **Support Medicaid coverage and reimbursement of clinical-community programs to connect people to services that can help improve health.** Medicaid should reimburse efforts that support improved health beyond the doctor's office — programs such as asthma and diabetes prevention and care management, and community-based initiatives, can help better address the root causes that contribute to inequities.

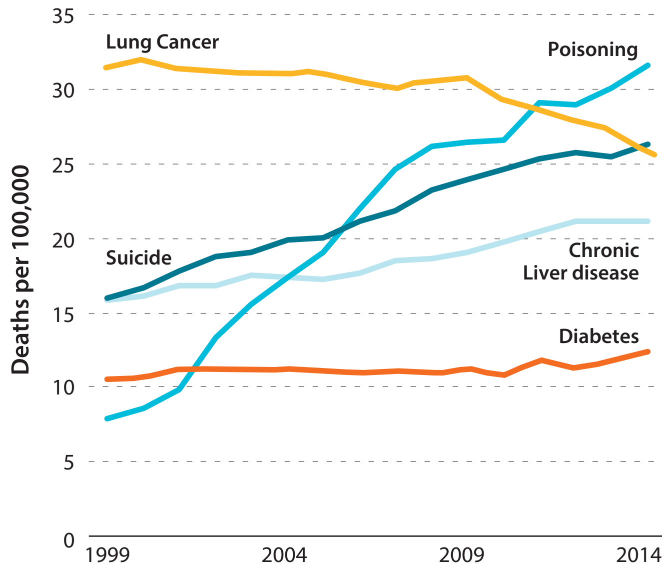
- **Communicate effectively with diverse community groups.** Federal, state and local officials must design culturally competent communication campaigns that use respected, trusted and culturally competent messengers to communicate their message. Communication channels should reflect the media habits of the target audience.

- **Prioritize community resiliency in health emergency preparedness efforts.** Federal, state and local government officials must work with communities and make a concerted effort to address the needs of low-income and minority groups during health emergencies. Public health leaders must develop and sustain relationships with trusted organizations and stakeholders in diverse communities on an ongoing basis—including working to improve the underlying health of at-risk communities, so these relationships are in place before a disaster strikes. Communication and community engagement must be ongoing to understand the disparate needs of various populations.

- **Eliminate racial bias in healthcare.** Policies should incentivize equity and penalize unequal treatment in healthcare, and there should be increased support for programs to increase diversity across health professions. Some of The Joint Commission's recommendations for combatting implicit bias include: assiduously practicing evidence-based medicine; supporting cultural understanding and avoiding stereotypes; supporting the National Standards for Culturally and Linguistically Appropriate Services in Health and Health Care; and supporting techniques that de-bias care, including through training, perspective-taking, emotional expression and counter-stereotypical exemplars.[805]

REVERSING RISING DEATH RATES AMONG MIDDLE-AGED WHITE ADULTS

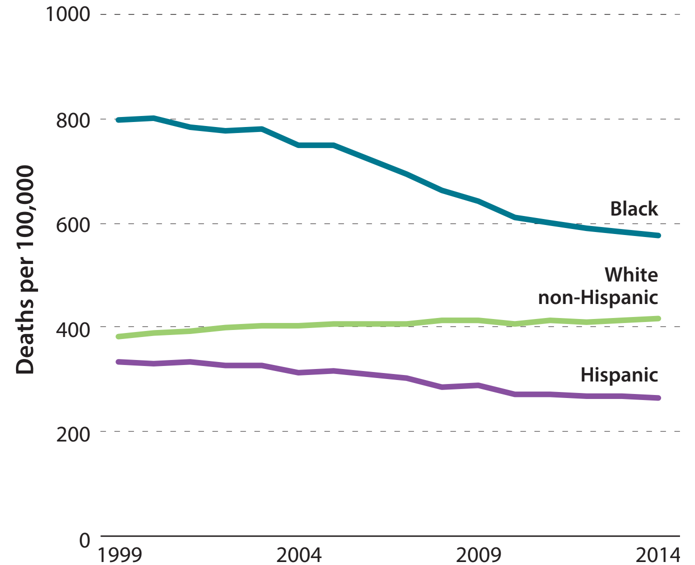
Mortality by Cause, White Non-Hispanics Age 45–54



Source: CDC 1999–2014.

Note: Figure is adapted from Case and Deaton (2015) figure 2. Chronic liver diseases include alcoholic liver diseases and cirrhosis. Poisonings include drug and alcohol poisoning, both accidental and with undetermined intent.

Mortality, Age 45–54



Source: Centers for Disease Control and Prevention 1999–2014.

Note: Mortality data are for all-cause mortality. Figure is adapted from Case and Deaton (2015) figure 1.

IMAGE SOURCE: Schanzenbach, Nunn & Bauer, The Hamilton Project, 2016[806]

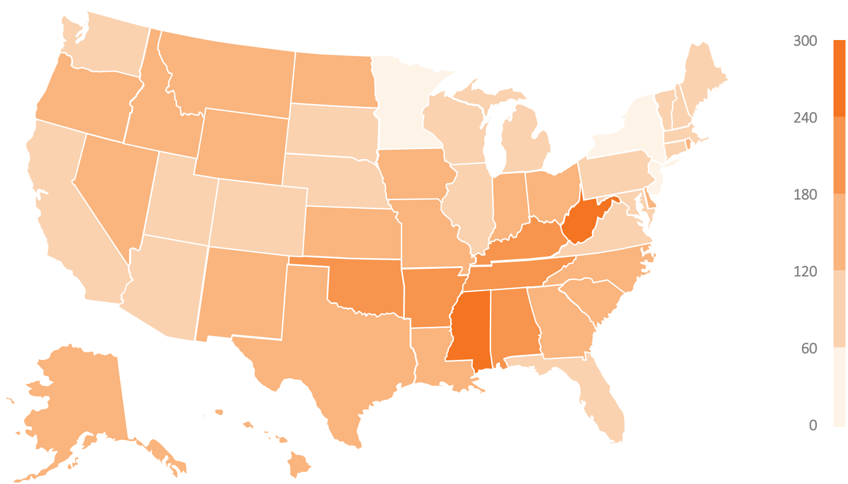
After decades of increasing life expectancy rates — the death rate for middle-aged (ages 45 to 54) White men and women increased by 10 percent since 1999.[807]

Key contributing factors have been growths in unintentional injuries (drug overdoses and alcohol poisonings), liver disease and suicide.[808] Deaths from these three factors have tripled among White working age Americans in the past 15 years.[809]

- Drug overdoses and alcohol poisoning passed lung cancer as the leading causes of death among middle-aged Whites in 2011. Nationally, prescription painkiller and heroin related deaths have more than tripled since 1999, and heroin use among middle-aged Whites increased nearly 115 percent from 2002 to 2013.[810] In 2014, the rates of synthetic opioid deaths and methadone overdose deaths were highest among Whites compared with other racial or ethnic groups.[811, 812] Between 2013 and 2014, rates of synthetic opioid deaths increased 170 percent among Whites in eight high-burden states, and were largely attributable to illicitly manufactured fentanyl.[813]
- Suicides among White females ages 45 to 64 have increased 80 percent and, among White males ages 45 to 64, they have increased by 59 percent since 1999. Middle-aged White females commit suicide more than three times more often than females in other racial and ethnic groups.[814]

Another factor in the increasing death rates among middle-aged Whites is that mortalities caused by diabetes, heart disease and other chronic conditions have remained relatively stagnant in this cohort — particularly among lower-income middle-aged Whites, since 1999.[815] Improvements in disease rates had been a major factor in prolonging life expectancy from the 1900s, and continued progress in these areas are still contributing to longer lifespans among Blacks and Latinos.

The "Mortality Gap" for Middle-Aged Whites Was Particularly Large in Parts of the South



Note: The mortality gap compares states' actual mortality rate for non-Hispanic, middle-aged whites in 2013/2014 with what that rate would have been if it had declined by 1.8% per year since 1999/2000.
Source: CDC WONDER Online Database.

Percent of total deaths for the 5 leading causes of death for Non-Hispanic, Whites, Both Sexes, 45-54 years: United States, 1999 & 2014[819, 820]

Cause of Death	1999	2014	Change in Percent of Total Deaths 1999 to 2014
Cancers	32.7	25.8	-6.9
Heart disease	23.2	19.2	-4.0
Unintentional injuries, including drug overdoses	7.9	12.9	+5.0
Suicide	4.2	6.3	+2.1
Chronic liver disease and cirrhosis	4.1	5.1	+1.0

Education and income levels play a role. The increases in death rates were only among middle-aged Whites with less than a college education.[816]

- Death rates among middle-aged Whites with a high school degree or no degree increased around 20 percent from 1999 to 2013, while Whites with some college or a college degree had lower death rates.
- For middle-aged Whites with a high school degree or less, death rates from drug overdoses and alcohol poisonings grew by 4 times compared to deaths in 1999 vs. a 2.3 time growth among those with a college degree; and deaths from chronic liver cirrhosis increased by nearly 50 percent among the high school or less group while those with a college degree experienced decreases.

The increasing death rates were also highest in a number of states in the South: West Virginia, Mississippi, Oklahoma, Tennessee, Kentucky, Alabama and Arkansas.[817] Five of the six states (all but Oklahoma) with the highest increases in death rates also had the highest poverty rates among Whites as of 2015.[818]

RECOMMENDATIONS

- **Support place-based initiatives that address the underlying social and environmental determinants of substance misuse in high-risk populations.** The trends of increasing middle-aged White deaths are most pronounced among those with lower income and lower educational attainment. To reduce mortality, resources must be devoted to broader community-driven approaches addressing systematic disparities driven by poverty, income and environmental factors.

- **Expand prevention efforts to combat the prescription opioid epidemic.** The prescription opioid epidemic plays a major role in the rising mortality trends among middle-aged Whites. States need to expand evidence-based approaches to reducing substance misuse, particularly in those states in which the mortality gap is the largest. States should increase prevention programs, strengthen prescription drug monitoring programs, make Screening, Brief Intervention and Referral to Treatment a routine practice for young and middle-aged adults and improve opioid prescription and dispensing practices through provider education.

- **Support targeted programs to enhance individual and community social connectedness.** Positive and supportive relationships with individuals have been shown to help prevent depression and suicide.[821 822] Strong social connectedness with community organizations, like schools or faith-based organizations, have also been shown to reduce suicidal behavior and can provide better access to formal preventive resources.[823 824] The National Strategy for Suicide Prevention report by the Surgeon General and National Action Alliance for Suicide Prevention encourages the development of community-based services and programs that promote wellness and resiliency and address the social and environmental risk factors for suicide.[825] Local government entities and community-based organizations can enhance social connectedness by promoting collaborative efforts between schools, workplaces, faith- and community-based organizations, the healthcare sector, law enforcement agencies and other groups to create targeted prevention programming for middle-aged adults in their communities.

- **Promote positive early learning environments through the inclusion of social and emotional learning in early care and school settings.** Research shows that the foundations for mental health are built during early childhood, making these early years a critical intervention period to promote mental well-being.[826] Social and emotional learning programs have been linked to reductions in drug and alcohol abuse and suicide ideation and attempts later in life.[827, 828] These programs provide a cost-effective prevention tool that on average, can yield an 11:1 return on investment.[829]

PROMOTING POSITIVE MENTAL HEALTH

Mental health is as essential to well-being as physical health. Promoting mental health and improved integration of care with other medical health and social services can help promote better health, reduce rates of mental illness and improve management and treatment of mental illness.

The United States should invest in a broad strategy to improve mental health — stressing prevention, early identification and full support for treatment.

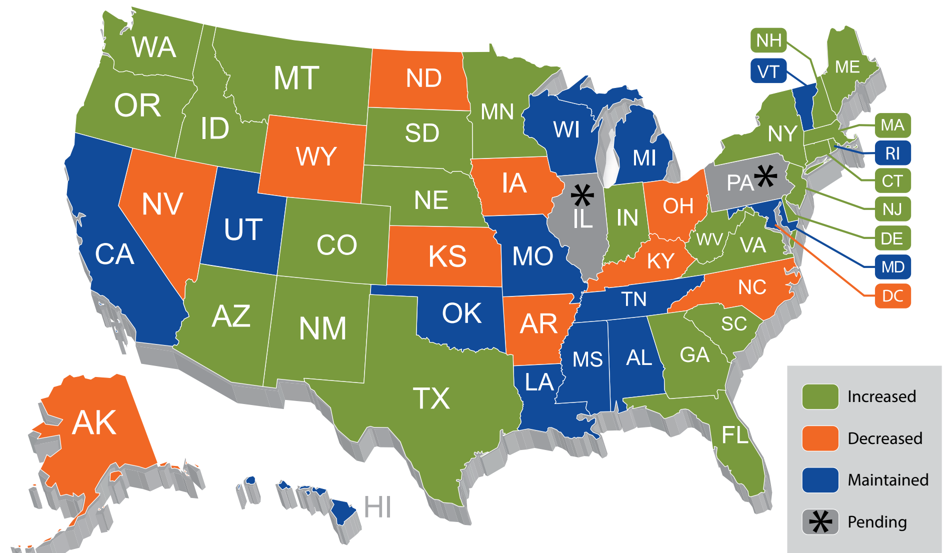
First, stronger prevention efforts — such as addressing cycles of toxic stress in low-income families and providing evidence-based social-emotional learning programs in child care and schools — are among the most important approaches to supporting positive mental health and well-being in the United States. For instance, toxic stress and traumatic experiences during childhood increase the risk for mental illness and behavioral problems, risky health behaviors, low academic and career performance and difficulty establishing fulfilling relationships.[830, 831]

Second, there is a need to improve screening and pathways to appropriately identify and address mental health issues and provide ongoing care for individuals.

And, third, while parity laws and measures in the Affordable Care Act require improved coverage and support for mental health, there are still many barriers to these being carried out in practice, including legacy healthcare systems and practices, shortages of trained professionals and ongoing social stigma.

Mental illness issues are widespread in the United States and are the fourth largest driver of medical expenses (at $77.6 billion annually), and are the top medical cost for children ($13.9 billion).[832, 833] In addition, serious mental illness accounts for $193.2 billion in lost earnings and 217 million lost days of work each year.[834, 835]

STATE MENTAL HEALTH BUDGETS FISCAL YEAR 2015-2016



Source: National Alliance on Mental Illness

- Each year, one in five adults in the United States experiences a mental illness.[836]
- One in five children and/or teens have a history of a serious debilitating mental disorder.[837] Half of all chronic mental illness begins by age 14 and three-quarters by age 24.[838, 839]
- Three out of every five adults and nearly half of youth ages 8 to 15 with a mental illness receive no mental health services.[840, 841]
- Untreated mental illness contributes to increased rates of homelessness, incarceration, violence and suicide.[842, 843]
- Around 20 percent of Veterans who severed in Iraq or Afghanistan suffer from depression or post-traumatic stress disorder, and around 20 Veterans commit suicide each day.[844, 845]

- Teens with untreated depression are at a higher risk to be aggressive, engage in risky behavior, die from suicide, misuse drugs or alcohol, do poorly in school or run away.[846]
- Suicide rates have increased 24 percent since 1999,[847] and 90 percent of those who die by suicide have an underlying mental illness.[848]
- Approximately 26 to 30 percent of homeless adults in shelters live with serious mental illness.[849,850]
- Roughly 15 percent of those below the poverty line experience depression, over twice the rate of those at or above the poverty line.[851]
- An estimated 56 percent of state prisoners, 45 percent of federal prisoners and 64 percent of jail inmates have mental health issues.[852] Among youth in the juvenile justice systems, 70 percent have at least one mental health condition.[853]
- Individuals with serious mental illness also have an increased risk of experiencing chronic medical conditions, injuries and cancer and die on average 25 years earlier than others.[854,855]

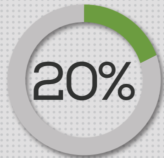
Stigma surrounding mental illness leads to prejudice and discrimination, which can limit access to care, discourage people from pursing treatment and contribute to self-stigmatizing attitudes.[856]

Another reason for the gap in care is there is a shortage of trained mental health professionals. More than half of U.S counties — all rural — have no practicing psychiatrists, psychologists or social workers.[857] More than three out of every four counties have a severe shortage of mental health workers and 96 percent of counties do not have sufficient numbers of professionals licensed to be able to prescribe mental health medications.[858] Schools also have a shortage of counselors — with an average counselor-to-student ratio of 1:471 (whereas 1:250 is the recommended level).[859]

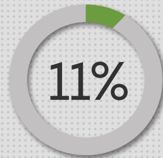
Nearly half of all Medicaid spending is on care for the 20 percent of Medicaid beneficiaries who have a behavioral health diagnosis (mental illness and/or substance use). Annual expenditures are nearly four times higher for Medicaid patients with a behavioral health diagnosis than without a diagnosis ($13,303 versus $3,564).[860] Despite the high amounts spent on mental healthcare, states cut $4.35 billion from the mental healthcare system from 2013 to 2015.[861]

Mental Health Facts
CHILDREN & TEENS

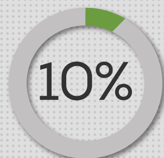
Fact: 1 in 5 children ages 13-18 have, or will have a serious mental illness.[1]



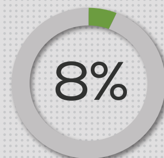
20% of youth ages 13-18 live a with mental health condition[1]



11% of youth have a mood disorder[1]



10% of youth have a behavior or conduct disorder[1]



8% of youth have an anxiety disorder[1]

Impact

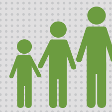
50% 50% of all lifetime cases of mental illness begin by age 14 and 75% by age 24.[1]

10 yrs The average delay between onset of symptoms and intervention is 8-10 years.[1]

37% 37% of students with a mental health condition age 14 and older drop out of school—the highest dropout rate of any disability group.[1]

70% 70% of youth in state and local juvenile justice systems have a mental illness.[1]

Suicide



3rd Suicide is the 3rd leading cause of death in youth ages 10 - 24.[1]

90% 90% of those who died by suicide had an underlying mental illness.[1]

Warning Signs

Feeling very sad or withdrawn for more than 2 weeks (e.g., crying regularly, feeling fatigued, feeling unmotivated).

Trying to harm or kill oneself or making plans to do so.

Out-of-control, risk-taking behaviors that can cause harm to self or others.

Sudden overwhelming fear for no reason, sometimes with a racing heart, physical discomfort or fast breathing.

Not eating, throwing up or using laxatives to lose weight; significant weight loss or gain.

Severe mood swings that cause problems in relationships.

Repeated use of drugs or alcohol.

Drastic changes in behavior, personality or sleeping habits (e.g., waking up early and acting agitated).

Extreme difficulty in concentrating or staying still that can lead to failure in school.

Intense worries or fears that get in the way of daily activities like hanging out with friends or going to classes.

4 Things Parents Can Do

Talk with your pediatrician

Get a referral to a mental health specialist

Work with the school

Connect with other families

Source: National Alliance on Mental Illness

RECOMMENDATIONS

- **Support social and emotional development, especially in early childhood.** Building positive protective factors and reducing risks can help improve the mental health of all children. Research by the National Institutes of Health, National Academy of Medicine and other experts have demonstrated that early interventions — including home visits, mental health consultations and family and parenting skills training — can be effective in preventing or delaying the onset of mental, emotional and behavioral disorders, as well as enhancing social and emotional skills and well-being. Federal and state policies should encourage integration of these interventions into early childhood settings such as schools and childcare.

- **Identify and intervene to address mental and behavioral illness as early after onset as is feasible.** Mental health screenings should be guaranteed to children — and parents — as part of well-child exams and to adults as part of annual physicals.[862] In addition to routine screenings, early intervention programs should be implemented, including public education programs that teach participants skills to aid others with mental health issues and treatment programs for those at risk for a psychotic episodes or immediately after their first psychotic episode.[863, 864] Resources for suicide prevention should be targeted to high-risk settings and populations.

- **Improve insurance coverage for mental and behavioral healthcare.** Despite significant advances in accessibility and affordability of mental health services, coverage is often limited and does not match what is needed to provide effective and ongoing treatment. Insurance coverage can be improved by expanding parity laws to include all employers; better enforcing parity laws; covering a broader range of mental healthcare services and medications; reducing out-of-pocket costs; and increasing transparency, including publishing clinical criteria used to approve or deny care and accurate lists of mental health providers participating in insurance plans.[865]

- **Promote payment and care models to support mental and behavioral healthcare.** Scaling up value-based care and payment models that promote flexible, team-based care — including community-based supports — can help expand services and integrate with primary care.[866] Solutions should include adequate funding for community health centers that have the capacity to address behavioral and mental health prevention and treatment needs.

- **Expand, improve and modernize the mental and behavioral health workforce.** Federal and state policymakers should incentivize the training of new behavioral health providers, including compensating providers fairly for their services. Providers should be trained in evidence-based models; to that end, curriculum reform should keep pace with emerging evidence-based practices and guidelines, quality improvement approaches and models of care based on interprofessional teams.[867] Policies are needed to promote sharing of knowledge and skills, effective team functioning, common standards of care and consensus on core competencies between physical and behavioral health and within behavioral health disciplines. Policymakers should broaden the behavioral health workforce to include peer support, social workers, and non-traditional health workers — and develop the capacity of these providers to identity and address mental health needs.

- **Implement effective treatment practices.** All states should adopt — and all payers should cover — the latest evidence-based treatment methods, including cognitive behavioral therapy, peer and family support programs and targeted approaches for high-intensity patients, youth transitioning to adulthood and partnerships between law enforcement and mental health services. Currently, only limited numbers of states have all of these policies. Criminal justice reform efforts should consider the role that healthcare, public health, and other partners can play in addressing mental health needs.

Examples of Early Childhood and Education Programs to Support Positive Mental Health, Build Resiliency and Reduce Risks

- Nurse-Family Partnership Home Visiting
- Social/Emotional Learning and Life Skills Training, e.g. Incredible Years, Good Behavior Game, Positive Action — including support for teachers, caregivers, parents and children
- "Early Warning" Identification Strategies to track chronic absenteeism — paired with early treatment support
- Anti-bullying programs involving parents and implementing a whole-school approach, e.g. Positive Behavioral Interventions and Supports
- Big Brothers/Big Sisters Mentoring Programs
- LBGT supportive programs such as the Safe Schools Program

Endnotes

1 Ward BW, Schiller JS, Goodman RA. Multiple chronic conditions among US adults: a 2012 update. *Prev Chronic Dis.* 2014;11:130389. DOI:http://dx.doi.org/10.5888/pcd11.130389.

2 Gerteis J, Izrael D, Deitz Det al. *Multiple Chronic Conditions Chartbook. 2010. Medical Expenditure Panel Survey Data.* AHRQ Publications No, Q14-0038. Rockville, MD: Agency for Healthcare Research and Quality, 2014. Accessed November 18, 2014. http://www.ahrq.gov/sites/default/files/wysiwyg/professionals/prevention-chronic-care/decision/mcc/mccchartbook.pdf (accessed September 2016).

3 Ogden CL, Carroll M, Kit BK, et al. Prevalence of Childhood and Adult Obesity in the United States, 2011-2012. *JAMA* 11(8): 806-814, 2016. http://jama.jamanetwork.com/article.aspx?articleid=1832542 (accessed September 2016).

4 Health Research & Educational Trust. *Hospital-based Strategies for Creating a Culture of Health.* Chicago, IL: Health Research & Educational Trust, 2014. http://www.hpoe.org/resources/hpoehretaha-guides/1687 (accessed September 2016).

5 U.S. Department of Health and Human Services. *The Health Consequences of Smoking – 50 Years of Progress: A Report of the Surgeon General.* 2014.

6 Mental and Substance Use Disorders. In *Substance Abuse and Mental Health Services Administration.* http://www.samhsa.gov/disorders (accessed September 2016).

7 Substance Abuse and Mental Health Services Administration, *Results from the 2012 National Survey on Drug Use and Health: Summary of National Findings,* NSDUH Series H-46, HHS Publication No. (SMA) 13-4795. Rockville, MD: Substance Abuse and Mental Health Services Administration, 2013.

8 Injury Prevention & Control: Opioid Overdose. Overview of an Epidemic. In *Centers for Disease Control and Prevention,* 2016. http://www.cdc.gov/drugoverdose/data/index.html (accessed September 2016).

9 Fauci AS, Touchette NA, Folkers GK. Emerging Infectious Diseases: a 10-Year Perspective from the National Institute of Allergy and Infectious Diseases. *Emerging Infect Dis,* 11(4), 2005. http://wwwnc.cdc.gov/eid/article/11/4/04-1167_article.htm#tnF1 (accessed October 2013).

10 Office of the Surgeon General. *The Surgeon General's Call to Action to Promote Health Homes.* Rockville, MD: U.S. Department of Health and Human Services, 2009. http://www.ncbi.nlm.nih.gov/books/NBK44192/ (accessed September 2016).

11 Injury Prevention & Control: Data & Statistics (WISARS). Key Injury and Violence Data. In *Centers for Disease Control and Prevention,* 2016. http://www.cdc.gov/injury/wisqars/overview/key_data.html (accessed September 2016).

12 Mental Health by the Numbers. Mental Health Facts in America. In *National Alliance on Mental Illness,* 2015. https://www.nami.org/Learn-More/Mental-Health-By-the-Numbers#sthash.rRCIqyvU.dpuf (accessed September 2016).

13 Kessler, RC, Heeringa S, Lakoma MD, Petukhova M, Rupp AE, Schoenbaum M, Wang PS, Zaslavsky AM. The individual-level and societal-level effects of mental disorders on earnings in the United States: results from the National Comorbidity Survey replication. *Am J Psy* 165 (5): 703-11, 2008.

14 Soni A. *The Five Most Costly Children's Conditions, 2011: Estimates for U.S. Civilian Noninstitutionalized Children, Ages 0–17.* Statistical Brief #434. Rockville, MD: Agency for Healthcare, Research and Quality, 2014. http://www.meps.ahrq.gov/mepsweb/data_files/publications/st434/stat434.shtml (accessed July 2014).

15 Felitti VJ, et al. Relationship of Childhood Abuse and Household Dysfunction to Many of the Leading Causes of Death in Adults: The Adverse Childhood Experiences (ACE) Study. *American J of Prev Med,* 14(4): 245-258, 1998.

16 Injury Prevention and Control: Division of Violence Prevention. In *Centers for Disease Control and Prevention.* http://www.cdc.gov/violenceprevention/acestudy/index.html (accessed May 2016).

17 Jian Y, Ekono M, and Skinner C. *Basic Facts about Low-Income Children. Children Under 6 Years, 2014.* New York: National Center for Children in Poverty, 2016. http://www.nccp.org/publications/pub_1149.html (accessed September 2016).

18 Center on the Developing Child at Harvard University (2010). *The Foundations of Lifelong Health Are Built in Early Childhood.* http://www.developingchild.harvard.edu (accessed March 2016).

19 Schreiber RJ. "Prevention in the Context of Frailty: The Role of Evidence-based Programs." 2015. http://www.almageriatria.info/miami_2015/Cuarto%20dia/Profesores/september122015ppt.ppt (accessed September 2016).

20 The Diabetes Prevention Program Research Group. The Diabetes Prevention Program (DPP). *Diabetes Care* 25(12): 2165-2171, 2002. http://care.diabetesjournals.org/content/25/12/2165 (accessed September 2016).

21 Galson SK. Self-Management Programs: One Way to Promote Healthy Aging.Public *Health Reports.* 2009;124(4):478-480. http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2693160/ (accessed September 2016).

22 Health Expenditures. In *Centers for Disease Control and Prevention,* 2016. http://www.cdc.gov/nchs/fastats/health-expenditures.htm (accessed September 2016).

23 Injury Prevention & Control: Opioid Overdose. Data Overview of an Epidemic. In *Centers for Disease Control and Prevention,* 2016. http://www.cdc.gov/drugoverdose/data/index.html (accessed September 2016).

24 Birnbaum HG, White AG, Schiller M, Waldman T, Cleveland JM and Roland CL. Societal costs of prescription opioid abuse, dependence, and misuse in the United States. *Pain Medicine,* 12(4):657-667, 2011.

25 Matrix Global Advisors, LLC. *Health Care Costs from Opioid Abuse: A State-by-State Analysis.* Washington, DC: Matrix Global Advisors, LLC, 2015. http://www.drugfree.org/wp-content/uploads/2015/04/Matrix_OpioidAbuse_040415.pdf (accessed September 2016).

26 Rudd RA, Aleshire N, Zibbell JE and Gladden MR. Increases in Drug and Opioid Overdose Deaths—United States, 2000–2014. *MMWR,* 64(50): 1378-1382, 2016.

27 Vital Signs. Today's Heroin Epidemic. In *Centers for Disease Control and Prevention.* http://www.cdc.gov/vitalsigns/heroin/ (accessed September 2016).

28 Substance Abuse and Mental Health Services Administration. *Results from the 2014 National Survey on Drug Use and Health: Summary of National Findings,* NSDUH Series H-50, HHS Publication No. SMA 15-4927. Rockville, MD: Substance Abuse and Mental Health Services Administration, 2015.

