# Perspective

## Does Preventive Care Save Money? Health Economics and the Presidential Candidates

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With health care once again a leading issue in a presidential race, candidates have offered plans for controlling spiraling costs while enhancing the quality of care. A popular component of

such plans involves greater promotion of preventive health measures. The first element in Hillary Clinton's plan is to "focus on prevention: wellness not sickness." John Edwards has stated that "study after study shows that primary and preventive care greatly reduces future health care costs, as well as increasing patients' health." Mike Huckabee has said that a focus on prevention "would save countless lives, pain and suffering by the victims of chronic conditions, and billions of dollars." Barack Obama has argued that "too little is spent on prevention and public health."

Indeed, some evidence does suggest that there are opportunities to save money and improve health through prevention. Preventable causes of death, such as to-

bacco smoking, poor diet and physical inactivity, and misuse of alcohol have been estimated to be responsible for 900,000 deaths annually — nearly 40% of total yearly mortality in the United States.[1] Moreover, some of the measures identified by the U.S. Preventive Services Task Force, such as counseling adults to quit smoking, screening for colorectal cancer, and providing influenza vaccination, reduce mortality either at low cost or at a cost savings.[2]

Sweeping statements about the cost-saving potential of prevention, however, are overreaching. Studies have concluded that preventing illness can in some cases save money but in other cases can add to health care costs.[3] For example, screening costs will exceed the savings from

avoided treatment in cases in which only a very small fraction of the population would have become ill in the absence of preventive measures. Preventive measures that do not save money may or may not represent cost-effective care (i.e., good value for the resources expended). Whether any preventive measure saves money or is a reasonable investment despite adding to costs depends entirely on the particular intervention and the specific population in question. For example, drugs used to treat high cholesterol yield much greater value for the money if the targeted population is at high risk for coronary heart disease, and the efficiency of cancer screening can depend heavily on both the frequency of the screening and the level of cancer risk in the screened population.[4]

The focus on prevention as a key source of cost savings in health care also sidesteps the question of whether such measures are generally more promising and efficient

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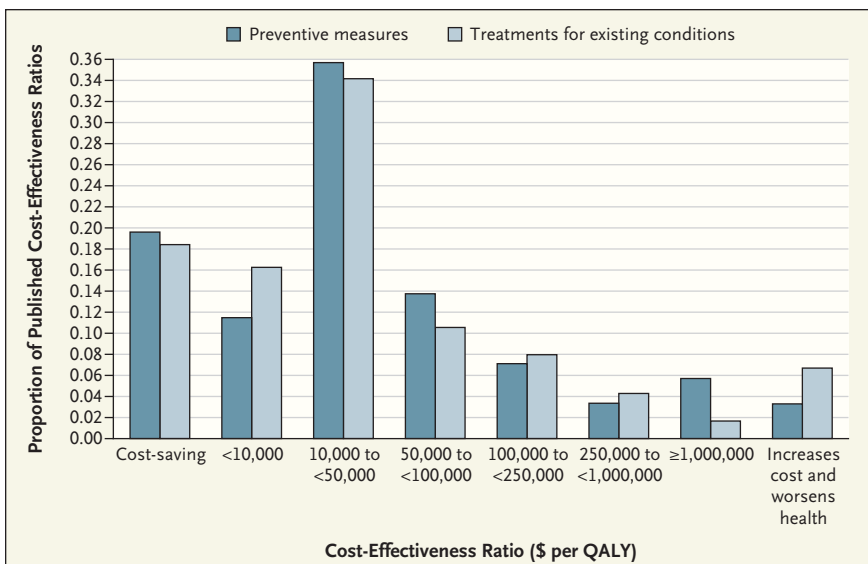
**Distribution of Cost-Effectiveness Ratios for Preventive Measures and Treatments for Existing Conditions.**

Data are from the Tufts–New England Medical Center Cost-Effectiveness Registry. QALY denotes quality-adjusted life-year.

than the treatment of existing conditions. Researchers have found that although high-technology treatments for existing conditions can be expensive, such measures may, in certain circumstances, also represent an efficient use of resources.[5] It is important to analyze the costs and benefits of specific interventions.

A systematic review of the cost-effectiveness literature sheds light on these issues. We analyzed the contents of the Tufts–New England Medical Center Cost-Effectiveness Analysis Registry (www.tufts-nemc. org/cearegistry), which consists of detailed abstracted information on published cost-effectiveness studies through 2005. Each registry article estimates the cost-effectiveness of one or more interventions as the incremental costs (converted here to 2006 U.S. dollars) divided by the incremental health benefits quantified in terms of quality-adjusted life-years (QALYs). Low cost-effectiveness ratios are "favorable" because they indicate that incremental QALYs can be accrued inexpensively. An intervention is

"cost-saving" if it reduces costs while improving health. Poorly performing interventions can both increase costs and worsen health.

Our analysis was restricted to the 599 articles (and 1500 ratios) published between 2000 and 2005 that properly discounted future costs and benefits. We classified 279 ratios as preventive because they refer to interventions designed to avert disease or injury; all 1221 other ratios pertain to treatments, a category that includes both "tertiary" measures (designed to ameliorate the effects of a disease or condition) and "secondary prevention" measures (designed to reverse or retard progression of an existing condition), such as the use of implantable cardioverter–defibrillators in patients with myocardial disease.

