



The Power of Prevention and What It Requires

Steven H. Woolf

Online article and related content
current as of May 27, 2008.

JAMA. 2008;299(20):2437-2439 (doi:10.1001/jama.299.20.2437)

<http://jama.ama-assn.org/cgi/content/full/299/20/2437>

Correction

[Contact me if this article is corrected.](#)

Citations

[Contact me when this article is cited.](#)

Topic collections

Public Health, Other; Medical Practice; Medical Practice, Other; Public Health
[Contact me when new articles are published in these topic areas.](#)

Subscribe

<http://jama.com/subscribe>

Email Alerts

<http://jamaarchives.com/alerts>

Permissions

permissions@ama-assn.org

<http://pubs.ama-assn.org/misc/permissions.dtl>

Reprints/E-prints

reprints@ama-assn.org

The Power of Prevention and What It Requires

Steven H. Woolf, MD, MPH

BENJAMIN FRANKLIN'S ADAGE THAT AN OUNCE OF PREVENTION IS WORTH A POUND OF CURE IS WORTH REMEMBERING AT THIS WORRISOME TIME FOR HEALTH CARE AND THE ECONOMY. The prevalence of chronic illnesses in the United States is projected to increase, from 133 million persons in 2005 to 171 million in 2030.¹ Health care spending accounts for 16% of the gross domestic product and may reach 25% by 2025.² Rising health care costs are eroding corporate profits and threaten Medicare solvency, state budgets, pensions, and the viability of employer-sponsored health insurance. Family medical bills, insurance premiums, and the number of uninsured persons are increasing. Policy makers have proposed solutions (eg, value-based purchasing, consumer-directed plans, information technology), but whether these are enough to alter the spending trajectory or can overcome the political challenges remains unclear.³

A more direct strategy for confronting both spending and disease burden is to mitigate the problem at its source by preventing the early onset of disease. Health promotion and disease prevention—eg, behavior modification, immunizations, and early detection (screening)—can modulate the prevalence and severity of disease, something few other proposals can claim. Prevention also may be an easier concept for the public—the politics are less volatile, the logic more intuitive: it is better to prevent diseases than to concentrate resources on treating diseases after they become clinically apparent, when treatment may be too late to be effective.

Even though disease prevention has its limitations, its potential benefits are profound. Chronic diseases, which account for 75% of health care expenditures,⁴ are precipitated by modifiable risk factors. The relationship between the obesity epidemic and diabetes incidence is illustrative. Targeting risk factors such as obesity can influence disease rates and costs on a scale that few biomedical advances can match. A new diabetes drug can make headlines if it reduces glycohemoglobin levels by 0.5%,⁵ whereas exercise can lower the incidence of diabetes by 50%.¹ Four health behaviors (smoking, diet, physical inactivity, and alcohol use) account for 38% of all US deaths.¹ Other forms of primary prevention can intervene more dramatically, as when

vaccines all but eradicate infectious diseases. Secondary prevention (screening) can reduce colorectal and breast cancer mortality by 15% to 20%.⁶

The business case for prevention is not lost on employers and policy makers.^{4,7} Fortune 500 companies have calculated that tobacco use costs \$157 billion per year in medical expenses and lost productivity.⁸ Economists have predicted that the obesity epidemic could increase future Medicare beneficiary spending by 34%.⁹ The glaring paradox is how little society invests in prevention, only 1% to 3% of health care expenditures.¹ Instead, health plans spend heavily on illness care, covering costly technologies even without evidence of benefit, while proceeding cautiously to cover preventive services.⁷ Funding for prevention research and public health programs is scarce.

This paradox is long-standing, but it grows more unsettling with time as the human toll of preventable disease increases. Resistance to health promotion and disease prevention has multiple causes, including skepticism about effectiveness, inertia, and competing interests. Disease prevention does not earn the large profits associated with disease treatments. That inertia and such disincentives dampen enthusiasm for health promotion and disease prevention is straightforward, but skepticism about effectiveness is more complex.

Some skepticism reflects disappointments with health promotion and disease prevention. Health behaviors are notoriously difficult to change. Decades of public health initiatives to promote a healthy diet and physical activity have failed to reverse the obesity epidemic. Years must pass before many interventions bear fruit. Hundreds of screening tests are of dubious value,⁶ and many are overzealously promoted. However, a cadre of important preventive services is supported by compelling evidence of health benefits and cost-effectiveness.⁶ The magnitude and quality of the outcomes data for these services surpass those of most disease treatments, yet the latter somehow elude the skepticism associated with preventive measures.

Some criticism turns on flawed premises. For example, skeptics of prevention argue that everyone dies of some-

Author Affiliations: Departments of Family Medicine and Epidemiology and Community Health, Virginia Commonwealth University, Richmond.

