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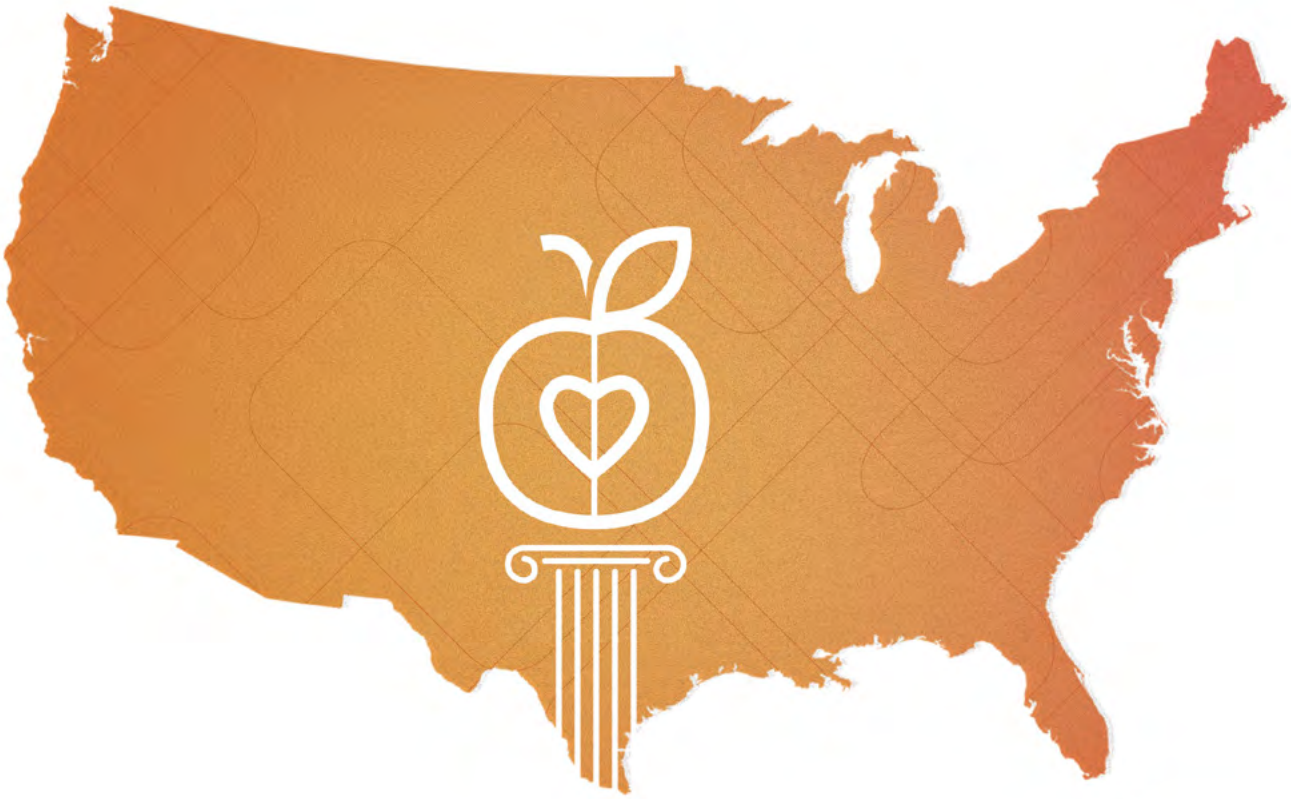

Investing in Prevention: A National Imperative

Key Findings and Recommendations of the Vitality Institute Commission on Health Promotion and the Prevention of Chronic Disease in Working-Age Americans

Vitality® INSTITUTE

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The Vitality Institute convened a Commission on Health Promotion and the Prevention of Chronic Disease in Working-Age Americans from May 2013 to June 2014. A diverse group of thought leaders and expert practitioners contributed their perspectives and insights through a series of private meetings and public forums. The Commission has generated five recommendations, each of which includes actionable and scalable pathways to achieve the Vision: Health should be embraced as a strategic imperative across sectors and as a core value in society.

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The Commission

Members

WILLIAM ROSENZWEIG, COMMISSION CHAIR
Managing Partner, Physic Ventures LP

MANDANA ARABI
Founding Executive Director, Sackler Institute for Nutrition Science

RHONDA CORNUM
Director, Health Strategy, TechWerks

SUSAN DENTZER
Senior Policy Adviser, Robert Wood Johnson Foundation

GINNY EHRLICH
Chief Executive Officer, Clinton Health Matters Initiative, Bill, Hillary, and Chelsea Clinton Foundation

EZEKIEL J. EMANUEL
Chair, Department of Medical Ethics and Health Policy, University of Pennsylvania

LINDA P. FRIED
Dean and DeLamar Professor of Public Health, Joseph L. Mailman School of Public Health, Columbia University

PAUL JARRIS
Executive Director, Association of State and Territorial Health Officials

ILENE KLEIN
Director, Global Employee Health Services, Qualcomm Incorporated

JEFFREY LEVI
Executive Director, Trust for America's Health

HEIDI MARGULIS
Senior Vice President, Public Affairs, Humana

OLIVER MOSES
Senior Managing Director, MTS Health Partners

SARBJIT NAHAL
Head, Thematic Investing Strategy, Bank of America Merrill Lynch

JOHN O'BRIEN
Vice President, Public Policy, CareFirst BlueCross BlueShield

CLARENCE PEARSON
AARP Representative to the United Nations

KYU RHEE
Vice President and Chief Health Director, IBM Corporation

ELLIS RUBINSTEIN
President and Chief Executive Officer, New York Academy of Sciences

MORTIMER SACKLER
Board of Governors, The Sackler Foundation

DENNIS SCHMULAND
Chief Health Strategy Officer, US Health and Life Sciences, Microsoft Corporation

Experts

HOWARD BOLNICK
Expert Adviser, Discovery Limited

RON GOETZEL
Director, Institute for Health and Productivity Studies, Johns Hopkins University Bloomberg School of Public Health

JENNIFER POMERANZ
Assistant Professor, Center for Obesity Research and Education, Temple University

KEVIN VOLPP
Director, Center for Health Incentives and Behavioral Economics, Leonard Davis Institute, University of Pennsylvania

Observers

MICHELLE DAVIS
Regional Health Administrator, US Department of Health and Human Services

KAREN SEALEY
Previously Special Adviser, UN Matters and Partnerships, Pan American Health Organization

This report is dedicated to Clarence Pearson, who has been an inspiring mentor for several generations of health leaders.

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A Letter from

William Rosenzweig, Vitality Institute Commission Chair, and Derek Yach, Vitality Institute Executive Director

A healthy society begins with healthy people. Healthy communities provide more economic opportunity for all their residents. Healthy citizens are more creative, productive, and resilient. A nation that is truly committed to promoting health and preventing disease reaps the greatest return on its investment: longer and healthier lives for all its citizens and a thriving, productive society.

There is ample evidence that the short- and long-term economic competitiveness of the United States is directly linked to the health of our workforce. A healthy workforce has the power to improve economic growth, national security, and global competitiveness. It can maximize worker productivity, spur unparalleled innovation, and reduce economic drag as fewer resources are allocated toward treating costly preventable diseases. The impact of an unhealthy workforce on economic and personal well-being spans beyond our lifetime and affects future generations, generations that are already threatened by a shorter lifespan than we have today.

The Vitality Institute convened the Commission on Health Promotion and the Prevention of Chronic Diseases in Working-Age Americans in 2013-14 with the goal of placing the power of evidence-based prevention at the center of health policies and actions in the US. The Commissioners, a nonpartisan group of distinguished thought leaders from the private, public, and social sectors, developed five catalytic recommendations to improve the health of the working-age population nationwide. We thank the Commissioners for their valued input and commitment to the Commission's research and recommendations.

Fulfilling the Commission's Vision—*Health should be embraced as a strategic imperative across sectors and as a core value in society*—requires trusting partnerships among disparate sectors and communities. It necessitates alignment between public and private sector voices to strengthen and amplify the rationale and message of prevention. It requires shifting resources to invest in prevention science, where we see exciting opportunities ranging from greater support for prevention research within the National Institutes of Health, the Centers for Disease Control and Prevention, and the private sector, to the application of behavioral economics and new developments in personalized technologies that hold promise for promoting health. Finally, it encourages employers to value their most important source of capital—the health and well-being of their workforce—which we hope to see reflected in the integration of workforce health metrics into financial reporting.

Implementing the recommendations of the Vitality Institute Commission requires cross-disciplinary collaboration and commitment. We must be both urgent and patient in our intention to generate positive impacts. Each improvement in health may seem minuscule, but in aggregate, they create a meaningful cultural force that has potential to improve the health and thereby the competitiveness of America and its diverse population for our generation and generations to come.

WILLIAM ROSENZWEIG
Commission Chair, Vitality Institute
Managing Partner, Physic Ventures

DEREK YACH, MBChB, MPH
Executive Director, Vitality Institute

Executive Summary

The vibrancy of America's future depends on its investment in the physical, mental, and social well-being of its people. The occurrence of non-communicable diseases (NCDs)—including cancer, diabetes, cardiovascular and chronic respiratory diseases, musculoskeletal disorders, and mental illness—threatens America's economic competitiveness, national security, and position as a world power. The consequences of NCDs have short- and long-term effects by forcing individuals to exit the workforce prematurely due to their own poor health, or to care for ill relatives. Lower productivity and higher absenteeism, combined with soaring costs of treatment, impede innovation and crowd out productive investment in education and research and development.

A significant portion of NCDs—perhaps as much as 80 percent—can be prevented through existing evidence-based methods. The Commission estimates an annual saving of $217–303 billion (5-7 percent of total healthcare spending) on healthcare costs by 2023. Without coordinated leadership and immediate action, the costs and impact of NCDs will further burden future generations and stifle economic and personal well-being for decades to come. We are faced with an opportunity to shift NCDs and their associated costs toward a *culture of health,* a term pioneered by the Robert Wood Johnson Foundation. Throughout the Commission, *health* refers to: "A state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity."[1]

The Vitality Institute Commission

The Vitality Institute convened a Commission on Health Promotion and the Prevention of Chronic Disease in Working-Age Americans from May 2013 to June 2014. Composed of a diverse group of thought leaders and expert practitioners, Commissioners from public health, academia, business, and the social sector contributed their perspectives and insights through a series of private meetings and public forums. Original research was commissioned to fill gaps in evidence to make an irrefutable case for health promotion and disease prevention. An interdisciplinary perspective and systems approach were used to identify and propose cross-sector pathways to achieve the Commission's Vision: *Health should be embraced as a strategic imperative across sectors and as a core value in society*.

The Commission has generated five recommendations to catalyze a widespread culture of health in America. Each recommendation includes actionable and scalable pathways for implementation, and measures of success over short- (2017), medium- (2020) and long-term (2025) horizons. Commissioners have committed to direct action on some of them. Taken together, the recommendations offer a focused strategy to create sustained well-being and competitive advantage at local, state, and national levels—a blueprint to transform America's health.

Call to Action

The time is ripe to take action to improve the health of working-age Americans. The Patient Protection and Affordable Care Act[2] (ACA) includes provisions focused on prevention, and it is becoming increasingly clear that employers cannot sustain the burden of rising healthcare costs.

The Commission has delineated substantial evidence that the short- and long-term economic vitality of the US is directly linked to the health of its workforce. The research and recommendations of the Commission emphasize the need to embrace health as a strategic imperative and as a core value in society. The Commission aims to catalyze coordinated action across sectors, realizing that a healthy workforce increases productivity, prosperity, and personal well-being as it spreads from the workplace to families, communities, and beyond. As the backbone and engine of the nation's economy, a healthy workforce supports national competitiveness and ensures a more vibrant future for generations to come.

RECOMMENDATION 1

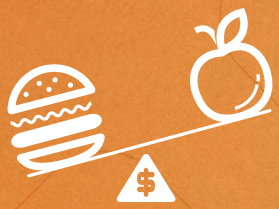
Invest in prevention science.

Prevention science, as the systematic application of scientific methods to the causes and prevention of health problems in populations, should be supported. It should also be extended beyond epidemiology and public health to include behavioral economics and new personalized technologies. Health education and leadership should reach beyond public health and policy to include medicine, law, architecture, technology, ergonomics, human factors, transportation, and agriculture.

RECOMMENDATION 2

Strengthen and expand leadership to deliver a unified message for health and prevention.

Advocates of prevention in the public and private sectors should be coordinated and join in common cause to develop coherent messages supporting a culture of health. A credible and influential multi-sector network should be developed that operates synergistically, using evidence-driven advocacy for the value of prevention. This includes local leaders who tackle challenges and implement solutions tailored to the needs of their communities.



RECOMMENDATION 3

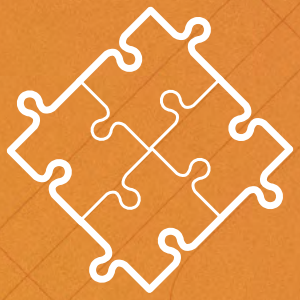
Make markets work for health promotion and prevention.

Markets should be stimulated to encourage consumers to purchase and use healthier products and services. New products, services, and technologies for healthier lifestyles should be commercialized with the support of incentives and structures that favor innovation and early adoption.

RECOMMENDATION 4

Integrate health metrics into corporate reporting.

Companies should generate shared value by integrating standardized metrics on the health of their workforce into annual financial reports. Forward-thinking business leaders will understand that the health of their workforce is an asset: Human capital is core to sustained competitive advantage.



RECOMMENDATION 5

Promote strong cross-sector collaborations that generate a systemic increase in health promotion and prevention across society.

Non-health sectors should be engaged to tackle all factors that influence health. Advocates for health should understand the priorities of other sectors where they aspire to make progress, and should work collaboratively to develop policies and a case for prevention.

"All Americans deserve the chance to lead a healthy life and achieve their full potential. And as a Nation, the health and well-being of our people must remain a top priority. ...Through the Affordable Care Act and other initiatives, my Administration is supporting efforts across our country to improve public health and shift the focus from sickness and disease to wellness and prevention. And each of us has the opportunity to make choices every day that can keep us healthy and safe. ...We can raise awareness about health issues in our communities, serve as role models to others, and teach children about the importance of preventive care and making smart choices. By investing in our individual health today, we will create a stronger America in the years to come."

President Barack Obama[3]

Introduction: The Time is Now

Health as defined by the World Health Organization (WHO), is "A state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity."[1] The vibrancy of America's future depends on its investment in the health of its people. We face a crisis that threatens our economy, national security, and position as a world power. Non-communicable diseases (NCDs)—cancer, diabetes, cardiovascular and chronic respiratory diseases, musculoskeletal disorders, and mental illness—carry consequences that touch us all. The majority of these diseases can be prevented. Reducing their toll calls for systematic engagement and action on the part of individuals, communities, groups, institutions, and leaders in all sectors of society.

"Rising healthcare costs are the primary driver of our national debt, and that is in large part due to our chronic disease epidemic."

Senator William H. Frist, MD, Bipartisan Policy Center

The effect of NCDs on the nation's workforce is of signal importance. An unhealthy workforce impedes America's competiveness in the global marketplace. Workers may exit the workforce because of their own poor health or to care for chronically ill relatives. For employers, lower productivity and higher absenteeism coupled with skyrocketing healthcare costs rob resources that could otherwise be reinvested in innovation or distributed as profits. For the nation, rising healthcare costs crowd out investment in other priority areas, such as education, defense, and infrastructure.[4] The costs and impacts will burden generations to come, further stifling economic as well as personal well-being (see Fig 1).

Healthcare and the US Economy

The US spent $2.7 trillion on healthcare in 2011. Healthcare expenditure as a percentage of gross domestic product (GDP) has doubled in the three decades since 1980, to reach 17.9 percent in 2011. The greatest increase in healthcare spending between 2000 and 2011 was attributable to drugs, medical devices, and hospital care.[5]

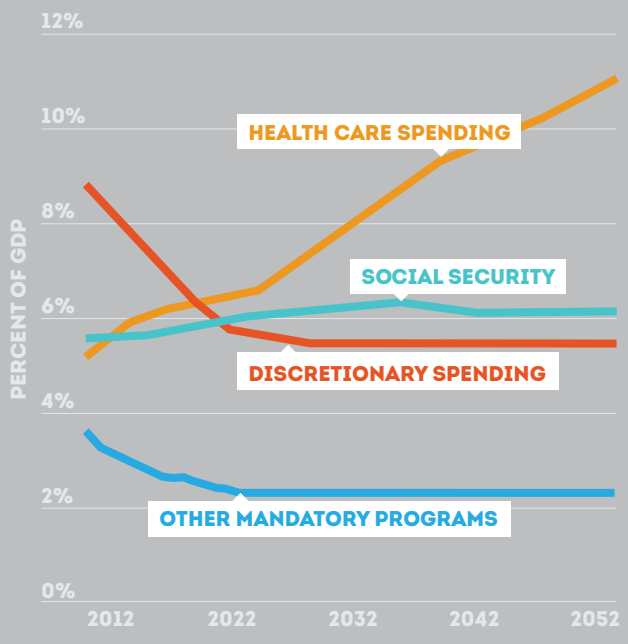


FIG 1.[6]
The Congressional Budget Office (CBO) projects that healthcare cost increases will be the primary driver of national debt in the next four decades.[4,7]

In contrast, improvements in population health can fuel economic development, through greater workforce productivity, higher profits, increased personal income, and a rise in GDP.[8,9,10] The workplace is well positioned to positively influence the health of 155 million working-age Americans and to see benefits in risk reduction through prevention and health promotion.[11]

Meaningful progress can be driven by the development and widespread use of integrated health metrics that reflect the equation between workforce health and economic strength.

"A healthy population is an engine for economic growth."

World Health Organization Commission on Macroeconomics and Health[9]

Fifty years ago, when the Surgeon General's report on smoking[12] was issued, it was commonplace for people to smoke in movie theaters, workplaces, restaurants, and other public indoor spaces. There were ashtrays in taxicabs and on airplanes, and cigarettes ads blanketed the media—television, radio, and glossy magazines. The US was Marlboro Country, and young and old alike were exposed to second-hand smoke even if they were not smokers themselves.

Change began with the Surgeon General—a leader armed with evidence on the health hazards of smoking—but it took decades of covert and overt conflict with big tobacco companies and their marketing allies; the building of coalitions of advocates for health in many sectors; restrictions and regulations on multiple levels, from private businesses to local, state, and federal governments; messaging to counter the blatant appeal of the cigarette cult; lawsuits and levying punitive taxes; development of programs and products to support those who wanted to stop smoking; and over time, a shift in the cultural norm. It was a systems change. Today, smoking is the exception rather than the rule. It has been banned from the airwaves and public spaces. Perhaps most important, people understand the hazards of smoking and many in the grip of the habit would like to quit.

"Enough is enough. We can't just say 'Health and wellness is important.' No! We must treat health and wellness as a national strategic imperative."

Rear Admiral Boris D. Lushniak, Acting Surgeon General

Today we face a more complex challenge and a more formidable foe: the epidemic of NCDs and the risky behaviors that underlie it. We can draw lessons from the campaign against smoking, but we cannot wait another half century to win the battle.

The Vitality Institute Commission asks: What if we applied what we already know about what works? How can we recruit the leaders, muster the forces, and create the groundswell that will eventually result in a change in culture? What would it look like if the power of evidence-based prevention were at the center of health policies and actions in the US?

It is time to seize the opportunities that have arisen from the convergence of legislative action through the Patient Protection and Affordable Care Act (ACA), the awareness in the private sector of the central role health plays in sustainability, and new technology tools that enable individuals to proactively improve their own health. America is at a pivot point: We can plan for a healthy future by investing in prevention now or plan to pay much more in the future for our failure to make that investment.

VISION:

Health should be embraced as a strategic imperative across sectors and as a core value in society.

The Vitality Institute Commission on Health Promotion and the Prevention of Chronic Disease in Working-Age Americans

The health of our nation extends beyond healthcare to the very heart of the social compact. It requires us to think of health as more than the absence of disease, but as a societal benefit and a human right. It requires a concerted effort by individuals and communities, as well as the private, public, and social sectors to apply what we know works to promote health. It also requires commitment, investment, and cooperation by all sectors to ensure continued progress.

Purpose and Goals

The Commission was convened by the Vitality Institute, an evidence-driven and action-oriented research organization dedicated to health promotion and the prevention of NCDs and the creation of a new culture of health. Membership of the Commission was drawn from a diverse group of stakeholders and was designed to tap the collective wisdom of thought leaders from a broad range of sectors of American society (see page i for full list). The Commission was tasked with applying a cross-disciplinary perspective to devise new pathways for health to be embraced as a strategic imperative across sectors, and as a core value in society. Taking a systems approach, it focused on high-leverage, high-impact spheres that have the potential to work synergistically to place prevention science at the center of health policies and practice in the US.

Prevention Science

The systematic application of scientific methods to the causes and prevention of health problems in populations.

The Commission supports this definition, but advocates a more expansive view of prevention science to generate a stronger and more comprehensive platform for intervention design and implementation.

- Classic scientific methods extended beyond the confines of epidemiology and public health
- Broader scope by advances arising from behavioral economics and innovations in personalized technologies
- Public sector interventions adapted to complement opportunities arising from private sector innovations to improve health behaviors and outcomes

The Commission's process involved private meetings and public forums, as well as consultation with a group of multidisciplinary experts, with research and analysis presented in original papers prepared to inform the Commission's work (see Appendix: Background Working Papers).

In view of the economic consequences of NCDs, the Commission sees the urgent need to integrate the innovative strength of the private sector with the authority and funding resources of the public sector. The Commission recommends that priority be given to investment in research to establish an evidence base for prevention, creating a career path for the next generation of prevention scientists and practitioners, and developing leadership for evidence-driven advocacy. The prevention message should be delivered not only by voices from the field of health, but also by leaders in business, manufacturing, education, the faith community, agriculture, energy, urban design, transportation, public policy, the social sector, as well as federal, state, and local governments.

Taking a systems view, the Commission looked at ways to break down silos and harness the power of collaborative and coordinated action. It developed a set of recommendations that are specific, actionable, and attainable. Citing best practices as models that can be scaled up or down for adoption throughout society, it outlined pathways to progress that emphasize multi-stakeholder and cross-sector partnerships. Measures of success—early advances by 2017, meaningful progress by 2020, and perceptible shifts in cultural norms by 2025—are realistic and within reach.

Although these recommendations call for a large-scale reassessment of the legislative, regulatory, and policy environment, the Commission recognizes that improvement in population health through the prevention of NCDs will ultimately occur at the local and individual levels. Policies both shape and are shaped by cultural norms, but health depends on individual action. The personal engagement and motivation of individuals and the communities in which they live and work are critical if American society is to make progress toward building a culture of health.

"To reverse—not just arrest—the rising prevalence of chronic disease, we need to approach this problem as we would a 'syndemic' that can neither be controlled nor eradicated without simultaneously addressing each co-occurring epidemic. To make an impact at scale, we need interventions that activate and engage not just individuals but also the households, workplaces, and communities where lifestyles, habits, and routines are learned, practiced, and perpetuated. We know that unhealthy lifestyles and obesity spread like a communicable disease through social networks with a rate of transmission greater than 50 percent. So why shouldn't it also be possible to spread healthy lifestyles, habits, and routines like a communicable disease using technology innovations as catalysts?"

Dennis Schmuland, MD,
Chief Health Strategy Officer,
US Health and Life Sciences, Microsoft Corporation,
and Vitality Institute Commissioner

Scope

Recognizing the complexity of the challenge, the Commission has focused on health promotion and the prevention of NCDs among working-age Americans as its complementary mandate. This focal point complements, without overlapping, the important work of the Robert Wood Johnson Foundation (RWJF), which is primarily concerned with the health of children and communities (see Appendix: Related Commissions and Reports).

Why the Workplace?

The Commission believes that the health of working-age adults has both broad and deep implications for business and the economy as a whole. Working-age Americans are as diverse as the nation itself. They work for small, medium, and large companies, in their own homes or the homes of others. They are white- and blue-collar workers. Some work part-time or as day laborers. Some are students, some are unemployed, and some have retired early.

Because NCD risks accumulate over the lifespan,[13,14] employers assume a crucial role during the working years, a time when risk levels are already high but before the highest levels of disease prevalence and costs occur. Disease costs rise rapidly from middle age onward, increasing significantly into retirement (see Fig 2). The fragmented approach to life-course prevention in the US leads to less effective prevention.[11]

The workplace is rich with opportunities to make an impact on the health of both the population and the economy. In the past, employer-provided healthcare coverage primarily emphasized treatment, but it is poised to include health promotion and NCD prevention, due in part to changes mandated by the ACA. Interventions initiated in the workplace and supported by employers have the potential to improve the health of working-age individuals, including incentives to change habits that increase risk for NCDs and to establish healthier behaviors. Companies that have successfully invested in the health of their workforce can serve as models. Best practices should be evidence based and linked to a corporate health index.

