

The Role of Prevention in Bending the Cost Curve

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Introduction

To help finance its historic expansions of insurance coverage, the Patient Protection and Affordable Care Act (ACA) includes several provisions aimed at slowing the rate of growth of personal health expenditures. This goal is addressed partly by reductions in payments to health care providers and partly by future reductions in the tax subsidies for extremely generous insurance plans—often referred to as “Cadillac plans”—to increase the price sensitivity of consumers. Another ACA strategy is a focus on disease prevention to reduce the future need for care. According to polling conducted during the 2009 health care reform debate, the public believes that disease prevention is a key component of improving the long-term prospect of the nation’s health care system,¹ and the rhetoric about reform has often included references to prevention. However, not until the passage of the ACA was health care reform linked to funding for public health and prevention.

The ACA includes provisions supporting coverage of clinical preventive services in insurance benefit packages and innovative new funding for public health through the Prevention and Public Health Fund (PPHF). The use of the fund is flexible but it will be guided by the National Prevention Strategy, which was published in June 2011.² Although current funding decisions had to be made before the strategy was finalized, they are consistent with its goals, and substantial PPHF expenditures have been dedicated to funding evidence-based interventions to address tobacco control, obesity prevention, better nutrition, and physical activity.³ Taken as a group, these interventions target primarily chronic diseases like diabetes, hypertension, heart disease, stroke, and renal disease. Recent research has demonstrated just how costly this limited set of diseases is to the U.S. health care system.⁴ The primary focus of this brief is to explore the contribution that disease prevention efforts can make toward bending the cost curve.

A growing body of research has demonstrated that community-based approaches can be successful in changing behaviors and reducing risk factors for these diseases, especially if implemented with the knowledge and participation of clinicians.⁵ It is specifically this type of lifestyle-modification interventions that a significant portion of the PPHF’s Community Transformation Grants have targeted.⁶

Some large private businesses have recognized the potential savings from disease prevention and are developing lifestyle modification or wellness programs.⁷ The impact of these programs, however, is limited to the population employed by such firms, which leaves several important segments of the population unaffected. Economies of scale in wellness programs make widespread private sector adoption unlikely. The case for public intervention in this area is bolstered by the fact that the greatest impact of disease prevention on spending will accrue to the Medicare and Medicaid programs.⁸ Further, the aging of the population means that the Medicare costs associated with this set of diseases will only grow. In the current debate over the future fiscal status of the federal government, cutting a set of evidence-based programs that can relieve pressure on the largest contributor to fiscal imbalance over the long run seems short-sighted at best.

The following overview outlines several promising approaches targeted in the first round of funding for the PPHF. It enumerates the benefits that these interventions can produce for both health and cost containment and that would be foregone if the PPHF were eliminated either through a full repeal of the ACA or through targeted budget cuts. Then, based on estimations of the cost of illness by age, it explores what reducing or eliminating the PPHF would mean for Medicare and Medicaid over the next 20 years.

Promising Initiatives in Chronic Disease Prevention

The literature abounds with examples of the potential of primary and community-based prevention. These initiatives indicate the level of results that could be expected from PPHF-funded programs and the progress that would be forgone if this ACA component were to be eliminated.

Diabetes Prevention

The Diabetes Prevention Program (DPP) is a large randomized clinical trial targeted at adults who have a high risk of developing diabetes. Early results showed that structured lifestyle intervention programs targeted at people identified by relatively simple diagnostic screening can reduce the incidence rate of diabetes by more than half.⁹ Follow-up studies showed that these gains could be maintained over time.¹⁰ The approach was designed to be implemented in physicians' offices by medical professionals. Following its success, however, it has been adapted to a community setting where trained nonclinicians can implement the intervention in the community at a cost that is approximately 12 percent of the cost of the original DPP intervention.¹¹ Interim measures of behavior modification and weight loss are quantitatively similar to those achieved by the DPP approach, but long-run results have not yet been quantified. Although diabetes is the focus of these studies, the weight loss, increased physical activity, and improved diet that these interventions produce have also been shown to reduce blood pressure, a known precursor of stroke, heart disease, and kidney disease.