29 Rudd RA, Paulozzi LJ, Bauer MJ, et al. Increases in Heroin Overdose Deaths — 2000-2014. *MMWR,* 64(50): 1378-1782, 2016.

30 Vital Signs. Today's Heroin Epidemic. In *Centers for Disease Control and Prevention,* 2015. http://www.cdc.gov/vitalsigns/heroin/ (accessed September 2016).

31 Whitman E. "US Heroin Epidemic: Growing Rates of Addiction and Overdose Reported in New Jersey, Kentucky, Indiana." *International Business Times* April 10, 2015. http://www.ibtimes.com/us-heroin-epidemic-growing-rates-addiction-overdose-reported-new-jersey-kentucky-1877064 (accessed September 2016).

32 Case A, and Deaton A. Rising Morbidity and Mortality in Midlife Among White non-Hispanic Americans in the 21st century. *Proceedings of the National Academy of Sciences,* 112(49): 15078-15083, 2015.

33 Centers for Disease Control and Prevention. *National Diabetes Statistics Report: Estimates of Diabetes and Its Burden in the United States, 2014.* Atlanta, GA: U.S. Department of Health and Human Services, 2014. http://www.cdc.gov/diabetes/data/statistics/2014statisticsreport.html (accessed September 2016).

34 Heidenreich PA, Trodgon JG, Khavjou OA, et al. Forecasting the Future of Cardiovascular Disease in the United States. A Policy Statement form the American Heart Association. Circulation, 123: 933-944, 2011. http://circ.ahajournals.org/content/123/8/933 (accessed September 2016).

35 Mission: Readiness. *Still Too Fat to Fight.* Washington, DC: Mission: Readiness, 2012. http://missionreadiness.s3.amazonaws.com/wp-content/uploads/Still-Too-Fat-To-Fight-Report.pdf (accessed June 2015).

36 Molinari NAM, Ortega-Sanchez IR, Messonnier ML, et al. The annual impact of seasonal influenza in the US: measuring disease burden and costs. *Vaccine,* 25(27): 5086-5096, 2007.

37 Centers for Disease Control and Prevention. Blood Lead Levels in Children Aged 1–5 Years — United States, 1999–2010. *MMWR,* 62(13): 245-248, 2013.

38 Department of Housing and Urban Development. *Advancing Health Housing: A Strategy for Action.* Washington, DC: Department of Housing and Urban Development, 2013.

39 Cubbin C, Pedregon V, Egerter S, et al. *Neighborhoods and Health.* Issue Brief 3. Princeton, NJ: Robert Wood Johnson Foundation, Commission to Build a Healthier America, 2008.

40 Miller T and Hendrie D. Substance *Abuse Prevention Dollars and Cents: A Cost-Benefit Analysis,* DHHS Pub. No. (SMA) 07-4298. Rockville, MD: Center for Substance Abuse Prevention, Substance Abuse and Mental Health Services Administration, 2008. http://www.samhsa.gov/sites/default/files/cost-benefits-prevention.pdf (accessed September 2016).

41 DrugFacts: Lessons from Prevention Research. In *National Institute on Drug Abuse,* 2014. https://www.drugabuse.gov/publications/drugfacts/lessons-prevention-research (accessed September 2016).

42 Research and Results. In *Communities that Care,* 2016. http://www.communitiesthatcare.net/research-results/ (accessed September 2016).

43 About Us. In *EPISCenter,* 2015. Evidence http://www.episcenter.psu.edu/ (accessed September 2016).

44 Trust for America's Health (TFAH). *Prevention for a Healthier America: Investments in Disease Prevention Yield Significant Savings, Stronger Communities.* Washington, DC: TFAH, 2009. http://healthyamericans.org/reports/prevention08/ (accessed September 2016).

45 National Institute of Diabetes and Digestive and Kidney Disease. *Diabetes Prevention Program (DPP).* NIH Publication No. 09-5099. Washington, DC: U.S. Department of Health and Human Services, 2008. http://www.niddk.nih.gov/about-niddk/research-areas/diabetes/diabetes-prevention-program-dpp/Documents/DPP_508.pdf (accessed July 2015).

46 Schreiber RJ. "Prevention in the Context of Frailty: The Role of Evidence-based Programs." http://www.almageriatria.info/miami_2015/Cuarto%20dia/Profesores/september122015ppt.ppt (accessed September 2016).47 Galson SK. Self-Management Programs: One Way to Promote Healthy Aging. *Public Health Rep* 124(4): 478-480, 2009. http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2693160/ (accessed September 2016).

48 Gould E. Childhood Lead Poisoning: Conservative Estimates of the Social and Economic Benefits of Lead Hazard Control. *Environ Health Perspect,* 117(7): 1162-1167, 2009.

49 TFAH/Healthsperien analysis.

50 Campbell F, Conti G, Heckman JJ, et al. Early Childhood Investments Substantially Boost Adult Health. *Science,* 343(6178):1478-1485, 2014.

51 Braverman P, Egerter S, Arena K, Aslam R. *Early Childhood Experiences Shape Health and Well-Being Throughout Life.* Princeton, NJ: Robert Wood Johnson Foundation, 2014. http://www.rwjf.org/content/dam/farm/reports/issue_briefs/2014/rwjf414926 (accessed September 2016).

52 Devaney B, Bilheimer L and Schore J. *The Savings in Medicaid Costs for Newborns and Their Mothers from Prenatal Participation in the WIC Program, Volume 1.* Prepared by Mathematic Policy Research for the Department of Agriculture, Food and Nutrition Service, Office of Analysis and Evaluation. Alexandria, VA: 1990. http://www.fns.usda.gov/savings-medicaid-costs-newborns-and-their-mothers-resulting-prenatal-participation-wic-program (accessed September 2016).

53 Sandel M, Cook J, Poblacion A, et al. *Housing as a Health Care Investment: Affordable Housing Supports Children's Health.* The National Housing Conference and Children's HealthWatch, 2016. http://www.childrenshealthwatch.org/wp-content/uploads/Housing-as-a-Health-Care-Investment.pdf (accessed September 2016).

54 Robertson EB, Sims BE, and Reider EE. Drug Abuse Prevention through Early Childhood Intervention. In *H.H. Brownstein (Editor), The Handbook of Drugs and Society* (pp. 525-554). West Sussex, United Kingdom: John Wiley & Sons, Inc, 2016.

55 Center for High Impact Philanthropy, University of Pennsylvania. *Invest in a Strong Start for Children: A Toolkit for Donors on Early Childhood.* http://www.impact.upenn.edu/our-analysis/opportunities-to-achieve-impact/early-childhood-toolkit/why-invest/what-is-the-return-on-investment/ (accessed September 2016).

56 Berwick DM, Nolan TW and Whittington J. The Triple Aim: Care, Health, and Cost. *Health Affairs,* 27(3): 759-769, 2008.

57 Health Research & Education Trust, Association for Community Health Improvements, and Public Health Institute. Approaches to Population Health in 2015: A National Survey of Hospitals. In *American Hospital Association,* 2016. http://www.hpoe.org/resources/hpoehretaha-guides/2650 (accessed September 2016).

58 Dzau, VJ, M McClellan and JM McGinnis. Vital Directors for Health and Health Care: An Initiative of the National Academy of Medicine. *JAMA*. 316(7): 2016. http://jama.jamanetwork.com/article.aspx?articleid=2544650 (accessed September 2016).

59 Goldman, L, G Benjamin, S Hernandez, D Kindig, S Kumanyika, C Nevarez, NR Shah and W Wong. Advancing the Health of Communities and Populations. *Vital Directions for Health and Health Care.* National Academies of Medicine. September 2016. https://nam.edu/advancing-the-health-of-communities-and-populations-a-vital-direction-for-health-and-health-care/ (accessed September 2016).

60 Flores, G. *Democratizing Health: The Power of Community. Vital Directions for Health and Health Care.* The National Academy of Medicine. September 2016. https://nam.edu/democratizing-health-the-power-of-community/ (accessed September 2016).

61 Public Health Leadership Forum. The Department of Health and Human Services as the Nation's Chief Health Strategist: Transforming Public Health and Health Care to Create Healthy Communities. September 2016. http://www.resolv.org/site-healthleadershipforum/the-department-of-health-and-human-services-as-the-nations-chief-health-strategist/ (accessed September 2016).

62 Alberti PM, Sutton K, Baer I, et al. Community Health Needs Assessments: Engaging Community Partners to Improve Health. *AAMC Analysis in Brief,* 14(11): 2014. https://www.aamc.org/download/419276/data/dec2014communityhealth.pdf (accessed September 2016).

63 Health Research & Educational Trust. *Hospital-based Strategies for Creating a Culture of Health.* Chicago, IL: Health Research & Educational Trust, October 2014. http://www.hpoe.org/Reports-HPOE/hospital_based_strategies_creating_culture_health_RWJF.pdf (accessed September 2016).

64 Alberti PM, Sutton KS, Baer I and Johnson J. Community Health Needs Assessments: Engaging Community Partners to Improve Health. *AAMC Analysis in Brief,* 14(11: 2014. https://www.aamc.org/download/419276/data/dec2014communityhealth.pdf (accessed September 2016).

65 Laura Segal (personal communication May 6, 2014 from Catholic Health Association).

66 Aly R. Making the Most of Community Health Planning in Ohio: The Role of Hospitals and Local Health Departments. Health Policy Institute of Ohio *Health Policy Brief,* 2015. http://www.healthpolicyohio.org/wp-content/uploads/2015/06/PolicyBrief_CHAS_CHNAS_FINAL.pdf (accessed September 2016).

67 Ortiz N. *Priorities in America's Counties, 2016. A Survey of County Officials.* Washington, DC: National Association of Counties, 2016. http://www.naco.org/resources/priorities-americas-counties-2016-survey-county-officials (accessed September 2016).

68 Northeastern University Institute on Urban Health Research and Practice. *Population Health Investments by Health Plans and Large Provider Organizations – Exploring the Business Case.* Boston, MA: Northeastern University, 2016. http://www.northeastern.edu/iuhrp/wp-content/uploads/2016/05/PopHealthBusinessCaseFullRpt-5-1.pdf (accessed September 2016).

69 Trust for America's Health (TFAH). *National Forum on Hospitals, Health Systems and Population Health: Partnerships to Build a Culture of Health. Overview and Highlights.* Washington, DC: TFAH, 2016. http://healthyamericans.org/health-issues/wp-content/uploads/2016/07/TFAH-2015-NatlForumOnHospRpt-Fnl-Rv.pdf

70 Office of the Associate Director for Policy. Health Impact in 5 Years. In *Centers for Disease Control and Prevention,* 2016. http://www.cdc.gov/policy/hst/hi5/ (accessed September 2016).

71 Hester J, Auerbach J, Seeff L, et al. *CDC's 6/18 Initiative: Accelerating Evidence into Action.* Washington, DC: The National Academies Press. https://nam.edu/wp-content/uploads/2016/05/CDCs-618-Initiative-Accelerating-Evidence-into-Action.pdf (accessed September 2016).

72 Trust for America's Health (TFAH) and Robert Wood Johnson Foundation. *The State of Obesity 2016.* Washington, DC: TFAH, 2016.

73 Office of National Drug Control Policy. Drug-Free Communities Support Program. In *The White House.gov,* 2016. https://www.whitehouse.gov/ondcp/drug-free-communities-support-program (accessed September 2016).

74 Partnerships for Sustainable Communities. In *Sustainable Communities, 2015* https://www.sustainablecommunities.gov/mission/about-us (accessed September 2016).

75 2 CFR Chapter I, Chapter II, Part 200. Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards. https://www.law.cornell.edu/cfr/text/2/part-200 (accessed September 2016).

76 Intergovernmental Partnership. In *Association of Government Accountants,* 2016. https://www.agacgfm.org/Intergovernmental/About-the-Intergovernmental-Partnership.aspx (accessed September 2016).

77 Rogan E and Bradley E. *Investing in Social Services for States' Health: Identifying and Overcoming the Barriers.* New York: Milbank Memorial Fund, 2016. http://www.milbank.org/uploads/documents/Bradley-Rogan%20Investing%20in%20Social%20Services%20Report.pdf (accessed September 2016).

78 McGinnis, Crawford M and Somers SA. A State Policy Framework for Integrating Health and Social Services. *The Commonwealth Fund Issue Brief,* July 2014. http://www.commonwealthfund.org/~/media/files/publications/issue-brief/2014/jul/1757_mcginnis_state_policy_framework_ib.pdf (accessed September 2016).

79 Stanek M. *Federal and State Policy to Promote the Integration of Primary Care and Community Resources*. Portland, ME: National Academy for State Health Policy, 2013. http://www.nashp.org/sites/default/files/Federal_and_State_Policy_to_Promote_the_Integration_of_Primary_Care_and_Community_Resources.pdf (accessed September 2016).

80 Crawford M and Houston R. State Payment and Financing Models to Promote Health and Social Service Integration. *Center for Health Care Strategies, Inc. Brief,* February 2016. http://www.chcs.org/media/Medicaid_-Soc-Service-Financing_022515_2_Final.pdf (accessed September 2016).

81 Bachrach D, Guyer J, Levin A, et al. *Medicaid Coverage of Social Interventions: A Road Map for States*. Milbank Memorial Fund, The Reforming States Group, and NYS Health Foundation Issue Brief, July 2016. http://nyshealthfoundation.org/uploads/resources/medicaid-coverage-of-social-interventions-issue-brief-july-2016.pdf (accessed September 2016).

82 Rosenbaum S, Kindig DA, Bao J, et al. The Value of the Nonprofit Hospital Tax Exemption was $24.6 Billion in 2011. *Health Affairs,* 34(7): 1225-1233, 2015.

83 Internal Revenue Service. *Report to Congress on Private, Tax-Exempt, Taxable, and Government-Owned Hospitals*. Washington, DC: Internal Revenue Services, 2015. https://www.vha.com/AboutVHA/PublicPolicy/CommunityBenefit/Documents/Report_to_Congress_on_Hospitals_Jan_2015.pdf (accessed February 2016).

84 Community Benefit and Community Building. A Suggested Approach for Determining Whether to Report a Program or Activity as Community Health Improvement. In *Catholic Health Association of the United States,* 2015. https://www.chausa.org/docs/default-source/community-benefit/guidance_for_determining-march25_2015.pdf?sfvrsn=0 (accessed September 2016).

85 Community-Building Activities – Archive. In *Catholic Health Association of the United States,* 2015. https://www.chausa.org/communitybenefit/what-counts-q-a-index-a/community-building-activities-a#socially (accessed September 2016).

86 CMS.gov, (2016). Medicare Diabetes Prevention Program Expansion. [Press Release]. https://www.cms.gov/Newsroom/MediaReleaseDatabase/Fact-sheets/2016-Fact-sheets-items/2016-07-07.html (accessed September 2016).

87 Health Care Innovation Awards Round One Project Profiles. In *Centers for Medicare & Medicaid Services,* 2012. https://innovation.cms.gov/files/x/hcia-project-profiles.pdf (accessed September 2016).

88 State Innovation Models Initiative: Model Test Awards Round Two. In *Centers for Medicare & Medicaid Services,* 2016. https://innovation.cms.gov/initiatives/state-innovations-model-testing-round-two/ (accessed September 2016).

89 RWJF Culture of Health Prize Winners, 2016. http://www.rwjf.org/en/library/collections/coh-prize-winners.html (accessed September 2016).

90 Federal and State Share of Medicaid Spending, 2014. Urban Institute analysis of CMS Form 64 data as of June 2015. In *Kaiser Family Foundation,* 2015. http://kff.org/medicaid/state-indicator/federalstate-share-of-spending/ (accessed September 2016).

91 Ortiz N. *Priorities in America's Counties 2016: A Survey of County Officials*. Washington, DC: National Association of Counties, 2016. http://www.naco.org/resources/priorities-americas-counties-2016-survey-county-officials (accessed September 2016).

92 Butler J. "JAMA Forum: Using Intermediaries to Improve Health." *News@JAMA* June 15, 2016. https://newsatjama.jama.com/2016/06/15/jama-forum-using-intermediaries-to-improve-health/ (accessed September 2016).

93 Thompson C. "Backbone Board Members have Additional Roles and Responsibilities." *Collective Impact Forum* August 29, 2016. http://collectiveimpactforum.org/blogs/1161/backbone-board-members-have-additional-roles-and-responsibilities (accessed September 2016).

94 Change DI. *"The Integrator": Who Convenes the Stakeholders to Improve Health?* Washington, DC: National Forum on Hospitals, Health Systems & Population Health, 2014. http://healthyamericans.org/health-issues/wp-content/uploads/2015/09/Chang-2-of-2.pdf (accessed September 2016).

95 Viveiros J and Sturtevant L. *The Role of Anchor Institutions in Restoring Neighborhoods: Health Institutions as a Catalyst for Affordable Housing and Community Development*. Washington, DC: National Housing Conference, 2016. http://media.wix.com/ugd/19cfbe_6ecc9ef72f3845139661eae555ae8c5b.pdf (accessed September 2016).

96 U.S. Department of Housing and Urban Development, Office of Policy Development and Research, Office of University Partnerships. *Building Resiliency: The Role of Anchor Institutions in Sustaining Community Economic Development*. Washington, DC: U.S. Department of Housing and Urban Development, 2013. https://www.huduser.gov/portal/publications/AnchorInstitutions.pdf (accessed September 2016).

97 Harkavy I and Zuckerman H. *Eds and Meds: Cities' Hidden Assets*. Washington, DC: The Brookings Institution, Center on Urban & Metropolitan Policy, 1999. http://www.brookings.edu/~/media/research/files/reports/1999/9/community-development-harkavy-zuckerman/09_community_development_report.pdf (accessed September 2016).

98 Zuckerman D, Sparks HJ, Dubb S, et al. Hospitals Building Healthier Communities: Embracing the Anchor Mission. Washington, DC: University of Maryland, The Democracy Collaborative, 2013. http://democracycollaborative.org/content/hospitals-building-healthier-communities-embracing-anchor-mission

99 Mikkelsen L and Haar WL. *Accountable Communities for Health: Opportunities and Recommendations*. Oakland, CA: Prevention Institute, 2015. https://www.preventioninstitute.org/publications/accountable-communities-health-opportunities-and-recommendations (accessed September 2016).

100 Heider F, Rosenthal J and Kniffin T. *State Levers to Advance Accountable Communities for Health*. Portland, ME: National Academy for State Health Policy, 2016. http://nashp.org/state-levers-to-advance-accountable-communities-for-health/ (accessed September 2016).

101 Craig C. Healthy Shelby Initiative: *A Triple Aim Improvement Story*. Cambridge, MA: Institute for Healthcare Improvement, 2015. http://www.ihi.org/resources/Pages/Publications/HealthyShelbyTripleAim.aspx (accessed September 2016).

102 Shelby County Tennessee. "Mayor Announces New Alliance to Improve Citizens' Health and Lower Healthcare Costs." [Press Release]. February 2012. http://shelbycountytn.gov/index.aspx?NID=2235 (accessed September 2016).

103 Frazier R. "Making a collective impact: engaging actors across different sectors." [Conference Materials] National Forum on Hospitals, Health Systems, & Population Health, Washington DC, Oct 22-24, 2014.

104 Healthy Shelby. In *Common Table Health Alliance,* 2016. http://commontablehealth.org/healthy-shelby.php (accessed September 2016).

105 Craig C. Healthy Shelby Initiative: *A Triple Aim Improvement Story*. Cambridge, MA: Institute for Healthcare Improvement, 2015. http://www.ihi.org/resources/Pages/Publications/HealthyShelbyTripleAim.aspx (accessed September 2016).

106 Craig C. Healthy Shelby Initiative: *A Triple Aim Improvement Story*. Cambridge, MA: Institute for Healthcare Improvement, 2015. http://www.ihi.org/resources/Pages/Publications/HealthyShelbyTripleAim.aspx (accessed September 2016).

107 Haggerty R, Figliuzzi D. Cigna Foundation and Nonprofit Aim To Revitalize Distressed Neighborhood: Community Development At Work. *Health Affairs Blog*. 2014. http://healthaffairs.org/blog/2014/09/15/cigna-foundation-and-nonprofit-aim-to-revitalize-distressed-neighborhood-community-development-at-work-2/; And The Northeast Hartford Partnership. In Community Solutions. https://cmtysolutions.org/what-we-do/northeast-hartford-partnership (accessed October 2016).

108 Butler J. "JAMA Forum: Using Intermediaries to Improve Health." *News@JAMA* June 15, 2016. https://newsatjama.jama.com/2016/06/15/jama-forum-using-intermediaries-to-improve-health/ (accessed September 2016).

109 Delale-O'Connor L and Walker KE. *Rising to the Challenge: The Strategies of Social Service Intermediaries*. Public/Private Ventures and Child Trends, 2012. http://ppv.issuelab.org/resource/rising_to_the_challenge_the_strategies_of_social_service_intermediaries (accessed September 2016).

110 Butler J. "JAMA Forum: Using Intermediaries to Improve Health." *News@JAMA* June 15, 2016. https://newsatjama.jama.com/2016/06/15/jama-forum-using-intermediaries-to-improve-health/ (accessed September 2016).

111 Rozansky P. *Maryland's Local Management Boards: Making A Difference for Children and Families 1990-2010*. Maryland, 2011. http://communitypartnerships.info/wp-content/uploads/2014/05/MD_LMB_Jan_2011.pdf (accessed September 2016).

112 Maternal and Child Health. B'more for Healthy Babies. In *Baltimore City Health Department,* 2016. http://health.baltimorecity.gov/maternal-and-child-health/bmore-healthy-babies (accessed September 2016).

113 Cantor J, Tobey R, Houston K, et al. *Accountable Communities for Health: Strategies for Financial Sustainability*. Boston, MA: John Snow, Inc., 2015. http://www.jsi.com/JSIInternet/Resources/publication/display.cfm?txtGeoArea=US&id=15660&thisSection=Resources (accessed September 2016).

114 Bau L. "Health Care Payment Learning Action Network: Financial Benchmarking". *Ignatius Bau* August 9, 2016. https://ignatiusbau.com/2015/09/29/changelab-accountable-communities-for-health-legal-and-practical-recommendations/ (accessed September 2016).

115 Mikkelsen L and Haar WL. *Accountable Communities for Health: Opportunities and Recommendations*. Oakland, CA: Prevention Institute, 2015. https://www.preventioninstitute.org/publications/accountable-communities-health-opportunities-and-recommendations (accessed September 2016).

116 Heider F, Rosenthal J and Kniffin T. *State Levers to Advance Accountable Communities for Health*. Portland, ME: National Academy for State Health Policy, 2016. http://nashp.org/state-levers-to-advance-accountable-communities-for-health/ (accessed September 2016).

117 Cantor J, Tobey R, Houston K, et al. *Accountable Communities for Health: Strategies for Financial Sustainability*. Boston, MA: John Snow, Inc., 2015. http://www.jsi.com/JSIInternet/Resources/publication/display.cfm?txtGeoArea=US&id=15660&thisSection=Resources (accessed September 2016).

118 CACHI Request for Proposals. In *Community Partners,* 2016. http://www.communitypartners.org/cachi-rfp (accessed September 2016).

119 California Accountable Communities for Health Initiative Frequently Asked Questions. In *Community Partners*. http://www.communitypartners.org/cachi-faq (accessed September 2016).

120 Haar WL, Estes L, Mikkelsen L, et al. *The Accountable Community for Health: An Emerging Model for Health System Transformation*. Oakland, CA: Prevention Institute, 2016. https://www.preventioninstitute.org/publications/accountable-community-health-emerging-model-health-system-transformation (accessed September 2016).

121 Healthier Washington. "Accountable Communities of Health Fact Sheet." 2016. http://www.hca.wa.gov/assets/program/achfactsheet_0.pdf (accessed September 2016).

122 Accountable Communities of Health. In *Washington State Health Care Authority*. http://www.hca.wa.gov/about-hca/healthier-washington/accountable-communities-health-ach (accessed September 2016).

123 Heider F, Rosenthal J and Kniffin T. *State Levers to Advance Accountable Communities for Health*. Portland, ME: National Academy for State Health Policy, 2016. http://nashp.org/state-levers-to-advance-accountable-communities-for-health/ (accessed September 2016).

124 Accountable Communities for Health. In *Health Reform Minnesota*. http://www.dhs.state.mn.us/main/idcplg?IdcService=GET_DYNAMIC_CONVERSION&RevisionSelectionMethod=LatestReleased&dDocName=SIM_ACH (accessed September 2016).

125 Heider F, Rosenthal J and Kniffin T. *State Levers to Advance Accountable Communities for Health*. Portland, ME: National Academy for State Health Policy, 2016. http://nashp.org/state-levers-to-advance-accountable-communities-for-health/ (accessed September 2016).

126 Ibid.

127 Health Equity Zones. In *State of Rhode Island Department of Health,* 2016. http://www.health.ri.gov/projects/healthequityzones/ (accessed September 2016).

128 Cantor J, Tobey J, Houston K, et al. *Accountable Communities for Health. Strategies for Financial Sustainability.* Boston, MA: JSI Research & Training Institutes, Inc., 2015. http://www.jsi.com/JSIInternet/Resources/publication/display.cfm?txtGeoArea=US&id=15660&thisSection=Resources (accessed September 2016).

129 New Requirements for 501(c)(3) Hospitals Under the Affordable Care Act. In I*nternal Revenue Service,* 2016. https://www.irs.gov/charities-non-profits/charitable-organizations/new-requirements-for-501c3-hospitals-under-the-affordable-care-act (accessed September 2016).

130 Tips for Getting Started. In *Public Health Accreditation Board.* http://www.phaboard.org/accreditation-overview/getting-started/ (accessed September 2016).

131 Center for the Study of Social Policy. Progress of the New Jersey Department of Children and Families, Period VI Monitoring Report for Charlie and Nadine H. v. Corzine. Washington, DC: Center for the Study of Social Policy, 2009. http://www.childrensrights.org/wp-content/uploads/2010/01/2010-01-06_embargoed_nj_period_vi_final_report.pdf (accessed September 2016).

132 Children's Amendment – Proposition D. Sec.16.108, Children's Fund. In *City & County of San Francisco's Department of Children, Youth & Their Families,* 2001. http://www.dcyf.org/modules/showdocument.aspx?documentid=670 (accessed September 2016).

133 Community Development Block Grant Entitlement Program Eligibility Requirements. In *Department of Housing and Urban Development Exchange,* 2014. https://www.hudexchange.info/programs/cdbg-entitlement/cdbg-entitlement-program-eligibility-requirements/ (accessed September 2016).

134 Office of Head Start and The National Center on Parent, Family, and Community Engagement. *Bringing the Parent, Family and Community Engagement Framework to Your Program: Beginning a PFCE Assessment.* Washington, DC: U.S. Department of Health and Human Services, 2011. https://eclkc.ohs.acf.hhs.gov/hslc/tta-system/family/docs/ncpfce-assessment-101411.pdf (accessed September 2016).

135 Texas Education Agency. *No Child Left Behind: Comprehensive Needs Assessment.* Austin, TX: Texas Education Agency, no date. https://www.dmac-solutions.net/files/resources/CNAresource.pdf (accessed September 2016).

136 Clean Watersheds Needs Survey. In *US Environmental Protection Agency,* 2016. http://water.epa.gov/scitech/datait/databases/cwns/ (accessed September 2016).

137 S.1177 – Every Student Succeeds Act, 2015. 114th Congress (2015-2016). In *Congress.gov,* 2015. https://www.congress.gov/bill/114th-congress/senate-bill/1177/text (accessed September 2016).

138 Smedly, BD and P Tegeler. Affirmatively Furthering Fair Housing: A Platform for Public Health Advocates. *American Journal of Public Health.* 2016. 106, 6, 1013-1014. http://ajph.aphapublications.org/action/showCitFormats?doi=10.2105%2FAJPH.2016.303175 (accessed September 2016.

139 NC Community Health Improvement Collaborative. In *UNC Gillings School of Global Public Health,* no date. http://sph.unc.edu/nciph/nciph-home/nciphph-hosp-collab/ (accessed September 2016).

140 Mason T. "Cook County Health & Hospitals System. Informing the CCHHS Strategic Plan: Community Health Planning Initiatives." [Conference Materials] April 22, 2016. http://www.cookcountyhhs.org/wp-content/uploads/2011/12/12.-Community-Health-Planning-Initiatives-04-22-16.pdf (accessed September 2016).

141 The Social Genome Project. In *Brookings, Center on Children and Families,* 2016 https://www.brookings.edu/the-social-genome-project/ (accessed September 2016).

142 Child Trends. The Social Genome Model Provides Insight into Economic Opportunity. [Press Release] August 25, 2015. http://www.childtrends.org/the-social-genome-model-provides-insight-into-economic-opportunity/#_ednref3 (accessed September 2016).

143 The Colorado Opportunity Project Stakeholder Summit. [Conference Materials] March 12, 2015. https://www.colorado.gov/pacific/sites/default/files/Colorado%20Opportunity%20Project%20Summit%20Materials.pdf (accessed September 2016).

144 McGinnis JM, Williams-Russo P and Knickman JR. The Case for More Active Policy Attention to Health Promotion. *Health Affairs,* 21(2): 78-93, 2002.