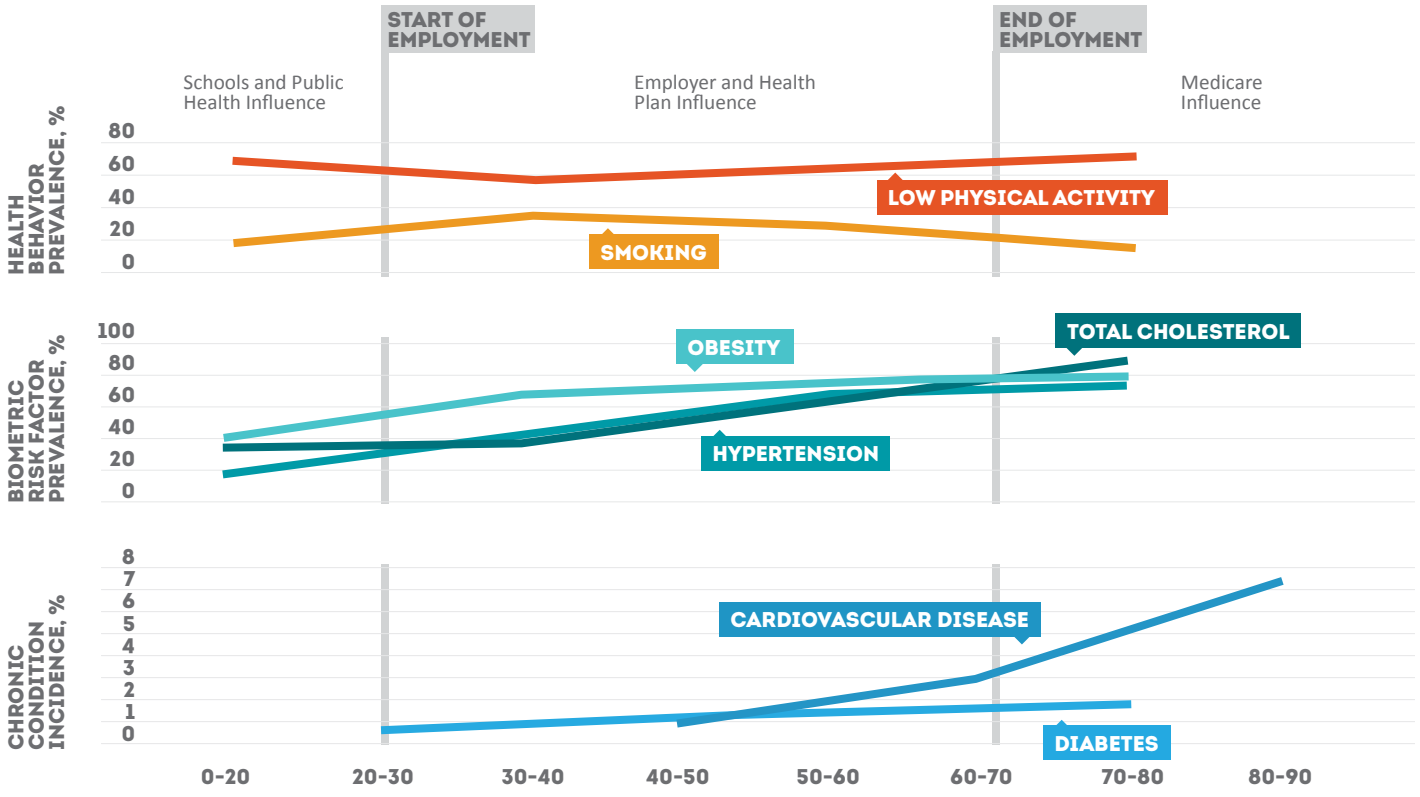


FIG 2.–RISK ACCUMULATION OVER THE LIFESPAN[15,16]
Medicare bears the burden of the failure to implement prevention programs during the working years.

Health is the Bottom Line

Employers have much to gain from a healthy workforce, including improvements in worker morale, productivity, and profitability. Prior to passage of the ACA, more than half the population had employment-based health insurance coverage through their own or another person's employer.[17] These numbers are likely to change once the law is fully implemented. Private employers currently spend less than 2 percent of their total health budget on prevention.[18]

The cost of health insurance is of great concern for employers. In 2010, employers in the US spent a total of $560.9 billion for group health insurance, an increase of 67 percent since 2000.[19] For three consecutive years, an annual survey of chief financial officers (CFOs) showed nearly 60 percent citing healthcare costs as their main financial concern, above revenue growth, cash flow, and corporate tax rates.[20] Businesses are also aware of the contribution of NCDs (including mental illness) to this cost, with half of all business leaders voicing concern that at least one NCD will hurt their company's bottom line in the next five years.[21]

The workplace is an ideal setting for interventions that improve broader population health, reaching beyond the workforce to families and communities (see Fig 3). It is a microcosm of society, and a model laboratory for prevention science.

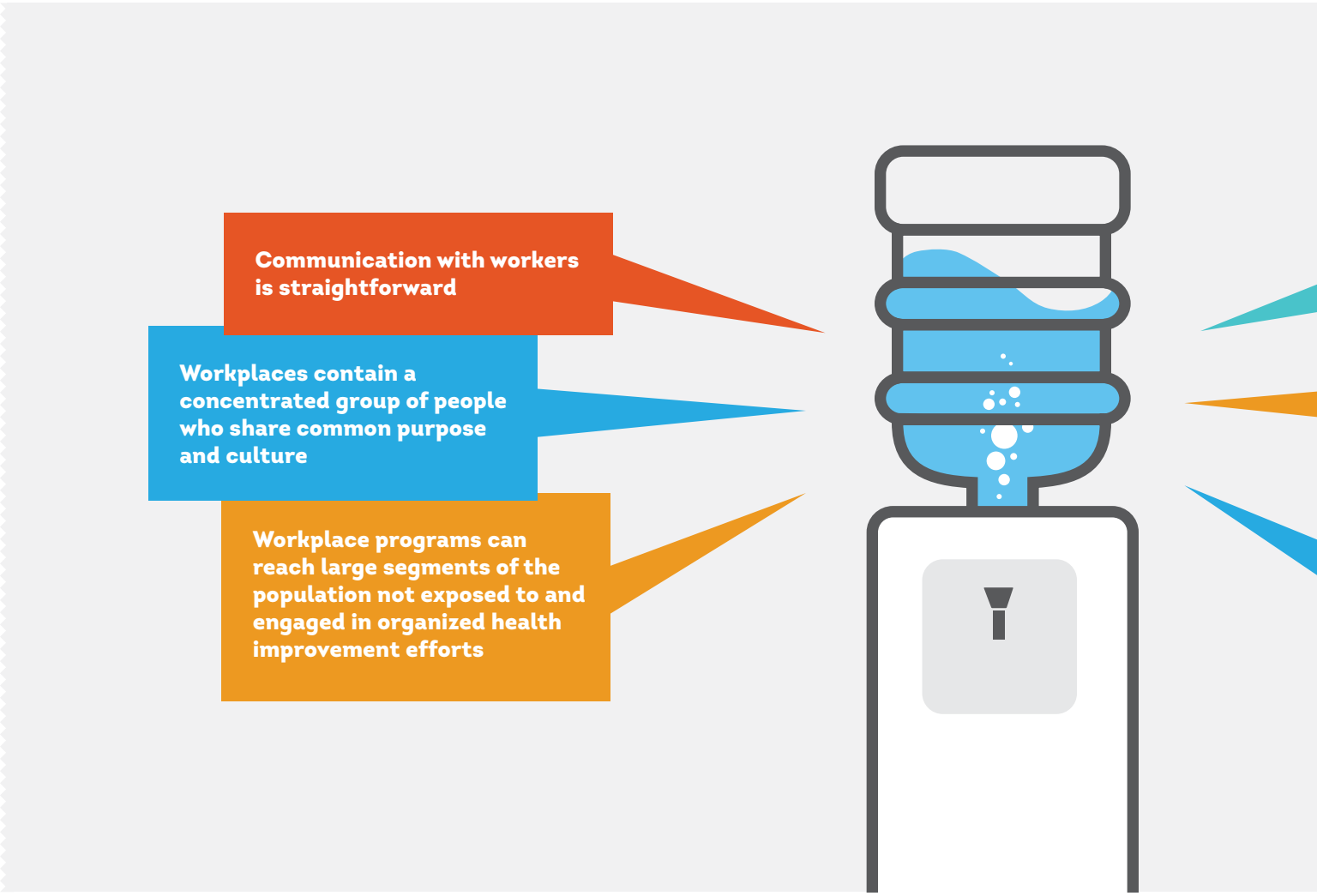


FIG 3.–WHY THE WORKPLACE
The workplace provides many opportunities for health promotion interventions.

The Time to Build a Culture of Health is Now

The Vision of the Vitality Institute Commission that health be embraced as a strategic imperative and as a core social value echoes the culture of health envisioned by RWJF, which its President and CEO, Risa Lavizzo-Mourey, says "will require us to think and work differently...[about] the bigger picture of what defines health in America—how health will always be linked to health care, but also extends to work, family, and community life; how health equity is connected to opportunity; and how we, as a nation, must balance the costs, benefits, and effectiveness of treatment and prevention to provide our people with care of the highest possible value."[22]

A Culture of Health[22]

The RWJF defines a culture of health as one in which:

1. Good health flourishes across geographic, demographic, and social sectors.
2. Being healthy and staying healthy is valued by our entire society.
3. Individuals and families have the means and the opportunity to make choices that lead to healthy lifestyles.
4. Business, government, individuals, and organizations work together to foster healthy communities and lifestyles.
5. Everyone has access to affordable, quality health care.
6. No one is excluded.
7. Health care is efficient and equitable.
8. The economy is less burdened by excessive and unwarranted health care spending.
9. The health of the population guides public and private decision-making.
10. Americans understand that we are all in this together.

The Vitality Institute Commission endorses the RWJF vision of a culture of health and supports its efforts to develop a framework to measure success.

Affordable Care Includes Prevention

Passage and gradual implementation of the ACA have provided an opportunity to test strategies for improving the health of the nation. The law has spurred renewed interest in well-being programs and optimism that they could become part of the nation's broader health strategy to prevent and control chronic disease and healthcare costs.[23,24] Although many ACA provisions relate to treatment, insurance, and reforms in the healthcare system, the law includes a "vibrant emphasis on disease prevention."[25] An estimated 71 million additional Americans were receiving coverage for preventive services without cost-sharing as of March 31, 2014, the end of the law's first open enrollment period.[26]

Among the prevention provisions included in the ACA:[2]

- **SECTION 2705** increases the maximum permissible reward from 20 to 30 percent of the cost of coverage under a health-contingent wellness program offered with a group health plan. The maximum permissible reward can be further increased to 50 percent for health programs that prevent or reduce tobacco use.

- **SECTION 2713** expands access to clinical preventive services, requiring that they be covered at no out-of-pocket cost to the insured by employer-sponsored group health plans and private health insurance policies.

- **SECTION 4001** mandates The National Prevention, Health Promotion, and Public Health Council to develop a National Prevention Strategy to work across the federal government and its agencies (including non-health agencies) to present evidence-based findings and recommendations about preventive services, programs, and policies to improve health.

- **SECTION 4002** establishes the Prevention and Public Health Fund to provide expanded and sustained national investment in prevention and public health.

- **SECTION 4108** authorizes grants to states to offer incentives to beneficiaries of Medicaid who participate in prevention programs and show improvements in health risks and outcomes. These programs are required to use evidence-based research.

"Creating a true 'culture of health' in the United States will require reshaping our environment such that health becomes the natural outcome of life and the default 'choice' for individuals. Many hands and sectors will need to collaborate to get us there: governments at all levels, businesses, education, and nonprofits, all of whom must now start by making the loudest possible case for investing in disease prevention and health promotion."

Susan Dentzer, Senior Policy Adviser to the Robert Wood Johnson Foundation, and Vitality Institute Commissioner

Trends in the Risks and Burden of Disease

In the decades since 1990, progress has been made against some NCDs. Death rates from lung cancer and cardiovascular disease have decreased, due in large part to declines in smoking and greater access to drugs to manage high blood pressure and cholesterol. But the prevalence of diabetes, and the related risk factors of overweight and inactivity, has increased, and along with them the percentages of deaths, years of life lost due to premature mortality (YLL), and years lived with disability (see Fig 4).

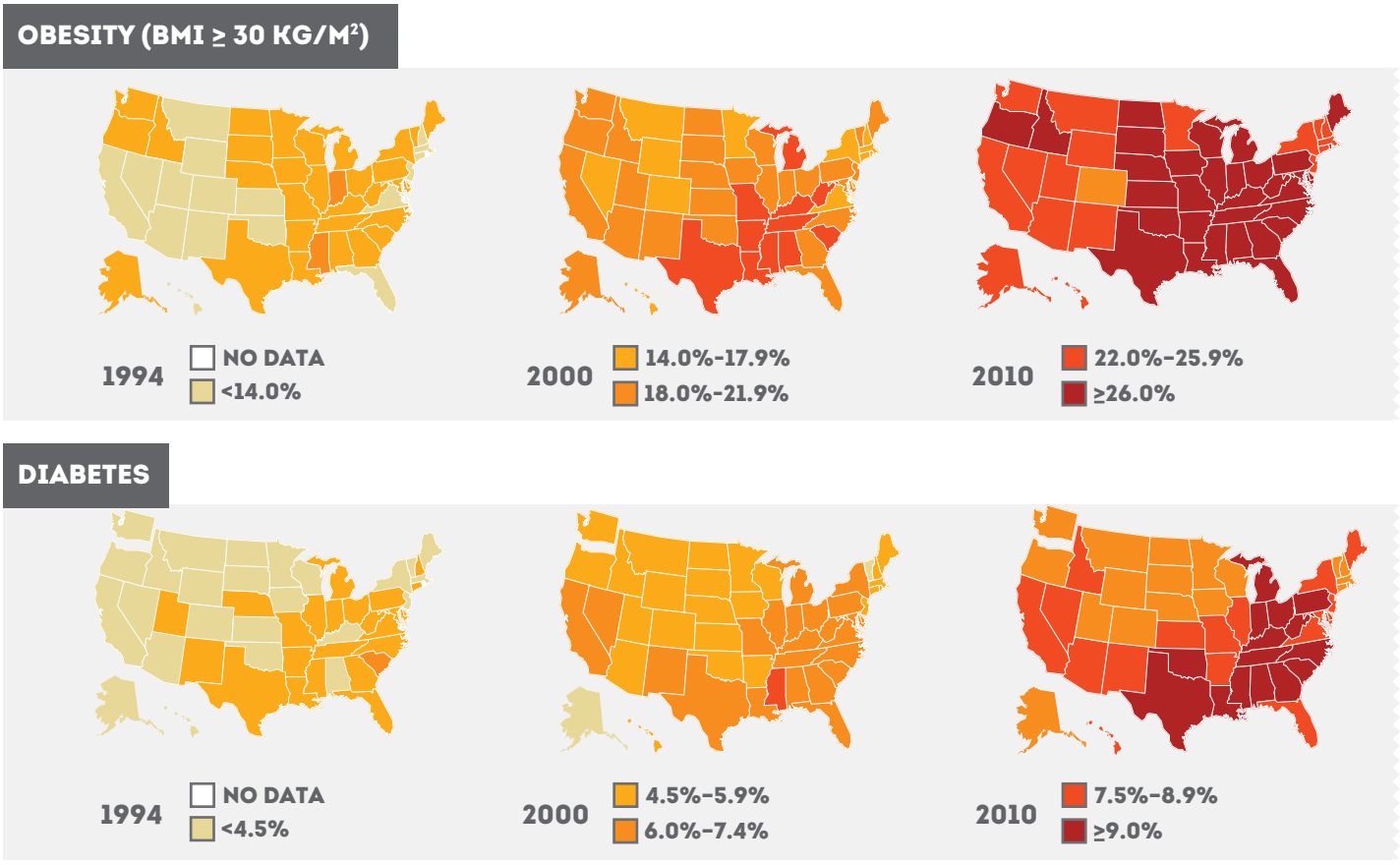


FIG 4.–AGE-ADJUSTED PREVALENCE OF OBESITY AND DIAGNOSED DIABETES AMONG US ADULTS AGED 18 YEARS OR OLDER (1994-2010)[27]
Diabetes and obesity rates have risen nationwide since 1994.

A recent National Research Council and IOM report[28] and comparative analyses using the latest Global Burden of Disease data[29] show that life expectancy and disease-specific survival rates in the US have not improved at rates seen in peer countries. Americans live shorter lives and experience more illnesses, they reach age 50 with a less favorable cardiovascular risk profile, lung disease is more prevalent and associated with higher mortality, and the death rate from heart disease is the second highest among peer countries. The trend can be tied to smoking, unhealthy diet, obesity, and physical inactivity, all of which are modifiable through behavior change (see Appendix: Tables 1 and 2).

Prevention is Health Promotion

The principal NCD risk factors arise from a complex chain of behaviors, some originating in early childhood, coupled with social and environmental factors. Years of exposure to multiple risk factors increase the probability of disease, disability, and death.

Fortunately, every point in life represents an opportunity to reduce risk by adopting healthier habits. Eating a healthy diet, engaging in regular physical activity, avoiding tobacco use and excessive alcohol intake, and adhering to medications go a long way toward delaying the onset, reducing the severity, and preventing the development of NCDs.[30] The onset of NCDs can be further postponed toward the end of the lifespan so that chronic illness is compressed into a shorter period (see Fig 5).[31] The age of onset of chronic disease may even be postponed longer than the age of death, resulting in a longer and disability-free life.[32]

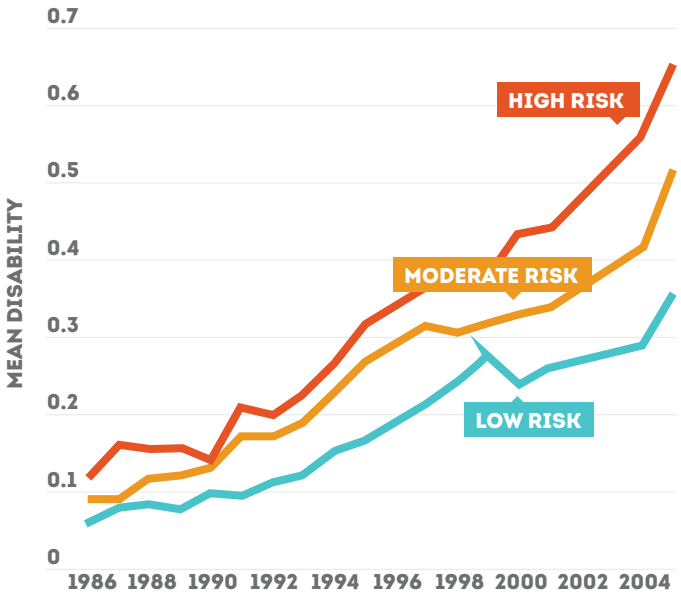


FIG 5.–FEWER RISK FACTORS MEAN LESS DISABILITY AND LONGER LIFE[33]

A landmark study from the University of Pennsylvania followed individuals at 68 years of age for 21 years. They were classified as low risk (with no baseline risk factors of tobacco use, obesity, or physical inactivity), moderate risk (with one risk factor present at baseline), and high risk (with two or three risk factors present at baseline). Fewer risk factors led to lower levels of disability over the study period. Individuals with no baseline risk factors had the lowest mean disability of all three groups.

What is Prevention?[34]

The aim of prevention is to eradicate, eliminate, or minimize the impact of disease and disability, or if none of these is feasible, to delay the progress of disease and disability.

- **PRIMARY PREVENTION** aims to reduce the incidence of disease by such efforts as enhancing nutritional status, immunizing against communicable diseases, and eliminating environmental risks.
- **SECONDARY PREVENTION** aims to reduce the prevalence of disease by shortening its duration through early detection and prompt intervention to control disease and minimize disability.
- **TERTIARY PREVENTION** aims to reduce the number and/or impact of disease complications by eliminating or reducing impairment, disability, and handicap; minimizing suffering; and maximizing potential years of useful life.

Progress in preventing NCDs would represent a giant step toward promoting the health of the nation and the aspirational goal of health and well-being for all.

Health
"A state of complete physical, mental and social well-being and *not merely the absence of disease*."[1]

Healthcare
The maintenance and restoration of health by the treatment and prevention of disease especially by trained and licensed professionals.[37]

Obstacles to Building a Culture of Health

The US has historically viewed health as merely the absence of disease and has thus undervalued and underinvested in public health and preventive services.[4] While partisans in the US argue about whether health is a human right, the constitutions of other nations, such as India and South Africa, include health among the rights guaranteed all citizens. Scandinavian countries share with the US a commitment to personal freedom, political voice, and to science and technology, but they invest far more than the US in programs to support mental and social well-being, not just health. Across the Organisation for Economic Co-operation and Development (OECD), for every $1 spent on healthcare, $2 is spent on social services, compared to only 55 cents for social services in the US.[35,36]

The Social Progress Index, which rates 132 countries on more than 50 indicators, including health, sanitation, shelter, personal safety, access to information, sustainability, tolerance and inclusion, and access to education, placed New Zealand at number 1 in its 2014 list. The remaining top 10 were Switzerland, Iceland, Netherlands, Norway, Sweden, Canada, Finland, Denmark, and Australia. The US ranked 16th. Japan ranked first in Health and Wellness, the US 70th.[38]

Although the US spends 17.9 percent of GDP on healthcare—the highest in the world—it receives a meager return on its investment. A World Economic Forum/Mercer ranking placed it 43rd out of 122 countries in health and well-being worldwide and 112th in obesity (see Fig 6).[39] In a comparison with 17 peer nations, the US came in last in average body mass index (BMI) for individuals between 35 and 44 years of age (see Fig 7).[28]

	OVERALL INDEX		HEALTH & WELLNESS	
COUNTRY	RANK	SCORE	RANK	SCORE
SWITZERLAND	1	1.455	1	0.977
FINLAND	2	1.406	9	0.844
SINGAPORE	3	1.232	13	0.762
NETHERLANDS	4	1.161	4	0.901
SWEDEN	5	1.111	2	0.960
GERMANY	6	1.109	8	0.877
NORWAY	7	1.104	6	0.890
UNITED KINGDOM	8	1.042	17	0.682
DENMARK	9	1.024	3	0.943
CANADA	10	0.987	20	0.548
BELGIUM	11	0.985	11	0.780
NEW ZEALAND	12	0.978	15	0.743
AUSTRIA	13	0.977	7	0.886
ICELAND	14	0.957	5	0.900
JAPAN	15	0.948	10	0.836
UNITED STATES	16	0.920	43	0.239

FIG 6.–THE US RANKS POORLY IN HEALTH[40]
The US placed 43rd out of 122 countries in health and well-being worldwide.

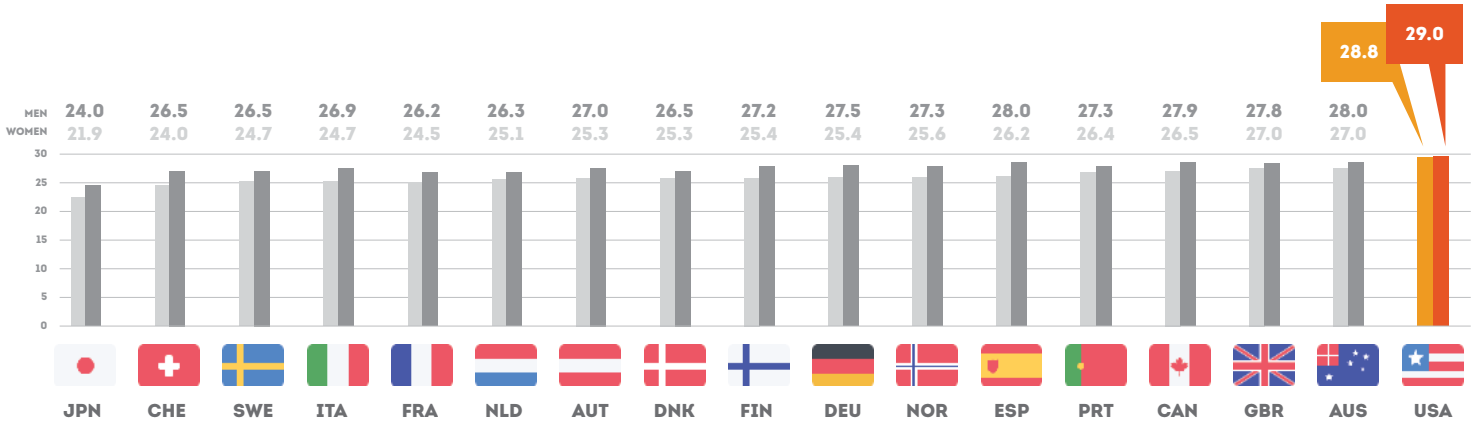


FIG. 7.–COMPARISON OF AVERAGE BMI[41]
The US came in last in average BMI for both males and females compared to peer nations.