Smoking Cessation

Smoking is associated not only with the incidence of several cancers but also with increased incidence of cardiovascular disease, hypertension, and stroke. In another randomized clinical trial, the traditional approach of clinician identification of smokers and brief in-office counseling was compared with a "cessation support" approach that included faxed referrals to a community-based "Quitline" of smokers identified as ready to try quitting.¹² The addition of an easy referral method and the availability of the link to the community program were associated with improved clinician provision of smoking cessation counseling. Other research shows that receipt of clinician counseling promotes smoking cessation.¹³

HIV Prevention

A recent large clinical trial on the transmission of human immunodeficiency virus (HIV) concluded early when researchers determined that the evidence was clear that

early diagnosis and treatment of HIV-positive individuals with oral antiretroviral medicines reduced the transmission of the virus by 96 percent.¹⁴ This landmark study highlights the importance of screening, one of the clinical preventive services included as a covered benefit under the ACA.

Multifactorial Community Interventions

Community-wide interventions that target nutrition and physical activity in a broad program of change across various sectors (e.g., schools, restaurants, built environment) have shown positive effects on reducing the rate of increase in obesity at relatively low cost. Shape Up Somerville (Massachusetts) provided evidence that such multifactorial interventions could slow the growth of child obesity.¹⁵ Evidence from other programs confirms the potential of this model. For example, from an initial base of 10 communities in France, the EPODE program has grown to cover 113 communities.¹⁶ EPODE promotes healthy eating, a more active lifestyle, and reduction in smoking and stress. It has documented improvements in health-related lifestyle choices and a leveling off of maternal and child obesity.¹⁷

Targeting Health Disparities

Racial and Ethnic Approaches to Community Health (REACH) is a Centers for Disease Control and Prevention (CDC)-sponsored program to reduce health disparities through community-based participatory approaches. Over four years, this program has shown results such as decreases in smoking among Asian Americans, increases in cholesterol screening among Hispanics and African Americans, and increases in breast and cervical cancer screening.¹⁸

The Cost of Ignoring Chronic Disease Prevention

If funding is not available to support these and other primary prevention initiatives, the country can expect to see at best a continuation of current trends in chronic disease. People with chronic disease have higher medical care costs. The difference between the cost of care for people with chronic disease and those without can be thought of as the "excess costs" associated with chronic disease. One of the benefits of primary prevention programs such as those funded under the PPHF would be a reduction in excess medical costs. (Other benefits include reduced absenteeism and improved productivity at work and school, which are not addressed here.) To the extent that these excess costs are currently publicly financed through Medicare and Medicaid, reducing these costs would offset the cost of funding the PPHF.

Based on our analysis of spending by two population groups—seniors (age 65 and above) and baby boomers (ages 45–64)—using data from the Medical Expenditure Panel Survey (MEPS), we estimate that the annual excess medical care cost of four diseases associated with obesity and smoking (type 2 diabetes, hypertension, heart disease, and stroke) is currently \$238 billion. Of this total, we estimate that \$134 billion is financed by the Medicare and Medicaid. More alarming, however, is the fact that the prevalence of each of these diseases has grown significantly in recent years and is projected to continue growing.¹⁹ Such projections are supported by the dramatic growth in obesity and overweight among Americans of all ages.²⁰

Table 1 shows baseline age-specific prevalence trends in each disease based on recent trends in type 2 diabetes prevalence observed by the CDC²¹ and projections of hypertension, heart disease, and stroke produced by the American Heart Association.²² Among the diseases studied, diabetes is growing the fastest with an annualized growth rate of 3.5 percent. If current trends continue, diabetes prevalence will approximately double over the next 20 years. Hypertension is the highest prevalence disease among the four but is growing more slowly (0.7 percent per year). The baseline projection is that by 2030, the prevalence of hypertension will reach 33.1 percent for 45- to 64-year-olds and 57.4 percent for those age 65 and older. Heart disease prevalence is growing the most slowly of the four conditions (0.5 percent per year), and by 2030 is expected to reach a prevalence of 11.2 percent and 33.9 percent in the younger and older age groups, respectively. Stroke has lower prevalence than the other three conditions, but it is second only to diabetes in the relative rate of growth (1.1 percent per year). Prevalence of stroke is projected to increase to 1.6 percent and 7.4 percent for the older and younger groups, respectively.

