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A Closer Look at the Economic Argument for Disease Prevention

Steven H. Woolf, MD, MPH

DISEASE PREVENTION HAS ALWAYS BEEN THE preferred option for promoting health and reducing disease rates. For many, this health argument is reason enough to invest in prevention, economics aside. Others, citing scarce resources, advocate a careful assessment of the costs and savings associated with prevention. It initially costs more to deliver preventive services; the savings the resulting health benefits will incur over time are less clear. Some reports claim that effective prevention programs would save the nation billions of dollars,¹ while others predict the reverse.² Economists and columnists have argued that prevention rarely saves money and is inherently no more cost-effective than disease care.³⁻⁵ For policy makers—caught between an economic crisis, pressure to defer new spending and seize control over escalating health care costs, and a promise to voters to make prevention part of health care reform—resolving whether prevention will help reduce spending is highly relevant.

The question of whether prevention saves money is incorrectly framed. Health care, like other goods, is not purchased to save money. The dollar can be stretched further—more goods can be acquired—by optimizing economic value. The proper question for a preventive (or therapeutic) intervention is how much health the investment purchases. This is typically measured in terms of cost-effectiveness or cost-utility, the ratio between the cost of a service and its benefits. Some services cost relatively little per unit of health gain and represent good buys. Some are extremely good buys because they generate net savings, but such services are uncommon. Much of the nation's enormous health care budget goes toward expensive tests and treatments that produce relatively little health gain per dollar. Services ordinarily are considered to have reasonable cost-effectiveness if they cost less than \$50 000 to \$75 000 per quality-adjusted life year (QALY), but payers routinely cover treatments that cost more than \$100 000 per QALY.

The occasional service that produces net savings is hardly a panacea for controlling spending. Through sheer volume, far more can be accomplished by curtailing lavish outlays on expensive, low-value services and investing more in high-value services that improve health at less cost (and may occasionally yield net savings). This redistribution in

spending offers the greatest opportunity to save more lives with the same dollar. Prevention stands out among the cadre of interventions that combine good health outcomes with good economic value. Although disputes exist on the margins, this much is clear:

1. A core set of preventive services is effective. Hundreds of thousands of lives would be saved annually if people stopped smoking, lost weight, exercised regularly, and consumed a healthy diet. Support is also nearly universal for a package of effective clinical preventive services (eg, screening tests, immunizations) recommended by the US Preventive Services Task Force and other reputable groups. Improved implementation of this core package could greatly reduce the nation's disease burden. By one account, increasing delivery of just 5 clinical preventive services would avert 100 000 deaths per year.⁶

2. These evidence-based clinical preventive services offer high economic value. Whereas major disease treatments (eg, angioplasty) can cost \$100 000 or more per QALY, most evidence-based preventive services offer a better value. For example, colonoscopy and other evidence-based screening tests for colorectal cancer cost less than \$25 000 per QALY.⁷ Among 25 recommended preventive services, 15 cost less than \$35 000 per QALY and 10 services cost less than \$14 000 per QALY.⁸

3. Among the core set of preventive services that offer high economic value, a subset yields net savings. The literature reports net savings from childhood immunizations,⁹ smoking cessation,¹⁰ and aspirin prophylaxis among patients at increased risk for cardiovascular disease.¹¹ Smoking cessation counseling by clinicians, if not cost saving, is highly cost-effective (less than \$5000 per QALY).¹⁰

4. Some preventive services, like many disease treatments, offer poor economic value. Cost-effectiveness is poor when effectiveness is uncertain or, as happens with some preventive services, the absolute probability of benefit is low (eg, offering services to low-risk patients, frequent rescreening, and pursuing aggressive targets [eg, reducing low-density lipoprotein cholesterol levels to <100 mg/dL]).

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Context (the research question and analytic methods) matters greatly in making sense of discrepant cost-effectiveness findings. Some studies measure only utilization costs, whereas others consider health outcomes over time. Assumptions about costs (numerator) and effectiveness (denominator) affect the cost-effectiveness ratio, as do other decisions, such as about discounting or including indirect costs. Cost-effectiveness can be enhanced by targeting the service to high-risk populations. Cost-effectiveness when compared with doing nothing differs from the marginal cost-effectiveness of option A vs option B. The analysts' perspective matters: the costs/benefits for society differ from those of a health plan. Comparisons of the cost-effectiveness of prevention and disease care can be misleading, especially if they compare apples and oranges. For example, one article⁴ cast doubt on the cost-effectiveness of prevention by examining a "basket" of services that included tests that no major guidelines recommend (eg, newborn screening for medium-chain acyl-coenzyme A dehydrogenase deficiency).