145 Lebrun-Harris LA, Baggett TP, Jenkins DM, et al. Health Status and Health Care Experiences Among Homeless Patients in Federally Supported Health Centers: Findings from the 2009 Patient Survey. *Health Services Research,* 48(3): 992–1017, 2013; Seligman HK, Bolger AF, Guzman D, et al. Exhaustion of Food Budgets at Month's End and Hospital Admissions for Hypoglycemia. *Health Affairs,* 33(1): 116–23, 2014; and Calvillo-King L, Arnold D, Eubank KJ, et al. Impact of Social Factors on Risk of Readmission or Mortality in Pneumonia and Heart Failure: Systematic Review. *J Gen Int Med,* 28(2): 269–282, 2013.

146 Bachrach D, Pfister H, Wallis K, et al. *Addressing Patient's Social Needs. An Emerging Business Case for Provider Investment.* Washington, DC: The Commonwealth Foundation, Skoll Foundation and Pershing Square Foundation, 2014. http://www.commonwealthfund.org/~/media/files/publications/fund-report/2014/may/1749_bachrach_addressing_patients_social_needs_v2.pdf (accessed September 2016).

147 2 CFR Chapter I, Chapter II, Part 200, et al. Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards. https://www.law.cornell.edu/cfr/text/2/part-200 (accessed September 2016).

148 Stanek M. Federal and State Policy to Promote the Integration of Primary Care and Community Resources. Portland, ME: National Academy for State Health Policy, 2013. http://www.nashp.org/sites/default/files/Federal_and_State_Policy_to_Promote_the_Integration_of_Primary_Care_and_Community_Resources.pdf

149 McGinnis, Crawford M and Somers SA. A State Policy Framework for Integrating Health and Social Services. *The Commonwealth Fund Issue Brief,* July 2014. http://www.commonwealthfund.org/~/media/files/publications/issue-brief/2014/jul/1757_mcginnis_state_policy_framework_ib.pdf (accessed September 2016).

150 Crawford M and Houston R. State Payment and Financing Models to Promote Health and Social Service Integration. *Center for Health Care Strategies, Inc. Brief,* February 2016. http://www.chcs.org/media/Medicaid_-Soc-Service-Financing_022515_2_Final.pdf (accessed September 2016).

151 Rogan E and Bradley E. *Investing in Social Services for States' Health: Identifying and Overcoming the Barriers.* New York: Milbank Memorial Fund, 2016. http://www.milbank.org/uploads/documents/Bradley-Rogan%20Investing%20in%20Social%20Services%20Report.pdf (accessed September 2016).

152 McGinnis, Crawford M and Somers SA. A State Policy Framework for Integrating Health and Social Services. The Commonwealth Fund Issue Brief, July 2014. http://www.commonwealthfund.org/~/media/files/publications/issue-brief/2014/jul/1757_mcginnis_state_policy_framework_ib.pdf (accessed September 2016).

153 Crawford M and Houston R. State Payment and Financing Models to Promote Health and Social Service Integration. *Center for Health Care Strategies, Inc. Brief,* February 2016. http://www.chcs.org/media/Medicaid_-Soc-Service-Financing_022515_2_Final.pdf (accessed September 2016).

154 Rogan E and Bradley E. *Investing in Social Services for States' Health: Identifying and Overcoming the Barriers.* New York: Milbank Memorial Fund, 2016. http://www.milbank.org/uploads/documents/Bradley-Rogan%20Investing%20in%20Social%20Services%20Report.pdf (accessed September 2016).

155 Bradley E., Canavan M, Rogan E., Talbert-Slagle K, Ndumele C, Taylor L, Curry L. Variation in health outcomes: the role of spending on social services, public health and health care, 2000-2009. *Health Affairs.* 2016; 35(5): 760-768.

156 2016 United States Budget Estimates. In *Federal-Buget.Insidegov,* 2016. http://federal-budget.insidegov.com/l/119/2016-Estimate (accessed September 2016).

157 About Us. In *Partners for Sustainable Communities,* 2015. https://www.sustainablecommunities.gov/mission/about-us (accessed Sept 2016).

158 Performance Partnership Pilots for Disconnected Youth. In *Youth.gov.* http://youth.gov/youth-topics/reconnecting-youth/performance-partnership-pilots (accessed September 2016).

159 Clary A and Riley T. Pooling and Braiding Funds for Health-Related Social Needs: Lessons from Virginia's Children's Services Act. *National Academy for State Health Policy Brief* June 2016. http://www.nashp.org/wp-content/uploads/2016/06/CSA-Virginia-Brief-1.pdf (accessed September 2016).

160 Homelessness. In *U.S. Department of Health and Human Services,* 2015. http://www.hhs.gov/programs/social-services/homelessness/index.html (accessed September 2016).

161 Executive Office of the President of the United States. *Epidemic: Responding to America's Prescription Drug Abuse Crisis.* Washington, DC: Executive Office of the President of the United States, 2011. https://www.whitehouse.gov/sites/default/files/ondcp/policy-and-research/rx_abuse_plan.pdf

162 Nemours. *Transforming Population Health: Case Studies of Place-Based Approaches.* Nemours, 2012. http://www.nemours.org/content/dam/nemours/www/filebox/healthpro/advocacy/seattle.pdf (accessed September 2016).

163 Sings of Progress. Pennsylvania: Philadelphia. In *Robert Wood Johnson,* 2016. http://www.rwjf.org/en/library/articles-and-news/2013/07/philadelphia--signs-of-progress.html (accessed September 2016).

164 Mallya G. Roundtable on Putting Population Health into Practice: Three Case Studies. [Conference Materials]. National Forum on Hospitals, Healthy Systems & Population Health, October 22-24, 2014. http://healthyamericans.org/health-isues/wp-content/uploads/2015/09/Mallya.pdf (accessed September 2016).

165 Live Well Sand Diego. *Live Well San Diego Report. 5 Years of Healthy, Save and Thriving Communities, 2009-2014.* San Diego CA: County of San Diego, 2016. http://www.sandiegocounty.gov/content/dam/livewell/LiveWellAnnualReports/2014-2015%20Live%20Well%20San%20Diego%20Annual%20Report.pdf (accessed September 2016).

166 U.S. Department of Health and Human Services. Better, Smarter, Healthier: In Historic Announcement, HHS Sets Clear Goals and Timeline for Shifting Medicare Reimbursements from Volume to Value." [Press Release]. January 26, 2015. http://www.hhs.gov/about/news/2015/01/26/better-smarter-healthier-in-historic-announcement-hhs-sets-clear-goals-and-timeline-for-shifting-medicare-reimbursements-from-volume-to-value.html (accessed September 2016).

167 Bachrach D, Pfister H, Wallis K, et al. *Addressing Patient's Social Needs. An Emerging Business Case for Provider Investment.* Washington, DC: The Commonwealth Foundation, Skoll Foundation and Pershing Square Foundation, 2014. http://www.commonwealthfund.org/publications/fund-reports/2014/may/addressing-patients-social-needs (accessed September 2016).

168 Northern University Institute on Urban Health Research and Practice. *Population Health Investments by Health Plans and Large Provider Organizations – Exploring the Business Case.* Boston, MA: Northern University Institute on Urban Health Research and Practice, 2016. http://www.northeastern.edu/iuhrp/wp-content/uploads/2016/05/PopHealthBusinessCaseFullRpt-5-1.pdf (accessed September 2016).

169 Ibid.

170 Hospitals in Pursuit of Excellence. Creating Effective Hospital-Community Partnerships to Build a Culture of Health. http://www.hpoe.org/resources/hpoehretaha-guides/2862?utm_source=newsletter&utm_medium=email&utm_campaign=NewsNow (accessed September 2016).

171 Zuckerman D. Hospitals Building Healthier Communities: Embracing the Anchor Mission. The Democracy Collaborative at the University of Maryland, 2013. http://community-wealth.org/sites/clone.community-wealth.org/files/downloads/Zuckerman-HBHC-2013.pdf (accessed September 2016).

172 Increasing Capital for Underserved Communities. In *Dignity Health,* 2016. https://www.dignityhealth.org/about-us/community-health/increasing-capital-for-underserved-communities (accessed September 2016).

173 Grovet D and Hernandez D. "Community Connectors – the Missing Link to Providing High Quality Healthcare." In *Trust for America's Health*. http://healthyamericans.org/health-issues/prevention_story/community-connectors-the-missing-link-to-providing-high-quality-healthcare/ (accessed September 2016).

174 Prybil L, Scutchfield FD, Killian R, et al. "Improving Community Health through Hospital-Public Health Collaboration: Insights and Lessons Learned from Successful Partnerships". Health Management and Policy Faculty Book Gallery, Book 2, 2014. http://uknowledge.uky.edu/cgi/viewcontent.cgi?article=1001&context=hsm_book (accessed September 2016).

175 The Heart of New Ulm Project. *Reducing Heart Attacks*. Minneapolis: Minneapolis Heart Institute Foundation, 2014. http://heartsbeatback.org/sites/default/files/u5/HONU%20Project%20Overview%20Fact%20Sheet.pdf (accessed September 2016).

176 Spencer A, Lloyd J and McGinnis T. Using Medicaid Resources to Pay for Health-Related Supportive Services: Early Lessons. Center for Health Care Strategies, 2015. http://www.chcs.org/media/Supportive-Services-Brief-Final-120315.pdf (accessed September 2016).

177 Bachrach D, Guyer J, Levin A, et al. Medicaid Coverage of Social Interventions: A Road Map for States. *Milbank Memorial Fund, The Reforming States Group, and NYS Health Foundation Issue Brief,* July 2016. http://www.milbank.org/uploads/documents/medicaid_coverage_of_social_interventions_a_road_map_for_states.pdf (accessed September 2016).

178 Snyder, L and R Rudowitz. *Trends in State Medicaid Programs: Looking Back and Looking Ahead.* Kaiser Family Foundation. June 2016. http://kff.org/report-section/trends-in-state-medicaid-programs-section-5-managed-care-and-delivery-system-reform/ (accessed September 2016).

179 Centers for Medicare & Medicaid Services. "Coverage of Housing-Related Activities and Services for Individuals with Disabilities." *CMCS Information Bulletin* June 2015. https://www.medicaid.gov/federal-policy-guidance/downloads/CIB-06-26-2015.pdf (accessed September 2016).

180 Hester JA, Auerbach J, Chang DI, et al. Opportunity knocks again for population health: Round two in state innovation models. Discussion Paper, Institute of Medicine, 2015. http://nam.edu/wp-content/uploads/2015/06/SIMsRound21.pdf (accessed September 2016).

181 Health Homes. In *Medicaid.gov*. https://www.medicaid.gov/Medicaid-CHIP-Program-Information/By-Topics/Long-Term-Services-and-Supports/Integrating-Care/Health-Homes/Health-Homes.html (accessed September 2016).

182 Bundled Payments for Care Improvement (BPCI) Initiative: General Information. In *Centers for Medicare and Medicaid Services*. http://innovation.cms.gov/initiatives/bundled-payments/ (accessed September 2016).

183 National Health Policy Forum. "Community Collaboration to Improve Population Health." 2015. http://www.nhpf.org/library/forum-sessions/FS_01-30-15_PopulationHealth.pdf (accessed September 2016).

184 About the CMS Innovation Center. In *Centers for Medicare and Medicaid Services*. https://innovation.cms.gov/About/index.html (accessed September 2016).

185 State Innovation Models Initiative Round Two. In *Centers for Medicare and Medicaid Services*. https://www.cms.gov/Newsroom/MediaReleaseDatabase/Fact-sheets/2014-Fact-sheets-items/2014-12-16.html (accessed September 2016).

186 Burwell SM. 2015 *Annual Report on the Quality of Care for Children in Medicaid and CHIP*. Health and Human Services, 2016. https://www.medicaid.gov/medicaid-chip-program-information/by-topics/quality-of-care/downloads/2015-child-sec-rept.pdf (accessed September 2016).

187 Spencer A, Lloyd J and McGinnis T. Using Medicaid Resources to Pay for Health-Related Supportive Services: Early Lessons. *Center for Health Care Strategies, Inc. Brief* December 2015. . http://www.chcs.org/media/Supportive-Services-Brief-Final-120315.pdf (accessed September 2016).

188 Ibid.

189 Accountable Health Communities Model. In *Centers for Medicare and Medicaid Services*. https://innovation.cms.gov/initiatives/AHCM (accessed September 2016).

190 Accountable Health Communities Model Fact Sheet. In *Centers for Medicare and Medicaid Services*. https://www.cms.gov/Newsroom/MediaReleaseDatabase/Fact-sheets/2016-Fact-sheets-items/2016-01-05.html (accessed September 2016).

191 Heider F, Rosenthal J and Kniffin T. State Levers to Advance Accountable Communities for Health. *National Academy for State Health Policy Brief,* May 2016. http://www.nashp.org/wp-content/uploads/2016/05/ACH-Brief-with-Appendix.pdf

192 Bau I. Changelab: Accountable Communities for Health – Legal and Practical Recommendations. *Health Care Consultation Services: Ignatius Bau* September 29, 2016. https://ignatiusbau.com/2015/09/29/changelab-accountable-communities-for-health-legal-and-practical-recommendations/

193 Cantor J, Tobey J, Houston K, et al. *Accountable Communities for Health. Strategies for Financial Sustainability*. Boston, MA: JSI Research & Training Institutes, Inc., 2015. http://www.jsi.com/JSIInternet/Resources/publication/display.cfm?txtGeoArea=US&id=15660&thisSection=Resources (accessed September 2016).

194 Rosenbaum S, Kindig DA, Bao J, et al. The value of the nonprofit hospital tax exemption was $24.6 billion in 2011. *Health Affairs,* 34(7): 1225-1233, 2015.

195 Internal Revenue Service. *Report to Congress on Private, Tax-Exempt, Taxable, and Government-Owned Hospitals.* Washington, DC: Internal Revenue Service, 2015. https://www.vha.com/AboutVHA/PublicPolicy/CommunityBenefit/Documents/Report_to_Congress_on_Hospitals_Jan_2015.pdf (accessed September 2016).

196 Results from 2012 Tax-Exempt Hospitals' Schedule H Community Benefit Reporting. Prepared by Ernst & Young LLP for the American Hospital Association, 2015. http://www.aha.org/content/15/2012schedhreport.pdf (accessed September 2016).

197 Rosenbaum S, Kindig DA, Bao J, et al. The value of the nonprofit hospital tax exemption was $24.6 billion in 2011. *Health Affairs,* 34(7): 1225-1233, 2015.

198 Internal Revenue Service. *Report to Congress on Private, Tax-Exempt, Taxable, and Government-Owned Hospitals.* Washington, DC: Internal Revenue Service, 2015. https://www.vha.com/AboutVHA/PublicPolicy/CommunityBenefit/Documents/Report_to_Congress_on_Hospitals_Jan_2015.pdf (accessed September 2016).

199 Rosenbaum S. "Additional Requirements for Charitable Hospitals: Final Rules on Community Health Needs Assessments and Financial Assistance." *Health Affairs Blog* January 23, 2015. http://healthaffairs.org/blog/2015/01/23/additional-requirements-for-charitable-hospitals-final-rules-on-community-health-needs-assessments-and-financial-assistance/ (accessed September 2016).

200 Health Policy Institute of Ohio. Beyond Medical Care Fact Sheet: Leveraging hospital community benefit for upstream prevention. *Issue Brief,* September 2015. http://www.healthpolicyohio.org/wp-content/uploads/2015/09/Beyond_HospCommBene_FactSheet_Final.pdf (accessed September 2016).

201 Falling for Fresh Foods. In *Lighten Up Lancaster County,* 2015. http://www.lightenuplancaster.org/Home.aspx (accessed September 2016).

202 Institute for Alternative Futures. *Community Health Centers Leveraging the Social Determinants of Health.* Alexandria, VA: Institute for Alternative Futures, 2012. http://kresge.org/sites/default/files/IAF-CHCsLeveragingSDH.pdf (accessed September 2016).

203 Institute for Alternative Futures. *Primary Care 2025: A Scenario Exploration.* Alexandria, VA: Institute for Alternative Futures, 2012. http://www.altfutures.org/pubs/pc2025/IAF-PrimaryCare2025Scenarios.pdf (accessed September 2016).

204 Institute for Alternative Futures. *Community Health Centers Leveraging the Social Determinants of Health.* Alexandria, VA: Institute for Alternative Futures, 2012. http://kresge.org/sites/default/files/IAF-CHCsLeveragingSDH.pdf (accessed September 2016).

205 Services. In *Mary's Center,* 2015. http://www.maryscenter.org/services (accessed September 2016).

206 Brookings Institute. "School-based "hubs" show promise in improving mobility in low-income neighborhoods, new Brookings research finds." 2016. https://www.brookings.edu/wp-content/uploads/2016/06/Media-summary-3.pdf (accessed September 2016).

207 Outcome Data. In *Mary's Center,* 2015. http://www.maryscenter.org/outcome-data (accessed September 2016).

208 St. John's Wellchild and Family Center. In *Trust for America's Health,* 2015. http://healthyamericans.org/health-issues/prevention_story/st-johns-wellchild-and-family-center/ (accessed September 2016).

209 What does the CDFI Fund do? In *Community Development Financial Institutions Fund.* https://www.cdfifund.gov/Pages/default.aspx (accessed September 2016).

210 What are CDFIs? In *CDFI Coalition.* http://www.cdfi.org/about-cdfis/what-are-cdfis/ (accessed August 2016).

211 Salamon L. *New Frontiers of Philanthropy: A Guide to the New Tools and New Actors that Are Reshaping Global Philanthropy and Social Investing.* New York: Oxford University Press, 2014.

212 About Us. In *Community Development Financial Institutions Fund,* no date. https://www.cdfifund.gov/about/Pages/default.aspx (accessed September 2016).

213 Dann M. Philanthropy and Community Development: Partners in Health. *Grantmakers in Health Issue Focus,* July 21, 2015. http://www.gih.org/files/FileDownloads/Issue_Focus_CDFIs_July_2015.pdf (accessed September 2016).

214 Erickson J. "An Idea About CDFIs and Community Health Collaboratives." ReThink Health, 2015. http://www.rethinkhealth.org/the-rethinkers-blog/an-idea-about-cdfis-and-community-health-collaboratives/ (accessed September 2016).

215 Kotelchuck R, Lowenstein D and Tobin JN. Community health centers and community development financial institutions: Joining forces to address determinants of health. *Health Affairs,* 30(11): 2090-2097, 2011.

216 About Us. In Community Development Financial Institutions Fund. https://www.cdfifund.gov/about/Pages/default.aspx (accessed September 2016).

217 Rausch E. "CDFIs emerge as key partners in improving community health." Federal Reserve Bank of Minneapolis, 2014. https://www.minneapolisfed.org/publications/community-dividend/cdfis-emerge-as-key-partners-in-improving-community-health (accessed September 2016).

218 Erickson J. "An Idea About CDFIs and Community Health Collaboratives." ReThink Health, 2015. http://www.rethinkhealth.org/the-rethinkers-blog/an-idea-about-cdfis-and-community-health-collaboratives/ (accessed September 2016).

219 About The Lenders Coalition for Community Health Centers. In *The Lenders Coalition for Community Health Centers.* https://lcchc.wordpress.com/ (accessed September 2016).

220 Nonprofit Finance Fund. http://www.nonprofitfinancefund.org/ (accessed September 2016).

221 Low-Income Investment Fund. http://www.liifund.org/ (accessed September 2016).

222 Karpyn A. *Understanding the Role of Community Development Finance in Improving Access to Healthy Food: A Guide for Public Health Practitioners.* Change Lab Solutions, 2014. http://thefoodtrust.org/uploads/media_items/cdfi-report-final-20140708.original.pdf (accessed September 2016).

223 Karpyn A. *Understanding the Role of Community Development Finance in Improving Access to Healthy Food: A Guide for Public Health Practitioners.* Change Lab Solutions, 2014. http://thefoodtrust.org/uploads/media_items/cdfi-report-final-20140708.original.pdf (accessed September 2016).

224 Healthy Food Enterprises. In *South Carolina Community Loan Fund,* 2016. http://sccommunityloanfund.org/borrow/healthy-food/ (accessed September 2016).

225 About The Lenders Coalition for Community Health Centers. In *The Lenders Coalition for Community Health Centers,* no date. https://lcchc.wordpress.com/ (accessed September 2016).

226 LCCHC Members. In *The Lenders Coalition for Community Health Centers,* no date. https://lcchc.wordpress.com/about/lcchc-members/ (accessed September 2016).

227 About IFF. In *IFF,* 2016. http://www.iff.org/about-iff (accessed September 2016).

228 LCCHC Members. In *The Lenders Coalition for Community Health Centers,* no date. https://lcchc.wordpress.com/about/lcchc-members/ (accessed September 2016).

229 Community Action Partnership. *New Markets Tax Credits. Community Economic Development Toolkit.* Washington, DC: U.S. Department of Health and Human Services; 2011.

230 Black D. *New Markets Tax Credits: Unlocking Investment Potential. Community Development Insights,* 2013. https://occ.gov/topics/community-affairs/publications/insights/insights-new-markets-tax-credits.pdf (accessed September 2016).

231 Community Development Financial Institutions Fund. *New Markets Tax Credit Program. Community Revitalization by Rewarding Private Investment.* Washington, DC: U.S. Department of Treasury, 2016. https://www.cdfifund.gov/Documents/NMTC%20Fact%20Sheet_Jan2016v2.pdf (accessed September 2016).

232 New Markets Tax Credit Program. In *Community Development Financial Institutions Fund,* no date. https://www.cdfifund.gov/programs-training/Programs/new-markets-tax-credit/Pages/default.aspx (accessed September 2016).

233 The New Markets Tax Credit: Opportunities for investment in Healthy Foods and Physical Activity. Prepared by Ernst & Young LLP for the Campaign to End Obesity, 2013. http://campaigntoendobesity.org/documents/EYCEONMTC-OpportunitiesforInvestmentinHealthFinal.pdf (accessed September 2016).

234 Grays Ferry Education and Wellness Center. In Reinvestment Fund. https://www.reinvestment.com/success-story/alcorn-education-and-wellness-center/ (accessed September 2016).

235 New Markets Tax Credit Coalition. New Markets Tax Credit – At Work in Communities Across America. New Markets Tax Credit Coalition: Washington, DC, 2012. http://nmtccoalition.org/wp-content/uploads/NMTC-At-Work-in-Communities-Across-America.pdf (accessed September 2016).

236 Ashe M. "Extra Credit: Enhancing Community Health with the New Markets Tax Credit Program". Investing in What Works for America's Communities. http://www.whatworksforamerica.org/extra-credit-enhancing-community-health-with-the-new-markets-tax-credit-program/#.Vx-7yFYrKUl (accessed September 2016).

237 About Us: The Fund. In *HealthyFuturesFund,* 2016. http://www.healthyfuturesfund.org/section/aboutus/overview (accessed September 2016).

238 Healthy Futures Fund. In *Local Initiatives Support Corporation,* 2016. http://www.lisc.org/our-initiatives/health/healthy-futures-fund/ (accessed September 2016).

239 About Us: The Fund. In *HealthyFuturesFund,* 2010-2016. http://www.healthyfuturesfund.org/section/aboutus/overview (accessed September 2016).

240 Health Centers: About FQHCs. In *HealthyFuturesFund,* 2000-2016. http://healthyfuturesfund.org/section/development_resources/aboutfqhcs/ (accessed September 2016).

241 We All do Better When Everyone Thrives. An Initiative of Enterprise Community Partnerships, the Federal Reserve Bank of San Francisco, the Low Income Investment Fund, and the Natural Resources Defense Council. In *Strong, Prosperous and Resilient Communities Challenge (SPARCC),* no date. http://sparcchub.org/ (accessed September 2016).

242 Andrews NA. "Announcing SPARCC – A $90 MM Investment in Creating Just and Equitable Places in Live." *Just Good Capital Blog* July 24, 2016. http://www.liifund.org/justgoodcapital/2016/07/24/creating-just-equitable-places-live/ (accessed September 2016).

243 Equity with a Twist. In *Low Income Investment Fund,* 2014. http://www.liifund.org/products/community-capital/equity-with-a-twist/ (accessed September 2016).

244 Overview: Community Development Corporations (CDCs). In *Community-Wealth.org.* http://community-wealth.org/strategies/panel/cdcs/index.html (accessed September 2016).

245 Chicanos Por La Causa: About Us. In *Chicanos Por La Causa,* 2016. http://www.cplc.org/AboutUs (accessed September 2016).

246 Chicanos Por La Causa. *Annual Report, 2014.* Phoenix, AZ: Chicanos Por la Causa, 2014. http://www.cplc.org/AboutUs#Annual_Report (accessed September 2016).

247 Nonprofit Finance Fund. "Frequently Asked Questions: Pay for Success/ Social Impact Bonds", 2014. http://www.nonprofitfinancefund.org/sites/default/files/pfs_faq.pdf (accessed September 2016).

248 Roman J, Eldridge M and Hawkins R. *Foundational Concepts and Terms of Pay for Success.* Urban Institute: Washington, DC, 2015. http://www.urban.org/sites/default/files/alfresco/publication-pdfs/2000562-Foundational-Concepts-and-Terms-of-Pay-for-Success.pdf (accessed September 2016).

249 Social Impact Bonds. In *Goldman Sachs.* 2014. http://www.goldmansachs.com/our-thinking/pages/social-impact-bonds.html (accessed September 2016).

250 Liebman J. *Social Impact Bonds.* Center for American Progress: Washington, DC, 2011. https://www.americanprogress.org/wp-content/uploads/issues/2011/02/pdf/social_impact_bonds.pdf (accessed September 2016).

251 Social Impact Bonds. In *Goldman Sachs.* 2014. http://www.goldmansachs.com/our-thinking/pages/social-impact-bonds.html (accessed September 2016).

252 Social Impact Bonds. In *Goldman Sachs.* 2014. http://www.goldmansachs.com/our-thinking/pages/social-impact-bonds.html (accessed September 2016).

253 Liebman J. *Social Impact Bonds.* Center for American Progress: Washington, DC, 2011. https://www.americanprogress.org/wp-content/uploads/issues/2011/02/pdf/social_impact_bonds.pdf (accessed September 2016).

255 Social Impact Bonds. In *Goldman Sachs.* 2014. http://www.goldmansachs.com/our-thinking/pages/social-impact-bonds.html (accessed September 2016).

256 National Governors Association (NGA). *Social Impact Bonds for Public Health Programs: An Overview.* Washington, DC: NGA, 2015. https://www.nga.org/files/live/sites/NGA/files/pdf/2015/1508SocialImpactBondsPublicHealthPrograms.pdf (accessed September 2016).

257 South Carolina Department of Health and Human Services. "South Carolina Nurse-Family Partnership Pay for Success Project", 2016. https://www.scdhhs.gov/sites/default/files/2-16-16-SC-NFP-PFS-Partners_0.pdf (accessed September 2016).

258 Xu L. *Pay for Success in the U.S. Summaries of Financed Projects.* Greenville, SC: Institute for Child Success, 2016. http://pfs.instituteforchildsuccess.org/wp-content/uploads/2016/06/summary_of_pay_for_success_social_impact_bonds_South_Carolina.pdf (accessed September 2016).

259 Connecticut Family Stability Project. In *Urban Institute,* 2016. http://pfs.urban.org/pfs-project-fact-sheets/content/connecticut-family-stability-project (accessed September 2016).

260 Blair R. "State Drug Abuse Initiative for Families Paired with Private Investment." *Hartford Courant* February 16, 2016. http://www.courant.com/politics/hc-malloy-substance-abuse-program-0217-20160216-story.html (accessed September 2016).

261 Shiffman H. "Pay-for-Success Takes Aim at Child Services." Open Minds, 2016. https://www.openminds.com/market-intelligence/executive-briefings/the-shifting-target-for-pay-for-success-child-services/ (accessed September 2016).

262 Connecticut Family Stability Pay for Success Project Frequently Asked Questions. In *Social Finance,* 2016. http://socialfinance.org/content/uploads/2016/02/CT-Family-Stability-PFS_FAQ_vFINAL.pdf (accessed September 2016).

263 Pay for Success. Connecticut Family Stability Project. In *Urban Institute,* 2016. http://pfs.urban.org/pfs-project-fact-sheets/content/connecticut-family-stability-project

264 Connecticut Family Stability Project. In *Urban Institute,* 2016. http://pfs.urban.org/pfs-project-fact-sheets/content/connecticut-family-stability-project (accessed September 2016).

265 Connecticut Family Stability Pay for Success Project Frequently Asked Questions. In *Social Finance,* 2016. http://socialfinance.org/content/uploads/2016/02/CT-Family-Stability-PFS_FAQ_vFINAL.pdf (accessed September 2016).

266 Wellness Trusts. In *ReThink Health,* 2016. http://www.rethinkhealth.org/primer-resources/wellness-trusts/ (accessed September 2016).

267 Health Policy Institute of Ohio. Wellness Trusts [Beyond Medical Care Fact Sheet], 2015. http://www.healthpolicyohio.org/wp-content/uploads/2015/09/Beyond_WellnessTrustsFactSheet_Final.pdf (accessed September 2016).