Left unchecked, health care costs associated with these conditions will continue to grow, affecting not just public sector budgets but also private sector costs and competitiveness. Even assuming no increase in the

price of services or per capita utilization rates by persons of a given health profile, the projected increases in the prevalence of these four diseases imply an increase in total excess health care cost from \$238.3 billion per year in 2010 to \$466.5 billion per year in 2030. Of that total, \$293.7 billion will be paid annually by Medicare and Medicaid.

The Potential Impact of Primary Prevention

Primary prevention approaches like those discussed above have been demonstrated effective at slowing the progression of each of these conditions. The DPP, for example, has reduced the rate of onset of diabetes among its participants by approximately 58 percent, with even higher rates of success (71 percent) among those over age 60.²³ Starting from this level of effectiveness in disease prevention, Table 2 shows three alternative scenarios for the growth in disease prevalence. The top panel presents prevalence projections if the current growth rates of these four diseases are cut by 50 percent. The second, more modest scenario assumes that we are only half as successful at slowing disease growth, reducing the growth rates by 25 percent. The third scenario assumes a minimal level of success, where the current rate of increase is slowed by only 5 percent.

It is important to note that we do not purport to reduce disease prevalence from current levels, but rather to simply slow the current rate of growth largely by preventing some fraction of new cases. Even with the reductions modeled here, by 2030 each disease will have increased in prevalence, albeit by less than would have been the case without the modeled reduction. For this reason, each of the prevalence scenarios is associated with an increase in excess medical care costs, although each is associated with a smaller increase than would be seen without prevention interventions. These excess costs can be thought of as the cost in government health care expenditures of failure to address the growth in chronic disease prevalence.

Table 1: Baseline Trends in Prevalence of Selected Chronic Disease

Age group	Baby Boomers				Seniors			
	Diabetes	Heart Disease	Hypertension	Stroke	Diabetes	Heart Disease	Hypertension	Stroke
Year								
2010	13.4%	9.7%	30.1%	1.3%	26.9%	29.3%	52.1%	5.9%
2015	16.0%	10.0%	30.8%	1.3%	32.1%	30.4%	53.4%	6.3%
2020	19.0%	10.4%	31.6%	1.4%	38.3%	31.5%	54.7%	6.6%
2025	22.7%	10.8%	32.3%	1.5%	45.7%	32.7%	56.0%	7.0%
2030	27.1%	11.2%	33.1%	1.6%	54.6%	33.9%	57.4%	7.4%

Source: Author's calculations based on CDC estimates of current prevalence and recent trends in type 2 diabetes and projected growth rates in heart disease, hypertension, and stroke from the American Heart Association. Age-specific prevalence rates for hypertension, heart disease, and stroke were estimated using the 2003–2008 Medical Expenditure Panel Survey.

Table 2: Disease Trends Assuming Varying Success in Disease Prevention

a. Slow disease growth by 50%

Age group	45–64				65+			
	Diabetes	Heart Disease	Hyper-tension	Stroke	Diabetes	Heart Disease	Hyper-tension	Stroke
Year								
2010	13.4%	9.7%	30.1%	1.3%	26.9%	29.3%	52.1%	5.9%
2015	14.6%	9.8%	30.5%	1.3%	29.4%	29.8%	52.8%	6.1%
2020	16.0%	10.0%	30.8%	1.3%	32.1%	30.4%	53.4%	6.3%
2025	17.4%	10.2%	31.2%	1.4%	35.1%	30.9%	54.0%	6.4%
2030	19.0%	10.4%	31.6%	1.4%	38.3%	31.5%	54.7%	6.6%