What the intervention entails also matters. Preventive interventions can be undertaken by individuals, the health care system, or community programs—and cost-effectiveness differs for each. For example, physical activity as a personal intervention induces net savings by improving one's health,¹² but counseling by clinicians to persuade patients to exercise is of uncertain effectiveness and cost-effectiveness.¹³ To surmise that "exercise is not cost-effective" is to confuse the cost-effectiveness of programs (of varied economic value) with the cost-effectiveness of the behavior itself (which saves money). This confusion obscures a vital message for public health and the economy: the nation's health care costs and disease rates would be reduced considerably if the public became more active, ate more healthfully, and stopped smoking. The savings would pay for the costs—in time, walking shoes, and nicotine patches—that are incurred to modify these habits. The economics of services to assist people with lifestyle changes are separate from the potent economics that result from the behaviors.

Several factors work against the economics of prevention. Personal behaviors take time to change, and the health outcomes can take even longer. The delayed effects, although substantial, may seem distant to those with a shortsighted focus on next year's budget, and to employers and payers concerned that their workforce and members will move out of plan. Preventive interventions are often designed for a large, relatively healthy population. Modest health benefits may not offset the harms and costs of delivering interventions to so many people. Some have argued that prevention can postpone, but not avert, the costs of treatment. Some have even argued that costs will increase if prevention (or anything else) enables people to live longer.⁵

Some factors enhance the economics of prevention, in ways that often elude disease care. For example, addressing a single risk factor (eg, smoking) can influence outcomes across multiple diseases, from preterm birth to lung disease and cancer. The long time horizon that poses a challenge for prevention is also an opportunity for "compounding" of health benefits. For example, with an aging population and projected increases in chronic diseases, reducing risk factors for those diseases can have amplified effects on disease trajectories over time. Addressing obesity in today's children will alter the prevalence of many diseases they will encounter decades later, a return on investment that may be profound.

Arguing that prevention and disease care are equally cost-effective encounters a more fundamental problem: preventing sickness has value in human terms that econometrics cannot capture. Even if prevention and treatment cost the same per QALY, patients prefer the former to avoid the ordeal of illness. Other societal benefits of improved health—eg, workforce productivity and corporate competitiveness, and the ripple effects these trends bring to households, education, crime, and other societal outcomes—are among the intangibles that typically go unmeasured in cost-effectiveness studies.

Like clinical preventive services, some community (population-based) preventive services (eg, tobacco taxes, immunization requirements, seatbelt requirement) offer low cost per QALY or net savings.¹⁴ Such policies may seem less relevant to systems and payers concerned with medical care than to officials concerned with population health, who must look beyond sectors to identify the best ways to reduce disease burden in a town, a state, or the country. Community interventions may outperform clinical interventions, on both effectiveness and economic value. Opening a new cardiac center may cost more and do less for the health of local citizens than banning smoking in public places. Interventions undertaken as a coordinated community initiative—involving clinicians, public health agencies, schools, and employers—may achieve more than actions taken by any one sector alone. Achieving the nation's health objectives at a time of economic hardship requires an examination of all options, not just those performed by clinicians, to make the most of every dollar.

Prevention accounts for only 2% to 3% of health care expenditures.¹⁵ Disease care is the dominant driver of health spending, and yet it evades the economic scrutiny applied to preventive services. Policy makers will rightly deny coverage for cancer screening until trials demonstrate an effect on mortality, but they readily extend coverage for new diagnostic tests simply because they boast greater accuracy or are advocated by specialists. Questions about costs are often waived. The question that dogs prevention—will it save money?—is rarely posed for an imaging device, a new antibiotic, or a surgical procedure. Although some payers consider cost-effectiveness studies and limit coverage when cost-

effectiveness is poor, many coverage decisions by Medicare and private plans expressly omit consideration of costs.