The bar graph shows that the distributions of cost-effectiveness ratios for preventive measures and treatments are very similar — in other words, opportunities for efficient investment in health care programs are roughly equal for prevention and treatment, at least

as reflected in the literature we reviewed. Moreover, both distributions span the full range of cost-effectiveness. The table shows the cost-effectiveness ratios for selected interventions of various types.

These results are consistent with earlier reviews but cover a larger sample of studies and quantify benefits in terms of QALYs. Some preventive measures save money, while others do not, although they may still be worthwhile because they confer substantial health benefits relative to their cost. In contrast, some preventive measures are expensive given the health benefits they confer. In general, whether a particular preventive measure represents good value or poor value depends on factors such as the population targeted, with measures targeting higher-risk populations typically being the most efficient. In the case of screening, efficiency also depends on frequency (more frequent screening confers greater benefits but is less efficient). Third, as is the case for preventive measures, treatments can be relatively efficient or inefficient.

Of course, our review reflects a selected sample of studies in the peer-reviewed literature and does not cover all possible opportunities to spend resources to improve health. In addition, there may be inconsistency among the studies in terms of the methods used. Still, our analysis is based on a large and diverse set of studies that used recommended metrics for cost-effectiveness analysis, and we believe that it offers important lessons.

Our findings suggest that the broad generalizations made by many presidential candidates can be misleading. These statements convey the message that substantial resources can be saved through prevention. Although some preventive measures do save money, the vast majority reviewed in the health

### Cost-Effectiveness of Selected Preventive Measures and Treatments for Existing Conditions (2006 Dollars).*

| Intervention | Cost-Effectiveness Ratio |
| --- | --- |
| **Preventive measures** | |
| *Haemophilus influenzae* type b vaccination of toddlers | Cost-saving |
| One-time colonoscopy screening for colorectal cancer in men 60–64 years old | Cost-saving |
| Newborn screening for medium-chain acyl-coenzyme A dehydrogenase deficiency | $160/QALY |
| High-intensity smoking-relapse prevention program, as compared with a low-intensity program | $190/QALY |
| Intensive tobacco-use prevention program for seventh- and eighth-graders | $23,000/QALY |
| Screening all 65-year-olds for diabetes as compared with screening 65-year-olds with hypertension for diabetes | $590,000/QALY |
| Antibiotic prophylaxis (amoxicillin) for children with moderate cardiac lesions who are undergoing urinary catheterization | Increases cost and worsens health |
| **Treatments for existing conditions** | |
| Cognitive-behavioral family intervention for patients with Alzheimer's disease | Cost-saving |
| Cochlear implants in profoundly deaf children | Cost-saving |
| Combination antiretroviral therapy for HIV-infected patients | $29,000/QALY |
| Liver transplantation in patients with primary sclerosing cholangitis | $41,000/QALY |
| Implantation of cardioverter–defibrillators in appropriate populations, as compared with medical management alone | $52,000/QALY |
| Left ventricular assist device, as compared with optimal medical management, in patients with heart failure who are not candidates for transplantation | $900,000/QALY |
| Surgery in 70-year-old men with a new diagnosis of prostate cancer, as compared with watchful waiting | Increases cost and worsens health |

* The cost-effectiveness ratio is the incremental costs divided by the incremental benefits, relative to a comparator. The comparator is omitted from the intervention's description if it was no treatment or current treatment or if the intervention was added to, rather than substituted for, another treatment. The cost-effectiveness estimates listed are point-estimate values from the original articles (a more detailed table appears in the Supplementary Appendix, available with the full text of this article at www.nejm.org). Preventive measures are those designed to avert the development of a condition. Treatments for existing conditions include both those designed to prevent the progression of a condition and those designed to ameliorate the effects of a disease or condition. QALY denotes quality-adjusted life-year. For more information see www.tufts-nemc.org/cearegistry.

economics literature do not. Careful analysis of the costs and benefits of specific interventions, rather than broad generalizations, is critical. Such analysis could identify not only cost-saving preventive measures but also preventive measures that deliver substantial health benefits relative to their net costs; this analysis could also identify treatments that are cost-saving or highly efficient (i.e., cost-effective).

In addition to determining which preventive measures and treatments are most efficient, it will be necessary to identify those that are not yet fully deployed and those that could serve a large population and bring about substantial aggregate improvements in health at an acceptable cost. Findings that some cost-saving or highly efficient measures are underused would in-

dicate that current practice is inconsistent with the efficient delivery of health care. Other services might be identified as overused, and such findings would underscore the importance of fashioning policies that provide incentives to shift practice toward more cost-effective delivery of health care. In the face of increasingly constrained resources, there is a realistic way of achieving better health results: conduct careful analysis to identify evidence-based opportunities for more efficient delivery of health care — whether prevention or treatment — and then restructure the system to create incentives that encourage the appropriate delivery of efficient interventions.

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