b. Slow disease growth by 25%

Age group	45–64				65+			
	Diabetes	Heart Disease	Hyper-tension	Stroke	Diabetes	Heart Disease	Hyper-tension	Stroke
Year								
2010	13.4%	9.7%	30.1%	1.3%	26.9%	29.3%	52.1%	5.9%
2015	15.3%	9.9%	30.7%	1.3%	30.7%	30.1%	53.1%	6.2%
2020	17.4%	10.2%	31.2%	1.4%	35.1%	30.9%	54.0%	6.4%
2025	19.9%	10.5%	31.8%	1.4%	40.1%	31.8%	55.0%	6.7%
2030	22.7%	10.8%	32.3%	1.5%	45.7%	32.7%	56.0%	7.0%

c. Slow disease growth by 5%

Age group	45–64				65+			
	Diabetes	Heart Disease	Hyper-tension	Stroke	Diabetes	Heart Disease	Hyper-tension	Stroke
Year								
2010	13.4%	9.7%	30.1%	1.3%	26.9%	29.3%	52.1%	5.9%
2015	15.8%	10.0%	30.8%	1.3%	31.8%	30.3%	53.3%	6.2%
2020	18.7%	10.4%	31.5%	1.4%	37.7%	31.4%	54.6%	6.6%
2025	22.1%	10.7%	32.2%	1.5%	44.5%	32.5%	55.8%	6.9%
2030	26.2%	11.1%	33.0%	1.6%	52.7%	33.7%	57.1%	7.3%

Using the baseline rates of disease prevalence from Table 1 and the simulated rates from Table 2, Table 3 shows the difference in annual Medicare and Medicaid spending that would result from the three alternative prevalence scenarios. If we assume that the level of success of the DPP can be replicated nationwide, then the cost of eliminating such an investment in disease prevention would be quite large. In five years, combined Medicare and Medicaid spending will be \$6.6 billion per year higher without these programs. Over time, these excess costs will grow ever larger: by 2030, spending by the two public health insurance programs could be nearly \$50 billion more per year.

Under a more modest assumption (shown in the second panel) that bringing disease prevention programs to scale would result in only half the reduction in growth rates demonstrated in studies, the savings are still substantial. They easily outweigh the annual

appropriation to the PPHF within the first five years and dwarf that investment by more than tenfold by 2030. Even assuming that prevention efforts are only minimally effective at slowing the rates of disease growth (shown in the third panel), the return on the PPHF investment is still positive. Thus, even under this scenario, eliminating PPHF funding would still end up affecting the public purse on an annual basis.

Furthermore, if these estimates of PPHF benefits included the effect on other sources of health care spending, such as private insurance expenditures and individual out-of-pocket costs, under the most optimistic scenario these savings would reach nearly \$10 billion per year within five years and nearly \$70 billion per year within 20 years. Under the least optimistic assumption, system-wide savings due to prevention would be \$1 billion per year within five years and nearly \$8 billion per year within 20 years.

Table 3: Annual Program Savings Assuming Reductions in Growth Rates of Chronic Disease Prevalence

a. Slow disease growth by 50%

Year	Medicare	Medicaid <i>Billions of \$ (2011)</i>	Total
2015	4.4	2.1	6.6
2020	11.1	5.1	16.2
2025	20.9	9.2	30.1
2030	34.2	14.7	48.9

b. Slow disease growth by 25%

Year	Medicare	Medicaid <i>Billions of \$ (2011)</i>	Total
2015	2.3	1.1	3.3
2020	5.7	2.7	8.4
2025	11.0	4.9	15.9
2030	18.3	7.9	26.2

c. Slow disease growth by 5%

Year	Medicare	Medicaid <i>Billions of \$ (2011)</i>	Total
2015	0.5	0.2	0.7
2020	1.2	0.5	1.7
2025	2.3	1.0	3.3
2030	3.9	1.7	5.5

The benefits of reduced chronic disease are found not only in medical care expenditures.²⁴ It has been estimated that the benefits to employers of reduced absenteeism and improved productivity of workers are nearly as high as the reduction in health costs. If one also includes these benefits to society in the calculations, even the modest reduction in disease prevalence results in a positive return on investment within a short time frame. The benefit to individuals of improved health and quality of life is difficult to quantify, but is nonetheless real.