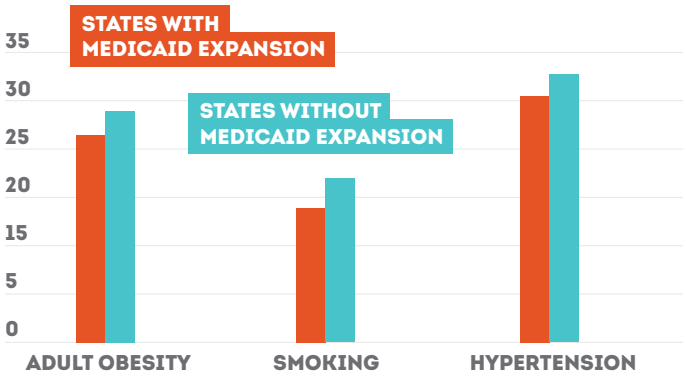


FIG 8.–RISK STATUS IN STATES WITH AND WITHOUT MEDICAID EXPANSION

States opting out of Medicaid expansion have higher levels of obesity, smoking, and hypertension than states that have expanded Medicaid.[45] The health coverage and prevention provisions of the ACA are unavailable to the people most in need of them.

> **"It does not take overwhelming evidence to change policy. It takes sufficient evidence and political will."**
>
> Brig. Gen. (ret) Rhonda Cornum, Director of Health Strategy, Techwerks, and Vitality Institute Commissioner

What accounts for the paradox of high spending on healthcare with relatively poor health status and life expectancy? The answer lies not in the amount, but in how and where the money is spent. Public health and preventive services in the US are highly fragmented and are financed by a complex set of federal, state, local, and private sources that vary across communities in ways unrelated to underlying need.[28] Poor population health at the state and county levels contributes to the nation's poor performance on international health indices.

As hopeful as the potential for prevention and health promotion is, many forces undermine widespread support, some of which are detailed here. A systems perspective reveals leverage points for overcoming the obstacles and building multi-sector support for a culture of health.

Legislative, Regulatory, and Tax Policies

Although the ACA includes provisions related to prevention, some obstruct rather than support evidence-based practices. For example, the ACA encourages implementation of workplace and community-based prevention and health promotion programs, but it imposes constraints at the same time as it establishes low standards, effectively undermining evidence-based program design.[2,42] One category of programs, termed "health contingent," requires an individual to satisfy a health-related standard, such as quitting smoking, or to complete an activity, such as a walking program, in order to obtain a reward. ACA mandates that health-contingent programs be "reasonably designed to promote health or prevent disease,"[43] but the responsible federal agencies explained that there "does not need to be a scientific record that the method promotes wellness."[44] The government's role would be better served by establishing protocols to strengthen the requirements for employers and program operators to utilize practice- and evidenced-based programs.[42]

A consequence arising from the 2012 Supreme Court decision allowing states to opt out of the Medicaid expansion provision of the ACA is that low-income working-age adults without dependent children are the group most likely to be left without health insurance, and the prevention services that go along with it (see Fig 8).[45,46,47]

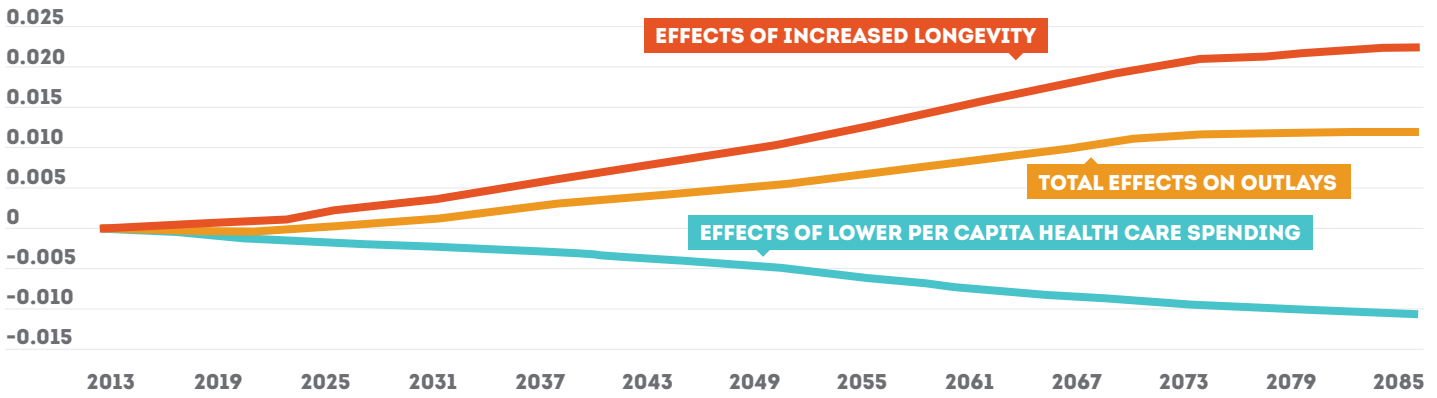


FIG 9.–CBO 72-YEAR PROJECTION[51]

Effects on outlays of an illustrative increase in the cigarette tax, as percentage of GDP

Another obstacle on the federal level stems from how the fiscal impact of prevention is assessed. The Office of the Actuary of the Centers for Medicare and Medicaid Services (CMS) contends, "There is no consensus in the available literature or among experts that prevention and wellness efforts result in lower costs."[48]

CMS funding for evaluation of community-based well-being programs focuses on current Medicare beneficiaries with no appropriations for the evaluation of health promotion interventions for working-age Americans, who will ultimately enter the Medicare pool. A Healthy Aging, Living Well Evaluation was authorized by the ACA to evaluate community-based programs for Medicare beneficiaries, with a focus on nutrition, physical activity, tobacco use reduction, substance abuse, screenings, and referrals for treatment of chronic diseases.[2] This five-year pilot was intended to provide grants to state health departments for screening and education for 55 to 64 year olds and operate from 2010 to 2014, but it was never funded. This omission deserves reexamination in light of the substantial Medicare savings potential from effective workplace health promotion measures.

The Congressional Budget Office (CBO), the agency responsible for estimating costs of proposed federal legislation, uses a 10-year window, which cannot account for the long-run impact—both budgetary and health—of effective prevention measures. A study conducted for the Campaign to End Obesity recommends using a 75-year time horizon. Extending to 75 years may more accurately represent the prevention opportunities over a lifetime because, the report contends, "very little of the federal savings [effective prevention interventions] induce may be captured in the first decade, especially if an intervention is geared toward children or young adults and yields meaningful impacts on health care costs for individuals receiving Medicare decades in the future."[49] In April 2014, the Long-Term Studies of Comprehensive Outcomes and Returns for the Economy (SCORE) Act (H.R. 4444) was introduced in the House of Representatives. The bill would require CBO to conduct 50-year scoring estimates of disease prevention and medical research legislation.[50] Such long-range projections, however, are viewed by some as too uncertain to be the basis of policy decisions.

Recently, the CBO has shown a willingness to alter the time frame of its projection. For example, it used a 72-year horizon to project the effects on outlays of increasing the tax on cigarettes, taking into account increased longevity and lower per capita healthcare spending (see Fig 9).

Although the CBO makes projections, not recommendations, Director Douglas W. Elmendorf said the Office incorporates "behavioral responses to the extent feasible." Among the key types of health policies the Office is studying is whether improving population health would help not only people but the federal budget (see Fig 10).

"It is encouraging to see that the Congressional Budget Office appears to be beginning to consider longer scoring estimates for prevention-related activities. This is a pivotal step for prevention to be placed at the core of policy making."

Heidi Margulis, Senior Vice President, Public Affairs, Humana, and Vitality Institute Commissioner

IMPROVING THE HEALTH OF THE POPULATION WOULD HELP PEOPLE AND MIGHT (OR MIGHT NOT) HELP THE FEDERAL BUDGET

Possible federal policies include **taxes**, **subsidies**, **or other ways** to:

- Reduce smoking or obesity
- Increase screening diseases
- Enhance compliance with regimens for chronic conditions

Presumed links between policy and the federal budget:

CHANGE BEHAVIOR → IMPROVE HEALTH → REDUCE HEALTH CARE COSTS

The federal budgetary effects depend on the combination of:

- Any reduction in annual health care costs per person
- Any increase in tax revenues from a larger or healthier workforce
- Any increase in costs for Social Security and health care benefits from people living longer
- Any budgetary cost or savings of the policy itself

FIG 10.–CBO ON EFFECTS OF HEALTH IMPROVEMENT[52]

Healthcare Delivery System

The prevailing "sick care" model in the US prioritizes treatment over prevention. While 97 percent of national health expenditure is directed toward healthcare services, only 3 percent goes toward prevention and health promotion.[4] Stakeholders for treatment (including hospitals and rehabilitation facilities, physicians and other healthcare providers and technicians, pharmacies, diagnostic labs and imaging centers, pharmaceutical and medical device manufacturers) devote most of their time and resources to people who are sick.

Advances in treatment come at a price for the nation's economy and society as a whole. A better balance could be achieved if prevention took its place alongside treatment. Effective prevention of NCDs costs less than diagnosis, treatment, and management of lifelong, incurable, and debilitating disease. Moreover, it results in a healthier, more vibrant society.

Treating disease is an idea that is easier to embrace than the complexity of behavior change required to prevent NCDs. Elevating prevention requires a greater share of the investment dollars that attract researchers, academic institutions, and leaders in science. In the policy world, the healthcare debate must give equal emphasis to prevention and disease management when considering long-term costs and benefits.

"Prevention reverses the usual order of clinical thinking: it often starts at the population level and then translates information back to the individual. Rather than dwell on the pathology of disease, preventive medicine focuses on risk. In curative care, the goal is usually to restore patients to their earlier, normal state of health. In prevention, as in dealing with hypertension or elevated cholesterol levels in a community, the goal is to shift the entire population-wide distribution to a healthier level, thus changing the norm. In curative care, the principal professional responsibility is to the individual patient, whereas in preventive care, focus is often at the population level and entails a responsibility to the entire community. In curative care, solutions involve prescribing medication, performing operations, or delivering other clinical therapies; in prevention, there is a much wider array of possibilities, from changing behavior choices to altering social conditions, in addition to clinical interventions such as immunizations. Ensuring the health of a population is more difficult than delivering health care to an individual."

Harvey Fineberg, President, Institute of Medicine[53]

Disparities

Disparities in health status between distinct groups of people, including differences by race or ethnicity, income, education, gender, sexual orientation, religion, disability, or geography, have been documented in the US since 1985.[54]

A 2006 study[56] highlighted a life expectancy gap of 35 years for race-county combinations. The prevalence of NCDs and their associated risk factors are readily apparent. For example, Mississippi has the nation's second-highest level of obesity after Louisiana,[57] with females in Issaquena County engaging the least in sufficient physical activity and suffering the most from obesity.[58] In contrast, Colorado has the lowest level of adult obesity in the nation,[57,59] with Routt County having the greatest number of individuals engaging in sufficient physical activity (see Figs 11a and b).[58]

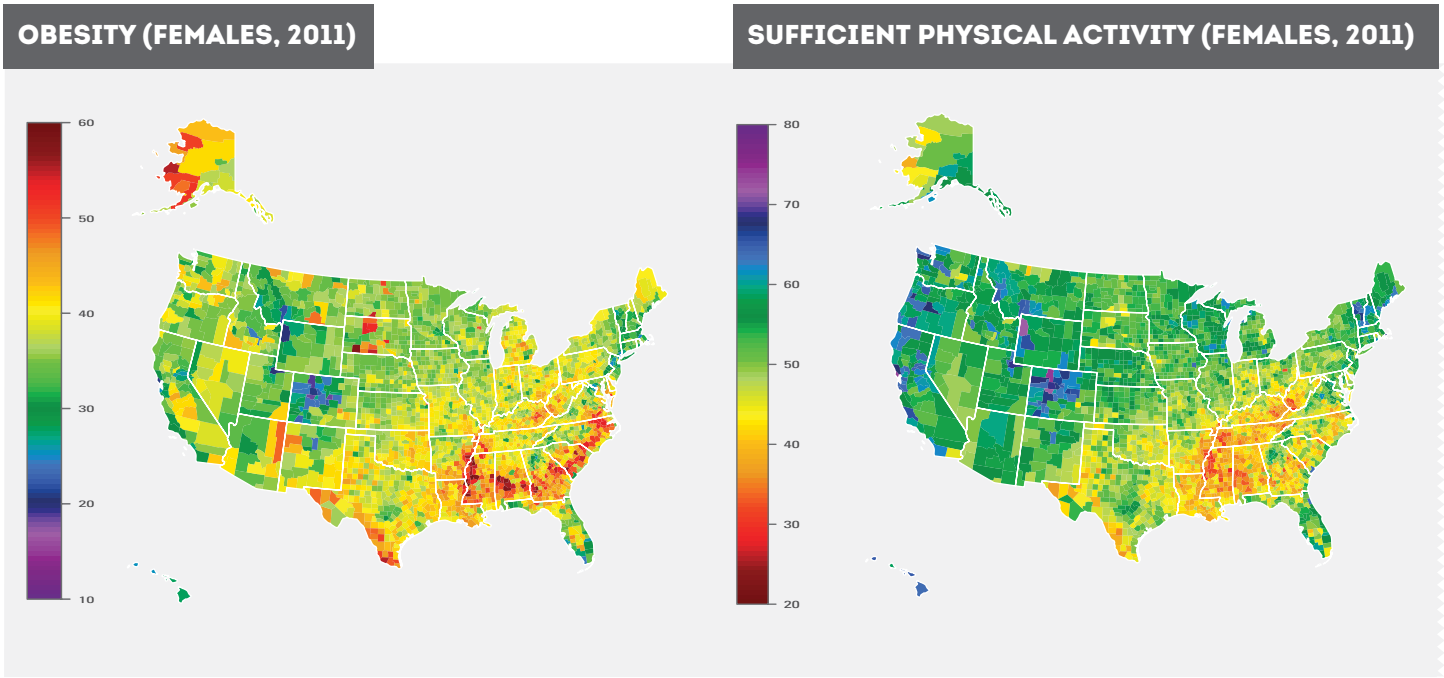


FIG 11.–OBESITY AND PHYSICAL ACTIVITY BY COUNTY[55]

Areas that have poor population health tend to be poorer economically; those with better population health are often more affluent. Statewide, Mississippi's median household income is $38,882 while Colorado has a median household income of $58,224.[60,61] (For an interactive map showing county-by-county correlations among poverty, risk factors, and life expectancy: viz.healthmetricsandevaluation.org/us-health-map.)

50 Years After the Surgeon General's Report, America Is Still Not Smoke-Free

In the US, the number of adults who smoke cigarettes has dropped dramatically since 1965, from 42 percent to 18 percent in 2012. As a result, 8 million premature deaths have been prevented in the past 50 years. Still, more than 40 million Americans continue to smoke. Socioeconomic disparities can be seen in smokers and non-smokers. An examination of 3127 counties from 1996 to 2012 found significantly fewer smokers in higher income counties than in those with the lowest income. During the study period, smoking among men declined in only 14.0 percent of the lowest income counties compared to 75.4 percent of the highest income counties. Among women, decline in smoking was seen in only 4.2 percent of the lowest income counties compared to 45.2 percent in counties with the highest income (see Fig 12).[62]

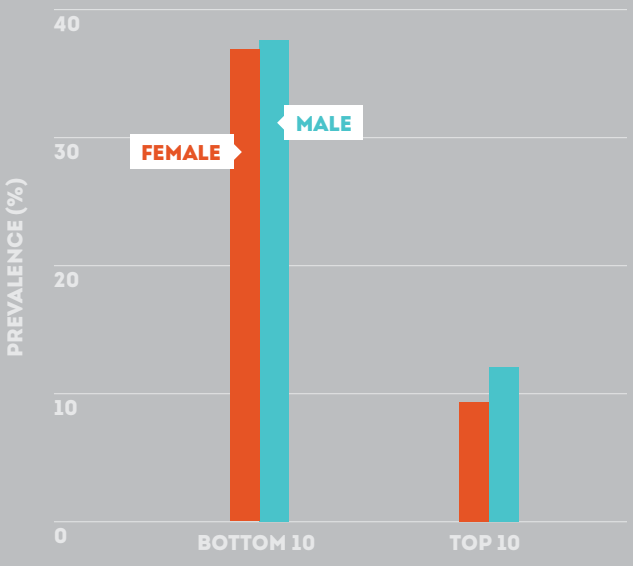


Fig. 12.—Median of Top 10 and Lowest 10 Counties Cigarette Smoking Prevalence, 2012[63]

It is essential that prevention move beyond diseases alone to address the determinants of health in the context of families, homes, communities, and worksites. Progress is being made in this direction. The National Partnership for Action to End Health Disparities (NPA) was established by the Department of Health and Human Services (HHS) to mobilize a comprehensive, community-driven, and sustained approach to combating health disparities and to move the nation toward achieving health equity. As an outgrowth of nationwide town meetings, HHS issued two guidance documents, which are intended to coordinate action to address racial and ethnic health disparities: The National Stakeholder Strategy for Achieving Health Equity outlines four categories of determinants of health: social, behavioral, environmental, and biological and genetic.[64] The HHS Action Plan to Reduce Racial and Ethnic Health Disparities builds on the objectives of Healthy People 2020 and leverages key provisions of the ACA.[65]

"We cannot improve the health of our nation or workforce without addressing health disparities. We must identify opportunities to close the health gap between different groups and deliberately act in a targeted manner to improve health equity."

Paul Jarris, Executive Director,
Association of State and Territorial Health Officials,
and Vitality Institute Commissioner

Short-Term Thinking about a Long-Term Challenge

Individuals, policymakers, and private and public sector stakeholders are all subject to making decisions based on irrational responses rather than informed thinking. One of these so-called decision errors is present bias, a concept drawn from behavioral economics to describe the tendency to favor short-term wins over long-term gains.[66,67]

Individuals want immediate rewards—a cigarette, a slice of pizza, an evening watching television—rather than adopting healthy habits and behaviors that have the potential to pay off in the future. Employers expect a positive return on investment (ROI) for implementing workplace well-being programs, but the timeframe to reap financial benefits through healthcare cost savings extends beyond the average employee's tenure.[11] Politicians who want to justify actions and expenditures while they are still in office may be reluctant to support programs that will pay dividends in a more distant future. Policymakers want immediate impact, so the time lag between introducing a prevention policy and the realized benefit to health puts prevention at a disadvantage to other policies that produce rapid results. Funding bodies use relatively short timelines, with grants and other support rarely extending long enough to test the long-term results of prevention interventions.

Across the entire spectrum of decision making, present bias represents an obstacle to facing the long-term challenges of health promotion and NCD prevention. Overcoming the challenges will take a widespread shift in cultural norms. Embracing health as a strategic imperative may be the best way to move beyond short-term thinking.

Evidence Trumps Short-Termism

A Commentary on a paper published in *The Lancet* on the effects of smoke-free legislation observes: "One reason that politicians are reluctant to invest in aggressive tobacco control policies and programmes is the perception that the costs (money and the risk of irritating tobacco companies) come now, whereas the benefits (reduced disease and medical costs) are years away. ... In addition to clearing the air, smoke-free laws bring rapid health benefits and improved lives, whilst, at the same time, reducing medical costs by avoiding emergency department visits and admissions to hospitals."

The paper focused on infant and child health, but the comment also observed "benefits for adults, including drops in hospital admissions for cardiac disease, cerebrovascular accidents, and respiratory disease, and reduced ambulance calls." It concluded that "the rapid economic benefits that smoke-free laws and other tobacco control policies bring in terms of reduced medical costs are real. Rarely can such a simple intervention improve health and reduce medical costs so swiftly and substantially."[68,69]

Broader prevention policies have the potential to yield similar gains, in both the short and long terms.

Inadequate Funding for Research to Build Evidence Base

Four barriers related to health research fuel the debate about whether prevention saves money and represents a good investment.

1. Knowledge gaps about specific cost-effective prevention and health promotion policies and programs
2. Failure to realize the full potential of behavioral economics
3. Lack of effective strategies to implement programs for different population groups and settings
4. Failure to effectively communicate robust evidence where it exists[70,71]

As a result, opportunities are missed to improve population-based health through disease prevention and health promotion.[72]

The Institute of Medicine (IOM) has proposed that burden of disease and preventability should be major factors for setting public health priorities and research funding. However, a comprehensive analysis of National Institutes of Health (NIH) funding for human behavioral interventions that target modifiable risk factors of NCDs found that of its $30 billion annual budget, NIH spends approximately $2.2–2.6 billion on behavioral studies, equivalent to less than 10 percent of its total budget.[72]

Although federal spending on research related to NCD risk factors is generally consistent with the burden of disease in the US, the proportion of NIH spending on prevention remains low compared to discovery of new treatments for NCDs and does not reflect their preventability. For every dollar spent on discovery by the NIH, pennies are spent on research to understand how to effectively implement prevention interventions.[71,73]

Federal Funding for Research: Misplaced and Missing the Target

Research on NCDs is not only underfunded; it is often misdirected. Support is weak for research into interventions that could have an impact on major NCDs. For example, research dollars directed toward preventing cardiovascular diseases (CVD)—the leading cause of death in the US—are disproportionately small compared to less prevalent causes of death. On the face of it, the $2 billion NIH spends annually on CVD research appears generous, but when this figure is divided by the number of deaths attributable to CVD each year, it amounts to only $2659 per death less than for other major causes of death.[74]

The ACA-mandated Patient-Centered Outcomes Research Institute (PCORI) has set five national priorities for funding comparative effectiveness research, which is designed to inform healthcare decisions by providing evidence on the effectiveness, benefits, and harms of different treatment options. The first priority is "evaluating prevention, diagnosis, and treatment options."[75] Indeed, this research area has thus far received the most funding and has approved the greatest number of research proposals, but NCD prevention is minimally represented among them.[76] PCORI is expected to receive an estimated $3.5 billion to fund patient-centered outcomes research through September 2019, the date through which ACA authorizes its funding source. PCORI-funded research could be an important avenue for establishing an evidence base for prevention interventions. What is needed are more proposals for research targeting prevention of NCDs and more funding for that research.

Many community-based health promotion and disease prevention programs have shown promising health outcomes, but information on how programs affect healthcare costs is lacking.[77] While not all preventive interventions should receive unqualified support, a more level playing field for funding between prevention and treatment could provide policymakers with critical information for evidence-driven decision making.

The need is urgent for increased and more targeted investment in primary, population-based prevention by federal funding agencies to support scientific inquiry to advance disease prevention and health promotion, and to continue progress toward building a culture of health.

Leadership Gap

Above all, what is lacking to turn the tide against NCDs and make health promotion the cornerstone of a culture of health is leadership. Public health, which is itself underfunded, cannot be expected to single-handedly advocate for prevention.

Stakeholders currently operate in silos, rather than participating in a broader discussion where they can learn from others what the needs are, what works and what does not, and what each brings to the table in terms of ideas, resources, strategies, and skills. When it comes to prevention and health promotion, lack of a sense of common interest and common cause bars leaders from different sectors from finding a common language. Competition within sectors makes leaders reluctant to share ideas. Disease-specific associations guard their own domains rather than joining forces against a common foe. Researchers compete for scant funding resources. And in a striking example of short-termism, graduate institutions are not proactively training the next generation of leaders to advocate for prevention, either in practice or in policy.

First Lady Michelle Obama has led the way in child health, emphasizing more activity and better nutrition. The Office of the Surgeon General has issued a National Prevention Strategy. These high-profile voices are calls to action, but action requires dynamic leaders with influence within their own spheres and the authority to work with their counterparts.

Mapping the future allows for better understanding of potential successes over the short, medium, and long terms.

FIG 13.–TECHNOLOGY CATALYSTS FOR HUMAN AND ECONOMIC VITALITY 2030
The Institute for the Future has mapped out the future of technology-enabled health.

The Commission engaged the Institute for the Future (IFTF) to envision technologies that could have an impact on prevention in the future and the implications for the health of Americans into the next two decades (see Fig 13). Download the IFTF map at: www.thevitalityinstitute.org/technologycatalysts.pdf.

The Institute for Alternative Futures, with funding from the RWJF and the Kresge Foundation, has developed four alternative scenarios of public health in 2030. Their draft recommendations for action align with those of the Commission:

- Transform public health agencies into "Health Development Agencies" with dedicated, sustainable, and sufficient funding.
  - Implement policies for the systematic use and development of evidence and best practices.
  - Build public health agencies' role in fostering and promoting prevention strategies.
- Partner in healthcare transformation to facilitate the evolution from a healthcare system to a health system.
- Build the capacity for dialogue about inclusion, opportunity, and equity.
- Dialogue with other sectors to support innovation.