268 Prevention Institute. Sustainable Investments in Health: Prevention and Wellness Funds, 2015. http://www.preventioninstitute.org/component/jlibrary/article/id-360/127.html (accessed September 2016).

269 Prevention Institute. *Sustainable Investments in Health: Prevention and Wellness Funds,* 2015. http://www.preventioninstitute.org/component/jlibrary/article/id-360/127.html (accessed September 2016).

270 Health Policy Institute of Ohio. Wellness Trusts [Beyond Medical Care Fact Sheet], 2015. http://www.healthpolicyohio.org/wp-content/uploads/2015/09/Beyond_WellnessTrustsFactSheet_Final.pdf (accessed September 2016).

271 Institute on Urban Health Research and Practice, Bouve College of Health Sciences, Northeastern University. *The Massachusetts Prevention and Wellness Trust: An Innovative Approach to Prevention as a Component of Health Care Reform.* http://www.northeastern.edu/iuhrp/wp-content/uploads/2013/12/PreventionTrustFinalReport.pdf (accessed September 2016).

272 Plaza C, Arons A, Rosenthal J and Heider F. *Financing Prevention: How States are Balancing Delivery System and Public Health Roles*. Prepared by the National Academy for State Health Policy for Change-Lab Solutions, 2014. http://www.changelabsolutions.org/sites/default/files/Financing_Prevention-NASHP_FINAL_20140410.pdf (accessed September 2016).

273 Allegheny County Health Department. “Health Department Chosen as One of First Sites for Key Health Initiative.” [Press Release] August 20, 2015. http://www.achd.net/pr/pubs/2015release/082015_rwjf.html (accessed September 2016).

274 Summary of the ReThink Health Dynamics Model. In *ReThinkHealth.org*, 2015. http://www.rethinkhealth.org/wp-content/uploads/2014/10/ReThink-Health-Model-Summary-v5.pdf (accessed September 2016).

275 Community Tool Kit. Healthy Cities/Healthy Communities, Chapter 2, Section 3. In *Learn a Skill*. http://ctb.ku.edu/en/table-of-contents/overview/models-for-community-health-and-development/healthy-cities-healthy-communities/main (accessed September 2016).

276 Flower J. Bethel New Life, Chicago: A Case Study of Community Transformation. In *The Well*, no date. http://www.well.com/user/bbear/bethel.html (accessed September 2016).

277 Frommer P and Papouchado. Police as Contributors to Healthy Communities: Aiken, South Carolina. *Public Health Reports,* 115(2-3), 2000. http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1308720/ (accessed September 2016).

278 Robert Wood Johnson Foundation. “Reinvestment Fund and Robert Wood Johnson Foundation Award $3 Million Across 50 Mid-Size U.S. Cities to Improve Health in Low-Income Neighborhoods.” *RWJF Blog* May 17, 2016. http://www.rwjf.org/en/library/articles-and-news/2016/05/reinvestment-fund-and-robert-wood-johnson-foundation-award–3-mi.html (accessed September 2016).

279 About. In *Reinvesting Fund,* 2016. https://www.reinvestment.com/about/ (accessed September 2016).

280 Impact. In Numbers. In *Reinvesting Fund,* 2016. https://www.reinvestment.com/impact/in-numbers/ (accessed September 2016).

281 Public Health Institute, (2014). New Initiative Aligns Health Equity and Development. [Press Release]. http://www.phi.org/news-events/676/new-initiative-aligns-health-equity-and-development (accessed September 2016).

282 The Reinvestment Fund and Public Health Institute. *Alignment for Health Equity and Development*. Oakland, CA: Public Health Institute, no date. http://www.phi.org/uploads/files/AHEAD%20-%20Opportunity.pdf (accessed September 2016).

283 Build Healthy Places Network (2016). “About Us.” Available at: http://buildhealthyplaces.org/about-us/ (accessed September 2016).

284 Healthy Communities. About the Healthy Communities Initiative. In *Federal Reserve Bank of San Francisco,* 2016. http://www.frbsf.org/community-development/initiatives/healthy-communities/about/ (accessed September 2016).

285 Initiatives. Healthy Communities. In *Federal Reserve Bank of San Francisco,* 2016 http://www.frbsf.org/community-development/initiatives/healthy-communities/ (accessed September 2016).

286 YMCA *Active America. Pioneering Healthier Communities. Lessons and Leading Practices*. Chicago, IL: YMCA of the USA, no date. http://www.sfgov3.org/ftp/uploadedfiles/shapeupsf/research_data/PHC_Full_Length_Practices_FNL.pdf (accessed September 2016).

287 The Secrets of Living Longs, Better are All Around Us. In *Blue Zones Project,* no date. https://communities.bluezonesproject.com/ (accessed September 2016).

288 BUILD with Us. In *The BUILD Health Challenge,* 2016. http://buildhealthchallenge.org/ (accessed September 2016).

289 Our Communities. In *The BUILD Health Challenge,* 2016. http://buildhealthchallenge.org/our-communities/ (accessed September 2016).

290 Systems Innovations & Improvement. Moving Health Care Upstream (MHCU). In Center for Healthier Children, Families & Communities. http://www.healthychild.ucla.edu/ourwork/mhcu/ (accessed September 2016).

291 Who We Are. What We Do. Our Approach. Our Network. In P*urpose Built Communities,* 2016. http://purposebuiltcommunities.org/ (accessed September 2016).

292 Building Healthy Communities. Overview. In *The California Endowment,* 2016. http://www.calendow.org/building-healthy-communities/ (accessed September 2016).

293 The California Endowment. *A New Power Grid: Building Healthy Communities at Year 5*. Spring 2016. http://www.calendow.org/bhcreport/ (accessed September 2016).

294 St. John’s Well Child & Family Center. White House Advisor Joins South LA Leaders Celebrate Opening of New Health Center. *Building Healthy Communities South Los Angeles News Letter,* 2014. http://www.simplesend.com/simple/textlink.asp?NewsletterID=87077&SI=&E=&S=495&N=87077&Format=HTML (accessed September 2016).

295 Sulaiman S. St. John’s New Health and Wellness Campus Promises Good Things for South L.A. *Streets Blog LA,* March 25, 2014. http://la.streetsblog.org/2014/03/25/st-johns-new-health-and-wellness-campus-promises-good-things-for-south-l-a/ (accessed September 2016).

296 Alameda County Public Health Department (ACPHD). *Part One, Health Inequities*. Life and Death from Unnatural Causes. Oakland, CA: ACPHD. http://www.acphd.org/media/144727/lduc-part1.pdf.

297 Alameda Health Care Services Agency. *Overview of Measure A Essential Health Care Services Initiative*. Oakland CA: Alameda County Public Health Department, 2013. http://www.acgov.org/board/bos_calendar/documents/DocsAgendaReg%2008%201%2013/GENERAL%20ADMINISTRATION/Regular%20Calendar/Measure_A_Overview_General.pdf (accessed September 2016).

298 City County Neighborhood Initiative. *Sobrante Park House Calls 2010 Survey Results.* Oakland, CA: City County Neighborhood Initiative, 2011. http://www.acphd.org/media/146693/sp_survey2010_results_handout.pdf (accessed September 2016).

299 Fresno. In *The California Endowment,* 2016. http://www.calendow.org/places/fresno/ (accessed September 2016).

300 Blancas AG. "Short-Term Program to Provide Healthcare to Undocumented." *Community Alliance* May 1, 2015. http://fresnoalliance.com/short-term-program-to-provide-healthcare-to-undocumented/ (accessed September 2016).

301 Let's Invest in #Parks4All. In *Building Healthy Communities Fresno,* no date. http://www.fresnobhc.org/parks4all/ (accessed September 2016).

302 Evidenced-Based Prevention and Intervention Support (EPIS) Center. *2014 Annual Report. Connecting Research, Policy, and Real-World Practice.* University Park, PA: EPISCenter, 2014. http://www.episcenter.psu.edu/sites/default/files/outreach/EPISCenter-Annual-Report-2014.pdf (accessed September 2016).

303 Hawkins JD and Catalano RF. *Investing in Your Community's Youth: An Introduction to the Communities That Care System.* Seattle, WA: Communities That Care, 2005. http://www.communitiesthatcare.net/userfiles/files/Investing-in-Your-Community-Youth.pdf (accessed September 2016).

304 Research & Results. In *Communities that Care,* no date. http://www.communitiesthatcare.net/research-results/ (accessed September 2016).

305 Hawkins JD, Oesterle S, Brown EC, et al. Youth problem behaviors 8 years after implementing the Communities That Care Prevention System. *JAMA Pediatrics,* 168(2):122-129, 2013.

306 Overview. In *Partnerships in Prevention Science Institute.* http://www.ppsi.iastate.edu/default.htm (accessed September 2016).

307 Evidence-based Prevention Saves Money and Reduces Problems. Alcohol-Related Disorder Costs. In *Partnerships in Prevention Science Institute.* http://www.ppsi.iastate.edu/overview3.htm (accessed September 2016); And Spoth R, Guyll M and Day SZ. Universal Family-Focused Interventions in Alcohol-Use Disorder Prevention: Cost-Effectiveness and Cost-Benefit Analyses of Two Interventions. *J Studies on Alcohol,* 63(2): 219-228, 2002.

308 Redmond C, Spoth RL, Shin C, et al. Long-term protective factor outcomes of evidence-based interventions implemented by community teams through a community-university partnership. *Journal of Primary Prevention,* 30: 513-530, 2009.

309 Osgood DW, Feinberg ME, Gest SD, et al. Effects of PROSPER on the influence potential of prosocial versus antisocial youth in adolescent friendship networks. *Journal of Adolescent Health,* 53(2): 174-179, 2013.

310 Spoth R, Redmond C, Clair S, et al. Preventing substance misuse through community -university partnerships: Randomized controlled trial outcomes 4? years past baseline. *American Journal of Preventive Medicine,* 40(4), 440-447, 2011.

311 Spoth R, Redmond C, Shin C, et al. PROSPER community-university partnerships delivery system effects on substance misuse through 6? years past baseline from a cluster randomized controlled intervention trial. *Preventive Medicine,* 56, 190-196, 2013.

312 Spoth RL, Trudeau LS, Redmond C, et al. PROSPER partnership delivery system: Effects on conduct problem behavior outcomes through 6.5 years past baseline. *Journal of Adolescence,* 45: 44-55, 2015.

313 McGinnis JM, Williams-Russo P and Knickman JR. The Case for More Active Policy Attention to Health Promotion. *Health Affairs,* 21(2): 78-93, 2002.

314 Taylor LA, Coyle CE, Ndumele C, et al. *Leveraging the Social Determinants of Health: What Works? Executive Summary.* New Haven, CT: Yale Global Health Leadership Institute, 2015. http://bluecrossfoundation.org/sites/default/files/download/publication/Social_Equity_ExecSumm_final.pdf (accessed September 2016).

315 Galea S, Tracy M, Hoggatt KJ, et al. Estimated Deaths Attributable to Social Factors in the United States. American *Journal of Public Health* 101(8):1456–1465, 2011.

316 Heiman HJ and Artiga S. Beyond Health Care: The Role of Social Determinants in Promoting Health and Equity. *KFF Issue Brief,* 2015. http://kff.org/report-section/beyond-health-care-the-role-of-social-determinants-in-promoting-health-and-health-equity-issue-brief/#endnote_link_168746-7 (accessed September 2016).

317 Heiman HJ and Artiga S. Beyond Health Care: The Role of Social Determinants in Promoting Health and Equity. *KFF Issue Brief,* 2015. http://kff.org/disparities-policy/issue-brief/beyond-health-care-the-role-of-social-determinants-in-promoting-health-and-health-equity/ (accessed September 2016).

318 Taylor LA, Coyle CE, Ndumele C, et al. *Leveraging the Social Determinants of Health: What Works? Executive Summary.* New Haven, CT: Yale Global Health Leadership Institute, 2015. http://bluecrossfoundation.org/sites/default/files/download/publication/Social_Equity_ExecSumm_final.pdf (accessed September 2016).

319 Bachrach D, Pfister H, Wallis K, et al. *Addressing Patient's Social Needs. An Emerging Business Case for Provider Investment.* Washington, DC: The Commonwealth Foundation, Skoll Foundation and Pershing Square Foundation, 2014. http://www.commonwealthfund.org/~/media/files/publications/fund-report/2014/may/1749_bachrach_addressing_patients_social_needs_v2.pdf (accessed September 2016).

320 Prevention Institute. *The Accountable Community for Health: An Emerging Model for Health System Transformation.* Oakland, CA: Prevention Institute, 2016. https://www.preventioninstitute.org/sites/default/files/publications/ACH%20-%20An%20Emerging%20Model%20for%20Health%20System%20Transformation.pdf (accessed September 2016).

321 Joynt, K, Gawande, A, Orav, J, and Jha, A, "Contribution of Preventable Acute Care Spending to Total Spending for High-Cost Medicare Patients," *JAMA Online First,* June 26, 2013.

322 Health in Housing: Exploring the Intersection between Housing and Health Care, Center for Outcomes Research and Education and Enterprise Community Partners, February 2016.

323 "Reducing Emergency Department Overuse: A $38 billion Opportunity," National Priorities Partnership: Convened by the National Quality Forum, November 2010.

324 Joynt, K, Gawande, A, Orav, J, and Jha, A, "Contribution of Preventable Acute Care Spending to Total Spending for High-Cost Medicare Patients," *JAMA Online First,* June 26, 2013.

325 Note: Medical Expenditure Panel Survey may undercount spending for some very high-cost users of the healthcare system. Figure does not include individuals receiving care in institutional facilities, such as nursing homes (around $150 billion per year).

326 CMS Office of the Actuary.

327 Taylor LA, Coyle CE, Ndumele C, et al. *Leveraging the Social Determinants of Health: What Works? Executive Summary.* New Haven, CT: Yale Global Health Leadership Institute, 2015. http://bluecrossfoundation.org/sites/default/files/download/publication/Social_Equity_ExecSumm_final.pdf (accessed September 2016).

328 Bachrach D, Pfister H, Wallis K, et al. *Addressing Patient's Social Needs. An Emerging Business Case for Provider Investment.* Washington, DC: The Commonwealth Foundation, Skoll Foundation and Pershing Square Foundation, 2014. http://www.commonwealthfund.org/~/media/files/publications/fund-report/2014/may/1749_bachrach_addressing_patients_social_needs_v2.pdf (accessed September 2016).

329 The New York Academy of Medicine and Trust for America's Health. *A Compendium of Proven Community-Based Prevention Programs.* New York: The New York Academy of Medicine, 2013. http://healthyamericans.org/report/110/ (accessed September 2016).

330 Community Preventive Services Task Force. *Using Evidence to Improve Health Outcomes. 2016 Annual Report to Congress, Federal Agencies, and Prevention Stakeholders.* Washington, DC: U.S. Department of Health and Human Services, 2016. http://www.thecommunityguide.org/ (accessed September 2016).

331 Health Education Curriculum Analysis Tool (HECAT). In *Centers for Disease Control and Prevention,* 2016. http://www.cdc.gov/healthyyouth/hecat/ (accessed September 2016).

332 National Registry of Evidenced-Based Programs and Practices. In *Substance Abuse and Mental Health Services Administration,* no date. http://www.nrepp.samhsa.gov/ (accessed September 2016).

333 National Institute on Drug Abuse (NIDA). *Preventing Drug Use Among Children and Adolescents. A Research-Based Guide for Parents, Educators, and Community Leaders.* Second Edition. Bethesda, MD: NIDA, 2003. https://www.drugabuse.gov/sites/default/files/preventingdruguse_2.pdf (accessed September 2016).

334 The Good Behavior Game's Strong Evidence Base. In *American Institutes for Research,* 2014. http://goodbehaviorgame.air.org/evidence_base.html (accessed September 2016).

335 Matrix of Programs as Identified by Various Federal and Private Agencies. In *Center for the Study and Prevention of Violence Institute of Behavioral Science, The University of Colorado,* no date. http://www.colorado.edu/cspv/blueprints/ratings.html (accessed September 2016).

336 Our Mission. In *Coalition for Evidenced-Based Policy,* no date. http://coalition4evidence.org/ (accessed October 2015).

337 What Works Clearinghouse. In *Institute of Education Sciences,* no date. http://ies.ed.gov/ncee/wwc/ (accessed October 2015).

338 County Health Rankings & Roadmaps. *What Works for Health.* http://www.countyhealthrankings.org/roadmaps/what-works-for-health (accessed September 2016).

339 Community Preventive Services Task Force. *Using Evidence to Improve Health Outcomes. 2016 Annual Report to Congress, Federal Agencies, and Prevention Stakeholders.* Washington, DC: U.S. Department of Health and Human Services, 2016. http://www.thecommunityguide.org/annualreport/2016-congress-report-full.pdf.

340 Office of the Associate Director for Policy. Health Impact in 5 Years. In *Centers for Disease Control and Prevention,* 2016. http://www.cdc.gov/policy/hst/hi5/index.html (accessed September 2016).

341 Washington State Institute for Public Policy. *School-based programs to increase physical activity.* Olympia, WA: Washington State Institute for Public Policy, 2016. http://www.wsipp.wa.gov/BenefitCost/ProgramPdf/574/School-based-programs-to-increase-physical-activity (accessed September 2016).

342 The Guide to Community Preventive Services Task Force. School-Based Programs to Reduce Violence. In *The Community Guide,* 2005. http://www.thecommunityguide.org/violence/schoolbasedprograms.html (accessed September 2016); And, Task Force on Community Preventive Services. Preventive Services. What Works to Promote Health? New York: Oxford University Press, 2005. http://www.thecommunityguide.org/library/book/Front-Matter.pdf (accessed September, 2016).

343 Washington State Institute for Public Policy. *Good Behavior Game. Benefit-Cost Estimates Updated June 2016. Literature Review Updated April 2012.* Olympia, WA: Washington State Institute for Public Policy, 2016. http://www.wsipp.wa.gov/BenefitCost/ProgramPdf/82/Good-Behavior-Game (accessed September 2016).

344 Washington State Institute for Public Policy. *Life Skills Training. Benefit-Cost Estimates Updated June 2016. Literature Review Updated June 2014.* Olympia, WA: Washington State Institute for Public Policy, 2016. http://www.wsipp.wa.gov/BenefitCost/ProgramPdf/37/Life-Skills-Training (accessed September 2016).

345 Washington State Institute for Public Policy. *Promoting Alternative Thinking Strategies (PATHS). Benefit-Cost Estimates Updated June 2016. Literature Review Updated April 2015.* Olympia, WA: Washington State Institute for Public Policy, 2016. http://www.wsipp.wa.gov/BenefitCost/ProgramPdf/94/Promoting-Alternative-Thinking-Strategies-PATHS (accessed September 2016).

346 Stewart O, Moudon AV and Claybrooke C. Multistate evaluation of safe routes to school programs. *American Journal of Health Promotion,* 28(Suppl. 3):S89-S96, 2044.

347 Muennig PA, Epstein M, Li G, et al. The Cost-effectiveness of New York City's Safe Routes to School Program. American *Journal of Public Health,* 104(7): 1294-1299, 2014.

348 Goodwin A, Thomas L, Kirley B, et al. *Countermeasures that Work: A Highway Safety Countermeasures Guide for State Highway Safety Offices. Eighth Edition.* Washington, DC: National Highway Traffic Safety Administration, 2015. (accessed September 2016).http://www.ghsa.org/html/publications/countermeasures.html

349 Derrick AJ and Faucher LD. Motorcycle helmets and rider safety: a legislative crisis. *J Public Health Policy,* 30(2): p. 226-42, 2009.

350 Liu BC, Ivers R, Norton R, et al. Helmets for Preventing Injury in Motorcycle Riders. *Cochrane Database Syst Rev,* (1): 2008. CD004333. doi: 10.1002/14651858.CD004333.pub3 http://www.ncbi.nlm.nih.gov/pubmed/18254047 (accessed September 2016).

351 National Highway Traffic Safety Administration. *Traffic Safety Facts. Estimating Lives and Costs Saved by Motorcycle Helmets With Updated Economic Cost Information.* Washington, DC: U.S. Department of Transportation, 2015. https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812206 (accessed September 2016).

352 Community Preventive Services Task Force. *Reducing Tobacco Use and Secondhand Smoke Exposure: Mass-Reach Health Communication Interventions.* Washington, DC: U.S. Department of Health and Human Services, 2015. http://www.thecommunityguide.org/tobacco/massreach.html (accessed September 2016).

353 Community Preventive Services Task Force. *Reducing Tobacco Use and Secondhand Smoke Exposure: Interventions to Increase the Unit Price for Tobacco Products.* Washington, DC: U.S. Department of Health and Human Services, 2012. http://www.thecommunityguide.org/tobacco/increasingunitprice.html (accessed September 2016).

354 Community Preventive Services Task Force. *Reducing Tobacco Use and Secondhand Smoke Exposure: Smoke-Free Policies.* Washington, DC: U.S. Department of Health and Human Services, 2012. http://www.thecommunityguide.org/tobacco/smokefreepolicies.html (accessed September 2016).

355 Nguyen TQ, Weir BW, Jarlais D, et al. Syringe Exchange in the United States: A National Level Economic Evaluation of Hypothetical Increases in Investment. *AIDS and Behavior,* 18(11): 2144-2155, 2014.

356 The Guide to Community Preventive Services. *Preventing Excessive Alcohol Consumption: Increasing Alcohol Taxes.* Washington, DC: U.S. Department of Health and Human Services, 2015. http://www.thecommunityguide.org/alcohol/increasingtaxes.html (accessed September 2016).

357 Chisholm D, Rehm J, Van Ommeren M, et al. Reducing the Global Burden of Hazardous Alcohol Use: a Comparative Cost-Effectiveness Analysis. *Journal of Studies Alcohol,* 65(6): 782-793, 2004.

358 Trogdon J, Finkelstein EA, Reyes M, et al. A return-on-investment simulation model of workplace obesity interventions. *J Occu and Envir Med,* 51(7): 751-758, 2009.

359 Washington State Institute for Public Policy. *State and District Early Childhood Education Programs.* Benefit-cost estimates updated June 2016. Literature review updated December 2013. Olympia, WA: Washington State Institute for Public Policy, 2016. http://wsipp.wa.gov/BenefitCost/ProgramPdf/270/State-and-district-early-childhood-education-programs (accessed September 2016).

360 Washington State Institute for Public Policy. *Head Start.* Benefit-cost estimates updated June 2016. Literature review updated December 2013. Olympia, WA: Washington State Institute for Public Policy, 2016 2016. http://wsipp.wa.gov/BenefitCost/Program/272 (accessed September 2016).

361 Isaacs JB. *Cost-Effective Investments in Children.* Washington, DC: The Brookings Institute, 2007.

362 Policy. Why Retrofit? In *Diesel Technology Forum,* 2016. http://www.dieselforum.org/policy/why-retrofit (accessed September 2016).

363 Beatty TK and Shimshack JP. School Buses, Diesel Emissions, and Respiratory Health. *J Health Econ,* 30(5): 987-999, 2011.

364 U.S. Environmental Protection Agency. *Third Report to Congress: Highlights from the Diesel Emission Reduction Program.* EPA-420-R-16-004. Washington, DC: United States Environmental Protection Agency, 2016. https://nepis.epa.gov/Exe/tiff2png.cgi/P100OHMK.PNG?-r+75+-g+7+D%3A%5CZYFILES%5CINDEX%20DATA%5C11THRU15%5CTIFF%5C00001209%5CP100OHMK.TIF (accessed September 2016).

365 Savage I. Comparing the Fatality Risks in United States Transportation Across Modes and Over Time. *Research in Transportation Economics,* 43(1): 9-22, 2013.

366 Shapiro RJ, Hassett KA, and Arnold FS. *Conserving energy and preserving the environment: The role of public transportation.* Washington, DC: American Public Transportation Association, 2002. https://www.apta.com/resources/reportsandpublications/Documents/shapiro.pdf (accessed September 2016).

367 Rissel C, Curac N, Greenway M, et al. Physical Activity Associated with Public Transport Use—A Review and Modelling of Potential Benefits. *Int J Environ Res Public Health,* 9(7): 2454-2478, 2012.

368 Litman T. *Evaluating Public Transportation Health Benefits*. Victoria, BC: Victoria Transport Policy Institute, 2010. http://www.apta.com/resources/reportsandpublications/Documents/APTA_Health_Benefits_Litman.pdf (accessed September 2016).

369 Transportation Research Board. *Cost/benefit Analysis of Converting a Lane for Bus Rapid Transit: Phase II Evaluation and Methodology*. Washington, DC: The National Academies Press. http://www.trb.org/Publications/Blurbs/165329.aspx (accessed September 2016).

370 Jacobs DE, Breysse J, Dixon SL, et al. Health and housing outcomes from green renovation of low-income housing in Washington, DC. *J Environ Health,* 76(7): 8-16, 2014.

371 Chapman R, Howden-Chapman R, Viggers H, et al. Retrofitting Houses with Insulation: A Cost-Benefit Analysis of a Randomised Community Trial. *J Epidemiol Community Health,* 63(4): p. 271-7, 2009

372 Arno PS, Sohler N, Viola D, et al. Bringing Health and Social Policy Together: The Case of the Earned Income Tax Credit. *Journal of Public Health Policy,* 30(2): p. 198-207, 2009.

373 Hoynes HW, Miller DL, and Simon D. Income, the earned income tax credit, and infant health. NBER Working Paper Series 18206. Cambridge, MA: National Bureau of Economic Research, 2012.

374 Avalos A and Alley S. The Economic Impact of the Earned Income Tax Credit (EITC) in California. *California Journal of Politics and Policy,* 2(1): 2010. http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1705685 (accessed September 2016).

375 McDonagh MS, Whiting PF, Wilson PM, et al. Systematic review of water fluoridation. *BMJ,* 321(7265): 855-859, 2000.

376 Ran T, Chattopadhyay SK, and Community Preventive Services Task. Economic Evaluation of Community Water Fluoridation: A Community Guide Systematic Review. *Am J Prev Med,* 50(6): p. 790-6, 2016.

377 State Medicaid & Public Health Collaboration to Advance the CDC's 6?18 Initiative. In *Center for Health Care Strategies, Inc.,* 2016. http://www.chcs.org/project/state-medicaid-public-health-collaboration-to-advance-the-cdcs-618-initiative/

378 McGinnis T. "The 6/18 Initiative: Accelerating Evidence into Action." [Conference Material]. ASTHO 2016 Senior Deputies Annual Meeting July 14, 2016. http://www.chcs.org/media/CHCS-6_18-Presention-for-ASTHO-Meeting-070816.pdf (accessed September 2016).

380 The Diabetes Prevention Program (DPP) Research Group. The Diabetes Prevention Program. Description of lifestyle intervention. *Diabetes Care,* 25:2165-2171, 2002.

381 National Institutes of Health. NIH Study Finds Interventions to Prevent Type 2 Diabetes Give Good Return on Investment. [Press Release]. March 22, 2012. https://www.nih.gov/news-events/news-releases/nih-study-finds-interventions-prevent-type-2-diabetes-give-good-return-investment (accessed September 2016).

382 The Diabetes Prevention Program Research Group. Reduction in the Incidence of Type 2 Diabetes with Lifestyle Intervention or Metformin. N Engl J Med, 346(6):393–403, 2002.

383 National Institutes of Health, (2012). NIH Study Finds Interventions to Prevent Type 2 Diabetes Give Good Return on Investment. [Press Release]. https://www.nih.gov/news-events/news-releases/nih-study-finds-interventions-prevent-type-2-diabetes-give-good-return-investment (accessed September 2016).

384 For Employers & Payors. How we help employers. In *Diabetes America,* 2016. www.diabetesamerica.com/employershealth-plans/ (accessed September 2016).

385 Li R, Zhang P, Barker LE, et al. Cost-Effectiveness of Interventions to Prevent and Control Diabetes Mellitus: A Systematic Review. *Diabetes Care,* 33(8): 1872-1894, 2010.

386 Espeland MA, Glick HA, Bertoni A, et al. Impact of an intensive lifestyle intervention on use and cost of medical services among overweight and obese adults with type 2 diabetes: the action for health in diabetes. *Diabetes Care* 37(9): 2548-56, 2014.

387 Dall TM, Storm MV, Semilla AP, et al. Value of lifestyle intervention to prevent diabetes and sequelae." *American Journal of Preventive Medicine* 48(3): 271-80, 2015.

388 Ackerman RT, Marrero DG, Hicks KA, et al. An Evaluation of Cost Sharing to Finance a Diet and Physical Activity Intervention to Prevent Diabetes. *Diabetes Care,* 29(6): 1237-1241, 2006.

389 Centers of Medicare & Medicaid Services, (2016). Diabetes Prevention Program Independent Evaluation Report Summary. [Press Release]. https://www.cms.gov/Newsroom/MediaReleaseDatabase/Fact-sheets/2016-Fact-sheets-items/2016-03-23.html (accessed September 2016).