Discussion

As has been rigorously demonstrated by the recent Oregon health experiments, expanding insurance coverage has unambiguously positive effects on access and health for those who would otherwise be uninsured.²⁵ The primary goal of the ACA pursues this goal of expanding access to quality health care through a combination of public and private insurance plans. Along with that goal, however, the ACA recognizes the urgency of controlling the growth in chronic disease, both for the benefits to individuals of good health and for the effect on national medical care costs and worker

productivity. The ACA includes the PPHF as a means of identifying and investing in effective primary prevention interventions. The experience of demonstration projects using this type of approach suggests huge potential returns on investment. But even if effectiveness is reduced significantly as such projects are scaled up—even to just one tenth the experimental effect—our analysis suggests that these investments can still pay for themselves. Large employers’ investment in prevention for their workers suggests that they believe that the contribution to good health and worker productivity will also be significant.²⁶

The growth in per capita medical care spending in the United States has dramatically outpaced spending in other industrialized countries, even as universal access to care has lagged. In large part, this growth is a result of growing prevalence of chronic disease. The result is accelerated growth in both public and private sector expenditures on health. Therefore, bringing disease growth under control is essential if the United States is to remain competitive in the world economy. Addressing the problem of cost growth will require multiple tools, and removing effective disease prevention approaches like the PPHF from our set of tools would simply increase the size of the problem.