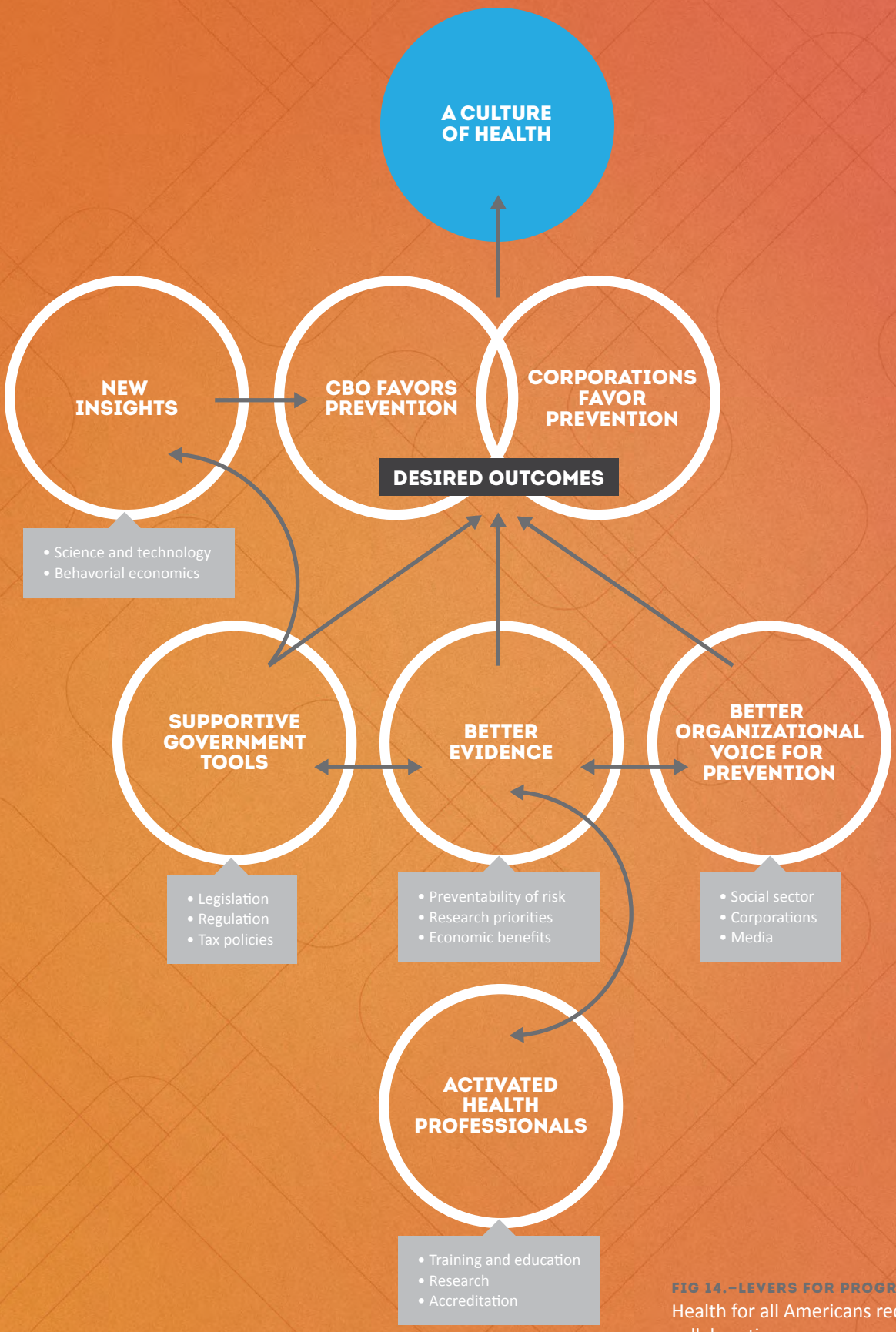


FIG 14.–LEVERS FOR PROGRESS
Health for all Americans requires multi-sector collaboration.

Note: The Congressional Budget Office (CBO) scores government programs worthy of investment

Recommendations of the Vitality Institute Commission: What If We Got It Right?

The Vitality Institute Commission's recommendations seek systemic progress toward achieving a culture of health (see Fig 14). The recommendations are bold and aspirational, but attainable through decisive leadership and collaboration among stakeholders. Each recommendation includes targeted, actionable, measurable, and scalable pathways to success in the short (by 2017), medium (by 2020), and long (by 2025) terms. Taken together, the recommendations offer a strategy for creating sustainable competitive advantage for our local, state, and national economies and a blueprint for improving the health of all Americans.

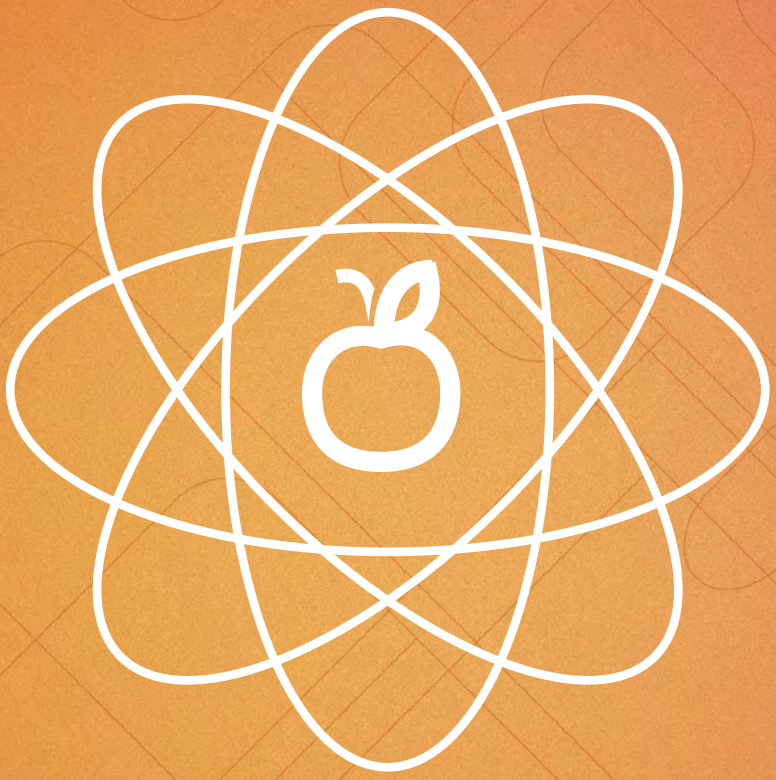
Best Practices: Learning from What Works

Perhaps the most effective way to ensure progress is to learn from and build on what works. Best practices and pilot programs are models to inform decision-making and drive policy change. Replicating successful intervention programs at scale and achieving consistent effects will develop practice-based evidence.[78] Looking beyond its borders for models may be useful as the US strives to improve the health of its population. Where ground has not yet been broken in the field of prevention and health promotion, analogues from other fields may show pathways. Examples of programs and initiatives that work are offered along with the Commission recommendations. These strategies may be used as a toolkit for pushing progress.

Alignment of Commission Recommendations with Institute of Medicine Reports

The Institute of Medicine (IOM) is the health arm of the National Academy of Sciences. An independent, non-partisan body, the IOM provides unbiased, authoritative, evidence-based advice on the nation's most pressing questions about health and healthcare to decision-makers and the public. In addition to consensus reports from expert panels requested by Congress, federal agencies, and independent organizations, the IOM also convenes forums, roundtables, and other activities to facilitate discussion, discovery, and cross-disciplinary critical thinking.

In developing its own recommendations, the Commission consulted with the IOM to identify alignment with the Institute's most recent recommendations related to prevention. (See Appendix: Table 3 for selected examples of correlations between Commission and IOM recommendations; greater detail can be found at: www.thevitalityinstitute.org/RecsIOM.)



Invest in prevention science.

The Commission believes that prevention science, as the systematic application of scientific methods to the causes and prevention of health problems in populations, should be supported. It also believes that the discipline should extend beyond the traditional fields of epidemiology and public health to gain insights and gather evidence from behavioral economics and innovations in technology. A complementary approach that adapts public sector intervention to opportunities arising from private sector innovations to improve health behaviors and outcomes will result in a stronger and more comprehensive platform for intervention design and implementation.

Scientific evidence is necessary to develop effective public policies that improve health. A timely and heated example is electronic cigarettes (e-cigs), battery-powered devices that deliver vaporized nicotine without burning tobacco. In February 2014, the European Parliament approved rules to regulate e-cigs throughout the 28-nation European Union, and in April, the US Food and Drug Administration proposed a similar regulatory framework. Although some argue that e-cigs have potential as a harm-reduction strategy, others view them as a gateway to smoking and a threat to the gains made in reducing the incidence of smoking. Opponents and proponents alike lack evidence to support their views. Systematic studies are needed regarding untoward health effects, optimal safety features, impact on children, and whether e-cigs offer a viable alternative for existing smokers that may be equally or more effective than nicotine replacement therapies such as patches and gum.

If prevention is to gain the support and resources it needs, evidence in its favor must be generated, coordinated, and presented in a way that enables decision- and policymakers to understand the value of investing in prevention and takes into account their priorities, interests, and constituencies.

What Constitutes Evidence?

Randomized controlled trials (RCTs), the "gold standard" in biomedical research, have limitations when it comes to moving from what works under ideal circumstances (efficacy) to scaled-up, real-world application (effectiveness). It is possible to reach beyond the narrow confines of conventional RCTs to study complex issues in community settings, as Esther Duflo and Abhijit Banerjee have done in their fieldwork on poverty.[79] Studying the effectiveness of interventions to alter behavior that increases risk for one or more NCD is similarly complex, requiring diversification of the type of methodologies used to evaluate public health trials.[80]

CMS outlined the challenges of gathering evidence for the cost-benefit analysis required under Section 4202 of the ACA. It developed a lengthy, three-stage process of evidence gathering, which has yet to be completed. The first phase, a literature review, found "several established wellness and prevention programs with a firm evidence base. These programs typically demonstrated improvements in health behaviors and proximate health outcomes. Results for chronic disease self-management and physical activity programs were especially promising," but concluded that "there are some gaps in the established evidence that make more widespread implementation of programs challenging."[77]

"Ensuring adequate funding for prevention science should be a high national priority, as it's the public's health that is at stake. America should be increasing its commitment to public health and prevention science and practice at a time when our fiscal strength depends increasingly on that commitment. What higher national priority should there be?"

Linda P. Fried, MD, MPH, Dean and DeLamar Professor of Public Health, Columbia University Mailman School of Public Health, and Vitality Institute Commissioner

New Kinds of Research Yield New Kinds of Evidence

Other types of evidence are needed to establish the long-term effectiveness of prevention strategies. The speed of adoption of personal devices to track changes in risk behaviors in relation to biological measures creates a demand for innovative designs to better evaluate impact beyond the current reliance on large-scale surveys.

Some alternatives include:

- **PRAGMATIC TRIALS**
  Conducted in "real-world" settings, pragmatic trials are centered on individuals rather than symptoms and measure a range of outcomes. "Policy makers have an active interest in pragmatic trials, since these are designed to answer the question most relevant to a decision maker's agenda: comparative effectiveness of interventions in the routine practice. Along with the implementation of cost-effectiveness analyses, pragmatic trials can inform policy makers and health care providers of a treatment's cost in real-life situations."[81]

- **PRACTICE-BASED EVIDENCE**
  This type of translational research can be applied to evaluating prevention programs through systematic reviews and case studies. It is well-suited to programs involving lifestyle modification to reduce multiple risk factors because it recognizes that health is multifaceted and people are too complex to fit the "cause and effect" paradigm of the scientific method.

- **RAPID-CYCLE RESEARCH**
  This "push-pull" model captures and feeds back data once a program is launched, allowing early insights and the opportunity to fine-tune, add elements, conduct interim analyses, and perhaps most useful, learn from both success and failure.[82]

- **IMPLEMENTATION RESEARCH**
  This research investigates policies and programs in real, complex contexts to discover challenges that are not foreseen in controlled research studies but that may arise during implementation. Implementation research can be used to develop an evidence base on how to achieve consistent effects when programs operate at scale, which is of particular value for decision-makers.[78]

It is a hopeful sign that the Office of Disease Prevention (ODP) at the NIH, under the leadership of David M. Murray, has prioritized prevention research, including development of new methodologies well suited to evaluating interventions. ODP completed its first strategic plan in February 2014, laying out six strategic priorities to improve existing programs and to establish new initiatives to advance research on prevention.[83]

1. Systematically monitor NIH investments in prevention research and assess the progress and results of that research.

2. Identify prevention research areas for investment or expanded effort by the NIH.

3. Promote the use of the best available methods in prevention research and support the development of better methods.

4. Promote collaborative prevention research projects and facilitate coordination of such projects across the NIH and with other public and private entities.

5. Identify and promote the use of evidence-based interventions and promote the conduct of implementation and dissemination research in prevention.

6. Increase the visibility of prevention research at the NIH and across the country.

Learning from What Works

Prevention science as defined by the Commission breaks out of the biomedical research silo to draw from other disciplines and other sectors. In private industry, for example, innovation research and development uses market research, pilot projects, focus groups, and other strategies that focus on their end users to discover what works. Behavioral economics draws insights from psychology and microeconomic theory.

In the UK, the Foresight Program relies on multidisciplinary input to study a range of societal challenges. Established by the UK government in 1994, the Program is tasked with systematically envisioning the country's future to help policymakers tackle complex issues with an understanding of opportunities and challenges. The Program's 2007 report, Tackling Obesities: Future Choices,[84] is a prime example of the use of scientific evidence from a range of disciplines to inform a strategic view of a major societal challenge. The report, which was prepared under the leadership of the Treasury—not the Ministry of Health—highlights the diversity in public and private stakeholders required to address obesity. (For an interactive map of obesity: http://www.shiftn.com/obesity/Full-Map.html.)

Behavioral Economics

Pioneered by Nobel laureate Daniel Kahneman, behavioral economics is a powerful, evidence-based tool for both understanding and influencing human behavior in individuals, groups, and institutions.[85] In addition to applications in advertising, marketing, and advocacy, behavioral economics has been adopted by policymakers. According to Harvard University economist David Laibson, behavioral economics has only just begun to extend its influence over public policy.[86]

Nudging Public Policy

In the UK, the Behavioral Insights Team (the "Nudge Unit") was established in 2010 within the Department for Business, Innovation & Skills to apply research findings in behavioral economics and psychology to policymaking. Its initiatives have included encouraging people to pay taxes on time, insulate their homes, enroll for organ donation, and stop smoking during pregnancy. Early in 2014, the unit was spun off as a "social purpose company" operating as a joint venture of the UK government, team employees, and the social sector technology incubator, Nesta (founded as National Endowment for Science Technology and the Arts). The new venture will broaden its scope to work in both the UK and internationally with business and social sector organizations, as well as local and national governments.

The White House Office of Science and Technology Policy has proposed an inter-agency Social and Behavioral Science Initiative. As part of a larger effort to promote evidence-based policy, the initiative will explore how academic findings from social and behavioral sciences can be used to design public policies that work better, cost less, and better serve citizens. It will promote collaboration among federal agencies in order to embed social and behavioral research insights into a range of policy initiatives and to test outcomes using rigorous experimentation and evaluation methods.

"Behavioral economics has the potential to transform health interventions by leveraging important learnings about decision errors that make people predictably irrational to design more effective approaches to help people get healthier."

Kevin G. Volpp, Director, Leonard Davis Institute Center for Health Incentives and Behavioral Economics, University of Pennsylvania

By applying an understanding of messages, incentives, and the way choices are structured and presented, behavioral economics can help people achieve their own goals without limiting freedom of choice. For example, arranging food in a cafeteria line so that healthier foods appear first or are easier to reach than less healthy foods is likely to increase healthy food consumption without denying people the freedom to choose less healthy foods.[87] Using financial incentives to encourage positive choices can reduce short-termism by nudging those who are prone to making irrational decisions, while not harming those making informed, deliberate decisions.[85]

Behavioral economics is particularly well-suited to prevention science, and shows promise when integrated into the design of prevention and health promotion programs focused on altering behavior to reduce risk for NCDs.[88,89]

A randomized clinical trial testing the effects of incentives on smoking cessation gives evidence of the value of behavioral economics as a prevention strategy. Out of 878 members of the General Electric workforce, 442 received information on smoking-cessation programs while 436 received program information plus the promise of incentives: $100 for completing a smoking-cessation program; $250 for stopping smoking within 6 months after enrolling in the study; and $400 for remaining smoke-free for an additional 6 months after quitting. Non-smoking status was confirmed by a lab test. Those in the incentives group enrolled in a smoking-cessation program at a higher rate (9.4 percent) than those who received program information only (3.6 percent). Quit rates within 6 months were also higher—10.8 percent with incentives versus 2.5 percent with information only. At 9 or 12 months after enrollment in a cessation program, the group receiving incentives remained smoke-free at a rate of 14.7 percent versus 5 percent of those who did not receive incentives.[90]

Training Tomorrow's Leaders in Prevention Science

If prevention science and practice are to take their place in the nation's health system, a new generation of leaders—researchers, practitioners, and policymakers—must be educated. Gaps in training programs and curricula must be filled, particularly in the multidisciplinary areas required to conduct research and influence policy. Schools of public health need a stronger focus on health policy. Schools of medicine and nursing need a stronger focus on prevention. In schools of law, business, and public policy the gap is even greater: they rarely consider health, let alone prevention.

Graduate training for the health professions mirrors the limited real-world attention to disease prevention and health promotion.[92,93] Medical and nursing education are primarily oriented toward treatment, rather than prevention. For example, one survey found that 94 percent of physicians believe that nutrition counseling should be incorporated into primary care visits, yet only 14 percent feel adequately trained to provide it.[94] In 1985, the National Academy of Sciences recommended that all medical schools include a minimum of 25 contact hours of nutrition education. Nonetheless, only 38 percent of medical schools had met these minimum standards as part of their general curricula in 2004, and by 2010 that number had fallen to 27 percent.[95] A bill introduced in Congress would require the Secretary of HHS to issue guidelines to federal agencies to develop procedures and requirements to ensure that primary care professionals have at least six credits of continuing medical education related to nutrition. As of April 2014, the Education and Training for Health Act of 2014 had been referred to the House Committee on Energy and Commerce.[96]

NIH funding has a significant impact on medical schools and the career development of research scientists since more than 80 percent of the NIH budget funds grants that support an estimated 350,000 scientists at the nation's medical schools.[97,98] Since that funding is generally targeted to exploring treatment therapies, universities and, in turn, individual faculty tend to set their priorities on clinical and laboratory science at the expense of prevention. The content focus of health research matters because researchers, especially junior scholars, will likely be attracted to a line of inquiry that offers a promising career path.

As a practical matter, there will be little incentive for universities to undertake radical revisions to current curriculum content until there is greater investment in prevention science and a critical mass of careers in health promotion and prevention. Although reforming the content of graduate education will not solve the problem on its own, it will contribute to furthering research in prevention science and training a new generation of leaders in building a culture of health.

Learning from What Works

Alternatives to Curriculum Reform

Many suggestions for reform call for expanding health-related curricula,[99] but students are often overwhelmed by existing degree requirements. Initiatives in both health education and the broader education sector suggest other opportunities to strengthen and better integrate prevention in graduate-level and career training.[100] Some possibilities include:

- **PRACTICE-ORIENTED COURSE OFFERINGS**
  Existing courses could be adapted to provide practice-oriented opportunities, such as internships and practicums in community health centers and legal clinics. Georgetown University's Law Center, for example, has transitioned several courses previously offered as lectures or seminars to experiential learning courses.[101] In the health-law practicum, students are assigned to projects from a number of sources, including social sector organizations and local health systems, both of which require multidisciplinary solutions.

- **DUAL-DEGREE PROGRAMS**
  Joint-degree programs are multidisciplinary by design, and many schools of medicine, law, and policy already offer joint degrees in cooperation with schools of public health. Students self-select into these programs and welcome the intensive training across competencies, which generally includes more robust public health curricula.

- **ONLINE DELIVERY PLATFORMS**
  The burgeoning field of massive open online classrooms (MOOCs) offers free online courses in a variety of subjects to the public at large. A growing number of schools see MOOCs as an opportunity to engage a broader audience. In the public health field, Johns Hopkins University offers courses on biostatistics, epidemiology, and data analysis.[102] Universities should consider partnering across departments to create multidisciplinary offerings, without necessarily having to create new content.

"The harsh, commercial atmosphere of the marketplace has permeated many academic medical centers. Students hear institutional leaders speaking more about 'throughput,' 'capture of market share,' 'units of service,' and the financial 'bottom line' than about the prevention and relief of suffering. Students learn from this culture that health care as a business may threaten medicine as a calling."

American Medical Education 100 Years after the Flexner Report [91]

Prevention at George Washington University

Gifts totaling of $80 million will enable George Washington University's school of public health to focus on some of the most complex public health issues, beginning with the health impacts of obesity and ways to improve health, nutrition. and physical activity. Newly renamed the George Washington University Milken Institute School of Public Health, the School will house the Sumner M. Redstone Global Center for Prevention and Wellness. Recognizing that "advances in treatment and cures have been rapid, but the benefits for public health have been muted as these strides are largely offset by poor nutrition, insufficient focus on prevention and wellness, environmental factors and lifestyle decisions," the Redstone Center will leverage its location in the nation's capital to work with other major US and international health institutions and schools of public health to drive change.

Recommendation 1

Invest in Prevention Science.

Pathways

Increase public and private sector funding for prevention science and research, through companies, foundations, the NIH, CDC, and PCORI.

Expand the understanding of prevention science to encompass epidemiology, behavioral economics, and application of personalized technology, as reflected by influential papers published in peer-review journals.

Reinforce the understanding among individuals and institutions that prevention is a critical investment with high-value returns.

Measures of Success

Short term **2017**

- The federal government has increased the proportion of total health funding for prevention science research by at least 10 percent, measured by the number and size of grants.
- Private-public partnerships have been formed at local, state, and federal levels to advance prevention science and to develop common metrics to report on progress.
- The Council on Foundations has reported on and given priority to NCD prevention and health promotion in its future funding.

Medium term 2020

- The IOM has reviewed and recommended new science-based guidelines for assessing the effectiveness of prevention and community- and workplace-based health promotion programs that go beyond a sole reliance on RCTs.
- The curricula of graduate schools of health, medicine, law, policy, and business have evolved to reflect the cross-disciplinary importance of health and prevention as a required subject of study.
- A growing body of convincing, robust evidence demonstrating that a healthy workforce is vital to our nation's security, job creation, economic growth, and global competitiveness is disseminated and used by policymakers and corporate leaders.

Long term 2025

- Enrollment in graduate programs to develop into executive health leaders for prevention across sectors has seen a meaningful increase.
- A dynamic and attractive career path for prevention science leaders has been widely established and adopted with support of the NIH and CDC as well as the social, education, and business sectors.
- The CBO uses evidence-based prevention research in scoring and recommending the size of prevention and health promotion budgets across federal agencies.

Strengthen and expand leadership to deliver a unified message for health and prevention.

Advocates for prevention have not coalesced around a position or agreed upon key messages. They come from disparate realms representing different interests and priorities. Public health rarely talks to business, the social sector rarely talks to academic researchers who in turn do not speak the language of policymakers. The media further muddles these messages. It is not surprising that the strongest and most consistent voice in the health arena—the voice for treatment and disease management—is heard most clearly and is most often acted upon.

Stakeholders for prevention have not historically seen value in working together and, to date, have not joined in common cause. It is essential that they develop coherent messages that are backed by a robust evidence base and a compelling argument for the economic value of a healthy workforce. And they must speak with a unified voice.

Leadership

In its Bipartisan Rx for Patient-Centered Care and System-Wide Cost Containment,[4] the Bipartisan Policy Center asserted that visible and sustained senior leadership commitment to prevention is critical to its success. There is an urgent need to recruit champions to spearhead a movement for prevention. If prevention is to take its proper place in the health system, with policies to support research and implementation, it will take a broad coalition of those who have the most to gain from a healthier nation and the greatest leverage to achieve it.

Effective leaders are able to listen as well as speak with conviction. They are as forceful as they are forward looking. Working with others, they create synergies. They must be brought together from diverse fields, ranging from private industry to the military, law to law enforcement, transportation to agriculture, finance to retail, education, technology innovation, research, manufacturing, health insurance, architecture, urban design, labor, service industries, local governments, the faith community, professional sports, entertainment, media, advertising, and communications—the entire spectrum of American life.

Leaders in prevention must be equipped with the best evidence from prevention science that is relevant to their own fields and willing to listen to what matters to those in other fields. They must be open to sharing their specialized knowledge as well as learning from others. Only then will they be able to create the synergy needed to promote the prevention message, and to take their places at the table where the research agenda, funding, and health policy are debated.