390 U.S. Department of Health & Human Services, (2016). Independent experts confirm that diabetes prevention model supported by the Affordable Care Act saves money and improves health. [Press Release]. http://www.hhs.gov/about/news/2016/03/23/independent-experts-confirm-diabetes-prevention-model-supported-affordable-care-act-saves-money.html (accessed September 2016).

391 American Medical Association, (2016). AMA Calls for Private, Public Health Coverage for Diabetes Prevention Programs. [Press Release]. http://www.ama-assn.org/ama/pub/news/news/2016/2016-06-14-coverage-diabetes-prevention-programs.page (accessed September 2016).

392 The Diabetes Prevention Program (DPP) Research Group. The Diabetes Prevention Program. Description of lifestyle intervention. *Diabetes Care,* 25:2165-2171, 2002.

394 Centers for Disease Control and Prevention, (2010). Number of Americans with Diabetes Projected to Double or Triple by 2050. [Press Release]. https://www.cdc.gov/media/pressrel/2010/r101022.html (accessed September 2016).

395 National Institute of Diabetes and Digestive and Kidney Diseases. Diabetes Prevention Program (DPP). NIH Publication No. 09–5099. Washington, DC: U.S. Department of Health & Human Services, 2008. http://www.niddk.nih.gov/about-niddk/research-areas/diabetes/diabetes-prevention-program-dpp/Documents/DPP_508.pdf (accessed July 2015).

396 Su W, Chen F, Dall TM, et al. Return on Investment for Digital Behavior Counseling in Patients with Prediabetes and Cardiovascular Disease. *Preventing Chronic Disease,* 13: 150357. http://www.cdc.gov/PCD/issues/2016/15_0357.htm (accessed September 2016).

397 ChangeLab Solutions. *Diabetes Prevention Program Return on Investment.* Oakland, CA: ChangeLab Solutions, 2015. http://www.changelabsolutions.org/sites/default/files/LADPH-DPP%20ROI%20Factsheet_FINAL_11_2015.pdf (accessed September 2016).

398 Brokaw S, Carpenedo D, Campbell P, et al. *Delivering the Diabetes Prevention Program (DPP) to Medicaid Beneficiaries: Challenges and Solutions.* Montana Cardiovascular Disease and Diabetes Prevention Program, 2014. http://dphhs.mt.gov/Portals/85/publichealth/documents/Diabetes/Data/ADA2014DPPposterBrokaw.pdf (accessed September 2016).

399 ChangeLab Solutions. *Diabetes Prevention Program Return on Investment.* Oakland, CA: ChangeLab Solutions, 2015. http://www.changelabsolutions.org/sites/default/files/LADPH-DPP%20ROI%20Factsheet_FINAL_11_2015.pdf + 19 (accessed September 2016).

400 Florida Health Care Coalition. *Diabetes Prevention Lifestyle Change Program. The Business Case for Inclusion as a Covered Health Benefit.* Winter Springs, FL: Florida Health Care Coalition, 2015. http://www.flhcc.org/uploads/Resources/Diabetes%20Prevention%20Lifestyle%20Change%20Program%20Business%20Case%2001%202015.pdf (accessed September 2016).

401 The Georgia Department of Public Health (DPH). *Return on Investment of Diabetes Prevention Programs (DPP) and Diabetes Self-Management Programs (DSME/T).* Atlanta, GA: DPH, 2015. https://dph.georgia.gov/sites/dph.georgia.gov/files/DPP-DSME%20ROI%20Factsheet%20July%202015%20Final.pdf (accessed September 2016).

402 Klonoff DC and Schwartz DM. An economic analysis of interventions for diabetes. *Diabetes Care,* 23(3):390-404, 2000. (http://www.ncbi.nlm.nih.gov/pubmed/10868871)

403 Boren SA, Fitzner KA, Specker JE. Costs and Benefits Associated with Diabetes Education: A Review of the Literature. Diabetes Educ, 35(1):72-96, 2009.

404 Stanford Small-Group Self-Management Programs in English. In *Stanford Medicine,* 2016. http://patienteducation.stanford.edu/programs/ (accessed September 2016).

405 Lorig K. "Stanford Self-Management Programs Effectiveness and Translation." [Presentation]. Institute of Medicine, 2004. https://www.nationalacademies.org/hmd/~/media/Files/Activity%20Files/PublicHealth/ChronicDisease/Lorig.pdf (accessed September 2016).

406 Schreiber RJ. "Prevetion in the Context of Frailty: The Role of Evidence Based Programs." [Presentation]. Hebrew Senior Life, Harvard Medical School, September 12, 2015. http://www.almageriatria.info/miami_2015/Cuarto%20dia/Profesores/september122015ppt.ppt (accessed September 2016).

407 Galson SK. Self-management Programs: One Way to Promote Healthy Aging. *Public Health Rep* 124(4): 478-480, 2009.

408 National Council on Aging. Chronic Disease Self-Management. Fact Sheet. Arlington, VA: NCA, 2015. https://www.ncoa.org/wp-content/uploads/Chronic-Disease-Fact-Sheet_Final-Sept-2015.pdf (accessed September 2016).

409 Trust for America's Health (TFAH). *Partner with Nonprofit Hospitals to Maximize Community Benefit Programs' Impact on Prevention. Issue Brief.* Washington, DC: TFAH, 2013. http://healthyamericans.org/assets/files/Partner%20With%20Nonprofit%20Hospitals04.pdf (accessed September 2016).

410 Meyerson K. How an Entire Community can Come Together to Help Control Asthma. In *Trust for America's Health,* 2015. http://healthyamericans.org/health-issues/prevention_story/how-an-entire-community-can-come-together-to-help-control-asthma/ (accessed September 2016).

411 Ruede-Yamashita B. Improving Lives & Saving Money by Extending Care from the Clinic into the Community. In Trust for America's Health, 2015. http://healthyamericans.org/health-issues/prevention_story/improving-lives-saving-money-by-extending-care-from-the-clinic-into-the-community/ (accessed September 2016).

412 Auerbach J. (2016). The 3 Buckets of Prevention. *Journal of Public Health Management and Practice,* 22(3): 215-218.

413 Ibid.

414 Health Reform. Preventive Services Covered by Private Health Plans Under the Affordable Care Act. In *Kaiser Family Foundation,* 2015. http://kff.org/health-reform/fact-sheet/preventive-services-covered-by-private-health-plans/ (accessed September 2016).

415 Farley TA, Dalal, MA, Mostashari F, et al. Deaths preventable in the U.S. by improvements in use of clinical preventive service. *Am J Prev Med,* 38(6): 600-609, 2010.

416 Maciosek MV, Coffield AB, Flottemesch TJ, et al. Greater Use of Preventive Services in U.S. Health Care Could Save Lives at Little or No Cost. *Health Affairs,* 29(9): 1656-1660, 2010.

417 Boyle CA, Perrin JM, and Moyer VA. Use of Clinical Preventive Services in Infants, Children, and Adolescents. *JAMA,* 312(5): 1509-1510, 2014. http://jama.jamanetwork.com/article.aspx?articleid=1905378.

418 Clinical Preventive Services. Latest Data. In *Healthpeople.gov,* 2014. https://www.healthypeople.gov/2020/leading-health-indicators/2020-lhi-topics/Clinical-Preventive-Services/data (accessed September 2016).

419 Boyle CA, Perrin JM, and Moyer VA. Use of Clinical Preventive Services in Infants, Children, and Adolescents. *JAMA,* 312(5): 1509-1510, 2014.

420 Jamal A, Dube SR, Malarcher AM, et al. Tobacco Use Screening and Counseling During Physician Office Visits Among Adults–National Ambulatory Medical Care Survey and National Health Interview Survey, United States, 2005-2009. *MMWR,* 61(Supplement): 38-45, 2012. http://www.cdc.gov/mmwr/pdf/other/su6102.pdf (accessed September 2016).

421 Ibid.

422 Raymond J, Wheeler W and Brown MJ. Lead screening and prevalence of blood lead levels in children aged 1–2 years—Child Blood Lead Surveillance System, United States, 2002–2010 and National Health and Nutrition Examination Survey, United States, 1999–2010. *MMWR,* 63(2): 38-42, 2014.

423 Centers for Disease Control and Prevention. Use of selected clinical preventive services to improve the health of infants, children, and adolescents—United States, 1999–2011. *MMWR,* 63(2):1–107, 2014. http://www.cdc.gov/mmwr/pdf/other/su6302.pdf (accessed September 2016).

424 Clinical Preventive Services. In *Centers for Disease Control and Prevention.* https://www.cdc.gov/aging/services/ (accessed September 2016).

425 USPSTF A and B Recommendations. In *U.S. Preventive Services Task Force.* http://www.uspreventiveservicestaskforce.org/Page/Name/uspstf-a-and-b-recommendations/ https://www.cdc.gov/aging/services/ (accessed September 2016).

426 Galewitz P. "Seniors' Obesity-Counseling Benefit Goes Largely Unused." *Kaiser Health News* November 20, 2014. http://www.medpagetoday.com/PublicHealthPolicy/Medicare/48753 (accessed June 2015).

427 Centers for Disease Control and Prevention. Health Plan Implementation of U.S. Preventive Services Task Force A and B Recommendations–Colorado, 2010. *MMWR,* 60(39): 1348-1350, 2011. https://www.cdc.gov/mmwr/preview/mmwrhtml/mm6039a3.htm (accessed September 2016).

428 Auerbach, J. (2016). The 3 buckets of prevention. *Journal of Public Health Management and Practice,* 22(3), 215-218.

429 Agency for Healthcare Research and Quality. *Evaluation of the U.S. Preventive Services Task Force Recommendations for Clinical Preventive Services.* Program Evaluation. Final Contract Report. AHRQ Publication No. 08-M011-EF. Washington, DC: U.S. Department of Health & Human Services, 2007. http://www.ahrq.gov/sites/default/files/publications/files/uspstfeval.pdf (accessed September 2016).

430 Million Hearts: Cardiovascular Disease Risk Reduction Model. In *Centers for Medicare and Medicaid,* 2016. https://innovation.cms.gov/initiatives/Million-Hearts-CVDRRM/ (accessed September 2016).

431 Priorities. Clinical and Community Preventive Services. In *Surgeon General.gov,* no date. http://www.surgeongeneral.gov/priorities/prevention/strategy/clinical-and-community-preventive-services.html (accessed September 2016).

432 Agency for Healthcare Research and Quality. *Evaluation of the U.S. Preventive Services Task Force Recommendations for Clinical Preventive Services.* Program Evaluation. Final Contract Report. AHRQ Publication No. 08-M011-EF. Washington, DC: U.S. Department of Health & Human Services, 2007. http://www.ahrq.gov/sites/default/files/publications/files/uspstfeval.pdf (accessed September 2016).

433 Blue Ribbon Study Panel on Biodefense. *A National Blueprint for Biodefense: Leadership and Major Reform Needed to Optimize Efforts.* Washington, DC: Hudson Institute, 2015. http://www.hudson.org/research/11824-a-national-blueprint-for-biodefense-leadership-and-major-reform-needed-to-optimize-efforts(accessed August 2016).

434 Trust for America's Health (TFAH). *Outbreaks: Protecting Americans from Infectious Diseases.* Washington, D.C.: TFAH, 2015. http://healthyamericans.org/reports/outbreaks2015/.

435 Index assesses all 50 states for Emergency Preparedness and Health Security. In National Health Security Preparedness Index. http://nhspi.org/nations-preparedness-for-public-health-emergencies-is-improving-2016-index-shows/ (accessed August 2016).

436 Institute of Medicine. *For the Public's Health: Investing in a Healthier Future.* Washington, DC: The National Academies Press, April 2012.

437 RESOLVE. "Transforming Public Health: Emerging Concepts for Decision Making in a Changing Public Health World." 2012.

438 Institute of Medicine. *For the Public's Health: Investing in a Healthier Future.* Washington, DC: National Academies Press, April 2012.

439 RESOLVE. "Transforming Public Health: Emerging Concepts for Decision Making in a Changing Public Health World." 2012.

440 Public Health Accreditation Board. http://www.phaboard.org/news-room/accreditation-activity/ (accessed September 2016).

441 Public Health Leadership Forum. The Department of Health and Human Services as the Nation's Chief Health Strategist: Transforming Public Health and Health Care to Create Healthy Communities. September 2016. http://www.resolv.org/site-healthleadershipforum/the-department-of-health-and-human-services-as-the-nations-chief-health-strategist/ (accessed September 2016).

442 Washington State Department of Health. *Update: A New Vision for Washington State,* September 2015. http://www.doh.wa.gov/Portals/1/Documents/1200/FPHS-Sept2015update.pdf (accessed January 2016).

443 Resource Sharing Among Ohio's Local Health Departments. In *The Center for Community Solution,* 2013. http://www.communitysolutions.com/assets/docs/Major_Reports/State_Budget_and_tax/publichealthfinal4.12.13.pdf (accessed February 2016).

444 Public Health Futures. *Considerations for a New Framework for Local Public Health in Ohio.* Columbus, OH: Association of Ohio Health Commissioners, 2012. http://www.aohc.net/aws/AOHC/asset_manager/get_file/70105?ver=435 (accessed February 2016).

445 Lampe S, Atherly A, VanRaemdonck L, Matthews K, and Marshall J. Minimum Package of Public Health Services: The Adoption of Core Services in Local Public Health Agencies in Colorado. *Am J Public Health,* 105(suppl. 2): S252-S259.

446 Mays GP and Public Health Cost Estimation Workgroup. *Estimating the Costs of Foundational Public Health Capabilities: A Recommended Methodology.* Lexington, KT: University of Kentucky, 2014.

447 Cost of Foundational Public Health Services. In *Public Health Services and Systems Research,* 2015. http://www.publichealthsystems.org/research/costs-foundational-public-health-services (accessed February 2016).

448 Trust for America's Health (TFAH). *Investing in America's Health: A State-by-State Look at Public Health Funding & Key Health Facts.* Washington, D.C.: TFAH, 2016. http://tfah.org/assets/files/TFAH-2016-InvestInAmericaRpt-FINAL.pdf

449 Council of State and Territorial Epidemiologists (CSTE). *Assessment of Capacity in 2012 for the Surveillance, Prevention and Control of West Nile Virus and Other Mosquito-borne Virus Infections in State and Large City/County Health Departments and How it Compares to 2004.* Atlanta, GA: CSTE, 2014. http://www.cste2.org/docs/VBR.pdf (accessed August 2016).

450 Trust for America's Health and Robert Wood Johnson Foundation. *Outbreaks: Protecting Americans from Infectious Diseases.* December 2015. http://healthyamericans.org/reports/outbreaks2015/ (accessed September 2016).

451 National Health Security Preparedness Index. http://nhspi.org/ (accessed September 2016).

452 Pandemic and All Hazards Preparedness Act. In *Public Health Emergency,* 2014. http://www.phe.gov/Preparedness/legal/pahpa/pages/default.aspx (accessed September 2016).

453 Blue Ribbon Study Panel on Biodefense. *A National Blueprint for Biodefense: Leadership and Major Reform Needed to Optimize Efforts.* Washington, DC: Hudson Institute, 2015. https://s3.amazonaws.com/media.hudson.org/20151028ANATIONALBLUEPRINTFORBIODEFENSE.pdf (accessed August 2016).

454 Independent Panel on the U.S. Department of Health and Human Services Ebola Response. *Report of the Independent Panel on the U.S. Department of Health and Human Services (HHS) Ebola Response.* Washington, DC: Public Health Emergency, June 2016. http://www.phe.gov/Preparedness/responders/ebola/EbolaResponseReport/Documents/ebola-panel.pdf (accessed August 2016).

455 Advanced Molecular Detection (AMD) Basics. In *Centers for Disease Control and Prevention,* 2015. https://www.cdc.gov/amd/basics/index.html (accessed August 2016).

456 Advanced Molecular Detection in Action: Tracing Connections in an HIV-1 Outbreak in Indiana. In *Centers for Disease Control and Prevention,* 2015. https://www.cdc.gov/amd/stories/tracing-connections-hiv.html (accessed August 2016).

457 Advance Molecular Detection (AMD). Identifying Enterovirus D68 in Children with Respiratory Illness. In *Centers for Disease Control and Prevention.* https://www.cdc.gov/amd/stories/enteroviruses.html (accessed August 2016).

458 Whole Genome Sequencing Pinpoints Source of Listeriosis Outbreak. In *Centers for Disease Control and Prevention,* 2015. https://www.cdc.gov/amd/stories/listeria-caramel-apples.html (accessed August 2016).

459 Improving the Nation's Ability to Detect and Respond to 21st Century Urgent Health Threats: Second Report of the National Biosurveillance Advisory Subcommittee. Atlanta, GA: Centers for Disease Control and Prevention, 2011. http://www.cdc.gov/about/advisory/pdf/NBASFinalReport_April2011.pdf (accessed December 2015).

460 There is a Chasm between What is and What could be. In *The Public Health Community Platform*, http://www.thephcp.org/ (accessed September 2016).

461 Centers for Disease Control and Prevention (CDC). *Surveillance Strategy. A Strategy for Improving the Centers for Disease Control and Prevention's Activities in Public Health Surveillance.* Atlanta, GA: Centers for Disease Control and Prevention, 2014. http://www.cdc.gov/ophss/docs/CDC-Surveillance-Strategy-Final.pdf (accessed October 2014).

462 The White House. *National Strategy for Biosurveillance.* Washington, D.C.: The White House, 2012. http://www.whitehouse.gov/sites/default/files/National_Strategy_for_Biosurveillance_July_2012.pdf (accessed December 2013).

463 Executive Office of the President, National Science and Technology Council. *National Biosurveillance Science and Technology Roadmap.* Washington, D.C.: The White House, 2013. https://www.whitehouse.gov/sites/default/files/microsites/ostp/biosurveillance_roadmap_2013.pdf (accessed November 2015).

464 Perlin, JB, et al. Information Technology Interoperability and Use for Better Care and Evidence. A Vital Direction for Health and Health Care. National Academy of Medicine. September 19, 2016. https://nam.edu/information-technology-interoperability-and-use-for-better-care-and-evidence-a-vital-direction-for-health-and-health-care/ (accessed September 2016).

465 U.S. Department of Health and Human Services (HHS) and Assistant Secretary for Preparedness and Response Biomedical Advanced Research and Development Authority. *BARDA Strategic Plan 2011-2016.* Washington, DC: HHS. http://www.phe.gov/about/barda/Documents/barda-strategic-plan.pdf (accessed October 2015).

466 U.S. Department of Health and Human Services (HHS). Fiscal Year 2017 Public Health and Social Services Emergency Fund – Justification of Estimates for Appropriations Committees. Washington, DC: HHS, 2016. http://www.hhs.gov/sites/default/files/fy2017-budget-justification-phssef.pdf (accessed August 2016).

467 FDA Medical Countermeasures Initiative. Protecting National Health and Security. In *U.S. Food and Drug Administration,* 2015. http://www.fda.gov/downloads/EmergencyPreparedness/Counterterrorism/MedicalCountermeasures/AboutMCMi/UCM434314.pdf (accessed September 2016).

468 Department of Health and Human Services (HHS). *Fiscal Year 2017 Public Health and Social Services Emergency Fund – Justification of Estimates for Appropriations Committees.* Washington, DC: HHS, 2016. http://www.hhs.gov/sites/default/files/fy2017-budget-justification-phssef.pdf (accessed August 2016).

469 Preparedness News Releases. In *Public Health Emergency.* http://www.phe.gov/Preparedness/Pages/NewsReleases.aspx (accessed August 2016).

470 Public Health Emergency Medical Countermeasures Enterprise. *2015 Public Health Emergency Medical Countermeasures Enterprise (PHEMCE) Strategy and Implementation Plan.* Washington, DC: U.S. Department of Health and Human Services, 2015. http://www.phe.gov/Preparedness/mcm/phemce/Documents/2015-PHEMCE-SIP.pdf (accessed September 2016).

471 Sellers K, Leider JP, Harper E, et al. The Public Health Workforce Interests and Needs Survey: The First National Survey of State Health Agency Employees. *J Public Health Management Practice* 21(Suppl. 6): S13-S27, 2015.

472 National Association of County and City Health Officials. "The changing public health landscape: Findings from the 2015 Forces of Change Survey". [Presentation] June 2015. http://nacchoprofilestudy.org/wp-content/uploads/2015/04/2015-Forces-of-Change-Slidedoc-Final.pdf (accessed August 2016).

473 de Beaumont Foundation and Association of State and Territorial Health Officials (ASTHO). *Public Health Workforce Interests and Needs Survey. Information to Action: The Workforce Data of Public Health WINS. Summary Report.* Arlington, VA: ASTHO, 2015. http://www.astho.org/phwins/National-Summary-Report-of-Workforce-Data/ (accessed August 2016).

474 Ibid.

475 Kaufman NJ, Castrucci BC, Pearsol J, et al. Thinking Beyond the Silos: Emerging Priorities in Workforce Development for State and Local Government Public Health Agencies. *J Public Health Management Practice* 20(2): 557-565, 2014.

476 National Association of County and City Health Officials (NACCHO). *Local Workforce Development and Training in Emergency Preparedness.* Washington, DC: NACCHO, 2014. http://www.naccho.org/uploads/downloadable-resources/14-02-preparedness-workforce.pdf (accessed August 2016).

477 Centers for Disease Control and Prevention. *Modernizing the Workforce for the Public's Health: Shifting the Balance.* CDC Workforce Summit Report. Atlanta, GA: U.S. Department of Health and Human Services, CDC, 2013. http://www.cdc.gov/ophss/csels/dsepd/documents/ph-workforce-summit-report.pdf (accessed March 2016).

478 Hospital Preparedness Program Overview. In *Public Health Emergency,* 2014. http://www.phe.gov/Preparedness/planning/hpp/Pages/overview.aspx (accessed October 2015)

479 Center for Biosecurity. "Hospitals Rising to the Challenge: The First Five Years of the U.S. Hospital Preparedness Program and Priorities Going Forward. National Healthcare Preparedness Evaluation and Improvement Conference July 20-24, 2009." [Presentation] July 2009 http://www.phe.gov/Preparedness/planning/nhpeic/Documents/waldron-hhs-data-conf.pdf (accessed August 2016).

480 National Health Expenditures 2014 Highlights. In *Centers for Medicare and Medicaid Services,* 2015. https://www.cms.gov/research-statistics-data-and-systems/statistics-trends-and-reports/nationalhealthexpenddata/downloads/highlights.pdf (accessed August 2016).

481 Hospital Preparedness Program: An Introduction. In *Public Health Emergency,* 2016. http://www.phe.gov/Preparedness/planning/hpp/Documents/hpp-intro-508.pdf (accessed September 2016).

482 Office of the Assistant Secretary for Preparedness and Response. *National Guidance for Healthcare System Preparedness.* Washington, DC: U.S. Department of Health and Human Services, 2012. http://www.phe.gov/preparedness/planning/hpp/reports/documents/capabilities.pdf (accessed August 2016).

483 Amtrak Train Derailment, Philadelphia, PA. In *Public Health Emergency,* 2016. http://www.phe.gov/Preparedness/planning/hpp/events/Pages/amtrak-derailment.aspx (accessed August 2016).

484 Emergency Preparedness Rule. Survey & Certification – Emergency Preparedness Regulation Guidance. Guidance for Surveyors, Providers and Suppliers Regarding the New Emergency Preparedness (EP) Rule. In *Centers for Medicare & Medicaid Services,* 2016. https://www.cms.gov/Medicare/Provider-Enrollment-and-Certification/SurveyCertEmergPrep/Emergency-Prep-Rule.html (Accessed September 2016).

485 Accountable Care Organizations (ACOs): General Information. In *Centers for Medicare and Medicaid Services,* 2016. https://innovation.cms.gov/initiatives/ACO (accessed August 2016).

486 Lord E. Bringing Public Health Preparedness Into the 21st Century. *DomPrep Journal,* 12(7): 10-12, 2016. https://www.domesticpreparedness.com/pub/docs/DPJJuly16.pdf (accessed August 2016).

487 Marcozzi D and B Stryckman. "Health, Economics, and Preparedness: Considerations and Paths Forward." *Health Affairs Blog* Sept 14, 2015. http://healthaffairs.org/blog/2015/09/14/health-economics-and-preparedness-considerations-and-paths-forward/ (accessed October 2015)

488 2015 Instructions for Schedule H (Form 990). In *Internal Revenue Service,* 2015. https://www.irs.gov/pub/irs-pdf/i990sh.pdf (accessed November 2015).

489 Preparing U.S. Hospitals for Ebola. In *Centers for Disease Control and Prevention,* 2015. http://www.cdc.gov/vhf/ebola/pdf/preparing-hospitals-ebola.pdf (accessed August 2016).

490 Independent Panel on the U.S. Department of Health and Human Services Ebola Response. *Report of the Independent Panel on the U.S. Department of Health and Human Services (HHS) Ebola Response.* Washington, DC: Public Health Emergency, 2016. http://www.phe.gov/Preparedness/responders/ebola/EbolaResponseReport/Documents/ebola-panel.pdf (accessed August 2016).

491 Healthcare-associated Infections. HAI Data and Statistics. In *Centers for Disease Control and Prevention,* 2016. http://www.cdc.gov/hai/surveillance/ (accessed October 2015).

492 Antibiotic/Antimicrobial Resistance. HAI/AR Prevention Programs. In *Centers for Disease Control and Prevention,* 2016. https://www.cdc.gov/drugresistance/solutions-initiative/hai-ar-prevention-program.html (accessed September 2016).

493 The White House. *National Action Plan for Combating Antibiotic-Resistant Bacteria.* Washington, DC: The White House, 2015. https://www.whitehouse.gov/sites/default/files/docs/national_action_plan_for_combating_antibotic-resistant_bacteria.pdf (accessed August 2016).

494 Plough AL and Chandra A. "What Hurricane Katrina Taught Us About Community Resilience." *RWJF Culture of Health Blog* August 27, 2015. http://www.rwjf.org/en/culture-of-health/2015/08/what_hurricane_katri.html?cid=xgo_partners_unpd_ini%3Arand (accessed October 2015).

495 National Health Security Strategy and Implementation Plan. In *Public Health Emergency,* 2015. http://www.phe.gov/Preparedness/planning/authority/nhss/Pages/strategy.aspx (accessed September 2015).

496 Chandra A, Williams M, Plough A, et al. Getting Actionable About Community Resilience: The Los Angeles County Community Disaster Resilience Project. *Am J Public Health,* 103(7): 1181-1189, 2013. http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3682620/ (accessed October 2015).

497 Institute of Medicine. *Healthy, Resilient, and Sustainable Communities After Disasters: Strategies, Opportunities, and Planning for Recovery.* Washington, D.C.: The National Academies Press, 2015. http://iom.nationalacademies.org/Reports/2015/Post-Disaster.aspx (accessed October 2015).

498 Finalists. In *Rebuild by Design,* 2013. http://www.rebuildbydesign.org/winners-and-finalists/ (accessed August 2016).

499 Wainwright O. "Bjarke Ingels on the New York Dryline: 'We think of it as the love-child of Robert Moses and Jane Jacobs'." *TheGuardian.com* March 9, 2015. https://www.theguardian.com/cities/2015/mar/09/bjarke-ingels-new-york-dryline-park-flood-hurricane-sandy (accessed August 2016).

500 Big U Winning Project. In *Rebuild by Design,* 2014. http://www.rebuildbydesign.org/project/big-team-final-proposal/ (accessed August 2016).

501 Save the Children. *Get Ready Get Safe.* http://www.savethechildren.org/site/c.8rKLIXMGIpI4E/b.9085877/k.6DF4/Get_Ready_Get_Safe_Project.htm (accessed September 2016).

502 Save the Children. *Still at Risk: U.S. Children 10 Years After Hurricane Katrina.* 2015.

503 The ACE Pyramid. In *Centers for Disease Control and Prevention.* https://www.cdc.gov/violenceprevention/acestudy/about.html

504 Felitti VJ, Anada RF, Nordenberg D, et al. Relationship of Childhood Abuse and Household Dysfunction to Many of the Leading Causes of Death in Adults: The Adverse Childhood Experiences (ACE) Study. *American J of Prev Med,* 14(4): 245-258, 1998.

505 Injury Prevention and Control: Division of Violence Prevention. In *Centers for Disease Control and Prevention.* http://www.cdc.gov/violenceprevention/acestudy/index.html (accessed May 2016).

506 Middlebrooks JS and Audage NC. *The Effects of Childhood Stress on Health across the Lifespan.* Atlanta, GA: Centers for Disease Control and Prevention, National Center for Injury Prevention and Control, 2008. http://health-equity.pitt.edu/932/1/Childhood_Stress.pdf (accessed May 2016).

507 Yang J, Ekono M and Skinner C. *Basic Facts about Low-Income Children: Children under 6 Years,* 2014. New York: National Center for Children in Poverty, Mailman School of Public Health, Columbia University, 2016. http://www.nccp.org/publications/pub_1149.html (accessed September 2016).

508 Center on the Developing Child at Harvard University (2010). *The Foundations of Lifelong Health Are Built in Early Childhood.* http://www.developingchild.harvard.edu (accessed March 2016).