Corresponding Author: Steven H. Woolf, MD, MPH, Departments of Family Medicine, Epidemiology, and Community Health, Virginia Commonwealth University, 1200 E Broad St, Richmond, VA 23298 (swoolf@vcu.edu).

thing; preventing demise serves only to allow a different disease to generate illness and spending.³ However, the aim of health promotion and disease prevention is not to prevent the inevitable but to “compress” morbidity,¹⁰ maximizing health until death. Preventing one disease and not others is hardly the goal.

Another common criticism is that prevention rarely saves money; it costs society if people live longer.¹¹ The same applies to disease treatments. Health is a good; it is not purchased to save money. Health is a good that costs too much under the current medical care system, a problem of inefficiency that calls for wiser resource use, such as spending less per health unit gained (lower cost-effectiveness ratio). Disease prevention offers a way to improve health with low cost-effectiveness ratios and to also modulate disease rates. To reject health promotion and disease prevention because they do not save money (ie, cost-effectiveness ratios are not negative) misses the point. By analogy, cars with higher gas mileage help control fuel consumption through superior efficiency, not because motorists get cash back at the pump.

The cost-effectiveness ratio of preventive interventions is not always low, of course. An inherent problem with health promotion and disease prevention is a huge, largely healthy target population with low absolute risk. Preventive interventions with modest benefits or small populations at risk can have high cost-effectiveness ratios (eg, >\$100 000 per quality-adjusted life-year [QALY] gained)¹¹ and may be no better than treatment, economically or clinically. However, these examples are irrelevant to highly effective preventive interventions, which have modest cost-effectiveness ratios. Among 25 strongly recommended preventive services, 15 cost less than \$35 000 per QALY gained and 10 services cost less than \$14 000 per QALY gained.¹²

Some skepticism involves a clumsy form of inductive reasoning, in which the failings of ineffective measures are generalized to health promotion and disease prevention broadly, bundling dubious and effective preventive services into one undifferentiated class. For example, a recent article drew similarities between the cost-effectiveness ratios of prevention and disease treatments, all but ignoring the much lower cost-effectiveness ratios of the preventive services that guidelines advocate.¹³ Blurred distinctions abound. The difficulties of dieting erode confidence in the health benefits of weight loss. The uncertain effect size of physician advice to exercise⁶ is confused with the enormous effect size of exercise. What physicians do for patients in their offices differs from what patients can do for themselves in daily life. Wariness about one ought not dampen enthusiasm for the other.

Negative results can be taken too far, such as when unsuccessful behavior modification experiments overlook the absence of an infrastructure for implementation. The context for behavior change is unlike that of clinical inter-

ventions, for which medicine’s elaborate infrastructure can largely control delivery and outcomes. Behavior change occurs where people live—at home, work, and school—but the community offers little infrastructure for modifying lifestyle. The environment works at cross-purposes. Advertising, school lunches, restaurant menus, entertainment media, convenience technologies, and the built environment discourage physical activity and promote consumption of calorie-dense foods, large portions, tobacco, and alcohol. Social conditions (eg, inadequate education, impoverished communities) impose additional barriers.

The health care system’s infrastructure to counteract these influences is meager. Patients interact with health care only briefly at outpatient appointments or during hospital stays. These encounters can be influential—even brief physician remarks can motivate smokers to quit—but the effectiveness of behavioral counseling correlates with its intensity.¹⁴ Few physicians have the time, skills, and reimbursement to deliver ongoing, intensive counseling. Without doing this, however, the evidence is weak that counseling average-risk patients about diet and exercise is beneficial.⁶

Intensive counseling, which can produce lasting results, occurs outside the clinic at wellness classes, by dietitians, via quit lines and Web sites, and by programs offered by health plans, employers, and public health departments. These services can provide the skilled support and continuity that behavior change requires, but they often exist in a silo because no infrastructure links them with clinicians. Clinicians generally know little about available programs and lack easy methods for referring patients; insurance coverage is paltry. The irony is stark: intensive counseling programs bemoan inadequate referrals, while clinicians bemoan the ardor of intensive counseling. The obvious solution is to invest in infrastructure to link clinicians with community resources, such as systems whereby clinicians collaborate with quit lines to help patients stop smoking.¹⁴ Bidirectional clinician-community collaboration leverages the resources in each silo, delivering better care to the good of all parties. Such partnerships represent a generic model that could help coordinate many aspects of preventive and chronic illness care.¹⁴

An even more imaginative model would transcend silos. Society would engage all of its facets—not just medicine and public health—in the collective act of preventing disease. A community with the resolve to abate unhealthy behaviors might engage its citizens and all sectors (eg, employers, schools, retailers, developers) in a concerted and coordinated effort to provide what people need to change lifestyles. With a coordinated strategy across sectors, citizens would encounter the same message and assistance options in diverse venues. For example, nutritional advice from physicians and the media might reappear at supermarkets, restaurants, school cafeterias, and fast-food outlets. Such coordination requires planning, infrastructure, and resources; these require community resolve.