Notes

1. "Americans Overwhelmingly Support Investment in Prevention: Disease Prevention Plays a Lead Role in Health Care Reform," Greenberg Quinlan Rosner Research & Public Opinion Strategies, May 18, 2009. <http://healthyamericans.org/assets/files/health-reform-poll-memo.pdf>
2. National Prevention Council, "National Prevention Strategy: America's Plan for Better Health and Wellness," June 2011. <http://www.healthcare.gov/center/councils/nphpphc/strategy/report.html>
3. "The Affordable Care Act's Prevention and Public Health Fund in Your State," HealthCare.gov, February 2011. <http://www.healthcare.gov/news/factsheets/prevention02092011a.html>
4. R. DeVol et al., "An Unhealthy America: The Economic Burden of Chronic Disease—Charting a New Course to Save Lives and Increase Productivity and Economic Growth," October 2007. http://www.milkeninstitute.org/pdf/chronic_disease_report.pdf
5. B. A. Ormond, R. R. Bovbjerg, and T. A. Waidmann, "Synergies Between Clinical and Community Prevention" (forthcoming, 2011).
6. "Prevention and Public Health Fund: Community Transformation Grants to Reduce Chronic Disease," HealthCare.gov, May 13, 2011. <http://www.healthcare.gov/news/factsheets/grants05132011a.html>.
7. P. Wechsler, "UnitedHealth Diabetes Plan Gives Savings Congress Snubbed," *Bloomberg News*, April 21, 2011.
8. B. Ormond et al., "Potential National and State Health Care Savings from Primary Prevention," *American Journal of Public Health* 101, no. 1 (January 2011):157–164.
9. Diabetes Prevention Program Research Group, "The Diabetes Prevention Program (DPP): Description of Lifestyle Intervention," *Diabetes Care* 25, no. 12 (2002): 2165–71; Diabetes Prevention Program Research Group, "Reduction in the Incidence of Type 2 Diabetes with Lifestyle Intervention or Metformin," *New England Journal of Medicine* 346, no. 6 (2002): 393–403.
10. Diabetes Prevention Program Research Group, "10-Year Follow-up of Diabetes Incidence and Weight Loss in the Diabetes Prevention Program Outcomes Study," *The Lancet* 374, no. 9702 (2009):1677–86.
11. R. T. Ackerman and D. G. Marrero, "Adapting the Diabetes Prevention Program Lifestyle Intervention for Delivery in the Community: The YMCA Model," *The Diabetes Educator* 33, no. 1 (2008): 69–78; R. T. Ackermann, E. A. Finch, E. Brizendine, H. Zhou, and D. G. Marrero, "Translating the Diabetes Prevention Program into the Community: The DEPLOY Pilot Study," *American Journal of Preventive Medicine* 35, no. 4 (2008): 357–63.
12. S. F. Rothemich et al., "Promoting Primary Care Smoking Cessation Support with Quitlines: The Quitline Randomized Clinical Trial," *American Journal of Preventive Medicine* 38, no. 4 (April 2010): 367–76.
13. C. L. Duncan et al., "Quitting Smoking: Reasons for Quitting and Predictors of Cessation among Medical Patients," *Journal of General Internal Medicine* 7, no.4 (July–August 1992): 398–404.
14. "Treating HIV-infected People with Antiretrovirals Protects Partners from Infection: Findings Result from NIH-funded International Study," NIH News, May 12, 2011. <http://www.niaid.nih.gov/news/newsreleases/2011/Pages/HPTN052.aspx>
15. C. D. Economos et al., "A Community Intervention Reduces BMI Z-score in Children: Shape Up Somerville First Year Results." *Obesity* (Silver Spring) 15, no. 5 (2007): 1325–36.
16. H. Westley, "Thin Living," *British Medical Journal* 335 (2007): 1236–1237.
17. S. Raffin, "Together, We Can Prevent Childhood Obesity," EPODE presentation. http://www.ehfg.org/fileadmin/ehfg/Website/Archiv/2005/Power_Points/Forum_1/F1-II_Raffin_final.pdf
18. REACH U.S., "Findings Solutions to Health Disparities: At a Glance 2010," Centers for Disease Control and Prevention, Chronic Disease Control and Health Promotion. <http://www.cdc.gov/chronicdisease/resources/publications/AAG/reach.htm>.
19. R. DeVol et al., "An Unhealthy America."
20. "F as in Fat: How Obesity Threatens America's Future," Trust for America's Health, July 2011. <http://healthyamericans.org/assets/files/TFAH2011FasInFat10.pdf>
21. "Diabetes Data and Trends," Centers for Disease Control and Prevention, Accessed July 1, 2011. <http://apps.nccd.cdc.gov/DDTSTRS/default.aspx>
22. P. A. Heidenreich et al., "Forecasting the Future of Cardiovascular Disease in the United States: A Policy Statement From the American Heart Association," *Circulation* 123 (January 2011): 933–944. <http://circ.ahajournals.org/content/123/8/933.full.pdf+html?sid=a2b44ebb-2c38-4d6f-9981-79a197b5c250>
23. Diabetes Prevention Program Research Group, "Reduction in the Incidence of Type 2 Diabetes with Lifestyle Intervention or Metformin," *New England Journal of Medicine* 346, no. 6 (February 2002): 393–403; Diabetes Prevention Program Research Group, "Within-Trial Cost-Effectiveness of Lifestyle Intervention or Metformin for the Primary Prevention of Type 2 Diabetes," *Diabetes Care* 26, no. 9 (September 2003): 2518–23.
24. R. Z. Goetzel et al., "The Health And Productivity Cost Burden of the 'Top 10' Physical and Mental Health Conditions Affecting Six Large U.S. Employers," *Journal of Occupational and Environmental Medicine* 46 (2003): 398–412.
25. A. Finkelstein et al., "The Oregon Health Insurance Experiment: Evidence from the First Year," NBER Working Paper 17190, July 2011. <http://www.nber.org/papers/w17190>
26. Pitney Bowes, for example, has been a leader in employee wellness programs. http://news.pb.com/press_kits.cfm?presskit_id=2

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