In the US, advocacy by a small number of government and political figures has raised the profile of prevention and galvanized some action by industry, the social sector, and communities. Within industry, a small but growing group of chief executive officers (CEOs) has championed prevention programs for their workforce and some have formed coalitions with other companies and groups.[103] Many CEOs of US corporations have been drivers of the World Economic Forum's Workplace Wellness Alliance. Despite these exemplars, the leadership cadre remains small, and there is a significant lack of representation from smaller businesses. Small businesses with fewer than 20 employees account for the majority (89.8 percent) of firms in the US. Collectively, small and medium-sized enterprises (SMEs) employ nearly half (48.5 percent) the American workforce, so it is crucial to develop and support leaders from the SME community (see Appendix: Table 4).[104]

Notably, the Federal Reserve Bank of San Francisco (which covers Alaska, Arizona, California, Hawaii, Idaho, Nevada, Oregon, Utah, Washington, the Northern Mariana Islands, American Samoa, and Guam) has actively linked health with community investment to improve health disparities that exist across populations of differing socioeconomic and demographic backgrounds. Investing in What Works for America's Communities is a joint project of the Federal Reserve Bank of San Francisco and the Low Income Investment Fund.[105] The Healthy Communities Initiative, a partnership with RWJF, was designed to enrich the debate on how cross-sector and place-based approaches to revitalize low-income communities might also improve health, and to encourage stronger linkages between the two sectors and move them forward toward a healthier future.[106]

On the local level, leadership from mayors, school and planning boards, and church and civic organizations, has been influential in tackling challenges and implementing solutions tailored to the needs of their communities. The impact of ill health and the benefits of prevention touch the lives of ordinary citizens in ways that local leaders are well positioned to address in innovative ways. Grassroots efforts have the potential to grow and spread to other communities and eventually to society as a whole.

People in leadership positions act as catalysts, inspiring action that builds momentum. First Lady Michelle Obama launched Let's Move! in 2010, the first national initiative dedicated to increasing physical activity and decreasing obesity among children. The stature of the First Lady gives her an unprecedented leadership role, but she can serve as a model for other high-profile people in all sectors of society.

Learning from What Works

Perhaps the best analogues for what the Commission views as Corporate Health Accountability are the well-established business principles of sustainability and corporate social responsibility (CSR). As recently as two decades ago, these were novel concepts. Very few people were trained as professionals in these areas and fewer still held leadership positions in major corporations. Today, CSR and sustainability are crucial to overall business strategies, with key representation on executive leadership teams.

Leadership in the Business Community

CEOs of a number of major corporations have championed the health of their own workforce. Examples include:

- **STEVEN BURD** developed Healthy Measures at Safeway, which provides the supermarket giant's workforce with reductions in their insurance premiums if they remain within specific limits on four risk factors – smoking, obesity, blood pressure, and cholesterol.
- **MICHAEL CRITELLI** was a pioneer in workforce health and prevention when he headed Pitney Bowes. Along with former Corporate Medical Director Jack Mahoney, he instituted an integrated approach focused on preventive care, removing barriers to receiving care and providing resources that empower employees to take control of their health.
- **JOHN HAMMERGREN** introduced Vitality's voluntary workplace program to over 85 percent of McKesson Corporation's workforce. McKesson aims to empower their workforce to improve their health by encouraging them to set health goals, including regular physical activity and healthy eating.
- **INDRA NOOYI** initiated PepsiCo's Performance with Purpose, a promise to deliver sustainable growth by investing in a healthier future and a commitment to PepsiCo's workforce that also extends to consumers, the communities in which it operates throughout the globe, and the planet.
- **WILLIAM WELDON** led an entire culture shift at Johnson & Johnson by realizing that workforce health makes business sense at the same time as it provides personal benefits. Weldon implemented the Tobacco-Free Workplace Policy that prohibits tobacco use at 98 percent of the company's locations.

Bipartisan Policy Center CEO Council on Health and Innovation

The Bipartisan Policy Center is harnessing the collective influence and experience of CEOs of some of the nation's largest employers. Their mandate is to identify and share innovative strategies and best practices to improve workforce health and the quality and cost-effectiveness of care, with the goal of encouraging adoption of such practices by other large and medium-sized companies. A Health Care Advisory Board representing clinicians, consumers, health plans, and hospitals, has been formed to provide expert guidance in this collaborative effort.

The Denver Metro Chamber of Commerce

Chambers of Commerce can provide leadership among smaller businesses, which may not have the financial resources or political clout to do it on their own. The Denver Metro Chamber of Commerce considers workplace health as material to the metropolitan area's economic viability and core to its brand as a magnet for healthy lifestyles.

As Kelly J. Brough, Chamber President and CEO, states, "Our workforce is our most competitive advantage. Ninety percent of our companies in Colorado have fewer than 20 employees and they employ one half of our workforce. We make sure that employers understand that they can have as high as 25 percent increase in productivity from folks who are healthy, who aren't calling in sick, who don't need more time off, who aren't slowing down in the afternoon."

Partnership for a Healthier America

A nonpartisan, nonprofit organization led by some of the nation's most respected health and childhood obesity advocates, Partnership for a Healthier America (PHA) is dedicated to addressing childhood obesity by catalyzing commitments between public, private, and social sector groups. Founded in 2010 in conjunction with, but independent from Let's Move!, PHA has to date secured commitment from over 60 partners, affecting 45 million Americans in nearly 2000 cities. In 2012, Birds Eye committed to invest $6 million in marketing vegetables to children. In 2014, Del Monte Foods committed to improving the nutrient density of products and an $18 million marketing campaign to promote fruit and vegetable consumption.

The Healthy Weight Commitment Foundation

A CEO-led organization designed to help reduce obesity in the US by 2015, the Healthy Weight Commitment Foundation (HWCF) brings together more than 250 retailers, food and beverage manufacturers, restaurants, sporting goods and insurance companies, trade associations, and professional sports and social sector organizations. Its mission is to promote solutions that help people achieve a healthy weight by balancing the calories they consume with the calories they burn. In January 2013, HWCF published results on their pledge to reduce 1 trillion calories from the marketplace by 2012 and 1.5 trillion by 2015. An independent assessment determined that HWCF had already exceeded their 2015 goal by over 4 trillion calories.[107]

The Clinton Global Initiative

The Clinton Global Initiative (CGI) is a major venue and approach to building tangible commitments to prevention. Established in 2005 to convene global leaders to address the world's challenges through innovative and creative solutions, CGI is focused on turning ideas into action. A Commitment to Action made through CGI must be new, specific and measurable. To date, members of the CGI community have made more than 2800 Commitments to Action, which are already improving the lives of more than 430 million people in over 180 countries. When fully funded and implemented, these commitments will be valued at $103 billion.

In 2013, for example, Pro Mujer, Sesame Workshop, the Mayo Clinic, and Pfizer committed to leverage their core competencies to promote healthy habits among more than 271,000 Pro Mujer clients and their families in Latin America, where chronic diseases account for 68 percent of mortality. By utilizing new technological platforms, such as social marketing videos, internet and web content, remote consultation and training, and mobile technology to address chronic disease prevention from multiple angles, the Pro Mujer initiative aims to educate and support patients, families, and providers.

"Healthier Futures: Prioritizing Prevention"

At its 2013 annual meeting, CGI hosted a plenary session to explore how to position prevention, invest in more economical measures to address NCDs, and leverage new insights from behavioral economics to incentivize change. Participants in the panel discussion moderated by Chelsea Clinton, Vice Chair of the Clinton Foundation, were Margaret Chan, Director-General of the World Health Organization; Adrian Gore, Chief Executive Officer of Discovery Limited; and Risa Lavizzo-Mourey, President and CEO of the Robert Wood Johnson Foundation.

Recommendation 2

Strengthen and expand leadership to deliver a unified message for health and prevention.

Pathways

Generate frequent references to and advocacy for prevention as a top priority and strategic asset by leaders from the public, private, and social sectors.

Establish trusted collaborations between public, private, and social sectors that catalyze investment in prevention.

Develop and disseminate clear and compelling messages for government and business leaders (through private-public consortiums) that convey the human and economic value of prevention.

Measures of Success

Short term **2017**

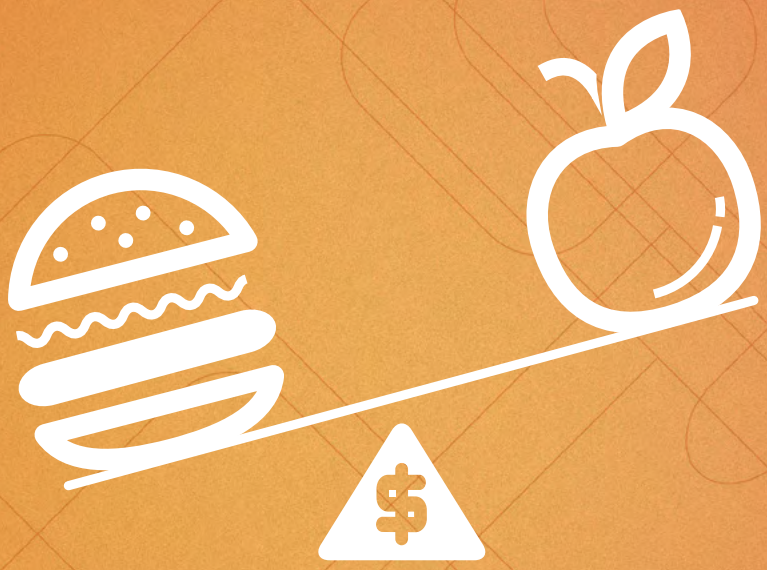
- Business groups and convening platforms covering different industries and small, medium, and large companies have formed councils to share best practices and work to integrate health as a core value in their corporate charters.
- A *Culture of Health* has become part of the policy and leadership lexicons, with new and established voices from diverse sectors referring to it in public statements and documents.
- Health has been incorporated as a core attribute within existing corporate social responsibility (CSR) and sustainability leadership strategies, metrics, and annual reports.

Medium term 2020

- A credible and influential multi-sector network operates synergistically, using evidence-driven advocacy for the value of prevention in public policy, business, and society.
- Workforce health is expressly articulated as part of the organizational strategy of a majority of Fortune 500 companies.
- Half of the regional Federal Reserve Banks across the US explicitly support investment in prevention as essential to economic growth.

Long term 2025

- The business community has adopted a C-Suite position for a Chief Health Officer, who is responsible for the systematic health of the workforce through programs that have conventionally been part of human resources, occupational safety, and facilities management.
- Prevention stakeholders have as strong and effective a presence as those from the pharmaceutical and biomedical industries in influencing the health agenda and allocation of resources, as expressed through industry collaboration and coordination.
- Prevention messages are inspired and effective, and integrated into all health information communicated to the public by the media, organizations, and public sector agencies.



Make markets work for health promotion and prevention.

Much decision-making about health, and especially about behavior related to health, ultimately occurs at the individual level. Markets both stimulate and respond to consumer demand. Investment in the development of an ecosystem of health—from healthy options in food and activity to personalized technology tools—will pay off by making the healthy choice the easy and appealing choice.

Innovation can be accelerated through private-public partnerships, including federal research and commercialization funding similar to that used in R&D for pharmaceuticals and medical devices. Such collaboration will necessitate clear and mutually agreed-upon outcomes subject to independent audit and public reporting to avoid real or perceived conflicts of interest.

"As investors, we seek out companies that enable insurers, employers, and other healthcare purchasers to reduce disease risk and associated costs. A healthy population translates to a healthy bottom line."

Oliver Moses, Senior Managing Director, MTS Health Investors, and Vitality Institute Commissioner

Investing in Companies that Invest in Health

Financial institutions, including Bank of America Merrill Lynch and UBS,[108,109] have begun to spotlight businesses committed to enabling consumers to make healthier choices. For example, Danone, Dean Foods, and Whole Foods Market are singled out by Bank of America Merrill Lynch as leaders in fighting obesity in the food sector. Similarly, the Access to Nutrition Index (ATNI) assesses and ranks 25 of the largest manufacturers in the world on its commitments, practices, and performance related to obesity, taking a holistic view that encompasses weight management, pharmaceutical interventions, and physical activity in addition to nutrition. In 2013, Danone, Unilever, Nestle, and PepsiCo were the top food and beverage industry performers.

Increasingly, food and beverage companies have responded to market demand by expanding their portfolios to include healthy alternatives and reformulating their existing products lines using healthier ingredients. PepsiCo, for example, pledged to reduce sugar, sodium, and saturated fat content in their products by up to 25 percent by 2015. The food and beverage leader also expanded its product portfolio to include baked, rather than fried, chips and whole-grain snacks.

Companies with product portfolios emphasizing health often outperform the market. The Hudson Institute's Obesity Solutions Initiative aims to deliver practical, market-oriented strategies to overcome obesity by "giving consideration to the needs of all vested parties—corporations, the public health community, consumers and regulators." It has found that companies focused on healthy products had overall sales growth over two times the rate of those focused on traditional items.[110,111]

Learning from What Works

Taking Tobacco Off the Shelves

CVS Caremark, the largest drugstore chain in the US based on sales, announced in February 2014 that it would discontinue the sale of tobacco products in its 7600 retail locations. The company is transitioning its business model to become a health provider rather than a retail business.

In the immediate aftermath of the announcement, CVS stocks rose while shares of tobacco giants fell.[112] It remains to be seen what the long-term effects are on CVS's bottom line, but as Ross Muken, an analyst at ISI Group, said: "Anytime a company puts public health and the long-term good ahead of short-term profit, it's sort of an eye opener."[113]

"Companies in many industries are recognizing the profit potential of more socially acceptable products and practices. ... While the public accolades are nice for a while, companies like CVS don't give up a profitable line of business unless it is in their best long-term financial interest to do so. What CVS did is what I call having a moment of profitable morality."

Hank Cardello, Director, Obesity Solutions Initiative[114]

"Technological innovations for health are exploding. They are tracking our steps, measuring our sleeping hours, and enabling us to better understand the impact of our daily lifestyle choices. Market winners among health technologies will be those can demonstrate effectiveness in reducing chronic disease risk factors."

Ilene Klein, MD, FAAFP Director,
Global Employee Health Services,
Qualcomm Incorporated,
and Vitality Institute Commissioner

Personal Intelligent Technologies

Technological innovations are transforming the landscape for health promotion and prevention. The advent and expansion of personal intelligent technologies provide individuals with both the tools and the opportunity to take greater responsibility for their health. Wearable tracking devices that measure steps walked and hours slept; embeddable sensors that passively release medications into the body; and diagnostic tests that sequence genes to customize prevention, detection, and treatment, have rapidly emerged to personalize health for early adopters. Adoption of personal, intelligent health monitoring is likely to mirror that of smart phones—accessibility and ubiquity will rise as prices fall.

One example is the McDevitt Programmable Bio-Nano-Chip (p-BNC),[115] which has the potential to transform biochemical screening (blood and urine testing). The credit card-sized disposable device is designed to work in conjunction with an imaging platform the size of a toaster, which analyzes biomarkers found in body fluids and relays test results to consumers through a smart phone interface. This is just one example of a disruptive technology that may facilitate access through reduced costs and distribution by leveraging existing points of sale and widespread use of smart phones.

HEALTHY HABIT	COMPANIES				
PHYSICAL ACTIVITY	**ALTA BIKE SHARE** Bicycle share systems to develop urban transportation networks. Similar examples already exist in over 48 countries, concentrated in North and South America, Europe, and Asia.		**FITBIT, JAWBONE** Wearable technology, audio and tracking devices that measure health data or status.	**MAPMYFITNESS, RUNKEEPER** Digital fitness community that uses interactive tools to make fitness social, simple, and rewarding.	**WITHINGS** Devices that track blood-pressure results, air quality, and weight.
HEALTHY DIET	**BEYOND MEAT** Solutions that replace animal protein with plant protein to reroute agriculture's environmental impacts.	**FARMLAND LP** Acquisition of conventional agricultural acreage and conversion to organic and sustainably managed farmland.	**LUVO, BIRDS EYE** High-quality frozen meals, including a high proportion of vegetables.	**REVOLUTION FOODS** Healthy, affordable meals for schools.	**YUMMLY** Online platform for selecting search filters to identify healthy recipes.
NO TOBACCO USE	**NJOY, BLU** Smoking cessation devices, including electronic cigarettes.				
MINIMAL ALCOHOL INTAKE	**MIT MEDIA LAB** Uses ice cubes to track sips and time spent drinking to understand when users may be intoxicated.				
MEDICATION ADHERENCE	**GLOWCAPS, ADHERETECH** Smart-pill boxes that track medication and use automated alerts or text messages to remind patients to ingest prescribed dosage as well as to get refills before they run out.				
MENTAL HEALTH, SLEEP, AND STRESS	**ABILTO** Service offering online video contact with trained coaches to support behavior change to improve physical health and mental well-being.	**BEDDIT** Thin film sensor placed in the bed to track sleep patterns.	**LUMOSITY, EYE GYM** Daily brain exercises informed by neuroscience research.	**PHILLIPS WAKE-UP LIGHT** Natural spectrum light combined with gentle sound to provide a more natural (and thereby less stressful) wake up experience.	**POSIT SCIENCE** Provides brain training software clinically proven to improve cognitive performance.

FIG 15.–COMPANIES INNOVATING TO SUPPORT HEALTHY HABITS
Selected examples of technologies and business-generated services that may have an impact on health—many more are in development or already on the market.

In the near future, we can expect to see more physical objects with highly accurate sensors that wirelessly communicate with users and coaches, both as wearable devices and placed within the environment. Digital coaches will become more responsive as algorithms become more personalized, converging with technologies based on artificial intelligence and virtual reality. When combined with behavioral economic strategies that nudge individuals to make healthier decisions, personal health technology has the power to reinforce healthy habits, including physical activity and not using tobacco, and to improve medication adherence.[116] Technology-enabled personal health monitoring and assessment are poised to spread beyond early adopters, ushering in a new era that may alter the economic as well as the health landscape. It remains to be seen, however, when and how gadgets and programs delivered by this route will transcend novelty for the "worried well" and scale to broad access and efficacy.

Adoption of personal health technology at scale will likely be dependent on whether solutions are found to the following challenges:

- Access across social and economic barriers, with a particular emphasis on lower-income populations
- Maintaining engagement over the long-term to ensure development of sustainable new habits among individuals and communities
- Privacy and confidentiality concerns associated with the collection and analysis of personal health data, including analyses of big data that can help to improve population health status

Ethical, Legal, and Social Implications of Personal Health Technologies

The National Human Genome Research Institute's Ethical, Legal and Social Implications Research Program focuses on genomic research, genomic healthcare, broader societal issues, and legal, regulatory, and public policy issues. The work of the program has provided an ethical framework for the use of genetics and genomics in research. An analogous framework is needed to investigate and resolve issues related to personal privacy, data confidentiality, and ownership of data associated with new technologies developed for monitoring health and prevention activities. This framework would necessitate closer interactions between government and technology innovators. It would also require strong government oversight and action by public health and prevention stakeholders.

As part of its eHealth Action Plan 2012-2020, the European Commission opened a public comment period in April 2014 to solicit ideas and methods for resolving existing barriers and issues related to privacy and confidentiality associated with mobile health. A similar process for overcoming related challenges is required in the US.[117]

The following actions would go far to address the ethical, legal, and social implications for the use of personal health technology without creating insurmountable obstacles for their development and adoption at scale:

- Create a trust framework for the way personal health and prevention data gathered from sensors and monitors is managed between individuals, private companies, employers, and health insurers.
- Generate standards for health and prevention metrics and protocols that are adopted across technology platforms to create interoperability.
- Encourage aggregation of blinded data of population health for study by universities and other researchers.

"Overcoming ethical, legal, and social challenges associated with emerging health technology and big data is essential to ensuring the safety of all Americans. We have a mandate to ensure supporting frameworks exist so that our personal data is not exposed."

Ezekiel J. Emanuel, MD, PhD, Chair, Department of Medical Ethics and Health Policy, University of Pennsylvania, and Vitality Institute Commissioner

The private sector has spurred investment in personal health technology. In 2013, approximately $13.8 billion was spent on R&D of digital enablers for health.[118] It is expected that private sector investment will continue to incentivize development of integrated health functionality across operating platforms and systems.

The economic effects are consistent with "Kondratieff wave" theory (see Fig 16), which views the world economy over time as a waveform, with downward trends due to crises such as the Great Depression and up cycles associated with new technologies, ranging from the steam engine to automobiles. According to Jeffrey Sachs, Director of The Earth Institute and Professor of Health Policy and Management at Columbia University, the sixth wave will build on intelligent technologies.

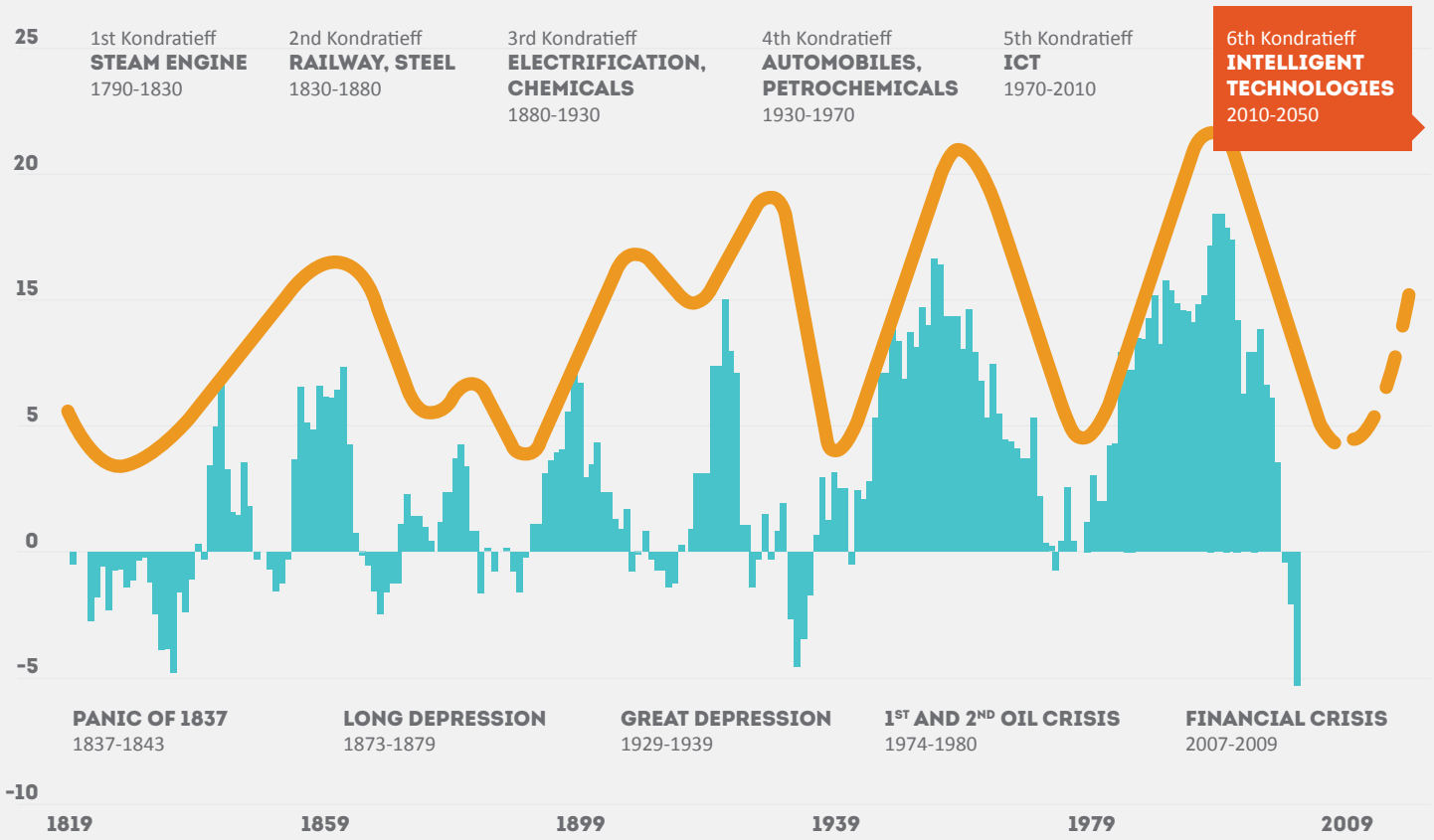


FIG 16.–KONDRATIEFF WAVES[119]
Intelligent technologies will drive the sixth wave of the world economy.

To spur innovation and investment in health-enabling technology, "early-stage" research grants and forms of financing that will attract later-stage sources of private capital—akin to the non-dilutive funding available for biomedical research—could be established by the federal government. One example is the Small Business Innovation Research program, which provides research grants that help attract private sector investment. Another is the Advanced Research Projects Agency-Energy (ARPA-E), which promotes technologies that generate, store, and use energy in new ways. On a smaller scale, some states and municipalities use grants and tax incentives to attract technology enterprises. Similar funding systems for prevention could further leverage existing private sector investment in personalized and intelligent health technologies.

Learning from What Works

Persuasive Technology

BJ Fogg, founder of the Persuasive Technology Lab at Stanford University, brings the science of behavior change to the design of innovative systems to change human behavior, with a focus on health. According to the Fogg Behavior Model, the three basic components of behavior change are motivation, abilities, and triggers. The model can guide designers of devices and other technologies to identify precise behaviors, find a way to make the behavior easy to do, and then put a timely "trigger" in place to prompt people to adopt the new behavior.