509 Injury Prevention & Control: Division of Violence Prevention. Child Abuse and Neglect: Consequences. In *Centers for Disease Control and Prevention,* 2016. https://www.cdc.gov/violenceprevention/childmaltreatment/consequences.html (accessed September 2016).

510 Institute of Medicine. *Child Maltreatment Research, Policy and Practice for the Next Decade.* Washington, D.C.: The National Academies Press, 20132014.

511 Iowa 360 ACEs. *Adverse Childhood Experiences in Iowa: A New Way of Understanding Lifelong Health. Findings from the 2012 Behavioral Risk Factor Surveillance System.* Iowa: Iowa ACEs 360, 2013 http://www.iowaaces360.org/uploads/1/0/9/2/10925571/iowa_aces_360_pdf_web_new.pdf (accessed September 2016).

512 Campbell F, Conti G, Heckman JJ, et al. Early Childhood Investments Substantially Boost Adult Health. *Science,* 343(6178):1478-1485, 2014.

513 Braverman P, Egerter S, Arena K, Aslam R. *Early Childhood Experiences Shape Health and Well-being Throughout Life.* Princeton, NJ: Robert Wood Johnson Foundation, 2014. http://www.rwjf.org/en/library/research/2014/08/early-childhood-experiences-shape-health-and-well-being-througho.html (accessed September 2016).

514 Robertson, E.B., Sims, B.E., & Reider, E.E. (2016). Drug Abuse Prevention through Early Childhood Intervention. In H.H. Brownstein (Editor), *The Handbook of Drugs and Society* (pp. 525-554). Location: West Sussex, United Kingdom, John Wiley & Sons, Inc.

515 Karoly LA, Kilburn MR, Cannon JS. *Early Childhood Interventions. Proven Results, Future Promise.* Santa Monica, CA: RAND Corporation, 2005. http://www.rand.org/content/dam/rand/pubs/monographs/2005/RAND_MG341.pdf (accessed August 2016).

516 Executive Office of the President. *The Economics of Early Childhood Investments.* Washington, D.C.: The White House, 2014. https://www.whitehouse.gov/sites/default/files/docs/early_childhood_report1.pdf (accessed September 2016).

517 Oliveira V and Frazão. The WIC Program: Background, Trends, and Economic Issues, 2015 Edition. *Economic Information Bulletin,* No. 134., 2015. Washington, D.C.: U.S. Department of Agriculture, 2015.

518 Sandel M, Cook J, Poblacion A, et al. Housing as a Health Care Investment: Affordable Housing Supports Children's Health,". *Insights from Housing Policy Research,* 2016. http://www.childrenshealthwatch.org/wp-content/uploads/Housing-as-a-Health-Care-Investment.pdf.

519 Center on the Developing Child at Harvard University (2010). *The Foundations of Lifelong Health Are Built in Early Childhood.* http://www.developingchild.harvard.edu (accessed September 2014).

520 Garner AS, Shonkoff JP, Siegel BS, et al. Early Childhood Adversity, Toxic Stress, and the Role of the Pediatrician: Translating Developmental Science into Lifelong Health. *Pediatrics,* 129: e224-e231, 2011.

521 Institute of Medicine and National Research Council. *Children's Health, The Nation'sNation's Wealth: Assessing and Improving Child Health.* Washington, DC: The National Academies Press, 2004.

522 Robertson EB, Sims BE, and Reider EE. Drug Abuse Prevention through Early Childhood Intervention. In H.H. Brownstein (Editor), *The Handbook of Drugs and Society* (pp. 525-554). West Sussex, United Kingdom, John Wiley & Sons, Inc.., 2016.

523 Child and Adolescent Health Measurement Initiative. *Child Health Data for Title V Needs Assessment.* Child and Adolescent Health Measurement Initiative, 2013. https://childhealthdata.org/docs/nsch-docs/titlevdia_brief_508-pdf.pdf (accessed September 2016).

524 McPherson MP, Arango H, Fox C, et al. A New Definition of Children With Special Healthcare Needs. *Pediatrics,* 102(1.1): 137-139, 1998.

525 Association of Maternal and Child Health Programs. *Developing Structure and Process Standards for Systems of Care Serving Children and Youth with Special Healthcare Needs.* Washington, D.C.: Association of Maternal and Child Health Programs, 2014.

526 Association of Maternal and Child Health Programs. Developing Structure and Process Standards for Systems of Care Serving Children and Youth with Special Healthcare Needs. Washington, D.C.: Association of Maternal and Child Health Programs, 2014. National Survey of Child with Special Health Care Needs. NS-CSHCN 2009/10. Data query from the child and Adolescent Health Measurement Initiative. In *Data Resource Center for Children & Adolescent Health.* http://childhealthdata.org/browse/survey/results?q=1792&r=1 (accessed September 2016).

527 US Department of Health and Human Services. July 13, 2013 Letter to State Directors. Washington, DC: Department of Health and Human Services, 2013. http://www.medicaid.gov/Federal-Policy-Guidance/Downloads/SMD-13-07-11.pdf

528 Klain EJ and White AR. *Implementing Trauma-Informed Practices in Child Welfare.* Washington, DC: American Bar Association, 2013.

529 National Center for Health Statistics. Infant Health. In *Centers for Disease Control and Prevention,* 2015. http://www.cdc.gov/nchs/fastats/infant-health.htm (accessed September 20160.

530 Xu J, Murphy S, Kochanek KD, et al. *Deaths: Final Data for 2013.* National Vital Statistics Reports, 64(2): February 2016. http://www.cdc.gov/nchs/data/nvsr/nvsr64/nvsr64_02.pdf (accessed September 2016).

531 Institute of Medicine. *Preterm Birth: Causes, Consequences, and Prevention.* Washington, D.C.: National Academies Press, 2007.

532 March of Dimes Prematurity Campaign. In *March of Dimes,* 2015. http://www.marchofdimes.org/mission/march-of-dimes-prematurity-campaign.aspx (accessed September 2016).

533 Trust for America's Health (TFAH). *A Healthy Early Childhood Action Plan: Policies for a Lifetime of Well-Being 2015.* Washington, D.C.: TFAH.

534 Suitts S and Barba P. *Research Bulleting: A New Majority – Low Income Students Now a Majority in the Nation's Public Schools.* Atlanta, GA: Southern Education Foundation, 2015. http://www.southerneducation.org/getattachment/4ac62e27-5260-47a5-9d02-14896ec3a531/A-New-Majority-2015-Update-Low-Income-Students-Now.aspx (accessed September 2016).

535 No Kid Hungry. *Hunger in Our Schools.* Washington, D.C.: No Kid Hungry, 2015. http://hungerinourschools.org/img/NKH-HungerInOurSchoolsReport-2015.pdf (accessed June 2015).

536 Felitti VJ, Anada RF, Nordenberg D, et al. Relationship of Childhood Abuse and Household Dysfunction to Many of the Leading Causes of Death in Adults: The Adverse Childhood Experiences (ACE) Study. *American J of Prev Med,* 14(4): 245-258, 1998.

537 Injury Prevention and Control: Division of Violence Prevention. In *Centers for Disease Control and Prevention.* http://www.cdc.gov/violenceprevention/acestudy/index.html (accessed September 2016).

538 Middlebrooks JS and Audage NC. *The Effects of Childhood Stress on Health across the Lifespan.* Atlanta, GA: Centers for Disease Control and Prevention, National Center for Injury Prevention and Control, 2008. http://www.cdc.gov/ncipc/pub-res/pdf/childhood_stress.pdf (accessed October 2014).

539 Ogden CL, Carroll MD, Kit BK, et al. Prevalence of childhood and adult obesity in the United States, 2011-2012. *JAMA,* 311(8):806-814, 2014.

540 Aron L and Loprest P. Disability and the Education System. *Children with Disabilities,* 22(1), 2012. http://futureofchildren.org/publications/journals/article/index.xml?journalid=77&articleid=562§ionid=3891 (accessed September 2014).

541 Kann L, Olsen EO, McManus T, et al. Sexual Identity, Sex of Sexual Contacts, and Health-Related Behaviors Among Students in Grades 9–12 — United States and Selected Sites, 2015. *MMWR Surveill Summ* 2016;65(No. SS-9):1–202. DOI: http://dx.doi.org/10.15585/mmwr.ss6509a1. (accessed September 2016).

542 http://www.cdc.gov/nchs/fastats/asthma.htm National Center for Health Statistics. Asthma. In *Centers for Disease Control and Prevention,* 2015. http://www.cdc.gov/nchs/fastats/asthma.htm (accessed September 2016).

543 National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention. Reported STDs in the United States: 2014 National Data for Chlamydia, Gonorrhea, and Syphilis. 2014. 2014. Atlanta, GA: Centers for Disease Control and Prevention, 2015http://www.cdc.gov/std/stats13/std-trends-508.pdf (accessed September 2016).

544 http://www.cdc.gov/teenpregnancy/about/index.htm Reproductive Health: Teen Pregnancy. About Teen Pregnancy. In *Centers for Disease Control and Prevention,* 2016. http://www.cdc.gov/teenpregnancy/about/index.htm (accessed September 2016).

545 Centers for Disease Control and Prevention. Health, United States, 2014. Table 59. Selected health conditions and risk factors, by age: United States, selected years 1988-1994 through 2011-2012. http://www.cdc.gov/nchs/data/hus/hus14.pdf (accessed March 2016).

546 Any Disorder Among Children. In *National Institute of Mental Health.* http://www.nimh.nih.gov/health/statistics/prevalence/any-disorder-among-children.shtml (accessed September 2016).

547 http://www.cdc.gov/nchs/fastats/adhd.htm National Center for Health Statistics. Attention Deficit Hyperactivity Disorder (ADHD). In *Centers for Disease Control,* 2015. http://www.cdc.gov/nchs/fastats/adhd.htm (accessed September 2016).

548 Singh T, Azzazola RA, Corey CG, et al. Tobacco Use Among Middle and High School Students—United States, 2011–2012015. *MMWR,* 65(14):–5, 2015.361–367, 2016. http://www.cdc.gov/mmwr/volumes/65/wr/mm6514a1.htm (accessed September 2016).

549 Substance Abuse and Mental Health Services Administration. *Behavioral Health Barometer: United States, 2015.* HHS Publication No. SMA-16-Baro-2015. Rockville, MD: Substance Abuse and Mental Health Services Administration, 2015.

550 High School YRBS. Tobacco Use. In *Centers for Disease Control and Prevention,* 2016. https://nccd.cdc.gov/Youthonline/App/QuestionsOrLocations.aspx?CategoryId=C02 (accessed September 2016).

551 Healthday. "Addiction Starts Early in American Society, Report Finds. *U.S. News and World Report* July 29, 2011. http://health.usnews.com/health-news/family-health/childrens-health/articles/2011/06/29/addiction-starts-early-in-american-society-report-finds (accessed October 2015).

552 Substance Abuse and Mental Health Services Administration. *Results from the 2013 National Survey on Drug Use and Health: Summary of National Findings.* Rockville, MD. Substance Abuse and Mental Health Services Administration, 2014. http://www.samhsa.gov/data/sites/default/files/NSDUHresultsPDFWHTML2013/Web/NSDUHresults2013.pdf (accessed September 2016).

553 High School YRBS. 2015 Results. In *Centers for Disease Control and Prevention,* 2016. https://nccd.cdc.gov/Youthonline/App/Results.aspx?TT=B&OUT=0&SID=HS&QID=H25&LID=LL&YID=RY&LID2=&YID2=&COL=&ROW1=&ROW2=&HT=&LCT=&FS=&FR=&FG=&FSL=&FRL=&FGL=&PV=&TST=&C1=&C2=&QP=&DP=&VA=CI&CS=Y&SYID=&EYID=&SC=&SO= (accessed September 2016)

554 Losen DJ and Martinez TE. *Out of School & Off Track: The Overuse of Suspensions in American Middle and High Schools.* Los Angeles, CA: UCLA, The Center for Civil Rights Remedies, 2013. https://civilrightsproject.ucla.edu/resources/projects/center-for-civil-rights-remedies/school-to-prison-folder/federal-reports/out-of-school-and-off-track-the-overuse-of-suspensions-in-american-middle-and-high-schools/OutofSchool-OffTrack_UCLA_4-8.pdf

555 http://www2.ed.gov/about/offices/list/ocr/docs/2013-14-first-look.pdf 2013-2014 Civil Rights Data Collection. Key Data Highlights on Equity and Opportunity Gaps in Our Nation's Public Schools. Washington, D.C.: U.S. Department of Education, Office of Civil Rights, 2016. http://www2.ed.gov/about/offices/list/ocr/docs/2013-14-first-look.pdf (accessed September 2016).

556 2013-2014 Civil Rights Data Collection. Key Data Highlights on Equity and Opportunity Gaps in Our Nation's Public Schools. Washington, D.C.: U.S. Department of Education, Office of Civil Rights, 2016. http://www2.ed.gov/about/offices/list/ocr/docs/2013-14-first-look.pdf (accessed September 2016).

557 Balfanz R and Byrnes V. C*hronic Absenteeism: Summarizing What We Know From Nationally Available Data.* Baltimore, MD: Johns Hopkins University Center for Social Organization of Schools, 2012. https://ct.global.ssl.fastly.net/media/W1siZiIsIjIwMTQvMDgvMTUvMjE1dnkya3BzOF9GSU5BTENocm9uaWNBYnNlbnRlZWlzbVJlcG9ydF9NYXkxNi5wZGYiXV0/FINALChronicAbsenteeismReport_May16.pdf.pdf?sha=ffcb3d2b (accessed May 2016).

558 Evers T. *Using Positive Behavioral Interventions & Supports (PBIS) to Help Schools Become More Trauma-Sensitive.* Madison, WI: Wisconsin Department of Public Instruction, n.dno date. http://dpi.wi.gov/sites/default/files/imce/sspw/pdf/mhtraumausingpbis.pdf (accessed September 2016).

559 .Cole SF, Greenwald O'Brien J, Gadd, MG, et al. *Helping Traumatized Children Learn.* Cambridge, MA: Massachusetts Advocates for Children, Harvard Law School, and The Task Force on Children Affected by Domestic Violence, 2009. https://traumasensitiveschools.org/wp-content/uploads/2013/06/Helping-Traumatized-Children-Learn.pdf (accessed September 2016).

560 Ungar L. "Lead Taints Drinking Water in Hundreds of Schools, Day Cares Across USA." *USA Today* March 17, 2016. http://www.usatoday.com/story/news/nation/2016/03/17/drinking-water-lead-schools-day-cares/81220916/ (accessed May 2016).

561 Medicaid Payment for Services Provided without Charge (Free Care). In *Centers for Medicare and Medicaid Services*. http://www.medicaid.gov/federal-policy-guidance/downloads/smd-medicaid-payment-for-services-provided-without-charge-free-care.pdf (accessed September 2016).

562 About School-Based Health Centers. In *California School-Based Health Alliance*. http://www.schoolhealthcenters.org/school-health-centers-in-ca/ (accessed September 2016).

563 Goldman D, Gaudette É. S*trengthening Medicare for 2030: Health and Health Care of Medicare Beneficiaries in 2030.* Washington, DC: Center for Health Policy at Brookings, 2015. http://www.brookings.edu/~/media/Research/Files/Papers/2015/06/04-medicare-2030-paper-series/Medicare2030_Chartbook.pdf

564 Vincent GK, Velkov VA. *The Next Four Decades: The Older Population in the United States: 2010 to 2050.* U.S. Census Bureau, May 2010. http://www.census.gov/prod/2010pubs/p25-1138.pdf (accessed January 2015).

565 Administration of Aging (AoA), Administration for Community Living (ACL), and U.S. Department of Health and Human Services (HHS). *A Profile of Older Americans: 2015*. Washington, D.C.: HHS, 2015. http://www.aoa.acl.gov/Aging_Statistics/Profile/2015/docs/2015-Profile.pdf.

566 AoA, ACL, and HHS, 2015.

567 Centers for Disease Control and Prevention. *The State of Aging & Health in America 2013.* Atlanta, GA: Centers for Disease Control and Prevention, U.S. Department of Health and Human Services, 2013. http://www.cdc.gov/features/agingandhealth/state_of_aging_and_health_in_america_2013.pdf

568 Hunter RH, Sykes K, Lowman SG, Duncan R, Satariano WA, Belza B. Environmental and policy change to support healthy aging. *J Aging Soc Policy*. 2011;23:(4):354-371.

569 http://www.nber.org/papers/w21501

570 Centers for Disease Control and Prevention. *The State of Aging and Health in America, 2013*. Atlanta, GA: Centers for Disease Control and Prevention, 2013.

571 Ibid.

572 Goldman D, Gaudette É. *Strengthening Medicare for 2030: Health and Health Care of Medicare Beneficiaries in 2030.* Washington, DC: Center for Health Policy at Brookings, 2015.

573 Goldman D, Gaudette É. *Strengthening Medicare for 2030: Health and Health Care of Medicare Beneficiaries in 2030.* Washington, DC: Center for Health Policy at Brookings, 2015.

574 Barbour KE, Helmick CG, Boring M, et al. Prevalence of Doctor-Diagnosed Arthritis at State and County Levels — United States, 2014. *MMWR* 65(19), 489-494, 2016. http://www.cdc.gov/mmwr/volumes/65/wr/mm6519a2.htm

575 National Center for Health Statistics, National Vital Statistic System. *10 Leading Causes of Injury Deaths by Age Group Highlighting Unintentional Deaths, United States—2014.* http://www.cdc.gov/injury/images/lc-charts/leading_causes_of_injury_deaths_unintentional_injury_2014_1040w740h.gif (accessed September 2016).

576 Hip Fractures Among Older Adults. In *Centers for Disease Control and Prevention,* Home and Recreational Safety, 2015. http://www.cdc.gov/homeandrecreationalsafety/falls/adulthipfx.html (accessed September 2016).

577 Costs of Falls Among Older Adults. In *Centers for Disease Control and Prevention,* Home and Recreational Safety, 2016. http://www.cdc.gov/homeandrecreationalsafety/falls/fallcost.html (accessed September 2016.

578 2016 Alzheimer's Disease Facts and Figures. In *Alzheimer's Association,* 2016. http://www.alz.org/facts/ accessed September 2016).

579 Alzheimer's Association. 2016 Alzheimer's Disease Facts and Figures. Alzheimer's & Dementia 12(4), 2016. http://www.alz.org/documents_custom/2016-facts-and-figures.pdf.

580 Alzheimer's Association, 2016.

581 Oral Health and Medicare Beneficiaries: Coverage, Out-of-Pocket Spending, and Unmet Need. *Medicare Policy Issue Brief,* June 2012. https://kaiserfamilyfoundation.files.wordpress.com/2013/01/8325.pdf (accessed September 2016).

582 America's Health Rankings Senior Report, 2016. In *America's Health Rankings,* 2016. http://cdnfiles.americashealthrankings.org/SiteFiles/Reports/Final%20Report-Seniors-2016-Edition.pdf (accessed September 2016).

583 National Academies of Sciences, Engineering, and Medicine. *Hearing Health care for Adults: Priorities for Improving Access and Affordability*. Washington, D.C.: The National Academies Press, 2016. http://nationalacademies.org/hmd/Reports/2016/Hearing-Health-Care-for-Adults.aspx?utm_source=HMD+Email+List&utm_campaign=f6d2ada521-Hearing+Health+Care+for+Adults&utm_medium=email&utm_term=0_211686812e-f6d2ada521-180155549.

584 Healthy Aging: Clinical Preventive Services. In *Centers for Disease Control and Prevention,* 2015. http://www.cdc.gov/aging/services/ (accessed September 2016).

585 Galewitz P. "Seniors' Obesity-Counseling Benefit Goes Largely Unused." *Kaiser Health News* November 20, 2014. http://www. medpagetoday.com/PublicHealthPolicy/ Medicare/48753 (accessed June 2015).

586 Percent of Adults Aged 65 and Over Who Had A Flu Shot within the Past Year, 2014. In *Kaiser Family Foundation,* 2016. http://kff.org/other/state-indicator/influenza-vaccines/ (accessed September 2016).

587 Percent of Adults Aged 65 and Over Who Have Ever Had A Pneumonia Vaccine. In Kaiser Family Foundation, 2016. http://kff.org/other/state-indicator/pneumococcal-vaccines/ (accessed September 2016).

588 Influenza: What You Should Know and Do This Flu Season IF you Are 65 Years and Older. In *Centers for Disease Control and Prevention,* 2016. http://www.cdc.gov/flu/about/disease/65over.htm (accessed September 2016).

589 Barrett L. *Home and Community Preferences of the 45+ Population 2014.* Washington, DC: AARP Research Center, 2015. http://www.aarp.org/content/dam/aarp/research/surveys_statistics/il/2015/2014-Home-Community-45plus-res-il.pdf.

590 Johnson RW, Toohey D and Wiener JM. *Meeting the Long Term Care Needs of the Baby Boomers. How Changing Families will Affect Paid Helpers and Institutions.* Washington, D.C.: The Urban Institute, 2007. http://www.urban.org/sites/default/files/alfresco/publication-pdfs/311451-Meeting-the-Long-Term-Care-Needs-of-the-Baby-Boomers.PDF (accessed September 2016).

591 Goldman L and Wolf R. *How Can States Support an Aging Population? Actions Policymakers Can Take.* New York, NY: Milbank Memorial Fund, 2016. http://www.milbank.org/uploads/documents/MMF%20-%20NYAM%20Aging%20Report.pdf. (accessed September 2016).

592 Stevens JA and Burns E. *A CDC Compendium of Effective Fall Interventions: What Works for Community-Dwelling Older Adults.* 3rd ed. Atlanta, GA: Centers for Disease Control and Prevention, National Center for Injury Prevention and Control, 2015. http://www.cdc.gov/homeandrecreationalsafety/pdf/falls/CDC_Falls_Compendium-2015-a.pdf#nameddest=intro.

593 Goldman L and Wolf R, 2016.

594 Goldman L and Wolf R, 2016.

595 Centers for Disease Control and Prevention. Promoting Preventive Services for Adults 50-64: Community and Clinical Partnerships (PPS). Atlanta, GA: Centers for Disease Control and Prevention, 2016. http://www.cdc.gov/aging/pdf/promoting-preventive-services.pdf (accessed September 2016).

596 Rudd R, Aleshire N, Zibbell JE, Gladden RM. Increases in Drug and Opioid Overdose Deaths — United States, 2000–2014. January 2016. *Morbidity and Mortality Weekly* 2016; 64(50);1378-82. http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6450a3.htm?s_cid=mm6450a3_w (accessed July 2016).

597 Record Overdose Deaths. In *Centers for Disease Control and Prevention.* https://www.cdc.gov/drugoverdose/epidemic/ (accessed September 2016).

598 National Institute on Drug Abuse. *Overdose Death Rates.* Bethesda, MD: National Institutes of Health, 2015. https://www.drugabuse.gov/related-topics/trends-statistics/overdose-death-rates (accessed July 2016).

599U.S. Department of Health and Human Services. *The Opioid Epidemic: By the Numbers.* Washington, DC: U.S. Department of Health and Human Services, 2016. http://www.hhs.gov/sites/default/files/Factsheet-opioids-061516.pdf (accessed July 2016).

600 Centers for Disease Control and Prevention. Prescription Opioid Overdose Data. Atlanta, GA: Centers for Disease Control and Prevention, 2016. http://www.cdc.gov/drugoverdose/data/overdose.html (accessed July 2016).

601 Substance Abuse and Mental Health Services Administration, *National Survey on Drug Use and Health, 2014.*

602 Record Overdose Deaths. In *Centers for Disease Control and Prevention.* https://www.cdc.gov/drugoverdose/epidemic/ (accessed September 2016). CDC. Wide-ranging online data for epidemiologic research (WONDER). Atlanta, GA: CDC, National Center for Health Statistics; 2016. Available at http://wonder.cdc.gov.

603 CDC. Wide-ranging online data for epidemiologic research (WONDER). Atlanta, GA: CDC, National Center for Health Statistics; 2016. Available at http://wonder.cdc.gov.

604 U.S. Department of Health and Human Services. The Opioid Epidemic: By the Numbers. Washington, DC: U.S. Department of Health and Human Services, 2016. http://www.hhs.gov/sites/default/files/Factsheet-opioids-061516.pdf (accessed July 2016).

605 Substance Abuse and Mental Health Services Administration, *National Survey on Drug Use and Health, 2014.*

606 Wachino V. *Best Practices for Addressing Prescription Opioid Overdoses, Misuse and Addiction.* Baltimore, MD: Centers for Medicare and Medicaid Services, 2016. https://www.medicaid.gov/federal-policy-guidance/downloads/cib-02-02-16.pdf (accessed July 2016).

607 Sharp MJ, Melnik TA. Poisoning deaths involving opioid analgesics-New York State, 2003-2012. *Morb Mortal Wkly Rep* 2015; 64:377-380.

608 Coolen P, Lima A, Savel J, et al. Overdose deaths involving prescription opioids among Medicaid enrollees—Washington, 2004-2007. *Morb Mortal Wkly Rep.* 2009; 58:1171-1175.

609 Centers for Disease Control and Prevention. Prescribing Data. Atlanta, GA: Centers for Disease Control and Prevention, 2016. https://www.cdc.gov/drugoverdose/data/prescribing.html (accessed July 2016).

610 Chang H, Daubresse M, Kruszewski S, et al. Prevalence and treatment of pain in emergency departments in the United States, 2000 – 2010. *Amer J of Emergency Med* 2014; 32(5): 421-31.

611 Daubresse M, Chang H, Yu Y, Viswanathan S, et al. Ambulatory diagnosis and treatment of nonmalignant pain in the United States, 2000 – 2010. *Medical Care* 2013; 51(10): 870-878.

612 Han B, Hedden SL, Lipari R, et al. Receipt of Services for Behavioral Health Problems: Results from the 2014 National Survey on Drug Use and Health. Substance Abuse and Mental Health Services Administration, 2015. http://www.samhsa.gov/data/sites/default/files/NSDUH-DR-FRR3-2014/NSDUH-DR-FRR3-2014/NSDUH-DR-FRR3-2014.htm (accessed September 2016).

613 National Institute on Drug Abuse. Prescription opioid use is a risk factor for heroin use. Bethesda, MD: National Institutes of Health, 2015. https://www.drugabuse.gov/publications/research-reports/relationship-between-prescription-drug-heroin-abuse/prescription-opioid-use-risk-factor-heroin-use (accessed July 2016).

614 Muhuri PK, Gfroerer JC and Davies MC. Substance Abuse and Mental Health Services Administration. Associations of nonmedical pain reliever use and initiation of heroin use in the United States. *CBHSQ Data Review,* 2013. http://www.samhsa.gov/data/2k13/DataReview/DR006/nonmedical-pain-reliever-use-2013.pdf (accessed September 2016).

615 National Institute on Drug Abuse. Overdose Death Rates. Bethesda, MD: National Institutes of Health, 2015. https://www.drugabuse.gov/related-topics/trends-statistics/overdose-death-rates (accessed July 2016).

616 Rudd R, Aleshire N, Zibbell JE, Gladden RM. Increases in Drug and Opioid Overdose Deaths — United States, 2000–2014. January 2016. *Morbidity and Mortality Weekly* 2016; 64(50);1378-82. http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6450a3.htm?s_cid=mm6450a3_w (accessed July 2016).

617 U.S. Department of Health and Human Services. The Opioid Epidemic: By the Numbers. Washington, DC: U.S. Department of Health and Human Services, 2016. http://www.hhs.gov/sites/default/files/Factsheet-opioids-061516.pdf (accessed July 2016).

618 Centers for Disease Control and Prevention. Heroin Overdose Data. Atlanta, GA: Centers for Disease Control and Prevention, 2016. https://www.cdc.gov/drugoverdose/data/heroin.html (accessed July 2016).

619 Birnbaum HG, White AG, Schiller M, Waldman T. , Cleveland JM, Roland CL. Societal Costs of Prescription Opioid Abuse, Dependence, and Misuse in the United States. *Pain Medicine,* 12: 657–667, 2011. http://www.asam.org/docs/advocacy/societal-costs-of-prescription-opioid-abuse-dependence-and-misuse-in-the-united-states.pdf (accessed July 2016).

620 Birnbaum HG, White AG, Schiller M, Waldman T. , Cleveland JM, Roland CL. Societal Costs of Prescription Opioid Abuse, Dependence, and Misuse in the United States. *Pain Medicine,* 12: 657–667, 2011. http://www.asam.org/docs/advocacy/societal-costs-of-prescription-opioid-abuse-dependence-and-misuse-in-the-united-states.pdf (accessed July 2016).

621 The Network for Public Health Law. Reducing Overdose via Provider Education. St. Paul, MN: The Network for Public Health Law, 2016. https://www.networkforphl.org/_asset/t00t0q/Issue-Brief-Provider-Training-of-SUD.pdf (accessed July 2016).

622 Greenwood-Erickson M, Weiner S, Schuur, J. Recommendations to Optimize Prescription Drug Monitoring Programs for use in Emergency Departments. Boston, MA: Brigham and Women's Hospital, 2016. http://emhp.bwh.harvard.edu/wp-content/uploads/2016/01/PDMP-Recommendations-Policy-Brief_final-secure.pdf (accessed July 2016).