This citizen-centered model sounds fanciful. Today, 1 or 2 sectors of a community may engage in a wellness campaign, but coordinated action across sectors is uncommon. Some exceptions—such as the initiatives in Seattle¹⁴ or Arkansas¹—prove the rule. Logic suggests that a vigorous community-wide strategy should outperform the current model of disjointed, underfinanced programs and overtaxed clinicians working separately in silos, but direct evidence is lacking. Studies and funding to examine such models are as atypical as communities wherein they exist. Settings with inadequate environmental supports for behavior change are the perennial backdrop for many negative studies of behavioral interventions. What a truly conducive environment might accomplish is largely untested.

The costs of transforming communities might seem to be the obstacle, but dollars are less the issue than how society allocates them. Resources for health promotion and disease prevention exist in the bloated US health care budget (\$2 trillion per year), much of it consumed by overuse and overcharging. Services with no measurable health benefit consume 30% of Medicare dollars.¹⁵ Beyond the health care sector, additional resources could be made available when society accepts the need and prioritizes the importance of funding health promotion and disease prevention, such as with current societal decisions to prioritize and allocate resources for agriculture, defense, or energy. Resources are less the obstacle to health promotion and disease prevention than skepticism, inertia, and competing interests.

Turmoil in health care and the economy may be shifting the dynamics for health promotion and disease prevention. Policy makers speak more about prevention, although the gestures are piecemeal (eg, better insurance coverage). History teaches that citizens and leaders make sweeping changes when they sense a mutual threat. Lifestyles change and schisms give way to accommodation when national security feels threatened (eg, wartime, climate change). Finding the economy and public health in decline may be what rouses the public to get serious about pre-

vention. Self-interest (living longer and healthier) and common interest (economic stability) may inspire the personal sacrifice of getting healthy and the collective sacrifice (by the private sector and the state) of mobilizing the resources to make it happen.

Financial Disclosures: None reported.

REFERENCES

1. Woolf SH. The big answer: rediscovering prevention at a time of crisis in health care. *Harv Health Policy Rev.* 2006;7:5-20.
2. US Congress, Congressional Budget Office. The long-term outlook for health care spending, November 2007. <http://www.cbo.gov/ftpdocs/87xx/doc8758/11-13-LT-Health.pdf>. Accessed March 19, 2008.
3. Mongan JJ, Ferris TG, Lee TH. Options for slowing the growth of health care costs. *N Engl J Med.* 2008;358(14):1509-1514.
4. National Business Group on Health. Preventing chronic disease in the United States and abroad. http://www.businessgrouphealth.org/pdfs/preventing_chronic_disease_issue_brief.pdf. Accessed April 15, 2008.
5. Reuters. Merck diabetes drug effective alone or as add-on. *USA Today.* June 10, 2006. http://www.usatoday.com/news/health/2006-06-10-diabetesdrug_x.htm. Accessed April 15, 2008.
6. Agency for Healthcare Research and Quality. Guide to clinical preventive services, 2007: recommendations of the US Preventive Services Task Force. <http://www.ahrq.gov/clinic/pocketgd.htm>. Accessed April 16, 2008.
7. Partnership for Prevention. *Why Invest? Recommendations for Improving Your Prevention Investment: Results From the Partnership for Prevention/Mercer Human Resource Consulting Survey of Employer-Sponsored Health Plans and Partnership for Prevention's Analysis of High Priority Clinical Preventive Services.* Washington, DC: Partnership for Prevention; 2007.
8. National Business Group on Health. Reducing the burden of smoking on employee health and productivity. http://www.businessgrouphealth.org/pdfs/issuebrief_cphssmoking.pdf. Accessed September 4, 2006.
9. Lakdawalla DN, Goldman DP, Shang B. The health and cost consequences of obesity among the future elderly. *Health Aff (Millwood).* 2005;24(suppl 2):W5R30-W5R41.
10. Fries JF. Aging, natural death, and the compression of morbidity. *N Engl J Med.* 1980;303(3):130-135.
11. Russell LB. Prevention's potential for slowing the growth of medical spending, 2007. http://www.nchc.org/nchc_report.pdf. Accessed April 16, 2008.
12. Maciosek MV, Coffield AB, Edwards NM, Flottemesch TJ, Goodman NJ, Solberg LI. Priorities among effective clinical preventive services: results of a systematic review and analysis. *Am J Prev Med.* 2006;31(1):52-61.
13. Cohen JT, Neumann PJ, Weinstein MC. Does preventive care save money? health economics and the presidential candidates. *N Engl J Med.* 2008;358(7):661-663.
14. Woolf SH, Krist AH, Rothenich SF. *Joining Hands: Partnerships Between Physicians and the Community in the Delivery of Preventive Care.* Washington, DC: Center for American Progress; 2006.
15. Fisher ES, Wennberg DE, Stukel TA, Gottlieb DJ, Lucas FL, Pinder EL. The implications of regional variations in Medicare spending: health outcomes and satisfaction with care. *Ann Intern Med.* 2003;138(4):288-298.