Fogg contends that the most practical approach to behavior change is to focus on people who are already motivated but have not yet taken action. He argues for viewing change as coming from hope rather than from fear. Systems that catch people when they are highly motivated and able can promote hope, which increases the odds of bringing about meaningful and sustainable behavior change. In his view, the most effective behavior change systems build small incremental actions that move toward larger behaviors that people want to change. An incremental profile of the behaviors that are relevant to the final outcome fosters momentum through practice, revision of behaviors, small steps, and appropriate rewards.

Recommendation 3

Make markets work for health promotion and prevention.

Pathways

Establish federal research and commercialization funding mechanisms and incentives to develop innovative and profitable products, services, and technologies for healthier lifestyles.

Deploy financial and environmental incentives for consumers that expand the successful adoption of healthier products and services.

Forge effective private-public collaborations that generate positive, measureable health outcomes and impacts through innovative and transparent financing and operations.

Measures of Success

Short term **2017**

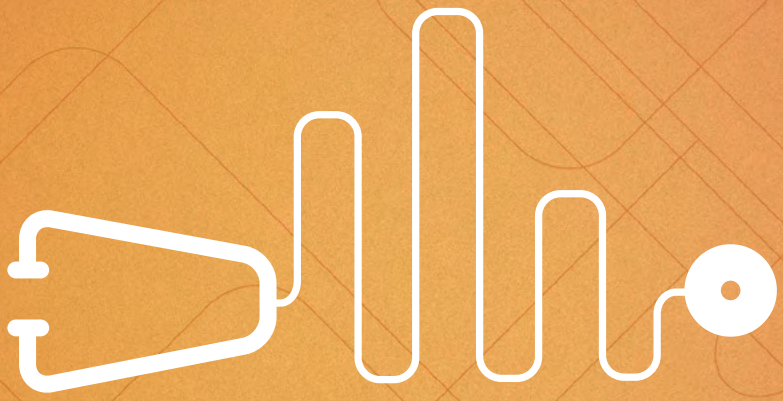
- New business competitions have been organized at universities to focus on health and prevention innovations.
- The CDC and NIH Foundations have developed a strategy to build private-public partnerships by investing federal dollars to accelerate private sector innovation for prevention, similar to those that have led to pharmaceutical advances.
- A framework that proactively addresses ethical, legal, and social issues with respect to the use of data collected by personal prevention technologies has been established through a systematic review and extensive public consultation, and adopted across sectors.

Medium term 2020

- Local governments and pension funds invest in community health-related innovations and social enterprises.
- A federal agency, similar to ARPA-E in the Department of Energy, has been established to fund research and commercialization for technologies and businesses that support health and prevention.
- Financial and behavioral incentive programs that provide broad access to health and prevention initiatives across society have been tested and scaled up.

Long term 2025

- GDP driven by health—related not only to the treatment of disease but also focused on building sustainable healthy communities—is increased by 20 percent over current levels.
- Health and prevention products and services are a major market segment and a long-term driver of the consumer economy.
- A thriving private sector built on innovation becomes a powerful and profitable voice for prevention and health promotion.



Integrate health metrics into corporate reporting.

Traditionally, the value of a company has been measured in terms of profit and stock price. More recently, sustainability has been added to that measure, often in the realm of CSR. It is time for Corporate Health Accountability to become the third leg of the stool on which a strong enterprise stands.

Workforce Health is a Shared Value

The notion of CSR may have seemed like little more than a "feel good" idea when first introduced, initially as a public relations tactic and more recently as a way for companies to mitigate risk. For forward-looking companies, CSR has evolved into the concept of shared value, which has now become a core business strategy.

As Michael E. Porter and Mark R. Kramer explain it, shared value "involves creating economic value in a way that also creates value for society by addressing its needs and challenges. Businesses must reconnect company success with social progress. Shared value is not social responsibility, philanthropy, or even sustainability, but a new way to achieve economic success. It is not on the margin of what companies do but at the center. We believe that it can give rise to the next major transformation of business thinking."[120]

It will be truly transformational if human capital, measured as workforce health, takes its place in the shared value system. That will require development and standardization of metrics that are material to the financial performance of companies. Further, the metrics need to be used in an integrated manner. The transformation will be realized only when CEOs, CFOs, and shareholders understand that workforce health is an investment in future profitability, not an expenditure to be minimized (see Fig 17).

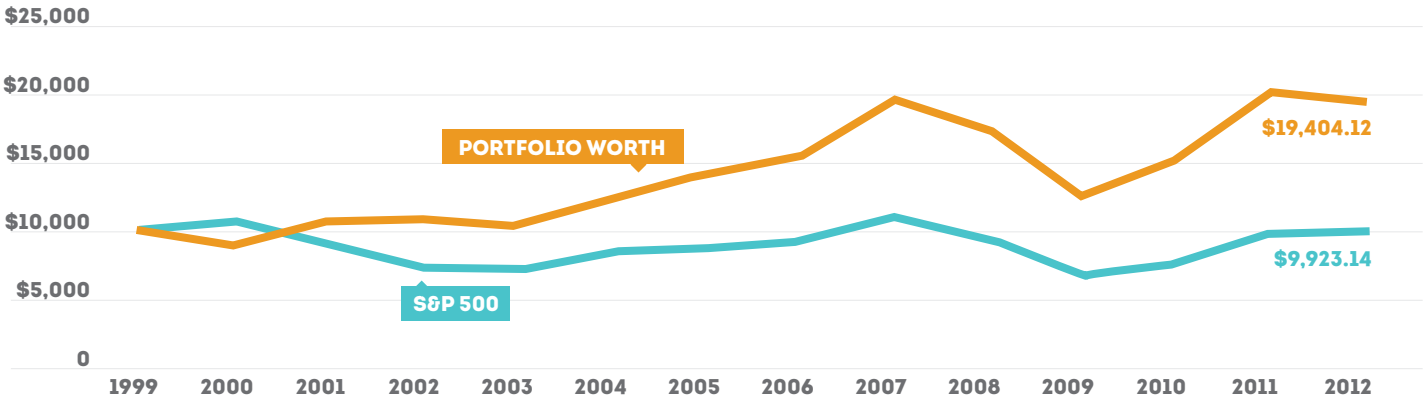


FIG 17.–WORKFORCE HEALTH AND A HEALTHY BOTTOM LINE
Companies that encourage a culture of health outperform the S&P 500.[121]

Learning from What Works

C. Everett Koop National Health Award Winners

The Koop awards are given annually to private and public sector initiatives that have measurably improved the health of Americans. Most companies that have won the award have been led by CEOs who have taken a strong public as well as internal stand on the value of health and the importance of prevention. The winner for 2013 was Dell, which was cited for "Well at Dell," which provides financial incentives to engage and reward participants who monitor, maintain, and improve their health. Past winners include L. L. Bean, Eastman Chemical, Alcon Laboratories, and Prudential Financial.

Corporate Health Accountability Begins in the Workplace

RK Mechanical, a Denver-based contracting company, worked with Centura Health, a healthcare network, to improve the health and safety of its 700-person workforce. RK Mechanical adapted Centura Health's Tobacco Cessation Program to mandate smoke-free construction zones on all their job sites.

"What if you train people and they leave? Well, what if you don't train them and they stay? The same goes for health and well-being."

Jon Kinning, CEO, RK Mechanical

Measuring Sustainability and CSR

The time has come for health metrics to be included alongside other measures that are driving a new vision of what truly leads to the creation of long-term value. To inform the necessary work of developing standardized metrics for workforce health, the established structures for measuring and valuing sustainability and CSR should be used as analogues and models.

- The Dow Jones Sustainability Index (DJSI), launched in 1999, was the first global index to track the financial performance of companies that have adopted sustainability best practices. It uses a defined set of criteria to evaluate the sustainability performance of the largest 2500 companies listed on the Dow Jones Global Total Stock Market Index. Currently, it addresses only occupational health and safety, not the major drivers of workforce health.

- The FTSE4Good Index Series, launched in 2001, objectively measures the performance of companies that meet globally recognized CSR standards.

- Pioneered in 2009 by the Johannesburg Stock Exchange (JSE), the King Code of Governance (King III) recommends companies produce an integrated report that includes social, environmental, and economic performance along with financial reporting. The code was one of three developed by the King Committee on Corporate Governance, chaired by Justice Mervyn E. King.

- Companies that adopt B Corporation status are able to pursue strategies they believe benefit society, rather than maximize short-term profits. For example, if a B Corporation wants to report on its environmental footprint, it can make a decision that forgoes creating shareholder value in the short term for the longer-term environmental benefit. Reporting health metrics should be included as a qualifier for B Corporations.

- Business in the Community (BITC) is a social sector organization based in the UK that promotes responsible business practices for a sustainable future. BITC encourages businesses to adopt an integrated approach, which currently includes reporting on sustainability strategy alongside commercial activity. Workforce health should be integrated as well.

- The United Nations Global Compact has created a platform for businesses to align operations and strategies with human rights, labor, environmental, and anti-corruption issues. These companies also must issue an annual Communication on Progress report, a public disclosure of actions supporting the UN Global Compact's principles and broader UN development goals.[122]

Recommendation 4

Integrate health metrics into corporate reporting.

Pathways

Develop effective health reporting metrics through a credible collaboration among key, respected stakeholders.

Incorporate health performance into existing integrated reporting and sustainability reports.

Generate evidence-based recognition that the health and well-being of workforces is a key metric for long-term successful business performance.

Measures of Success

Short term **2017**

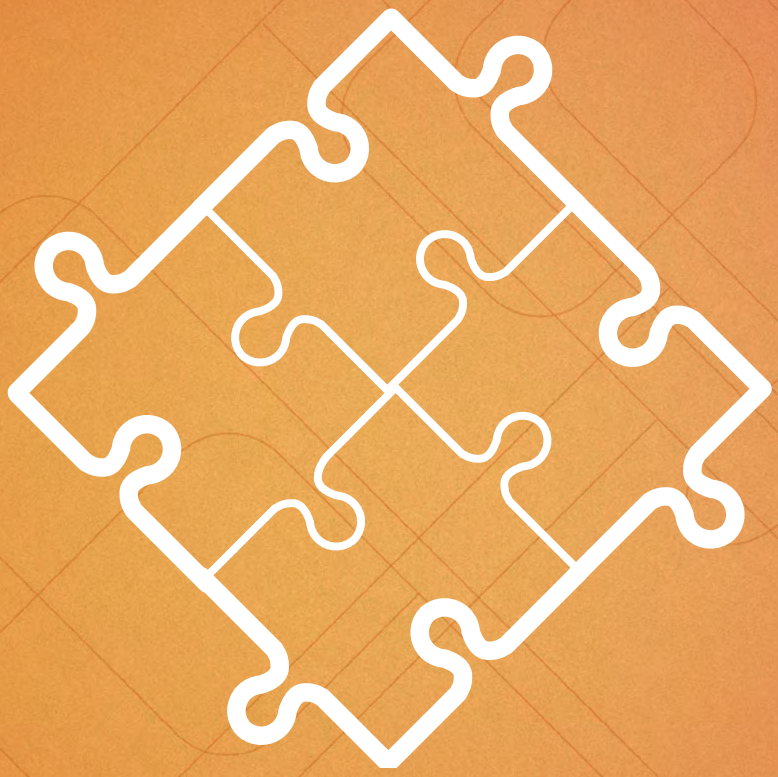
- Meetings have been convened for companies committed to integrated health metric reporting to develop an initial set of metrics to be piloted and iterated over time, in consultation with major reporting bodies, such as the Global Reporting Initiative and Dow Jones.
- Early adopter companies have begun to incorporate standardized workforce health metrics into corporate financial and sustainability reporting.
- Small, medium, and large companies have formed a task force to pilot reporting metrics on the health of their workforce, and have issued a report to the broader community.

Medium term 2020

- Several hundred small, medium, and large companies across industries have published the health status of their workforce alongside corporate financial and sustainability reports.
- Global reporting agencies such as the Global Reporting Initiative, Coalition for Environmentally Responsible Economies, and Sustainability Accounting Standards Board have adopted and called for health and associated metrics to become an integrated component of corporate financial reporting.
- Corporate boards and investors have begun to demand and use information on workforce and organization health alongside corporate financial and sustainability metrics to drive strategy and inform valuation models.

Long term 2025

- Standard metrics for health reporting have been widely adopted throughout the business sector.
- The Dow Jones Sustainability Index has incorporated workforce health as a core metric.
- Recognition of the value of workplace health leads to a 50 percent greater investment in workplace programs that tackle major contributors to the burden of NCDs.



Promote strong cross-sector collaborations that generate a systemic increase in health promotion and prevention across society.

A theme in many IOM reports and recommendations is the need to engage non-health sectors to tackle all factors that influence health. Constructive engagement with decision-makers in other sectors involves developing strategies that help each other.

Health in All Policies

Achieving a culture in which health is embraced as a strategic imperative and as a core social value requires the inclusion of health in all sectors and all policies.[123] But just as the health sector might find it challenging if asked to integrate programs to achieve education or economic development aims when time and human and financial resources are stretched thin, other sectors driven by their own specific pressures might reasonably resist difficult demands from the health sector.[78]

"Health in All Policies is an approach to public policies across sectors that systematically takes into account the health implications of decisions, seeks synergies, and avoids harmful health impacts, in order to improve population health and health equity."

World Health Organization

When Health is Not the Priority

Many non-health sectors are driven by considerations other than health. Advocates for health need to understand the priorities of the sectors in which they want to make progress and must work collaboratively to develop a case for prevention and policies that support it. Advocates for prevention will be more successful if they ask such questions as: What are the values and aims in these sectors? How might health interventions be strengthened to provide benefits and reduce harm to them? How can attaining their goals be done in ways that also improve health? What areas of collaboration have not been discovered yet? The answers may yield "win-win" approaches that will encourage other sectors to collaborate and share their resources to ultimately promote health side by side with other community priorities.[124]

In the UK, for example, the Oxford Martin Commission, a group of highly respected global leaders, has called for progress in climate change, economic inequality, corporate practices, and chronic disease. The Oxford Martin Commission proposed fighting NCDs using an action-focused and city-based network termed "Fit Cities," which would partner food, beverage, and alcohol providers with public health and city officials as well as civil society to minimize the burden of chronic disease on health systems.[125]

Infrastructure Planning and Development

Public sector investments in transportation focus disproportionately on roads and neglect efforts that would promote active transportation such as walking and cycling. Advocates for prevention can involve themselves in the early stages of projects designed to develop and enhance urban infrastructure to ensure health benefits such as walkable neighborhoods, recreational facilities, and more accessible retail outlets for healthy foods are part of the master plan. This approach is truly collaborative across sectors.[124]

A prime example of the creative merger of health with urban planning and infrastructure development is the Atlanta BeltLine. The most comprehensive transport and economic development revitalization project in the Georgia city's history and currently the largest such initiative in the US, the BeltLine will provide a network of public parks, multi-use trails, and transit by reusing 22 miles of historic railroad right-of-way. The project represents a major infrastructure investment that carries health benefits with it. Recreation is built into the project, which will provide an environment where the community can experience the fun of physical activity. It can serve as a model by other cities of innovative, sustainable, and health-promoting urban design.

"The Atlanta BeltLine is arguably the largest grassroots undertaking in the history of Atlanta, largely driven by residents of neighborhoods. ... It is among the largest economic and social experiments going on in the country because the community is teaching us as we grow."

Paul Morris, CEO, Atlanta BeltLine

Education

Education policy, whether at the national, state, or local levels, has incorporated health considerations to a degree. Nonetheless, "No Child Left Behind" and its successor, "Race to the Top," along with the current emphasis on the common core, have forced children off the playgrounds and into their seats for high-stakes testing. The decline in physical education and time allotted for recess has consequences that reach beyond the health of our children. Learning, classroom management, and behavior issues all suffer when children are deprived of physical activity as part of their experience for the developmentally important years from kindergarten through high school. This is an expression of a societal value that must change if we are to achieve a culture of health in the US.[10,36,126]

Food and Agriculture

Food and agriculture policy, which is set at the federal level, can be especially challenging for advocates of prevention, since political priorities and special interests have tended to sideline health considerations or include them as an afterthought if they include them at all.[78] The $8.6 billion cut in the USDA Supplemental Nutrition Assistance Program (SNAP) as part of the much larger 2014 Farm Bill is a stunning example. On the plus side is the USDA Food and Nutrition Service's implementation of the Healthy, Hunger-Free Kids Act of 2010, which authorized federal funding for child nutrition programs and school meals, and increased access to healthy food for lower income children.

Health and the Food Chain

The USDA recommends that fruits and vegetables make up 50 percent of daily food intake, but these products are currently grown on 2 percent of US farm acres. Meat consumption disproportionately utilizes resources compared to other plant-based protein sources, and high-fat meats are a less healthy choice (see Fig 18). A truly sustainable diet makes eating healthily possible without drawing heavily on planetary resources.[123,127]

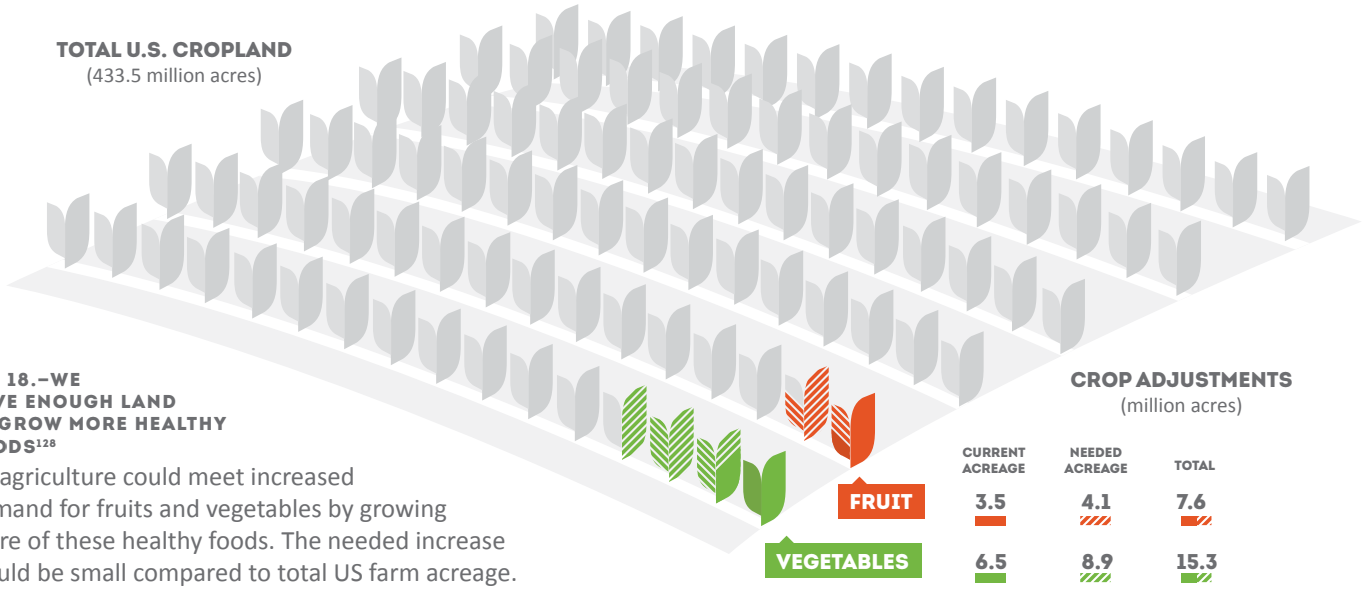


FIG 18.–WE HAVE ENOUGH LAND TO GROW MORE HEALTHY FOODS[128]

US agriculture could meet increased demand for fruits and vegetables by growing more of these healthy foods. The needed increase would be small compared to total US farm acreage.

Learning from What Works

California's Health in All Policies Task Force

California founded a Health in All Policies Task Force in 2010 to foster inter-agency partnerships to examine health, equity, and environmental sustainability. The Department of Public Health and the Public Health Institute head the task force and use a co-benefits approach to identify collaborative opportunities to improve health. The task force recommends building healthy and safe communities and applying health to public policy and program development.[129]

Prevention for National Security: "Fueling the Soldier" and The Healthy Base Initiative

Risk factors for NCDs pose a risk for national security. Growing numbers of potential recruits are rejected for service because of their weight and poor physical fitness. In 2010, 59 percent of female candidates for enlistment and 47 percent of males failed the military's entry-level physical fitness test. Subpar physical fitness also compromises retention of personnel trained at great expense to American taxpayers. For example, the Navy discharges an average of 2000 sailors a year who do not pass physical fitness tests.[130]

Among the armed forces, health spending has increased to $50 billion annually, approaching 10 percent of the Department of Defense (DoD) budget. To lower healthcare costs as well as improve performance and readiness, the DoD is tackling unhealthy behaviors with programs such as the Healthy Base Initiative (HBI). HBI was launched in 2013 in 14 pilot locations and focused on obesity and tobacco use. Another program, "Fueling the Soldier," begun in 2011 at 69 Army training bases, promotes healthy eating to enhance performance. In addition, the private sector is taking action to support health in the military. For example, Sodexo, a member of the Partnership for a Healthier America, is working to improve nutrition in the military by increasing the quality, taste, and appearance of healthy food and redesigning the dining environment to boost consumer demand for healthy products.[130]

The National Diabetes Prevention Program

This private-public partnership of community organizations, private insurers, healthcare organizations, employers, and government agencies has developed community-based lifestyle change programs for people at increased risk for type 2 diabetes. The program design is based on evidence from a major multicenter clinical research study comparing lifestyle intervention (modest weight loss through dietary changes and increased physical activity) with treatment with an oral diabetes drug as strategies for preventing or delaying the onset of type 2 diabetes in high-risk individuals. The study found that lifestyle intervention reduced the chance of developing diabetes by 58 percent over the placebo group; the diabetes drug also reduced risk, though only by 31 percent. The incidence of diabetes was 39 percent lower dramatically. The incidence of diabetes was 39 percent lower with lifestyle intervention than with the diabetes drug.[131]

GENYOUth Foundation

GENYOUth is a private-public partnership with the National Dairy Council, the National Football League, and local schools across the country. Its school-based initiatives aim to inspire and educate the next generation about the importance of nutrition and physical activity to their health. GENYOUth collaborates with students, schools, communities, business partners, and thought leaders to make a lasting difference in children's lives. Its 2013 report, "The Wellness Impact: Enhancing Academic Success through Healthy School Environments," reinforced the "learning connection" that eating a healthy diet and engaging in regular physical activity were associated with better academic performance in schools.[132]

Clinton Health Matters Initiative

Clinton Health Matters Initiative (CHMI) aims to activate individuals, communities, and organizations to make meaningful contributions to improve the health and well-being of all people. The goals are to reduce the prevalence of preventable diseases, health disparities, and healthcare costs. CHMI builds strategic partnerships, works across sectors, and engages industry and NGOs to develop solutions at the community, national, and global levels. Currently in the US, CHMI is focused on the Coachella Valley, California; Central Arkansas; Northeast Florida; and Greater Houston, Texas.

Double Up Food Bucks and SNAP Healthy Incentives Pilot

Michigan's Double Up Food Bucks, a private-public partnership to stimulate markets and improve health, is currently the largest healthy food incentive program in the country. It incentivizes SNAP participants to buy locally grown produce by doubling food stamp value when used at participating grocery stores or farmers markets. Seventy-eight percent of customers reported that Double Up Food Bucks helped them increase the amount of fruits and vegetables they buy.[134]

In 2011, 50,000 SNAP households in urban, suburban, and rural cities and towns in Hampden County, Massachusetts, were selected for a 14-month USDA Healthy Incentives Pilot to promote consumption of fruits and vegetables without added sugars, fats, oils, or salt. The majority (70 percent) of households said the pilot made fruit and vegetables more affordable, helping them purchase greater quantity and variety.[135]

County Health Rankings & Roadmaps

County Health Rankings & Roadmaps is a collaboration between RWJF and the University of Wisconsin Population Health Institute. The county rankings measure more than 30 indicators of health, including obesity, smoking, access to healthy foods, and air and water quality. The roadmaps provide guidance and tools to comprehend the data, and strategies to encourage action. The 2014 *County Health Rankings & Roadmaps* indicates linkages between NCDs—for example, the close association of depression with obesity and tobacco use. It also concludes that the counties with the lowest health rankings have twice as many premature deaths as the highest ranking counties.[133]

"Professionals in all fields–from urban planners who can make neighborhoods safer for exercise to farmers who can improve access to healthy foods to economists who can make better investments in healthy choices–need to understand how important prevention is to America and their vocational goals. Quite simply, prevention must be an intentional focus of every sector of our society."

Jeffrey Levi, PhD, Executive Director,
Trust for America's Health, and
Vitality Institute Commissioner

Recommendation 5

Promote strong cross-sector collaborations that generate a systemic increase in health promotion and prevention across society.

Pathways

Develop and implement a strategy to integrate a Health in All Policies approach across the US, leveraging and strengthening the health component of impact assessments.

Establish partnerships between government sectors (including the Departments of Health and Human Services, Agriculture, Education, Transportation, and the Interior) to facilitate the integration of health into policies and programs using standardized health metrics.