623 The Network for Public Health Law. Legal Interventions to Reduce Overdose Mortality: Naloxone Access and Overdose Good Samaritan Laws. St. Paul, MN: The Network for Public Health Law, 2016. https://www.networkforphl.org/_asset/qz5pvn/network-naloxone-10-4.pdf (accessed July 2016).

624 Flegal KM, Kruszon-Moran D, Carroll MD, et al. Trends in obesity among adults in the United States, 2005 to 2014. *JAMA,* 315(21): 284-2291, 2016.

625 Ogden CL, et al. Prevalence of obesity among adults and youth: United States, 2011-2014. NCHS Data Brief, No. 219, 2015.

626 Freedman DS, Kettel Khan L, Serdula MK, et al. The relation of Childhood BMI to adult Adult Adiposity: The Bogalusa Heart Study. *Pediatrics,* 115(1): 22-27, 2005.

627 The Writing Group for the SEARCH for Diabetes in Youth Study, et al. Incidence of diabetes in youth in the United States. *JAMA,* 297(24): 2716-2724, 2007.

628 The Writing Group for the SEARCH for Diabetes in Youth Study, et al. Incidence of diabetes in youth in the United States. *JAMA,* 297(24): 2716-2724, 2007. Moore SC, Lee IM, Weiderpass E, et al. Association of leisure-time physical activity with risk of 26 types of cancer in 1.44 million adults. *JAMA Intern Med,* [Epub ahead of print], 2016. http://archinte.jamanetwork.com/article.aspx?articleid=2521826 (accessed May 2016).

629 Cawley J and Meyerhoefer C. The medical Medical Care Costs of Obesity: instrumental variables An Instrumental Variables Approach. Journal of Health Economics, 31(1): 219-230, 2012; And Finkelstein, Trogdon, Cohen, et al. Annual medical spending attributableMedical Spending Attributable to Obesity. *Health Affairs,* 38(5): w822-w831, 2009.

630 Ogden CL, Carroll MD, Lawman HG, et al. Trends in obesity prevalence among children and adolescents in the United States, 1988-1994 through 2013-2014. *JAMA,* 315(21): 2292-2299, 2016.

631 Trust for America's Health (2016). "New Report Finds Adult Obesity Rates Decreased in Four States". [Press Release]. http://tfah.org/newsroom/releases/?releaseid=345 (accessed September 2016).

632 Centers for Disease Control and Prevention. *Diabetes: At a Glance 2016.* Atlanta, GA, Centers for Disease Control and Prevention, 2016. http://www.cdc.gov/chronicdisease/resources/publications/aag/pdf/2016/diabetes-aag.pdf (accessed September 2016).

633 Centers for Disease Control and Prevention. *National Diabetes Statistics Report, 2014.* Atlanta, GA: Centers for Disease Control and Prevention, 2014. http://www.cdc.gov/diabetes/data/statistics/2014statisticsreport.html

634 High Blood Pressure. In *Centers for Disease Control and Prevention,* 2016. https://www.cdc.gov/bloodpressure/ (accessed September 2016).

635 Mission: Readiness. *Still Too Fat to Fight.* Washington, D.C.: Mission: Readiness, 2012. http://missionreadiness.s3.amazonaws.com/wp-content/uploads/Still-Too-Fat-To-Fight-Report.pdf (accessed June 2015).

636 Mission: Readiness. *Retreat is Not An Option for Kansas. Healthier School Meals Protect Our Children and Our Country.* Washington, D.C.: Mission: Readiness, 2014. http://missionreadiness.s3.amazonaws.com/wp-content/uploads/MR-NAT-Retreat-Not-an-Option2.pdf (accessed May 2016).

637 Flegel, K.M., Kruszon-Moran D., Carroll M., et al. Trends in obesity among adults in the United States, 2005 to 2014. *JAMA*. 315(2): 2284-2291, 2016.

638 Ogden CL, Carroll MD, Lawman HG, et al. Trends in obesity prevalence among children and adolescents in the United States, 1988-1994 through 2013-2014. *JAMA,* 315(21): 2292-2299, 2016.

639 Trust for America's Health and Robert Wood Johnson Foundation. *F as in Fat: How Obesity Threatens America's Future – 2011.* Washington, D.C.: Trust for America's Health, 2011. http://www.tfah.org/report/88/ (accessed July 2012). Based on data using the previous BRFSS methodology in use from 2008-2010.

640 .Singh T, Arrazola RA, Corey CG, et al. .Tobacco Use Among Middle and High School Students—United States, 2011–2015. *MMWR,* 65(14): 361–73677, 2016. http://www.cdc.gov/mmwr/volumes/65/wr/mm6514a1.htm?s_cid=mm6514a1_w (accessed September 2016).

641 Campaign for Tobacco Free Kids. *Toll of Tobacco in the United States.* Washington, DC: Campaign for Tobacco Free Kids, July 2016. https://www.tobaccofreekids.org/research/factsheets/pdf/0072.pdf.

642 U.S. Department of Health and Human Services. Atlanta The Health Consequences of Smoking—50 Years of Progress: A Report of the Surgeon General. Rockville, MD: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, 2014.

643 Clarke TC, Ward BW, Freeman G, et al. Early Release of Selected Estimates Based on Data From the January-March 2015 National Health Interview Survey. Atlanta, GA: Centers for Disease Control and Prevention, 2016. http://www.cdc.gov/nchs/data/nhis/earlyrelease/earlyrelease201509.pdf (accessed September 2016).

644 Singh T, Arrazola RA, Corey CG, et al. Tobacco Use Among Middle and High School Students—United States, 2011–2015. *MMWR,* 65(14): 361–3677, 2016. http://www.cdc.gov/mmwr/volumes/65/wr/mm6514a1.htm?s_cid=mm6514a1_w (accessed September 2016).

645 http://www.cdc.gov/tobacco/data_statistics/fact_sheets/youth_data/tobacco_use/ Smoking & Tobacco Use. Youth and Tobacco Use. In *Centers for Disease Control and Prevention,* 2016. http://www.cdc.gov/tobacco/data_statistics/fact_sheets/youth_data/tobacco_use/ (accessed September 2016).

646 Bunnell RE, Agku IT, Arrazola Ra, et al. Intentions to smoke cigarettes among never-smoking US middle and high school electronic cigarette users: National Youth Tobacco Survey, 2011-2013. *Nicotine Tab Res,* 14(2):228-235, 2015.

647 Barrington-Trimis JL, Berhane K, Unger JB, et al. Psychosocial factors associated with adolescent electronic cigarette and cigarette use. *Pediatrics,* 136(2): 308-317, 2015.

648 Bach L. Toll of Tobacco in the United States of America. Washington, DC: Campaign for Tobacco Free Kids, 2016. https://www.tobaccofreekids.org/research/factsheets/pdf/0072.pdf (accessed September 2016).

649 U.S. Department of Health and Human Services. The Health Consequences of Smoking—50 Years of Progress: A Report of the Surgeon General. Rockville, MD: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, 2014.

650 U.S. Department of Health and Human Services. The Health Consequences of Smoking—50 Years of Progress: A Report of the Surgeon General. AtlantaRockville, MD: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, 2014.

651 Substance Abuse and Mental Health Services Administration. (SAMHSA). *Behavioral Health Barometer: United States, 2015.* HHS Publication No. SMA–4895.16-Baro-2015. Rockville, MD: SAMHSA, 2015. http://www.samhsa.gov/data/sites/default/files/NSDUH-DetTabs-2015/NSDUH-DetTabs-2015/NSDUH-DetTabs-2015.pdf (accessed September 2016).

652 U.S. Department of Health and Human Services. The Health Consequences of Smoking—50 Years of Progress: A Report of the Surgeon General. Atlanta: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, 2014

653 Health care costs updated to 2009 dollars, based on data in Behan, DF, et al., Economic Effects of Environmental Tobacco Smoke, Society of Actuaries, March 31, 2005, https://www.soa.org/Research/Research-Projects/LifeInsurance/research-economic-effect.aspx

654 Campaign for Tobacco Free Kids. *Benefits & Savings from each One Percentage Point Decline in the USA Smoking Rates.* Washington, DC: Campaign for Tobacco Free Kids, 2016.

655 Substance Abuse and Mental Health Services Administration, Center for Behavioral Health Statistics and Quality. The NSDUH Report: Adults With Mental Illness or Substance Use Disorder Account for 40 Percent of All Cigarettes Smoked. March 20, 2013. Rockville, MD.

656 Current Cigarette Smoking Among Adults—United States, 2005–2014. *Morbidity and Mortality Weekly Report,* 2015.

657 .Boonn A. *Raising Cigarette Taxes Reduces Smoking, Especially Among Kids.* Washington, DC: Campaign for Tobacco-Free Kids, 2016. https://www.tobaccofreekids.org/research/factsheets/pdf/0146.pdf (accessed September 2016).

658 Campaign for Tobacco Free Kids. *Increasing the Sale Age for Tobacco Products to 21.* Washington, DC: Campaign for Tobacco Free Kids, 2016.

659 Institute of Medicine. *Public Health Implications of Raising the Minimum Age of Legal Access to Tobacco Products.* Washington, DC: Institute of Medicine, March 2015.

660 Campaign for Tobacco Free Kids. *Increasing the Sale Age for Tobacco Products to 21.* Washington, DC: Campaign for Tobacco Free Kids, 2016. https://www.tobaccofreekids.org/research/factsheets/pdf/0376.pdf.

661 U.S. Department of Housing and Urban Development, (2012). HUD, HHS and Health Groups Announce New Smoke-Free Housing Tools. [Press Release]. http://portal.hud.gov/hudportal/HUD?src=/press/press_releases_media_advisories/2012/HUDNo.12-106 (accessed July 20152016).

662 King BA, Peck RM and Babb BD. National and State Cost Savings Associated with Prohibiting Smoking in Subsidized and Public Housing in the United States. *Prev Chronic* 11(E171): 1-11, 2014. http://www.cdc.gov/pcd/issues/2014/14_0222.htm

663 "The Facts on the FDA's New Tobacco Rule." Food and Drug Administration, 12 Aug. 2016. http://www.fda.gov/ForConsumers/ConsumerUpdates/ucm506676.htm (accessed September 2016).

664 American Cancer Society. Cancer Facts & Figures 2016. Atlanta: American Cancer Society; 2016. http://www.cancer.org/acs/groups/content/@research/documents/document/acspc-047079.pdf (accessed July 2016).

665 Ibid.

666 Ibid.

667 United States Census Bureau. 1 Million Milestone. United States Census Bureau. 2014. http://www.census.gov/content/dam/Census/newsroom/releases/2015/cb15-89_graphic.jpg (accessed July 2016).

668 American Cancer Society. Cancer Facts & Figures 2016. Atlanta: American Cancer Society; 2016. http://www.cancer.org/acs/groups/content/@research/documents/document/acspc-047079.pdf (accessed July 2016).

669 National Cancer Institute. Prevention. Bethesda, MD: National Cancer Institute, 2015. http://www.cancer.gov/research/areas/prevention (accessed July 2016).

670 Mariotto AB, Yabroff KR, Shao Y, Feuer EJ, and Brown ML. Projections of the Cost of Cancer Care in the United States: 2010-2020. Jan 19, 2011, *JNCI,* Vol. 103, No. 2.

671 American Cancer Society. Cancer Facts & Figures 2016. Atlanta: American Cancer Society; 2016. http://www.cancer.org/acs/groups/content/@research/documents/document/acspc-047079.pdf (accessed July 2016). Ibid.

672 Ibid.

673 Ibid.

674 National Cancer Institute. Obesity and Cancer Risk. Bethesda, MD: National Cancer Institute, 2012. http://www.cancer.gov/about-cancer/causes-prevention/risk/obesity/obesity-fact-sheet (accessed July 2016).

675 Wang YC, McPherson K, Marsh T, et al. Health and economic burden of the projected obesity trends in the USA and the UK. *The Lancet.* 2011 Sep 2;378(9793):815-25. National Cancer Institute. Obesity and Cancer Risk. Bethesda, MD: National Cancer Institute, 2012. http://www.cancer.gov/about-cancer/causes-prevention/risk/obesity/obesity-fact-sheet (accessed July 2016).

676 National Cancer Institute. Obesity and Cancer Risk. Bethesda, MD: National Cancer Institute, 2012. http://www.cancer.gov/about-cancer/causes-prevention/risk/obesity/obesity-fact-sheet (accessed July 2016).Ibid

677 Wang YC, McPherson K, Marsh T, et al. Health and economic burden of the projected obesity trends in the USA and the UK. *The Lancet.* 2011 Sep 2;378(9793):815-25. Ibid

678 Bradley CJ, Lansdorp-Vogelaar I, Yabroff KR, et al. Productivity Savings from Colorectal Cancer Prevention and Control Strategies. *American Journal of Preventive Medicine* 41, (2): e5-e14, 2011.

679 The White House. "Fact Sheet: Investing in the National Cancer Moonshot." 2016. https://www.whitehouse.gov/the-press-office/2016/02/01/fact-sheet-investing-national-cancer-moonshot (accessed September 2016).

680 American Cancer Society. Cancer Facts & Figures 2016. Atlanta: American Cancer Society; 2016. http://www.cancer.org/acs/groups/content/@research/documents/document/acspc-047079.pdf (accessed July 2016).

681 Dobbins D and Ossip D. Society for Research on Nicotine and Tobacco and Truth Initiative, 2016. http://truthinitiative.org/sites/default/files/NIH%20RFI%20Cancer%20Moonshot%20FINAL_07.01.16.pdf (accessed July 2016).

682 Viens LJ, Henley SJ, Watson M, et al, Human papillomavirus–associated cancers—United States, 2008–2012. *MMWR Morb Mortal Wkly Rep,* 65(26):661–666, 2016.

683 Reagan-Steiner S, Yankey D, Jeyarajah J, et al. National, Regional, State, and Selected Local Area Vaccination Coverage Among Adolescents Aged 13–17 Years — United States, 2015. *MMWR Morb Mortal Wkly Rep,* 65:850–858, 2016. The Henry J. Kaiser Family Foundation. The HPV Vaccine: Access and Use in the U.S. The Henry J. Kaiser Family Foundation, 2015. http://kff.org/womens-health-policy/fact-sheet/the-hpv-vaccine-access-and-use-in/ (accessed July 2016).

684 National Cancer Institute. Accelerating HPV Vaccine Uptake: Urgency for Action to Prevent Cancer. Bethesda, MD. National Cancer Institute, 2013. http://deainfo.nci.nih.gov/advisory/pcp/annualReports/HPV/Part3Goal1.htm#sthash.pPlZpUYI.dpbs (accessed September 2016).

685 Centers for Disease Control and Prevention. HIV Surveillance Report, 2014; vol. 26, 2015. http://www.cdc.gov/hiv/library/reports/surveillance/ (accessed September 2016).

686 HIV in the United States: At a Glance. In *Centers for Disease Control and Prevention,* June 2016. http://www.cdc.gov/hiv/statistics/overview/ataglance.html (accessed September 2016).

687 Centers for Disease Control and Prevention, June 2016.

688 9 in 10 New U.S. HIV Infections Come From People Not Receiving Care. *HIV/AIDS News.* February 23, 2015. https://aidsinfo.nih.gov/news/1540/from-cdc-9-in-10-new-us-hiv-infections-come-from-people-not-receiving-hiv-care (accessed November 2015).

689 HIV Among Youth. In Centers for Disease Control and Prevention. http://www.cdc.gov/hiv/risk/age/youth/index.html?s_cid=tw_std0141316 (accessed November 2015).

690 Garcia J, Parker C, Parker RG, et al. Psychosocial implications of homophobia and HIV stigma in social support networks. *Health Edcu Behav,* 43(2): 217-225, 2016 [Epub 2015 Aug 26].

691 Cahill S, Valadez R, and Ibarrola S. Community-based HIV prevention interventions that combat anti-gay stigma for men who have sex with men and for transgender women. *J Pub Health Policy,* 2012. doi:10.1057/jphp.2012.

692 Russell S, Ryan C, Toomey RB, et al. Lesbian, Gay, Bisexual, and Transgender Adolescent School Victimization: Implications for Young Adult Health and Adjustment. *School Health,* 81(5): 223-230, 2011.

693 Zibbell JE, Iqbal K, Patel RC, et al. Increases in Hepatitis C Virus Infection Related to Injection Drug Use Among Persons Aged ≤30 Years — Kentucky, Tennessee, Virginia, and West Virginia, 2006–2012. *MMWR,* 64(17): 453-458, 2015. http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6417a2.htm (accessed November 2015).

694 Today's Heroin Epidemic. In *Centers for Disease Control and Prevention.* http://www.cdc.gov/vitalsigns/heroin/ (accessed November 2015).

695 Surveillance for Viral Hepatitis – United States, 2014. In *Centers for Disease Control and Prevention.* http://www.cdc.gov/hepatitis/statistics/2014surveillance/commentary.htm#hepatitisC (accessed September 2016).

696 Zibbell JE, et al, 453-458, 2015.

697 Interventions to Reduce Sexual Risk Behaviors or Increase Protective Behaviors to Prevent Acquisition of HIV in Men Who Have Sex with Men: Individual-, Group-, and Community-Level Behavioral Interventions. In *The Community Guide.* http://www.thecommunityguide.org/hiv/mensexmen.html (accessed December 2013).

698 Trust for America's Health. *Issue Brief: Ending the HIV Epidemic Among Gay Men in the United States.* Washington, D.C.: Trust for America's Health, 2012. http://healthyamericans.org/report/99 (September 2016).

699 Trust for America's Health. *Addressing the Social Determinants of Health Inequities Among Gay Men and Other Men Who Have Sex With Men in the United States.* Washington, DC: Trust for America's Health, December 2014.

700 State Medicaid Coverage of Routine HIV Screening. In *The Henry J. Kaiser Family Foundation,* 2014. http://kff.org/hivaids/fact-sheet/state-medicaid-coverage-of-routine-hiv-screening/ (accessed October 2015).

701 Abdul-Quader A, Feelemeyer J, Modi S, et al. Effectiveness of Structural-Level Needle/Syringe Programs to Reduce HCV and HIV Infection Among People Who Inject Drugs: A Systematic Review. *AIDS and Behavior,* 17(9): 2878-2892, 2013.

702 Institute of Medicine. *Preventing HIV Infection among Injecting Drug Users in High Risk Countries.* Washington, D.C.: The National Academies, 2006.

703 World Health Organization. *Policy Brief: Provision of Sterile Injecting Equipment to Reduce HIV Transmission.* Geneva, Switzerland: World Health Organization, 2004. http://www.who.int/hiv/pub/advocacy/en/provisionofsterileen.pdf (accessed October 2015).

704 Sterile Syringe Access. In *Drug Policy Alliance.* http://www.drugpolicy.org/sites/default/files/DPA_Fact_Sheet_Sterile_Syringe_Access_Feb2014.pdf (accessed November 2015).

705 Centers for Disease Control and Prevention. Syringe Exchange Programs – United States, 2008. *MMWR,* 59(45): 1487-1491, 2010. http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5945a4.htm/Syringe-Exchange-Programs-United-States-2008 (accessed September 2016).

706 The antibiotic alarm. *Nature,*495(7440):141, 2013. http://www.nature.com/polopoly_fs/1.12579!/menu/main/topColumns/topLeftColumn/pdf/495141a.pdf (accessed September 2016).

707 Antibiotic/Antimicrobial Resistance. In *Centers for Disease Control and Prevention,* 2016. https://www.cdc.gov/drugresistance/ (accessed September 2016).

708 Centers for Disease Control and Prevention. *Antibiotic Resistance Threats in the United States, 2013.* Atlanta, GA: Centers for Disease Control and Prevention, 2013.

709 http://www.cdc.gov/media/releases/2016/p0303-superbugs.html

710 Fleming-Dutra KE, Hersh AL, Shapiro DJ, et al. Prevalence of inappropriate antibiotic prescriptions among US ambulatory care visits, 2010–2011. *JAMA,* 315(17): 1864-1873, 2016.

711 Spellberg B, Gilbert DN. The future of antibiotics and resistance: a tribute to a career of leadership by John Bartlett. *Clin Infect Dis.* 2014;59 (suppl 2):S71–S75.

712 Marshall, B. M., and Levy, S. B. 2011. Food Animals and Antimicrobials: Impacts on Human Health. Clinical *Microbiology Reviews,* 24(4):718–33. doi:10.1128/ CMR.00002-11.

713 Daghrir, R., and Drogui, P. 2013. Tetracycline Antibiotics in the Environment: a Review. *Environmental Chemistry Letters,* 11(3):209–227. Retrieved from http://link.springer.com/ 10.1007/s10311-013-0404-8.

714 Ibid.

715 Michael Hay et al., "Clinical Development Success Rates for Investigational Drugs," *Nature Biotechnology* 32 (2014): 40–51, doi:10.1038/nbt.2786.

716 National Vaccine Advisory Committee. Assessing the State of Vaccine Confidence in the United States: Recommendations from the National Vaccine Advisory Committee. Washington, DC: National Vaccine Advisory Committee, 2015.

717 Williams WW, Lu P, O'Halloran A, et al. Surveillance of Vaccination Coverage Among Adult Populations — United States, 2014. *MMWR Surveill Summ* 2016;65(No. SS-1):1–36. DOI: http://dx.doi.org/10.15585/mmwr.ss6501a1

718 Lindley MC, Wortley PM, Winston CA, Bardenheier BH. The Role of Attitudes in Understanding Disparities in Adult Influenza Vaccination. *American Journal of Preventive Medicine,* 31(4), 2006.

719 Centers for Disease Control and Prevention, National Center for Health Statistics and National Center for Environmental Health, National Health and Nutrition Examination Survey. America's Children and Environmental Health, Third Edition, Updated October 2015.

720 HealthyPeople.gov. Environmental Health. In HealthPeople.gov, 2016. https://www.healthypeople.gov/2020/topics-objectives/topic/environmental-health (accessed September 2016).

721 Transande L and Liu Y. Reducing the Staggering Costs of Environmental Disease in Children, Estimated at $76.6 Billion in 2008. *Health Affairs,* 30(5): 863-870, 2011. http://content.healthaffairs.org/content/early/2011/05/02/hlthaff.2010.1239.abstract (accessed September 2016).

722 Aizer A and Currie J. The Intergenerational Transmission of Inequality: Maternal Disadvantage and Health at Birth. *Science,* 344(6186): 856-861, 2014. https://wws.princeton.edu/system/files/research/documents/Science-2014-Aizer-856-61.pdf (accessed July 2016).

723 Currie J, Zivin JG, Mullins J, et al. What Do We Know About Short- and Long-Term Effects of Early-Life Exposure to Pollution? *Annu Rev Resour Econ,* 6: 1.1-1.31, 2014. http://www.princeton.edu/~jcurrie/publications/What_Do_We_Know_About_Short_and_Long_Term_Effects_of_Early_Life_Exposure_To_Pollution.pdf (accessed July 2016).

724 Centers for Disease Control and Prevention. Blood Lead Levels in Children Aged 1–5 Years — United States, 1999–2010. *MMWR,* 62(13): 245-248, 2013.

725 Lead Prevention Tips. In *Centers for Disease Control and Prevention,* 2014. https://www.cdc.gov/nceh/lead/tips.htm (accessed September 2016).

726 “TFAH Calls for Urgent Action in Flint, MI, Jackson, MS and Renewed National Priority on Environmental Health”. Trust for America’s Health February 2, 2016. http://healthyamericans.org/newsroom/releases/?releaseid=340 (accessed September 2016).

727 Raymond J, Wheeler W, Brown MJ. Lead Screening and Prevalence of Blood Lead Levels in Children 1-2 Years– Child Blood Lead Surveillance, United States, 2002-2010 and National Health and Nutrition Examination Survey, Unite States, 1999-2010. *MMWR,* 63(02): 36-42, 2014.

728 Lead Screening in Children. In *NCQA,* no date. http://www.ncqa.org/report-cards/health-plans/state-of-health-care-quality/2015-table-of-contents/lead-screening (accessed September 2016).

729 National Institute of Environmental Health Sciences. *Asthma and Its Environmental Triggers.* Research Triangle Park, NC: National Institute 2012.of Health, 2012. https://www.niehs.nih.gov/health/assets/docs_a_e/asthma_and_its_environmental_triggers_508.pdf (accessed September 2016).

730 Asthma’s Impact on the Nation. Data form the CDC National Asthma Control Program. In *Centers for Disease Control and Prevention,* 2012. http://www.cdc.gov/asthma/impacts_nation/asthmafactsheet.pdf (accessed July 2015).

731 Asthma Triggers: Gain Control. In *U.S. Environmental Protection Agency.* http://www.epa.gov/asthma/triggers.html (accessed July 2015).

732 Arbes SJ Jr, et al. 2003. House dust mite allergen in U.S. beds: Results from the First National Survey of Lead and Allergens in Housing. *J Allergy Clin Immunol* 111(2):408-414 Wright LS and Phipatanakul W. Environmental Remediation in the Treatment of Allergy and Asthma: Latest Update. *Current Allergy and Asthma Report* 14(419) doi:10.1007/s11882-014-0419-7, 2014.

733 Arbes SJ Jr, et al. 2003. House dust mite allergen in U.S. beds: Results from the First National Survey of Lead and Allergens in Housing. *J Allergy Clin Immunol* 111(2):408-414

734 Soni A. Top Five *Most Costly Conditions among Children, Ages 0-17, 2012: Estimates for the U.S. Civilian Noninstitutionalized Population.* Statistical Brief # 472. Medical Expenditure Panel Survey. Washington, DC: Agency for Healthcare Research and Quality, 2015. https://meps.ahrq.gov/data_files/publications/st472/stat472.pdf.

735 Center on the Developing Child at Harvard University. T*he Foundations of Lifelong Health Are Built in Early Childhood.*, 2010. http://developingchild.harvard.edu/wp-content/uploads/2010/05/Foundations-of-Lifelong-Health.pdf (accessed October 2014).

736 Wilson KM, Klein JD, Blumkin AK, et al. Tobacco-smoke exposure in children who live in multiunit housing. Pediatrics 127(1):85-92, 2010.

737 Smoking & Tobacco Use. Secondhand Smoke (SHS) Facts. In Centers for Disease Control and Prevention, 2016. http://www.cdc.gov/tobacco/data_statistics/fact_sheets/secondhand_smoke/general_facts/ (accessed September 2016).

738 Aizer A and Currie J. The Intergenerational Transmission of Inequality: Maternal Disadvantage and Health at Birth. *Science,* 344(6186): 856-861, 2014.

739 Brownfields and Land Revitalization. In *U.S. Environmental Protection Agency.* http://www.epa.gov/swerosps/bf/publichealth/index.html (accessed July 2015).

740 Gould E. Childhood Lead Poisoning: Conservative Estimates of the Social and Economic Benefits of Lead Hazard Control. *Environ Health Perspect,* 117(7): 1162-1167, 2009.

741 Sommer et al. Boston Children’s Hospital Community Asthma Initiative Replication Manual: Needs Assessment, Implementation and Evaluation. Boston, MA: Boston Children’s Hospital, 2013.

742 Lead. Advisory Committee on Childhood Lead Poisoning Prevention (ACCLPP). In *Centers for Disease Control and Prevention,* 2012. https://www.cdc.gov/nceh/lead/acclpp/acclpp_main.htm (accessed September 2016).

743 American Academy of Pediatrics. Prevention of Childhood Lead Toxicity. *Pediatrics.* 2016;138(1):e20161493

744 The Community Guide. Asthma Control: Home-Based Multi-Trigger, Multicomponent Environmental Interventions. Atlanta, GA: The Community Guide, 2008. http://www.thecommunityguide.org/asthma/multicomponent.html (accessed September 2016).

745 U.S. Department of Housing and Urban Development, (2012). HUD, HHS and Health Groups Announce New Smoke-Free Housing Tools. [Press Release]. http://portal.hud.gov/hudportal/HUD?src=/press/press_releases_media_advisories/2012/HUDNo.12-106 (accessed July 20152016).

746 King BA, Peck RM and Babb BD. National and State Cost Savings Associated with Prohibiting Smoking in Subsidized and Public Housing in the United States. *Prev Chronic* 11(E171): 1-11, 2014. http://www.cdc.gov/pcd/issues/2014/14_0222.htm

747 Centers for Disease Control and Prevention. National Environmental Public Health Tracking Network. Atlanta, GA: Centers for Disease Control and Prevention, n.d.

748 Centers for Disease Control and Prevention. Climate Effects on Health. Atlanta, GA: Centers for Disease Control and Prevention, 2014. Available at http://www.cdc.gov/climateandhealth/effects/default.htm

749 U.S. Global Change Research Program. The Impacts of Climate Change on Human Health in the United States: A Scientific Assessment. Crimmins, A., J. Balbus, J.L. Gamble, C.B. Beard, J.E. Bell, D. Dodgen, R.J. Eisen, N. Fann, M.D. Hawkins, S.C. Herring, L. Jantarasami, D.M. Mills, S. Saha, M.C. Sarofim, J. Trtanj, and L. Ziska, Eds. U.S. Global Change Research Program, Washington, DC, 2016. http://dx.doi.org/10.7930/J0R49NQX (accessed September 2016).