The origins of this double standard are longstanding, but the unsustainable increases in health care spending now call for more critical thinking. The same questions posed for prevention must now be applied to disease treatments: does the intervention improve health outcomes, and how strong is the evidence? If the intervention is effective, is it cost-effective (a good value)? Can other options achieve better results, or the same results at lower cost?

Throughout health care, the spending crisis requires a comprehensive search for ways to shift spending from services of dubious economic value to those with high cost-effectiveness or net savings. Whether those services are preventive or otherwise is not the point; what matters is prioritizing services that produce the greatest health benefits for the dollars spent. In that context it makes sense to invest in a well-defined package of preventive services that are effective and offer good economic value. Services that yield net savings—whether prevention or treatment—are priorities. However, the greatest gains in controlling costs will occur by shifting spending to services that maximize value while reducing outlays on services with the lowest benefit per dollar. As a matter of economic security and ethics, it is inappropriate to debate the economic value of prevention while excusing the rest of medical care from such scrutiny.

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REFERENCES

1. Levi J, Segal LM, Juliano C. *Prevention for a Healthier America: Investments in Disease Prevention Yield Significant Savings, Stronger Communities*. Washington, DC: Trust for America's Health; July 2008. <http://healthamericans.org/reports/prevention08/Prevention08.pdf>. Accessed September 18, 2008.
2. Kahn R, Robertson RM, Smith R, Eddy D. The impact of prevention on reducing the burden of cardiovascular disease. *Diabetes Care*. 2008;31(8):1686-1696.
3. Russell LB. Preventing chronic disease: an important investment, but don't count on cost savings. *Health Aff (Millwood)*. 2009;28(1):42-45.
4. 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.
5. Brown D. In the balance: some candidates disagree, but studies show it's often cheaper to let people get sick. *Washington Post*. April 8, 2008:HE01. http://www.washingtonpost.com/wp-dyn/content/article/2008/04/04/AR2008040403803_pf.html. Accessed January 8, 2009.
6. National Commission on Prevention Priorities. *Preventive Care: A National Profile on Use, Disparities, and Health Benefits*. Washington, DC: Partnership for Prevention; August 2007. <http://www.prevent.org/content/view/full/129/72/>. Accessed January 8, 2009.
7. Pignone M, Saha S, Hoerger T, Mandelblatt J. Cost-effectiveness analyses of colorectal cancer screening: a systematic review for the U.S. Preventive Services Task Force. *Ann Intern Med*. 2002;137(2):96-104.
8. Maciosek MV, Coffield AB, Edwards NM, Flottemesch TJ, Goodman MJ, Solberg LI. Priorities among effective clinical preventive services: results of a systematic review and analysis. *Am J Prev Med*. 2006;31(1):52-61.
9. Zhou F, Santoli J, Messonnier ML, et al. Economic evaluation of the 7-vaccine routine childhood immunization schedule in the United States, 2001. *Arch Pediatr Adolesc Med*. 2005;159(12):1136-1144.
10. Solberg LI, Maciosek MV, Edwards NM, Khanchandani HS, Goodman MJ. Repeated tobacco use screening and intervention in clinical practice: health impact and cost effectiveness. *Am J Prev Med*. 2006;31(1):62-71.
11. Pignone M, Earnshaw S, Tice JA, Pletcher MJ. Aspirin, statins, or both drugs for the primary prevention of coronary heart disease events in men: a cost-utility analysis. *Ann Intern Med*. 2006;144(5):326-336.
12. Hatzidreou EI, Koplan JP, Weinstein MC, Caspersen CJ, Warner KE. A cost-effectiveness analysis of exercise as a health promotion activity. *Am J Public Health*. 1988;78(11):1417-1421.
13. Eden KB, Orleans CT, Mulrow CD, Pender NJ, Teutsch SM. Does counseling by clinicians improve physical activity? summary of the evidence for the U.S. Preventive Services Task Force. *Ann Intern Med*. 2002;137(3):208-215.
14. Zaza S, Briss PA, Harris KW. *The Guide to Community Preventive Services: What Works to Promote Health? Task Force on Community Preventive Services*. New York, NY: Oxford University Press; 2005.
15. Satcher D. The prevention challenge and opportunity. *Health Aff (Millwood)*. 2006;25(4):1009-1011.