Foster collaboration at the local level to promote and improve community health, involving leaders in business, education, health, and civic and faith organizations in planning of all municipal programs and infrastructure projects.

Measures of Success

Short term **2017**

- Building on past IOM reports, action plans have been generated that translate existing recommendations into policy development with federal, state, and local government departments and agencies.
- The Community Preventive Services Task Force collaborates formally with sectors such as agriculture, transportation, education, and infrastructure planning, to define the specific health issues at stake and determine how to address them in the context of each sector's priorities.
- NGO leaders involved in key sectors (including agriculture, transportation, education, and infrastructure planning) have convened to define how best to integrate health across advocacy platforms for near-term, high-impact action.

Medium term 2020

- Health risks and outcomes are measured, reported, and used in decision-making by non-health businesses and public sector agencies.
- The federal government mandates reporting on health indicators and metrics by the agriculture, transportation, education, and infrastructure planning sectors, and inclusion of health as a key component in all impact assessments.
- In 10 cities and states, mayors and governors make prevention a top agenda item by spearheading task forces and other action, in collaboration with leaders from the business, financial, faith, education, public health, and social sectors, to improve the health of their communities.

Long term 2025

- Information generated from cities and states that made prevention a top agenda item have been shared with other cities and states to form task forces in collaboration with leading stakeholders.
- Health in All Policies is the standard in 100 percent of the public sector.
- Short- and long-term return on investment for health promotion and prevention is unequivocally adopted and widely accepted as common sense.

Conclusion: A Call to Action

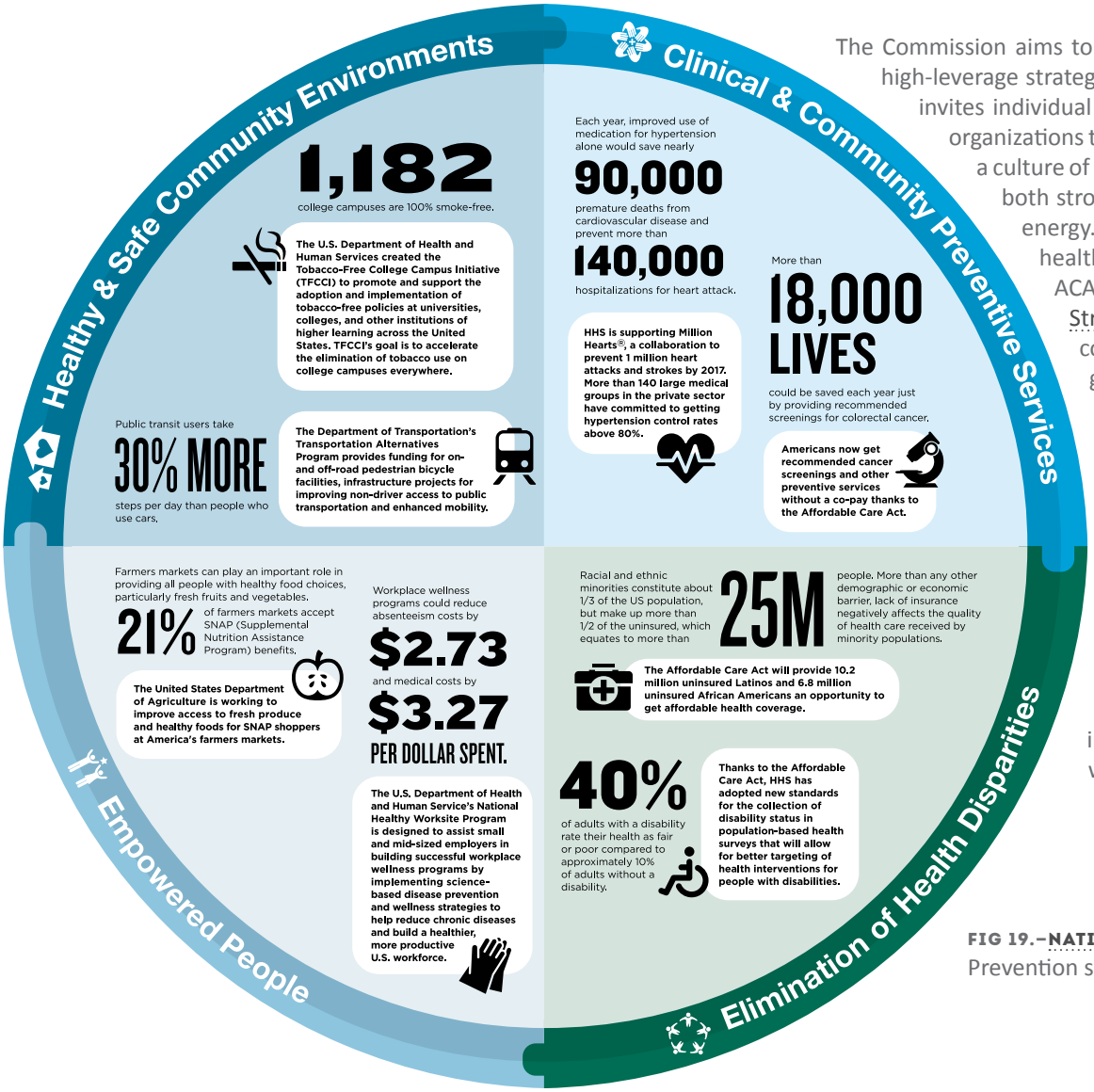
"[The] evolution in the aspirations, landscape, and financing of global health is being accompanied by a rapid shift in the global disease burden away from infectious diseases and towards non-communicable diseases (NCDs) and injuries."

The Lancet Commission on Investing in Health[10]

The twentieth century saw enormous strides against infectious diseases, with tuberculosis, smallpox, polio, and diphtheria nearly eradicated in the US. In the twenty-first century, the major threat is disease caused not by microbes but by lifestyle. The answer lies not in vaccines but in encouragement of healthy behaviors supported by programs and policies based on the best evidence from prevention science. The rising toll of NCDs has consequences for the health of the population as well as the nation's economy. Reversing the upward trend requires a sustained and coordinated campaign that calls on the strengths of all sectors of society, using all available tools.

The Commission's recommendations emphasize the need to embrace health as a strategic imperative and as a core value of society. Investing in health requires robust funding of research in prevention science. It requires tapping the potential of behavioral economics and innovative technologies. It requires developing health and prevention leaders in the public, private, and social sectors to use their leverage and deliver a coherent, evidence-driven message. It requires dialogue and partnerships across sectors, disciplines, and interests to create synergies that will drive progress. It requires new policies that support prevention at all levels of government. It requires new business models and innovation to design and deliver products and services that promote health. It requires a new focus on health not only in the medical community, but across the entire spectrum of American life.

The Commission has compiled convincing evidence that the health of the workforce is key to the health and economic vitality of the nation. It urges businesses to value the health of their workforce—human capital—as highly as it does financial performance, and to measure and report integrated health metrics as an indicator of Corporate Health Accountability. Workforce health not only increases productivity, it spreads beyond the workplace to families and communities. As the backbone of the nation's economy, a healthy workforce supports the competitiveness of American business across the globe. And it ensures a better future for generations to come.



The Commission aims to act as a catalyst by offering high-leverage strategies and practical solutions. It invites individual leaders and forward-looking organizations to work in partnership to build a culture of health, a mission that calls for both strong leadership and grassroots energy. Support for prevention and health promotion embedded in the ACA and the National Prevention Strategy must be matched by a commitment from individuals, groups, and institutions to learn from what works and apply what we know (see Fig 19). Positive personal habits that promote health and well-being are the most potent and effective means to counteract NCDs and ensure a thriving society for generations. An enduring culture of health will be the greatest return on investment for our nation as a whole.

FIG 19.–NATIONAL PREVENTION STRATEGY.[136]
Prevention saves money and lives.

Appendices

Links to organizations, reports, documents, and other resources can be found at: www.thevitalityinstitute.org/more-resources

Tables

COUNTRY	RANKING	DISEASE & INJURY									
		ISCHEMIC HEART DISEASE	LUNG CANCER	STROKE	COPD	ROAD INJURY	SELF-HARM	DIABETES	CIRRHOSIS	ALZHEIMER DISEASE	COLO-RECTAL CANCER
ICELAND	1	12	14	1	11	1	10	2	1	32	5
JAPAN	2	2	4	22	1	2	31	1	13	2	12
SWITZERLAND	3	9	9	3	6	8	24	11	10	15	6
SWEDEN	4	17	3	8	12	3	19	14	6	30	9
ITALY	5	7	13	16	5	22	3	22	14	14	16
UNITED STATES	28	27	28	9	32	32	16	31	21	33	8

TABLE 1.–RANK OF AGE-STANDARDIZED YEARS OF LIFE LOST (YLL) RATES OF THE US RELATIVE TO TOP FIVE COUNTRIES[137]

COUNTRY	RANKING*	RISK FACTOR*									
		DIETARY RISKS	TOBACCO SMOKING	HIGH BLOOD PRESSURE	HIGH BODY MASS INDEX	PHYSICAL INACTIVITY	HIGH FASTING PLASMA GLUCOSE	HIGH TOTAL CHOLES-TEROL	AMBIENT PARTICULATE MATTER POLLUTION	ALCOHOL USE	DRUG USE
JAPAN	1	5	1	4	1	1	3	2	20	5	10
SPAIN	2	10	14	11	17	8	21	6	13	14	26
ICELAND	3	6	5	5	10	4	5	18	3	2	21
SWITZERLAND	4	1	10	2	3	6	9	8	12	11	15
ITALY	5	8	12	14	6	10	13	11	19	3	23
UNITED STATES	28	27	26	18	27	27	29	23	24	19	34

TABLE 2.–RANK OF RISK FACTORS BASED ON CONSEQUENT MEDICAL CONDITIONS MEASURED USING DISABILITY-ADJUSTED LIFE YEARS (DALYS) OF THE US RELATIVE TO TOP FIVE COUNTRIES[29]

Lower than mean Indistinguishable from mean Higher than mean

COMMISSION RECOMMENDATION	RELATED INSITUTE OF MEDICINE REPORT
Recommendation 1: Invest in prevention science.	Evaluating Obesity Prevention Efforts: A Plan for Measuring Progress (2013) For the Public's Health: Investing in a Healthier Future (2012) Living Well with Chronic Illness: A Call for Public Health Action (2012) Bridging the Evidence Gap in Obesity Prevention: A Framework to Inform Decision Making (2010) Promoting Cardiovascular Health in the Developing World: A Critical Challenge to Achieve Global Health (2010)
Recommendation 2: Strengthen and expand leadership to deliver a unified message for health and prevention.	Accelerating Progress in Obesity Prevention: Solving the Weight of the Nation (2012) A Population-Based Policy and Systems Change Approach to Prevent and Control Hypertension (2010) Promoting Cardiovascular Health in the Developing World: A Critical Challenge to Achieve Global Health (2010)
Recommendation 3: Make markets work for health promotion and prevention.	Accelerating Progress in Obesity Prevention: Solving the Weight of the Nation (2012) A Population-Based Policy and Systems Change Approach to Prevent and Control Hypertension (2010)
Recommendation 4: Integrate health metrics into corporate reporting.	Living Well with Chronic Illness: A Call for Public Health Action (2012) Integrating Employee Health: A Model Program for NASA (2005)
Recommendation 5: Promote strong cross-sector collaborations that generate a systemic increase in health promotion and prevention across society.	Evaluating Obesity Prevention Efforts: A Plan for Measuring Progress (2013) Toward Quality Measures for Population Health and the Leading Health Indicators (2013) An Integrated Framework for Assessing the Value of Community-Based Prevention (2012) For the Public's Health: Revitalizing Law and Policy to Meet New Challenges (2011) Promoting Cardiovascular Health in the Developing World: A Critical Challenge to Achieve Global Health (2010)

TABLE 3.–ALIGNMENT OF VITALITY INSTITUTE COMMISSION RECOMMENDATIONS WITH SELECTED INSTITUTE OF MEDICINE REPORTS (2005-2013)

For more detail on specific IOM recommendations, go to www.thevitalityinstitute.org/RecsIOM

ENTERPRISE EMPLOYMENT SIZE	FIRMS	FIRMS (%)	ESTABLISHMENTS	ESTABLISHMENTS (%)	EMPLOYMENT	EMPLOYMENT (%)
TOTAL	5,684,424	100.00%	7,354,043	100.00%	113,425,965	100.00%
<20	5,684,424	89.79%	5,160,237	70.17%	20,250,874	17.85%
20-99	481,496	8.47%	651,624	8.86%	18,880,001	16.65%
100-499	81,243	1.43%	350,197	4.76%	15,867,437	13.99%
500+	17,671	0.31%	1,191,985	16.21%	58,427,653	51.51%

TABLE 4.– DISTRIBUTION OF FIRMS,* ESTABLISHMENTS,† AND EMPLOYMENT IN THE UNITED STATES: 2011[138]

*A firm is a business organization consisting of one or more domestic establishments in the same state and industry that were specified under common ownership or control. The firm and the establishment are the same for single-establishment firms. For each multi-establishment firm, establishments in the same industry within a state will be counted as one firm- the firm employment and annual payroll are summed from the associated establishments.

†An establishment is single physical location where business is conducted or where services or industrial operations are performed.

References

1 World Health Organization. Constitution of the World Health Organization. 1946. <http://whqlibdoc.who.int/hist/official_records/constitution.pdf> (accessed March 10, 2014).

2 The Patient Protection and Affordable Care Act. PUBLIC LAW 111–148 (March 23, 2010). <http://www.gpo.gov/fdsys/pkg/PLAW-111publ148/pdf/PLAW-111publ148.pdf> (accessed May 5, 2014).

3 National Public Health Week. Message from President Barack Obama recognizing national public health week. Washington, DC: The White House;2014. <http://www.nphw.org/assets/general/uploads/Presidential_Message_National_Public_Health_Week.pdf> (accessed May 5, 2014).

4 Bipartisan Policy Center. A bipartisan rx for patient-centered care and system-wide cost containment. 2013. <http://bipartisanpolicy.org/library/report/health-care-cost-containment> (accessed March 10, 2014).

5 Moses H, 3rd, Matheson DH, Dorsey ER, George BP, Sadoff D, Yoshimura S. The anatomy of health care in the United States. J Am Med Assoc. 2013;310(18):1947–63.

6 Adapted from Bipartisan Policy Center extrapolations: Congressional Budget Office's alternative fiscal scenario (February 2013), additionally assuming that combat troops overseas decline to 45,000 by 2015 and that Hurricane Sandy funding is not allocated in future years.

7 Congressional Budget Office. The budget and economic outlook: fiscal years 2013 to 2023. <http://www.cbo.gov/sites/default/files/cbofiles/attachments/43907-BudgetOutlook.pdf> (accessed March 10, 2014).

8 World Bank. World development report. 1993. <http://www-wds.worldbank.org/external/default/WDSContentServer/IW3P/IB/2013/02/27/000425962_20130227111342/Rendered/PDF/121830REPLACEMENT0WDR01993.pdf> (accessed March 10, 2014).

9 World Health Organization. Macroeconomics and health: investing in health for economic development.Report of the Commission on Macroeconomics and Health. 2001. <http://apps.who.int/iris/bitstream/10665/42435/1/924154550X.pdf> (accessed May 6, 2014).

10 Jamison DT, Summers LH, Alleyne G, Arrow KJ, Berkley S, Binagwaho A, et al. Global health 2035: a world converging within a generation. Lancet. 2013;382:1898–955. <http://globalhealth2035.org/sites/default/files/report/global-health-2035.pdf> (accessed May 12, 2014).

11 Tryon K, Bolnick H, Pomeranz J, Pronk N, Yach D. Vitality Institute Commission background working paper on implementation of workplace prevention and health promotion programs. 2014.

12 Bayne-Jones S, Burdette W, Cochran W, et al. Smoking and health: report of the advisory committee to the Surgeon General of the United States. U-23 Department of Health, Education, and Welfare. Public Health Service Publication No. 1103. 1964. <http://profiles.nlm.nih.gov/ps/retrieve/ResourceMetadata/NNBBMQ> (accessed March 10, 2014).

13 Robert Wood Johnson Foundation Commission to Build a Healthier America. Time to act: investing in the health of our children and communities. 2014. <http://www.commissiononhealth.org/> (accessed March 10, 2014).

14 World Health Organization. The world health report: reducing risks, promoting healthy life. 2002. <http://www.who.int/whr/2002/en/whr02_en.pdf> (accessed March 10, 2014).

15 Adapted from Go AS, Mozaffarian D, Roger V, et al. Heart disease and stroke statistics—2014 update: a report from the American Heart Association. Circulation. 2014;129(3):e28-e292.

16 Adapted from Centers for Disease Control and Prevention. Crude incidence of diagnosed diabetes per 1,000 population aged 18–79 years, by sex and age, United States, 1997–2011. 2013. <http://www.cdc.gov/diabetes/statistics/incidence/fig5.htm> (accessed March 10, 2014).

17 Janicki H. Employment-based health insurance: 2010. US Census Bureau. 2013. <https://www.census.gov/prod/2013pubs/p70-134.pdf> (accessed May 5, 2014).

18 Miller S. U.S. Employers spend nearly 2% of health budget on wellness. Society For Human Resource Management. 2010. <http://www.shrm.org/hrdisciplines/benefits/Articles/Pages/WellnessBudgets.aspx> (accessed May 5, 2014).

19 Business for Social Responsibility. A new CSR frontier: business and population health. 2013. <https://www.bsr.org/reports/BSR_A_New_CSR_Frontier_Business_and_Population_Health.pdf> (accessed March 10, 2014).

20 Bank of America Merrill Lynch. 2013 CFO outlook, annual survey of US senior financial executives. 2013. <http://corp.bankofamerica.com/documents/16303/307298/CFO_Outlook_2013_Report.pdf> (accessed March 10, 2014).

21 Bloom, D.E, Cafiero, E.T, Jané-Llopis, et al. The global economic burden of noncommunicable diseases. Geneva: World Economic Forum. 2011. <http://www3.weforum.org/docs/WEF_Harvard_HE_GlobalEconomicBurdenNonCommunicableDiseases_2011.pdf> (accessed March 10, 2014).

22 Robert Wood Johnson Foundation. Building a culture of health: 2014 president's message. <http://www.rwjf.org/en/about-rwjf/annual-reports/presidents-message-2014.html> (accessed May 5, 2014).

23 Anderko L, Roffenbender JS, Goetzel RZ, et al. Promoting prevention through the Affordable Care Act: workplace wellness. Prev Chronic Dis. 2012;9:120092.

24 Fries JF, Koop CE, Beadle CE, et al. Reducing health care costs by reducing the need and demand for medical services. N Engl J Med. 1993;329:321–5.

25 Koh HK, Sebelius KG. Promoting prevention through the Affordable Care Act. N Engl J Med. 2010;363:1296–9.

26 Skopec L, Sommers BD. ASPE issue brief. Seventy-one million additional Americans are receiving preventive services coverage without cost-sharing under the Affordable Care Act. Department of Health and Human Services, Office of the Assistant Secretary for Planning and Evaluation. <http://158.74.49.3/health/reports/2013/PreventiveServices/ib_prevention.cfm> (accessed March 10, 2014).

27 Adapted from Centers for Disease Control and Prevention. Diabetes data & trends. <http://www.cdc.gov/diabetes/statistics> (accessed March 10, 2014).

28 Woolf S, Aron L, editors. National Research Council and Institute of Medicine Report: US health in international perspective: shorter lives, poorer health. Washington, DC: National Academies Press. 2013. <http://books.nap.edu/openbook.php?record_id=13497> (accessed March 10, 2014).

29 Lim SS, Vos T, Flaxman AD, et al. A comparative risk assessment of burden of disease and injury attributable to 67 risk factors and risk factor clusters in 21 regions, 1990–2010: a systematic analysis for the global burden of disease study 2010. Lancet. 2012;380(9859):2224–60.

30 Ahmed H, Blaha M, Nasir K, et al. Low-risk lifestyle, coronary calcium, cardiovascular events, and mortality: results from MESA. Am J Epidemiol. 2013;178(1):12–21.

31 Fries JF, Bruce B, Chakravarty E. Compression of morbidity 1980–2011: a focused review of paradigms and progress. J Aging Res. 2011; 2011:261702.

32 Fries JF. Aging, natural death, and the compression of morbidity. N Engl J Med. 1980;303(3):130–5.

33 Adapted from Fries JF, Bruce B, Chakravarty E. Compression of morbidity 1980–2011: a focused review of paradigms and progress. J Aging Res. 2011:261702.

34 John Last JM. Dictionary of epidemiology 4th ed. Oxford: OUP;2001.

35 Bradley E, Elkins B, Herrin J, Elbel B. Health and social services expenditures: associations with health outcomes. BMJ Qual Saf. 2011;20(10):826–83.

36 Bradley EH, Taylor LA. The American health care paradox: why spending more is getting us less. New York, NY: PublicAffairs;2013.

37 Merriam-Webster Dictionary. 2014. <http://www.merriam-webster.com/dictionary/healthcare> (accessed March 10, 2014).

38 Social Progress Imperative. <http://www.socialprogressimperative.org> (accessed March 10, 2014).

39 World Economic Forum. The human capital report. 2013. <http://www3.weforum.org/docs/WEF_HumanCapitalReport_2013.pdf> (accessed March 10, 2014).

40 Adapted from World Economic Forum. The human capital report. 2013. <http://www3.weforum.org/docs/WEF_HumanCapitalReport_2013.pdf> (accessed March 10, 2014).

41 Adapted from Woolf S, Aron L, editors. National Research Council and Institute of Medicine Report: US health in international perspective: shorter lives, poorer health. Washington, DC: National Academies Press;2013. <http://books.nap.edu/openbook.php?record_id=13497> (accessed March 10, 2014).

42 Pomeranz JL. Workplace wellness programs: how regulatory flexibility may undermine success. 2014. Under review.

43 45 CFR 146.121(f).

44 78 FR 33159 (June 3, 2013).

45 Pomeranz JL, Yang YT. The affordable care act and state coverage of clinical preventive health services for working-age adults. J Public Health Manag Pract. Epub 2014 Apr 30.

46 Kaiser Family Foundation. A Guide to the Supreme Court's Decision on the ACA's Medicaid Expansion. 2012. <http://kaiserfamilyfoundation.files.wordpress.com/2013/01/8347.pdf> (accessed March 10, 2014).

47 Kaiser Family Foundation. The coverage gap: uninsured poor adults in states that do not expand Medicaid. 2013. <http://kff.org/health-reform/issue-brief/the-coverage-gap-uninsured-poor-adults-in-states-that-do-not-expand-medicaid/> (accessed May 8, 2014).

48 Centers for Medicare and Medicaid Services, Office of the Actuary. Estimated Financial Effects of the Patient Protection and Affordable Care Act. 2010. <http://www.cms.gov/Research-Statistics-Data-and Systems/Research/ActuarialStudies/downloads/PPACA_2010-04-22.pdf> (accessed March 10, 2014).

49 Brill A. The long-term returns of obesity prevention policies. Matrix Global Advisors. 2013. <http://www.rwjf.org/content/dam/farm/reports/reports/2013/rwjf405694> (accessed March 10, 2014).

50 Govtrack.us. H.R.4444: Long-term Score Act. 113th Congress, 2013-2015. 2014. <https://www.govtrack.us/congress/bills/113/hr4444/text> (accessed May 5, 2014).

51 Adapted from Elmendorf DW. CBO's analysis of health care policy, presentation to the healthcare leadership council. Congressional Budget Office. 2014. <http://www.cbo.gov/sites/default/files/cbofiles/attachments/45050-presentation_HealthcareLeadershipCouncil.pdf> (accessed March 10, 2014).

52 Elmendorf DW. CBO's analysis of health care policy, presentation to the healthcare leadership council. Congressional Budget Office. 2014. <http://www.cbo.gov/sites/default/files/cbofiles/attachments/45050-presentation_HealthcareLeadershipCouncil.pdf> (accessed March 10, 2014).

53 Fineberg H. The paradox of disease prevention celebrated in principle, resisted in practice. JAMA. 2013;310(1):85–90.

54 Department of Health and Human Services. Report of the secretary's task force on black and minority health. 1985.<http://files.eric.ed.gov/fulltext/ED263293.pdf> (accessed March 10, 2014).

55 Adapted from Institute for Health Metrics and Evaluation. The state of US health: innovations, insights, and recommendations from the global burden of disease study. 2013. <http://www.healthdata.org/policy-report/state-us-health-innovations-insights-and-recommendations-global-burden-disease-study> (accessed March,10, 2014).

56 Murray CJ, Kulkarni SC, Michaud C, et al. Eight Americas: investigating mortality disparities across races, counties, and race-counties in the United States. PLoS Med. 2006;3(9):e260. <http://www.plosmedicine.org/article/info%3Adoi%2F10.1371%2Fjournal.pmed.0030260> (accessed May 8, 2014).