750 Centers for Disease Control and Prevention. Climate Effects on Health. Atlanta, GA: Centers for Disease Control and Prevention, 2014. Available at http://www.cdc.gov/climateandhealth/effects/default.htm

751 U.S. Global Change Research Program. The Impacts of Climate Change on Human Health in the United States: A Scientific Assessment. Crimmins, A., J. Balbus, J.L. Gamble, C.B. Beard, J.E. Bell, D. Dodgen, R.J. Eisen, N. Fann, M.D. Hawkins, S.C. Herring, L. Jantarasami, D.M. Mills, S. Saha, M.C. Sarofim, J. Trtanj, and L. Ziska, Eds. U.S. Global Change Research Program, Washington, DC, 2016. http://dx.doi.org/10.7930/J0R49NQX (accessed September 2016).

752 U.S. Global Change Research Program. The Impacts of Climate Change on Human Health in the United States: A Scientific Assessment. Crimmins, A., J. Balbus, J.L. Gamble, C.B. Beard, J.E. Bell, D. Dodgen, R.J. Eisen, N. Fann, M.D. Hawkins, S.C. Herring, L. Jantarasami, D.M. Mills, S. Saha, M.C. Sarofim, J. Trtanj, and L. Ziska, Eds. U.S. Global Change Research Program, Washington, DC, 2016. http://dx.doi.org/10.7930/J0R49NQX (accessed September 2016). Rey, G., E. Jougla, A. Fouillet, G. Pavillon, P. Bessemoulin, P. Frayssinet, J. Clavel, and D. Hémon, 2007: The impact of major heat waves on all-cause and cause-specific mortality in France from 1971 to 2003. *International Archives of Occupational and Environmental Health,* 80, 615-626, doi:10.1007/s00420-007-0173-4.

753 Centers for Disease Control and Prevention. Climate Effects on Health. Atlanta, GA: Centers for Disease Control and Prevention, 2014. Available at http://www.cdc.gov/climateandhealth/effects/default.htm

754 U.S. Global Change Research Program. The Impacts of Climate Change on Human Health in the United States: A Scientific Assessment. Crimmins, A., J. Balbus, J.L. Gamble, C.B. Beard, J.E. Bell, D. Dodgen, R.J. Eisen, N. Fann, M.D. Hawkins, S.C. Herring, L. Jantarasami, D.M. Mills, S. Saha, M.C. Sarofim, J. Trtanj, and L. Ziska, Eds. U.S. Global Change Research Program, Washington, DC, 2016. http://dx.doi.org/10.7930/J0R49NQX (accessed September 2016).

755 Ibid.

756 Ibid.

757 Ibid.

758 U.S. Global Change Research Program. The Impacts of Climate Change on Human Health in the United States: A Scientific Assessment. Crimmins, A., J. Balbus, J.L. Gamble, C.B. Beard, J.E. Bell, D. Dodgen, R.J. Eisen, N. Fann, M.D. Hawkins, S.C. Herring, L. Jantarasami, D.M. Mills, S. Saha, M.C. Sarofim, J. Trtanj, and L. Ziska, Eds. U.S. Global Change Research Program, Washington, DC, 2016. http://dx.doi.org/10.7930/J0R49NQX (accessed September 2016). United States Environmental Protection Agency. Climate Impacts on Human Health. 2013

759 Brown ME, Antle JM, Backlund P et al. *Climate Change, Global Food Security, and the U.S. Food System.* U.S. Department of Agriculture, 2015. http://www.usda.gov/oce/climate_change/FoodSecurity2015Assessment/FullAssessment.pdf (accessed September 2016). Wheeling Jesuit University / Center for Educational Technologies. Climate Change and Health Effects. http://ete.cet.edu/gcc/?/humanhealth_effects

760 Tagaris, E., K. J. Liao, A. J. DeLucia, L. Deck, P. Amar, and A. G. Russell, 2009: Potential impact of climate change on air pollutionrelated human health effects. *Environmental Science & Technology,* 43, 4979-4988, doi:10.1021/es803650w.

761 Liao, K. J., E. Tagaris, K. Manomaiphiboon, C. Wang, J. H. Woo, P. Amar, S. He, and A. Russell, 2009: Quantification of the impact of climate uncertainty on regional air quality. *Atmospheric Chemistry and Physics,* 9, 865-878, doi:10.5194/acp-9-865-2009.

762 Jacobson, M. Z. On the causal link between carbon dioxide and air pollution mortality. *Geophysical Research Letters,*35, L03809, 2008, doi:10.1029/2007GL031101.

763 National Resources Defense Council. *Health and Climate Change: Accounting for Costs.* Washington, DC: National Resource Defense Council, 2011.

764 Knowlton K, Rotkin-Ellman M, Geballe L, et al. Six climate change–related events in the United States accounted for about $14 billion in lost lives and health costs. *Health Affairs,* 30(11):2167-76, 2011. National Resources Defense Council. *Health and Climate Change: Accounting for Costs.* Washington, DC: National Resource Defense Council, 2011.

765 Melillo JM, Richmond TC, Yohe GW, eds. *Climate Change Impacts in the United States: Third National Climate Assessment.* Washington, DC: US Global Change Research Program; 2014.

766 Bambrick, H. J., A. G. Capon, G. B. Barnett, R. M. Beaty, and A. J. Burton, 2011: Climate change and health in the urban environment: Adaptation opportunities in Australian cities. *Asia-Pacific Journal of Public Health,* 23, 67S-79S, doi:10.1177/1010539510391774

767 Building Resilience Against Climate Effects (BRACE). In *Federal Grants*. http://www.federalgrants.com/Building-Resilience-Against-Climate-Effects-BRACE-41116.html (accessed September 2016).

768 Heintz J, Garrett-Peltier H and Zipperer B. New Jobs – Cleaner Air: Employment Effects Under Planned Changes to the EPA's Air Pollution Rules. Ceres, 2011. http://www.ceres.org/resources/reports/new-jobs-cleaner-air (accessed September 2016).

769 Trust for America's Health and the Environmental Defense Fund. *Saving Lives and Reducing Health Care Costs: How Clean Air Act Rules Benefit The Nation.* 2011.

770 Association of State and Territorial Health Officials. *Public Health Confronts the Mosquito – Developing Sustainable State and Local Mosquito Control Programs.* Association of State and Territorial Health Officials: Washington, DC, 2005. http://www.astho.org/programs/environmental-health/natural-environment/confrontsmosquito/ (accessed September 2016).

771 Chetty R, Stepner M, Abraham S, Lin S, Scuderi B, Turner N, Bergeron A, Cutler D. The Association Between Income and Life Expectancy in the United States, 2001-2014. *Journal of the American Medical Association*. April 2016; 315 (16).

772 Chetty R, Stepner M, Abraham S, Lin S, Scuderi B, Turner N, Bergeron A, Cutler D. The Association Between Income and Life Expectancy in the United States, 2001-2014. *Journal of the American Medical Association*. April 2016; 315 (16).

773 Bahls C. Achieving Equity in Health. Health Affairs, 2011.

774 National Center for Health Statistics. Health, United States, 2015: With Special Feature on Racial and Ethnic Health Disparities—Table 18. Hyattsville, MD: National Center for Health Statistics, 2016

775 Meyer PA, Yoon PW, Kaufmann RB. Introduction: CDC Health Disparities and Inequalities Report — United States, 2013. *Morb Mort Surveil Summ,* 2013; 62(3): 3-5

776 Proctor BD, JL Semega and MA Kollar. *Income and Poverty in the United States: 2016*. Washington , DC: United States Census Bureau, 2016. https://www.census.gov/content/dam/Census/library/publications/2016/demo/p60-256.pdf (accessed September 2016).

777 Wilson, V. "New Census Data Show No Progress in Closing Stubborn Racial Income Gaps." *Working Economics Blog* September 16, 2015. https://www.epi.org/blog/new-census-data-show-no-progress-in-closing-stubborn-racial-income-gaps/ (accessed September 2016). https://www.epi.org/blog/new-census-data-show-no-progress-in-closing-stubborn-racial-income-gaps/

778 DeNavas-Walt C, Proctor BD. *Income and Poverty in the United States: 2014*. Washington , DC: United States Census Bureau, 2015.

779 Cubbin C, Pedregon V, Egerter, S, Braveman P. *Issue Brief 3: Neighborhoods and Health*. Princeton, NJ: Robert Wood Johnson Foundation, Commission to Build a Healthier America, 2008.

780 Powell L, Slater S, and Chaloupka F. The Relationship between Community Physical Activity Settings and Race, Ethnicity and Socioeconomic Status. *Evidence-Based Preventive Medicine,* 1(2): 135-44, 2004.

781 Bell JF, Wilson JS, and Liu GC. Neighborhood Greenness and 2-Year Changes in Body Mass Index of Children and Youth. *American Journal of Preventive Medicine,* 35(6): 547-553, 2008.

782 Why Low-Income and Food Insecure People are Vulnerable to Obesity. In *Food Research and Action Center.* http://frac.org/initiatives/hunger-and-obesity/why-are-low-income-and-food-insecure-people-vulnerable-to-obesity/ (accessed September 2016).

783 Miranda ML, Edwards SE, Keating MH, Paul CJ. Making the Environmental Justice Grade: The Relative Burden of Air Pollution Exposure in the United States. *Int J Environ Res Public Health.* 2011 Jun; 8(6): 1755–1771.

784 Waidmann, TA. *Estimating the Cost of Racial and Ethnic Health Disparities*. Washington, DC: Urban Institute, 2009.

785 Waidmann, TA. *Estimating the Cost of Racial and Ethnic Health Disparities*. Washington, DC: Urban Institute, 2009.

786 LaVeist TA, Gaskin D, Richard P. Estimating the economic burden of racial health inequalities in the United States. *Int J Health Serv*. 2011;41(2):231-8.

787 LaVeist TA, Gaskin D, Richard P. *The Economic Burden Of Health Inequalities in the United States*. Washington, DC: Joint Center for Political and Economic Studies, n.d.

788 Centers for Disease Control and Prevention. *CDC Health Disparities and Inequalities Report — United States, 2013.* Atlanta, GA: CDC, 2013.

789 Centers for Disease Control and Prevention. *Diabetes Report Card 2014*. Atlanta, GA: Centers for Disease Control and Prevention, 2015. http://www.cdc.gov/diabetes/pdfs/library/diabetesreportcard2014.pdf (accessed September 2016).

790 Cancer Facts and Figures for African Americans. In *American Cancer Society*. http://www.cancer.org/research/cancerfactsstatistics/cancer-facts-figures-for-african-americans (accessed September 2016). http://www.cancer.org/research/cancerfactsstatistics/cancer-facts-figures-for-african-americans

791 Hunt BR, Whitman S and Hurlbert MS. Increasing Black: White disparities in breast cancer mortality in the 50 largest cities in the United States. *Cancer epidemiology*. Apr 30;38(2):118-123, 2014.

792 Breast Cancer Rates by Race and Ethnicity. In *Centers for Disease Control and Prevention*. http://www.cdc.gov/cancer/breast/statistics/race.htm (accessed September 2016).

793 Prostate Cancer Rates by Race and Ethnicity. In *Centers for Disease Control and Prevention*. http://www.cdc.gov/cancer/prostate/statistics/race.htm (accessed September 2016).

794 Cervical Cancer Rates by Race and Ethnicity. In Centers for Disease Control and Prevention. http://www.cdc.gov/cancer/cervical/statistics/race.htm (accessed September 2016). Ibid.

795 Centers for Disease Control and Prevention. CDC Health Disparities and Inequalities Report — United States, 2013. Atlanta, GA: CDC, 2013.

796 Sudden Unexpected Infant Death and Sudden Infant Death Syndrome. In *Centers for Disease Control and Prevention.* http://www.cdc.gov/sids/data.htm (accessed September 2016).

797 Centers for Disease Control and Prevention. *Vital Signs: Asthma in the U.S.* Atlanta, GA: Centers for Disease Control and Prevention, 2011. http://www.cdc.gov/vitalsigns/asthma/ (accessed September 2016).n.d.

798 Akinbami LJ, Simon AE and Rossen LM. Changing trends in asthma prevalence among children. *Pediatrics,* 137(1):1-7, 2016.

799 Centers for Disease Control and Prevention. *National Surveillance of Asthma: United States, 2001-2010.* National Center for Health Statistics Data Brief, 2012. http://www.cdc.gov/nchs/data/series/sr_03/sr03_035.pdf (accessed September 2016). Ibid.

800 Most Recent Asthma Data – Mortality. In *Centers for Disease Control and Prevention.* http://www.cdc.gov/asthma/most_recent_data.htm (accessed September 2016).

801 Agency for Healthcare Research and Quality. *2015 National Healthcare Quality and Disparities Report and 5th Anniversary Update on the National Quality Strategy.* Rockville, MD: Agency for Healthcare Research and Quality. AHRQ Pub. No. 16-0015, 2016. http://www.ahrq.gov/sites/default/files/wysiwyg/research/findings/nhqrdr/nhqdr15/2015nhqdr.pdf (accessed September 2016). .

802 2015 National Healthcare Quality and Disparities Report and 5th Anniversary Update on the National Quality Strategy. Rockville, MD: Agency for Healthcare Research and Quality; April 2016. AHRQ Pub. No. 16-0015. http://www.ahrq.gov/sites/default/files/wysiwyg/research/findings/nhqrdr/nhqdr15/2015nhqdr.pdf (accessed September 2016).

803 The Joint Commission. Implicit Bias in Health Care. April 2016. https://www.jointcommission.org/assets/1/23/Quick_Safety_Issue_23_Apr_2016.pdf (accessed September 2016).

804 National Prevention Council. National *Prevention Strategy: Elimination of Health Disparities.* Washington, DC: National Prevention Council, 2014.

805 The Joint Commission. *Implicit Bias in Health Care.* April 2016. https://www.jointcommission.org/assets/1/23/Quick_Safety_Issue_23_Apr_2016.pdf (accessed September 2016).

806 Schanzenbach D, Nunn R, and Bauer L. *The Changing Landscape of American Life Expectancy.* Washington, DC: The Hamilton Project, June 2016.

807 Case A and Deaton A. Rising morbidity and mortality in midlife among white non-Hispanic Americans in the 21st century. Proceedings of the National Academy of Sciences, 112 (49): 15078-15083, 2015.

808 Centers for Disease Control and Prevention. Deaths, percent of total deaths, and death rates for the 15 leading causes of death in 10-year age groups, by Hispanic origin, race for non-Hispanic population and sex: United States, 2014. National Vital Statistics System Leading Causes of Death Tables. 2014.

809 Squires D and Blumenthal D. *Mortality Trends Among Working Age Whites: The Untold Story.* Washington, DC: The Commonwealth Fund, January 2016.

810 Jones CM, Logan J, Gladden RM, Bohm MK. Vital Signs: Demographic and Substance Use Trends Among Heroin Users — United States, 2002–2013. *Morbidity and Mortality Weekly Report:* (64) (26); 719-725, 2015.

811 Gladden, RM. Fentanyl law enforcement submissions and increases in synthetic opioid–involved overdose deaths—27 states, 2013–2014. *MMWR. Morbidity and Mortality Weekly Report* 65, 2016.

812 Jones, CM et al. Trends in Methadone Distribution for Pain Treatment, Methadone Diversion, and Overdose Deaths—United States, 2002–2014. MMWR. *Morbidity and Mortality Weekly Report* 65, 2016.

813 Gladden, RM et al. Fentanyl law enforcement submissions and increases in synthetic opioid–involved overdose deaths—27 states, 2013–2014. *MMWR. Morbidity and Mortality Weekly Report* 65, 2016.

814 Curtin SC, Warner M, Hedegaarrd H. *Suicide Rates for Females and Males by Race and Ethnicity: United States, 1999 and 2014.* Atlanta, GA: Centers for Disease Control and Prevention, 2016.

815 Squires D and Blumenthal D. *Mortality Trends Among Working Age Whites: The Untold Story.* Washington, DC: The Commonwealth Fund, January 2016.

816 Case A and Deaton A. Rising morbidity and mortality in midlife among white non-Hispanic Americans in the 21st century. *Proceedings of the National Academy of Sciences,* 112 (49): 15078-15083, 2015.

817 Squires D and Blumenthal D. *Mortality Trends Among Working Age Whites: The Untold Story.* Washington, DC: The Commonwealth Fund, January 2016.

818 Kaiser Family Foundation. Poverty Rate by Race/Ethnicity. Washington, DC: The Kaiser Family Foundation, 2015.

819 Centers for Disease Control and Prevention. Deaths, percent of total deaths, and death rates for the 15 leading causes of death in 10-year age groups, by Hispanic origin, race for non-Hispanic population and sex: United States, 1999. National Vital Statistics System Leading Causes of Death Tables. 1999.

820 Centers for Disease Control and Prevention. Deaths, percent of total deaths, and death rates for the 15 leading causes of death in 10-year age groups, by Hispanic origin, race for non-Hispanic population and sex: United States, 2014. National Vital Statistics System Leading Causes of Death Tables. 2014.

821 Uchino BN, Cacioppo JT, Kiecolt-Glaser JK. The relationship between social support and physiological processes: a review with emphasis on underlying mechanisms and implications for health. *Psychol Bull,* 119:488–531, 1996.

822 Bearman PS and Moody J. Suicide and friendships among American adolescents. *American Journal of Public Health,* 94:89–95, 2004.

823 Centers for Disease Control and Prevention. Strategic Direction for the Prevention of Suicidal Behavior: Promoting Individual, Family, and Community Connectedness to Prevent Suicidal Behavior. Atlanta, GA: Centers for Disease Control and Prevention, 2008.

824 Bearman PS and Moody J. Suicide and friendships among American adolescents. *American Journal of Public Health,* 94:89–95, 2004.

825 U.S. Department of Health and Human Services (HHS) Office of the Surgeon General and National Action Alliance for Suicide Prevention. 2012 National Strategy for Suicide Prevention: Goals and Objectives for Action. Washington, DC: HHS, September 2012.

826 National Scientific Council on the Developing Child. Establishing a Level Foundation for Life: Mental Health Begins in Early Childhood: Working Paper 6. Updated Edition. Cambridge, MA: National Scientific Council on the Developing Child, 2012.

827 Wilcox HC, Kellam SG, Brown CH, Poduska JM, Ialongo NS, Wang W, Anthony JC. The impact of two universal randomized first- and second-grade classroom interventions on young adult suicide ideation and attempts. *Drug and Alcohol Dependence,* 95 Suppl:S60-73, June 2008.

828 Kellam SG, Brown CH, Poduska JM, Ialongo NS, Wang W, Toyinbo P, Petras H, Ford C, Windham A, Wilcox HC. Effects of a universal classroom behavior management program in first and second grades on young adult behavioral, psychiatric, and social outcomes. *Drug and Alcohol Dependence.* 95 Suppl:S5-S28, June 2008.

829 Belfield C, Bowden AB, Klapp A, Levin H, Shand R, and Zander S. The economic value of social and emotional learning. *Journal of Benefit-Cost Analysis,* 6(3):508-544, 2015.

830 The National Child Traumatic Stress Network. Understanding Child Trauma. Rockville, MD: National Child Traumatic Stress Network. http://www.nctsn.org/sites/default/ files/assets/pdfs/policy_and_the_nctsn_ final.pdf (accessed September 2016).

831 Institute of Medicine. Capturing social and behavioral domains and measures in electronic health records: phase 2. Washington, DC: IOM, 2014.

832 Kessler, RC, Heeringa S, Lakoma MD, et al. The individual-level and societal-level effects of mental disorders on earnings in the United States: results from the National Comorbidity Survey replication. *American Journal of Psychiatry* 165:703-11711, 2008.

833 Soni A. The Five Most Costly Conditions, 2011 Among Children, Ages 0-17, 2012: Estimates for U.S. Civilian Noninstitutionalized Population. Statistical Brief #472. Rockville MD, Agency for Healthcare Research and Quality, 2014. 2015. https://meps.ahrq.gov/data_files/publications/st472/stat472.shtml (accessed 2014September 2016).

834 Insel TR. Assessing the Economic Costs of Serious Mental Illness. The American JournalJournal of Psychiatry 165(6),): 663-665, 2008.

835 Hertz RP and Baker CL. The Impact of Mental Disorders on Work. Pfizer Outcomes Research, 2002.

836 Mental Health By The Numbers. In *National Alliance on Mental Illness,* no date. https://www.nami.org/Learn-More/Mental-Health-By-the-Numbers#sthash.rRCIqyvU.dpufhttps://www.nami.org/Learn-More/Mental-Health-By-the-Numbers#sthash.rRCIqyvU.dpuf (accessed July 2016).

837 Any Disorder Among Children. In *National Institute of Mental Health,* no date. http://www.nimh.nih.gov/health/statistics/prevalence/any-disorder-among-children.shtml (accessed September 2016).

838 Kessler RC, Berglund P, Demler O, et al. Lifetime prevalence and age-of-onset distributions of DSM-IV disorders in the National Comorbidity Survey Replication. *Archives of General Psychiatry,* 62(6), 593-602, 2005.

839 National Institute of Mental Health. "Mental Illness Exacts Heavy Toll, Beginning in Youth.." National Institutes of Health, 2005. June 6 2005. http://www.nimh.nih.gov/news/science-news/2005/mental-illness-exacts-heavy-toll-beginning-in-youth.shtml (accessed July 2016)).

840 Substance Abuse and Mental Health Services Administration. *Results from the 2014 National Survey on Drug Use and Health: Mental Health Findings.* NSDUH Series H-50, HHS Publication No. (SMA) 15-4927. Rockville, Md.;MD: Substance Abuse and Mental Health Services Administration, 20122015. http://www.samhsa.gov/data/sites/default/files/NSDUH-FRR1-2014/NSDUH-FRR1-2014.pdf (accessed September 2016).

841 Use of Mental Health Services and Treatment Among Children. In *National Institutes of Health,* no date. http://www.nimh.nih.gov/statistics/1NHANES.shtml (accessed July 2016).

842 Treatment Advocacy Center. Consequences of Non-Treatment. Arlington, VA: Treatment Advocacy Center, no date. http://www.treatmentadvocacycenter.org/resources/consequences-of-lack-of-treatment/violence/1384 (accessed July 2016).

843 Mental Health By The Numbers. In *National Alliance on Mental Illness,* 2016. https://www.nami.org/Learn-More/Mental-Health-By-the-Numbers#sthash.rRCIqyvU.dpuf (accessed July 2016).

844 Tanielian, Terri, Lisa H. Jaycox, Terry L. Schell, Grant N. Marshall, M. Audrey Burnam, Christine Eibner, Benjamin R. Karney, Lisa S. Meredith, Jeanne S. Ringel and Mary E. Vaiana. *Invisible Wounds: Mental Health and Cognitive Care Needs of America's Returning Veterans.* Santa Monica, CA: RAND Corporation, 2008. http://www.rand.org/pubs/research_briefs/RB9336.html. (accessed September 2016).

845 Department of Veterans Affairs. VA Suicide Prevention Program. *Facts About Veterans Suicide.* July 2016. http://www.va.gov/opa/publications/factsheets/Suicide_Prevention_FactSheet_New_VA_Stats_070616_1400.pdf (accessed September 2016).

846 Depression. In *National Alliance on Mental Illness,* no date. http://www.nami.org/Learn-More/Mental-Health-Conditions/Depression (accessed July 2016).

847 Curtin S, Warner M, Hedegaard H. Increase in Suicide in the United States, 1999–2014. ,NCHS Data Brief, No. 241, 2016. http://www.cdc.gov/nchs/products/databriefs/db241.htm (accessed July 2016).

848 Risk of Suicide. In National Alliance on Mental Illness, 2016. http://www.nami.org/Learn-More/Mental-Health-Conditions/Related-Conditions/Suicide (accessed September 2016).

849 Homelessness and Housing. In Substance Abuse and Mental Health Services Administration, 2016. http://www.samhsa.gov/homelessness-housing (accessed September 2016).

850 Mental Illness: Facts and Numbers. Arlington, VA: National Alliance on Mental Illness, 2013. http://www2.nami.org/factsheets/mentalillness_factsheet.pdf (accessed July 2016).

851 Pratt LA and Brody DJ. *Depression in the U.S. Household Population, 2009–2012.* Hyattsville, MD: National Center for Health Statistics, 2014. http://www.cdc.gov/nchs/data/databriefs/db172.pdf (accessed July 2016).

852 Kim KD, Becker-Cohen M and Serakos M. *The Processing and Treatment of Mentally Ill Persons in the Criminal Justice System. A Scan of Practice and Background Analysis.* Washington, D.C.: The Urban Institute, 2015. http://www.urban.org/sites/default/files/alfresco/publication-pdfs/2000173-The-Processing-and-Treatment-of-Mentally-Ill-Persons-in-the-Criminal-Justice-System.pdf (accessed July 2016).

853 Skowyra KR and Cocozza JJ. *Blueprint for Change: A Comprehensive Model for the Identification and Treatment of Youth with Mental Health Needs in Contact with the Juvenile Justice System.* Delmar, NY: National Center for Mental Health and Juvenile Justice, 2007. http://www.ncmhjj.com/wp-content/uploads/2013/07/2007_Blueprint-for-Change-Full-Report.pdf - See more at: https://www.nami.org/Learn-More/Mental-Health-By-the-Numbers#sthash.hYZVreV9.dpuf

854 Colton CW and Manderscheid RW. Congruencies in Increased Mortality Rates, Years of Potential Life Lost, and Causes of Death Among Public Mental Health Clients in Eight States. *Preventing Chronic Disease: Public Health Research, Practice and Policy,* 3(2),): 1–14, 2006.

855 Parks J, Svendsen D, Singer P, MEet al. *Morbidity and Mortality in People with Serious Mental Illness.* Alexandria, VA: National Association of State Mental Health Program Directors Council, 2006. http://www.nasmhpd.org/sites/default/files/Mortality%20and%20Morbidity%20Final%20Report%208.18.08.pdf (accessed July 2016).

856 Corrigan PW, Druss BG, Perlick DA. The Impact of Mental Illness Stigma on Seeking and Participating in Mental Health Care. *Association for Psychological Science,* 15(2)): 37–70, 2014. http://www.psychologicalscience.org/index.php/publications/mental-illness-stigma.psi.sagepub.com/content/15/2/37.full.pdf+html?ijkey=dDpyhM2zRi.Fg&keytype=ref&siteid=sppsi%2520 (accessed September 2016).

857 Substance Abuse and Mental Health Services Administration. An Action Plan for Behavioral Health Workforce Development. (HHS Publication No. SMA 11-4629.) Rockville, MD: Substance Abuse and Mental Health Services Administration, 2007. http://www.samhsa.gov/workforce/annapolis/workforceactionplan.pdf

858 Thomas KC, Ellis AR, Konard TR, et al. County-level Estimates of Mental Health Professional Shortage in the United States. *Psychiatric Services* 60(10),): 1323-1328, 2009.

859 Strauss V. "How big is the school counselor shortage? Big.." *The Washington Post,* March 20 2013. https://www.washingtonpost.com/news/answer-sheet/wp/2013/03/20/how-big-is-the-school-counselor-shortage-big/

860 .Medicaid and CHIP Payment and Access Commissions (MACPAC). Report to Congress on Medicaid and CHIP. Washington, DC: MACPAC, 2015. https://www.macpac.gov/wp-content/uploads/2015/06/June-2015-Report-to-Congress-on-Medicaid-and-CHIP.pdf

861 National Association on Mental Illness (NAMI). *State Mental Health Legislation.* Arlington, VA: NAMI, 2015.

862 Early Identification and Intervention for those at Risk. In *Mental Health America,* 2016. http://www.mentalhealthamerica.net/issues/early-identification-and-intervention-those-risk (accessed September 2016).

863 Research and Evidence Base. In *Mental Health First Aid*, 2013. http://www.mentalhealthfirstaid.org/cs/about/research/ (accessed September 2016).

864 National Association of State Mental Health Program Directors. About EDIPPP. Falls Church, VA: National Association of State Mental Health Program Directors. http://www.nasmhpd.org/content/about-edippp

865 National Alliance on Mental Illness. (NAMI). Mental Health Parity: What do Health Insurance Consumers Say? Arlington, VA: NAMI, 2015. http://namimd.org/uploaded_files/347/Mental_Health_Parity_What_do_Health_Insurance_Consumers_Say.pdf

866 Klein S and Hostetter M. *In Focus: Integrating Behavioral Health and Primary Care.* Washington, DC: The Commonwealth Fund, 2014. http://www.commonwealthfund.org/publications/newsletters/quality-matters/2014/august-september/in-focus

867 American Hospital Association. *The State of the Behavioral Health Workforce: A Literature Review.* Washington, DC: American Hospital Association, 2016. http://www.aha.org/content/16/stateofbehavior.pdf

1730 M Street, NW, Suite 900
Washington, DC 20036
(t) 202-223-9870
(f) 202-223-9871