57 United Health Foundation. America's Health Ranking Report. 2013. <http://www.americashealthrankings.org> (accessed March 10, 2014).

58 Institute for Health Metrics and Evaluation. The state of US health: innovations, insights, and recommendations from the global burden of disease study. 2013. <http://www.healthdata.org/policy-report/state-us-health-innovations-insights-and-recommendations-global-burden-disease-study> (accessed March. 10, 2014).

59 Colorado Department of Public Health and Environment. <http://www.colorado.gov/cs/Satellite/CDPHE-Main/CBON/1251583470000> (accessed March 10, 2014).

60 US Census Bureau. State & county quickfacts: Mississippi. <http://quickfacts.census.gov/qfd/states/28000.html> (accessed May 8, 2014).

61 US Census Bureau. State & county quickfacts: Colorado. <quick facts http://quickfacts.census.gov/qfd/states/08000.html> (accessed May 8, 2014).

62 Dwyer-Lindgren L, Mokdad AH, Srebotnjak T, Flaxman AD, Hansen GM, Murray CJ. Cigarette smoking prevalence in US counties: 1996–2012. Popul Health Metr. 2014;12(1):5.

63 Adapted from Dwyer-Lindgren L, Mokdad AH, Srebotnjak T, Flaxman AD, Hansen GM, Murray CJ. Cigarette smoking prevalence in US counties: 1996–2012. Popul Health Metr. 2014;12(1):5.

64 National Partnership for Action to End Health Disparities. National stakeholder strategy for achieving health equity. 2011. <http://minorityhealth.hhs.gov/npa/files/Plans/NSS/NSSExecSum.pdf> (accessed May 8, 2014).

65 National Partnership for Action to End Health Disparities. HHS action plan to reduce racial and ethnic health disparities. 2011. <http://minorityhealth.hhs.gov/npa/templates/content.aspx?lvl=1&lvlid=33&ID=285> (accessed March 10, 2014).

66 Kahneman D. A Psychological Perspective on Economics. American Economic Review. 2003; 93(2); 162–8.

67 Shiller RJ. Irrational exuberance. 2nd ed. New York, NY: Crown; 2005.

68 Kalkhoran S, Glantz SA. Smoke-free policies: cleaning the air with money to spare. Lancet. 2014;383(9928):1526–8.

69 Been JV, Nurmatov UB, Cox B, Nawrot TS, van Schayck CP, Sheikh A. Effect of smoke-free legislation on perinatal and child health: a systematic review and meta-analysis. Lancet. 2014. 383(9928):1549.

70 Community Preventive Services Task Force. 2012 annual report to congress. 2012. <http://www.thecommunityguide.org/news/2013/2012AnnualReport.html> (accessed March 10, 2014).

71 National Research Council. The healthcare imperative: lowering costs and improving outcomes. 2011. <http://iom.edu/Reports/2011/The-Healthcare-Imperative-Lowering-Costs-and-Improving-Outcomes.aspx> (accessed March 10, 2014).

72 Calitz FC, Pollack KM, Millard C, Yach D. Vitality Institute Commission background working paper on federal funding for prevention research. 2014.

73 Glasgow RE, Vinson C, Chambers D, Khoury MJ, Kaplan RM, Hunter C. National Institutes of Health approaches to dissemination and implementation science: current and future directions. Am J Public Health. 2012;102(7):1274–81.

74 Stockmann C, Hersh AL, Sherwin CM, Spigarelli MG. Alignment of United States funding for cardiovascular disease research with deaths, years of life lost, and hospitalizations. Int J Cardiol. 2014;172(1):e19–21.

75 Selby JV, Lipstein SH. PCORI at 3 years—progress, lessons, and plans. N Engl J Med. 2014;370:592–5. <http://www.nejm.org/doi/full/10.1056/NEJMp1313061?query=TOC#t=article> (accessed April 12, 2014).

76 Patient-Centered Outcomes Research Institute. <http://pfaawards.pcori.org/> (accessed March 10, 2014).

77 Centers for Medicaid and Medicare Services (CMS). Report to Congress: The Centers for Medicare and Medicaid Services' evaluation of community-based wellness and prevention programs under Section 4202(b) of the Affordable Care Act. 2010. <http://innovation.cms.gov/Files/reports/CommunityWellnessRTC.pdf> (accessed March 10, 2014).

78 Vitality Institute Commission background working paper: Review of Institute of Medicine recommendations on prevention and health promotion strategies (2005–2013). 2014.

79 Bannerjee A, Duflo E. Poor economics: a radical rethinking of the way to fight global poverty. New York, NY: PublicAffairs; 2011.

80 Lyons RA, Ford DV, Moore L, Rodgers SE. Use of data linkage to measure the population health effect of non-health-care interventions. Lancet. 2014;383:1517–9.

81 Nikolaos A. Patsopoulos. A pragmatic view on pragmatic trials. Dialogues Clin Neurosci. 2011;13:217–24. <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3181997> (accessed May 8, 2014).

82 Gold M, Helms D, Guterman S. Identifying, monitoring, and assessing promising innovations: using evaluation to support rapid-cycle change. The Commonwealth Fund. 2011. <http://www.statecoverage.org/files/CMWF-ACO_promising_innovations_rapid_cycle_change_.pdf> (accessed March 10, 2014).

83 National Institutes of Health. Office of Disease Prevention. Strategic Plan. 2014. <https://prevention.nih.gov/about/strategic-plan> (accessed March 10, 2014).

84 Government Office for Science and Department of Health. Tackling obesities: future choices. 2007. <http://www.bis.gov.uk/foresight/our-work/projects/published-projects/tackling-obesities> (accessed March 10, 2014).

85 Volpp KG, Loewenstein G, Asch D. Vitality Institute Commission background working paper on behavioral economics for health. 2014.

86 Harford T. Behavioural economics and public policy. Financial Times. 2014. <http://www.ft.com/intl/cms/s/2/9d7d31a4-aea8-11e3-aaa6-00144feab7de.html> (accessed May 12, 2014).

87 Sunstein CR, Thaler RH. Nudge: improving decisions about health, wealth, and happiness. New York, NY: Penguin;2009.

88 Loewenstein G, Asch DA, Volpp KG. Behavioral economics holds potential to deliver better results for patients, insurers, and employers. Health Aff. 2013;32(7):1244–50.

89 Loewenstein G, Asch DA, Friedman JY, Melichar LA, Volpp KG. Can behavioural economics make us healthier? BMJ. 2012;344:e3482.

90 Volpp KG, Troxel AB, Pauly MV, et al. A randomized, controlled trial of financial incentives for smoking cessation. N Engl J Med. 2009;360(7):699–709.

91 Cooke M, Irby DM, Sullivan W, Ludmerer MK. American medical education 100 years after the Flexner report. N Engl J Med 2006;355:1339–44.

92 Association of American Medical Colleges. Report of the Ad Hoc Committee of Deans. Educating doctors to provide high quality medical care: a vision for medical education in the United States. 2004. <https://members.aamc.org/eweb/upload/Educating Doctors to Provide July 2004.pdf> (accessed May 12, 2014).

93 Institute of Medicine. The future of nursing: leading change, advancing health. 2010. <http://www.iom.edu/Reports/2010/The-future-of-nursing-leading-change-advancing-health.aspx> (accessed March 10, 2014).

94 Vetter ML, Herring SJ, Sood M, Shah NR, Kalet, AL. What do resident physicians know about nutrition? An evaluation of attitudes, self-perceived proficiency and knowledge. J Am Coll Nutr. 2008;27(2):287–98.

95 Adams KM, Kohlmeier M, Zeisel SH. Nutrition education in U.S. medical schools: latest update of a national survey. Acad Med. 2010;85(9):1537–42.

96 OpenCongress. H.R.4378 - Education and Training for Health Act of 2014. OpenCongress.2014. <http://www.opencongress.org/bill/hr4378-113/actions_votes> (accessed Mar 10, 2014).

97 National Institutes of Health. NIH: turning discovery into health. 2011. <http://nih.gov/about/discovery/viewbook_2011.pdf> (accessed March 10, 2014).

98 Ehrlich E. NIH's role in sustaining the U.S. economy. United for Medical Research. <http://www.unitedformedicalresearch.com/wp-content/uploads/2012/07/NIHs-Role-in-Sustaining-the-US-Economy-2011.pdf> (accessed March 10, 2014).

99 The Blue Ridge Academic Health Group. Reforming medical education: urgent priority for the academic health center in the new century. 2003. <http://www.whsc.emory.edu/blueridge/_pdf/blue_ridge_report_7_2003may.pdf> (accessed March 10, 2014).

100 Kim SC, Glasner A, Listhaus A, Berke D, Baytor T. Vitality Institute Commission background working paper on graduate-level training in prevention and health promotion. 2014.

101 Georgetown Law. Experiential learning at Georgetown Law. 2012. <http://www.law.georgetown.edu/academics/academic-programs/clinical-programs/upload/Experiential-Learning-2012-2013-2.pdf> (accessed March 7, 2014).

102 Coursera. Johns Hopkins University. <https://www.coursera.org/jhu> (accessed March 10, 2014).

103 Yach D. Food industry: friend or foe? Obesity Reviews. 2013;15(1):2–5.

104 US Census Bureau. County business patterns. 2011. <http://www.census.gov/econ/cbp/> (accessed March 10, 2014).

105 Investing in What Works for America's Communities. <http://www.whatworksforamerica.org/> (accessed March 10, 2014).

106 Federal Reserve Bank of San Francisco. Healthy communities. 2014. <http://www.frbsf.org/community-development/initiatives/healthy-communities> (accessed March 10, 2014).

107 Slining MM, Ng SW, Popkin BM. Food companies' calorie-reduction pledges to improve U.S. diet. Am J Prev Med. 2013;44(2):174–84.

108 Bertocci B, Bolli A, Friedman AS, et al. UBS Investment Research; UBS Global I/O: Global sustainability: nutrition: access and traceability. New York, NY: UBS Financial Services; 2013.

109 Nahal S, Lucas-Leclin V, King J. Globesity—the global fight against obesity. Bank of America Merrill Lynch: ESG and Sustainability; 2012. <http://www.foodpolitics.com/wp-content/uploads/Globesity-Report_12.pdf> (accessed May 12, 2014).

110 Hudson Institute. Better-for-you-foods: it's just good business. 2011. <http://www.rwjf.org/content/dam/farm/reports/reports/2011/rwjf71199> (accessed March 10, 2014).

111 Pepsico. Human Sustainability means providing a wide range of foods and beverages, from treats to healthy eats. 2012. <http://www.pepsico.com/Purpose/Human-Sustainability> (accessed March 10, 2014).

112 Wahba P, Steenhuysen J. CVS becomes first big U.S. drugstore chain to drop tobacco. Reuters. Feb 5, 2014. <http://www.reuters.com/article/2014/02/05/us-cvscaremark-cigarettes- idUSBREA140RP20140205> (accessed March 10, 2014).

113 Rupp L. CVS to stop selling cigarettes, tobacco products by October. <http://www.bloomberg.com/news/2014-02-05/cvs-caremark-to-stop-selling-cigarettes-tobacco-by-october.html> (accessed March 10, 2014).

114 Cardello H. CVS and the rise of corporate profitable morality. Hudson Institute. 2014. <http://www.hudson.org/research/10138-cvs-and-the-rise-of-corporate-profitable-morality> (accessed March 10, 2014).

115 Press release: p-BNC, the programmable Bio-Nano-Chip: Nokia Sensing XCHALLENGE finalist. 2013. <http://www.reuters.com/article/2013/10/31/tx-mcdevitt-research-idUSnBw316171a+100+BSW20131031> (accessed May 12, 2014).

116 Asch DA, Muller R, Volpp KG. Automated hovering: watching over the other 5,000 hours. N Engl J Med. 2012;367(1):1–3. <http://www.nejm.org/doi/full/10.1056/NEJMp1203869> (accessed May 12, 2014).

117 European Commission. Green paper on mobile health ("mHealth"). <https://ec.europa.eu/digital-agenda/en/news/green-paper-mobile-health-mhealth> (accessed May 12, 2014).

118 Booz & Co. Navigating the digital future: the 2013 global innovation 1000 study. 2013. <http://www.strategyand.pwc.com/media/file/Strategyand_2013-Global-Innovation-1000-Study-Navigating-the-Digital-Future_Fact-Pack.pdf> (accessed March 10, 2014).

119 Adapted from Allianz. The sixth Kondratieff—long waves of prosperity. 2010. <https://www.allianz.com/v_1339501901000/media/press/document/kondratieff_en.pdf> (accessed March 10, 2014).

120 Porter ME, Kramer MR. Creating shared value. Harvard Business Review. Jan 2011.

121 Adapted from Fabius R, Thayer RD, Konicki DL, Yarborough CM, Peterson KW, Isaac F. The link between workforce health and safety and the health of the bottom line. J Occup Environ Med 2013. 55(9):993–1000.

122 United Nations Global Compact. The Global Compact. 2014. <http://www.unglobalcompact.org/index.html> (accessed 27 May 2014).

123 Institute of Medicine. Sustainable diets: food for healthy people and a healthy planet. 2014.<http://www.iom.edu/Reports/2014/Sustainable-Diets-Food-for-Healthy-People-and-a-Healthy-Planet.aspx> (accessed March 10, 2014).

124 Carroll L, Kelly B, Jarris P, Yach D, Rosenzweig W. Vitality Institute Commission background working paper on cross-sector engagement for health. 2014.

125 Oxford Martin Commission for Future Generations. <http://www.oxfordmartin.ox.ac.uk/commission> (accessed March 10, 2014).

126 RWJF. Why does education matter so much to health? 2013. <http://www.rwjf.org/content/dam/farm/reports/issue_briefs/2012/rwjf403347> (accessed March 10, 2014).

127 Chicago Council. Bringing agriculture to the table. 2011. <http://www.thechicagocouncil.org/UserFiles/File/GlobalAgDevelopment/Report/Bringing_Agriculture_To_The_Table.pdf> (accessed March 10, 2014).

128 Adapted from Union of Concerned Scientists. <http://www.ucsusa.org/assets/images/fa/plant-the-plate/Plant-the-Plate-Infographic-full.jpg> (accessed March 10, 2014).

129 California Department of Public Health. Health in all policies task force-about us. <http://sgc.ca.gov/hiap/about.html> (accessed March 10, 2014).

130 Glickman D, Hertling M, Milam C, Reddington T. Opinion: Health initiatives can save money, boost readiness. Military Times. 2014. <http://www.militarytimes.com/article/20140313/BENEFITS06/303130032/Opinion-Health-initiatives-can-save-money-boost-readiness> (accessed March 10, 2014).

131 Knowler WC, Barrett-Connor E, Fowler SE, et al. Reduction in the incidence of type 2 diabetes with lifestyle intervention or metformin. N Engl J Med 2002;6(6):393–403.

132 GENYOUth.The wellness impact: enhancing academic success through healthy school environment.2013. <http://www.genyouthfoundation.org/wp-content/uploads/2013/02/The_Wellness_Impact_Report.pdf> (accessed March 10, 2014).

133 Robert Wood Johnson Foundation. County health rankings & roadmaps. <http://www.countyhealthrankings.org/> (accessed March 10, 2014).

134 Double Up Food Bucks. Double up food bucks 2012 evaluation report reveals promising health and economic trends. 2012. <http://www.fairfoodnetwork.org/sites/default/files/FFN_DUFB%20Eval%202012_OnePager.pdf> (accessed March 10, 2014).

135 United States Department of Agriculture. Double up food bucks expands to grocery stores. 2013. <http://blogs.usda.gov/2013/07/24/double-up-food-bucks-expands-to-grocery-stores> (accessed March 10, 2014).

136 Surgeon General. Prevention matters. <http://www.surgeongeneral.gov/initiatives/prevention/strategy/infographic/index.html> (accessed March 10, 2014).

137 Collaborators USBoD. The state of US health, 1990–2010: burden of diseases, injuries, and risk factors. JAMA. 2013;310(6):591–608.

138 US Census Bureau. US & states, totals. Statistics of US businesses annual data. 2011. <http://www.census.gov/econ/susb/> (accessed May 6, 2014).

Background Working Papers

Original papers on the following topics were prepared to inform the Commission's work:

Agriculture and Urban Design Policies

- Johanna Goetzel, MA—Vitality Institute
- Caitlin Morris—Nike, Inc.

Behavioral Economics for Health

- Kevin G. Volpp, MD, PhD—Leonard Davis Institute Center for Health Incentives and Behavioral Economics; Penn Medicine Center for Innovation; Departments of Medical Ethics and Health Policy, and Medicine, Perelman School of Medicine, University of Pennsylvania
- George Loewenstein, PhD—Leonard Davis Institute Center for Health Incentives and Behavioral Economics; Carnegie Mellon University
- David Asch, MD, MBA—Leonard Davis Institute Center for Health Incentives and Behavioral Economics; Penn Medicine Center for Innovation; Departments of Medical Ethics and Health Policy, and Medicine, Perelman School of Medicine, University of Pennsylvania

Chronic Disease Prevention Priorities in the US

- Mandana Arabi, MD, PhD—Sackler Institute for Nutrition Science, New York Academy of Sciences
- Ashkan Afshin, PhD—Harvard School of Public Health
- Dariush Mozaffarian, MD, MPH, DrPH—Harvard School of Public Health

Cross-Sector Engagement for Health

- Leigh Carroll—Institute of Medicine
- Bridget Kelly, PhD—Institute of Medicine
- Paul E. Jarris, MD—Association of State and Territorial Health Officials
- Derek Yach, MBChB, MPH—Vitality Institute
- William B. Rosenzweig—Physic Ventures

Federal Funding for Prevention Research

- Chris Calitz, MPP—Institute for Health and Social Policy, Department of Health Policy and Management, Bloomberg School of Public Health, Johns Hopkins University
- Keshia M. Pollack, PhD—Department Health Policy and Management, Bloomberg School of Public Health, Johns Hopkins University
- Chris Millard—Institute for Health and Social Policy, Department of Health Policy and Management, Bloomberg School of Public Health, Johns Hopkins University
- Derek Yach, MBChB, MPH—Vitality Institute

Institute of Medicine Recommendations on Prevention and Health Promotion Strategies (2005-2013): A Review

- Leigh Carroll—Institute of Medicine
- Bridget Kelly, PhD—Institute of Medicine

Personal Intelligent Technologies for Health

- Gillian Christie, MPhil—Vitality Institute
- Neil Adamson—Discovery Limited
- Derek Yach, MBChB, MPH—Vitality Institute

Graduate-Level Training in Prevention and Health Promotion

- Susan C. Kim, JD—O'Neill Institute for National and Global Health Law, Georgetown University
- Aliza Glasner, JD— O'Neill Institute for National and Global Health Law, Georgetown University
- Alyson Listhaus, MPH— Joseph L. Mailman School of Public Health, Columbia University
- Daryl Berke, MPH—Yale School of Public Health,
- Tanya Baytor, LLM— O'Neill Institute for National and Global Health Law, Georgetown University

Workplace Prevention and Health Promotion Programs: Implementation

- Katherine Tryon, MA, MBBS—Vitality Institute
- Howard Bolnick, MBA, FSA—Discovery Limited
- Jennifer Pomeranz, JD, MPH—Temple University
- Nicolaas Pronk, PhD—Harvard School of Public Health
- Derek Yach, MBChB, MPH—Vitality Institute

Workplace Prevention and Health Promotion Programs: Potential Savings

- Howard Bolnick, MBA, FSA—Discovery Limited
- Ali Mokdad, PhD—Institute for Health Metrics and Evaluation, University of Washington
- Francois Millard, FIA, FSA, MAAA—The Vitality Group
- Jonathan Dugas, PhD—The Vitality Group
- Derek Yach, MBChB, MPH—Vitality Institute

Workplace Prevention and Health Promotion Programs: ACA and Regulatory Issues (series)

- Jennifer Pomeranz, JD, MPH—Temple University

Related Commissions and Reports

The Vitality Institute Commission endorses and aligns itself with the work of the following groups, which drive the message that prevention is key to the health of America's economy and its people.

- Bipartisan Policy Center, A Bipartisan Rx for Patient-Centered Care and System-Wide Cost Containment (2013), addressed unsustainable healthcare cost growth in the US and made recommendations to improve how healthcare is delivered and financed in the private and public sectors.

  www.bipartisanpolicy.org/sites/default/files/BPC Cost Containment Report.pdf

- Institute of Medicine, Improving Support for Health Promotion and Chronic Disease Prevention (2014), analyzed IOM reports published between 2005 and 2013 that address prevention.

  www.thevitalityinstitute.org/IOM

- The Lancet Commission on Investing in Health, Global Health 2035: A World Converging Within a Generation (2013), prompted by the 20th anniversary of the 1993 World Development Report, the Commission revisited the case for investment in health and developed a new investment framework to achieve better health outcomes by 2035.

  www.thelancet.com/commissions/global-health-2035

- Robert Wood Johnson Foundation Commission to Build a Healthier America, Time to Act: Investing in the Health of Our Children and Communities (2014), examined factors outside of medical care that influence health and issued 10 recommendations for action at the local, state, and federal levels to improve population health.

  http://www.rwjf.org/en/research-publications/find-rwjf-research/2014/01/recommendations-from-the-rwjf-commission-to-build-a-healthier-am.html

Vitality Institute Commission Calendar

LAUNCH OF THE VITALITY INSTITUTE AND COMMISSION

May 21, 2013	New York, NY

COMMISSION MEETINGS

May 21-22, 2013	New York, NY
September 20-21, 2013	New York, NY
February 19-20, 2014	Washington, DC

"WITHIN REACH: AN ACTION PLAN FOR OUR NATION'S HEALTH AND PROSPERITY" PRESENTATION OF THE VITALITY COMMISSION REPORT AND RECOMMENDATIONS

June 18, 2014	New York, NY

COMMISSION FORUMS

September 19, 2013	Leveraging Technologies for Health Promotion Co-hosted by Mandana Arabi from The Sackler Institute for Nutrition Science at the New York Academy of Sciences New York, NY
January 7, 2014	Business for Health: Fostering Healthy Workplaces Co-hosted by Kelly Brough from the Denver Metro Chamber of Commerce Denver, CO
February 20, 2014	Health Promotion: Empowering Change through Policy Co-hosted by Lynn Goldman from the George Washington University Milken Institute School of Public Health Washington, DC
March 19, 2014	Building Healthier Societies: Pioneer Perspectives Co-hosted by Michael Eriksen from Georgia State University School of Public Health and Jeffrey Koplan from Emory University Global Health Institute Atlanta, GA
April 17, 2014	Food@Work: Exploring Links between Food and Productivity, Health, and Sustained Competitive Advantage in the Workplace Co-hosted by Michiel Bakker from Google Inc. San Francisco, CA

INSTITUTE FOR THE FUTURE EXPERT WORKSHOPS ON THE FUTURE OF TECHNOLOGY-ENABLED STRATEGIES FOR HEALTH PROMOTION & DISEASE PREVENTION 2030

September 30, 2013	The Role of Technology in Health Promotion and Disease Prevention Palo Alto, CA
October 21, 2013	Adoption of Technology-Enabled Strategies New York, NY

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AUTHORS OF BACKGROUND WORKING PAPERS

Neil Adamson, Discovery Limited
Ashkan Afshin, Harvard University
Mandana Arabi, New York Academy of Sciences
David Asch, University of Pennsylvania
Tanya Baytor, Georgetown University
Daryl Berke, Yale University
Howard Bolnick, Discovery Limited
Chris Calitz, Johns Hopkins University
Gillian Christie, Vitality Institute
Leigh Carroll, Institute of Medicine
Aliza Glasner, Georgetown University
Johanna Goetzel, Vitality Institute
Paul Jarris, Association of State and Territorial Health Officials
Bridget Kelly, Institute of Medicine
Susan Kim, Georgetown University
Alyson Listhaus, Columbia University
George Loewenstein, Carnegie Mellon University
Chris Millard, Johns Hopkins University
Francois Millard, The Vitality Group
Ali Mokdad, University of Washington
Dariush Mozaffarian, Harvard University
Caitlin Morris, Nike Incorporated
Keshia Pollack, Johns Hopkins University
Jennifer Pomeranz, Temple University
Nicolaas Pronk, Harvard University
William Rosenzweig, Physic Ventures
Katherine Tryon, Vitality Institute
Kevin Volpp, University of Pennsylvania
Derek Yach, Vitality Institute

SECRETARIAT OF THE VITALITY INSTITUTE

Derek Yach, Executive Director
Elle Alexander, Policy Analyst
Gillian Christie, Health Innovation Analyst
Johanna Goetzel, Policy Analyst
Carrie-Andrea Koppelman, Project Manager
Vera Oziransky, Project Manager
Shahnaz Radjy, Senior Communications Specialist
Christina Rateau, Executive Assistant
Barbara Ravage, Consultant
Katherine Tryon, Senior Global Research Scientist

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3 COLUMBUS CIRCLE | SUITE 1656 | NEW YORK, NY 10019 | WWW.THEVITALITYINSTITUTE.ORG