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EDITORIAL COMMENT

Building the Economic Case for Investment in Cardiovascular Prevention*

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The case for investing in cardiovascular prevention has traditionally rested on clinical and ethical arguments. The clinical argument posits that effective prevention strategies, either applied to the entire population (e.g., "soda" tax on sugar-sweetened beverage sales) or selectively targeted at high-risk subgroups (e.g., statin therapy among patients with diabetes), improve quality of life, survival, or both. The ethical argument is that effective strategies for cardiovascular prevention can help ameliorate health disparities. Since absolute risk reduction is proportional to baseline risk, vulnerable populations (who have a higher baseline risk for developing cardiovascular disease and experiencing poor outcomes) derive a larger benefit from prevention strategies than the general population. These clinical and ethical arguments have previously formed the cornerstone of the case for investment in cardiovascular prevention.

In a world of spiraling health care costs and tightening budgets, however, economic arguments are becoming increasingly salient to the case for investing in cardiovascular prevention (1). The intuition is that treating cardiovascular disease is expensive, and thus prevention is a good investment. However, contrary to general perception, the majority of cardiovascular prevention strategies do not "pay for themselves" in the long term (i.e., they are not cost-saving). The return on investment in cardiovascular prevention is predominantly in the form of improved health rather than monetary savings from reduced health expenditures downstream. A notable exception is the use of generic high-intensity statins in secondary prevention, where savings from averted myocardial infarctions and stroke more than offset the cost of statin therapy and any associated adverse events (2). Although not cost-saving, strategies for cardiovascular prevention are generally cost-effective; that is, they are an economically efficient way to generate (or retain) good health.

This distinction between cost-saving and cost-effective is an important one because even very effective cardiovascular prevention strategies are unlikely to meet the high bar of being "cost-saving" for 3 reasons. First, because absolute event rates of cardiovascular disease are low in the United States, prevention programs avert a relatively small number of events. For instance, patients with previous atherosclerotic cardiovascular disease have an annual rate of major adverse cardiovascular events of approximately 3%; a prevention strategy that reduces the risk by 10% would avert only 3 events for every 1,000 person-years of treatment. Second, the cost of most prevention strategies is borne upfront, whereas the benefit accrues later in life. Economic decision-making over-weights current events and under-values savings that will occur in the distant future (in economics parlance, this method is called discounting of future costs and benefits) (3). As a result, the upfront costs of cardiovascular prevention strategies loom larger than the savings from averting cardiovascular events in the future, thus making it difficult for prevention strategies to achieve monetary savings that completely off-set costs. Finally, the fragmented nature of our health insurance system means that the payer investing in preventive strategies when a

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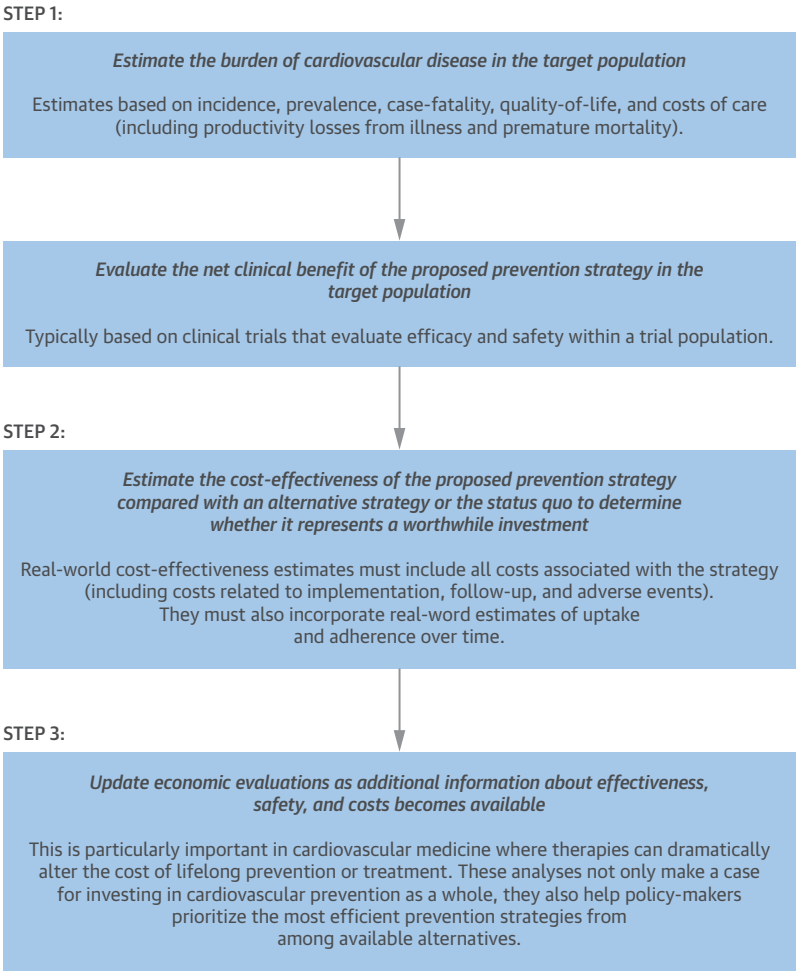
FIGURE 1 Building an Economic Case for Investment in Cardiovascular Prevention



This figure summarizes the 4 key steps involved in the complex undertaking of building an economic case for investment in cardiovascular prevention. In this issue of the *Journal*, Shaw et al. (4) tackle the critical first step by examining the cumulative cost of cardiovascular care among 6,814 asymptomatic adults enrolled in MESA (Multi-Ethnic Study of Atherosclerosis). In addition to documenting the staggering clinical and economic burden of cardiovascular disease and its risk factors, the authors show how epidemiological studies can be adapted to reveal important health economic insights.

patient is 40 years old is unlikely to reap the monetary benefits from events averted when the patient turns 70 years of age.

Despite these challenges, most reasonably priced cardiovascular prevention strategies are considered cost-effective from the health system perspective; that is, they come at an incremental cost that we should be willing to bear in return for the health benefits they generate. By stratifying prevention strategies according to their cost-effectiveness, economic evaluations not only help build a strong case for investing in cardiovascular prevention as a whole, they also help prioritize among the various options policymakers may be considering. They can therefore help optimize the allocation of dollars committed to prevention efforts. Given the critical role economic evaluations can play in driving evidence-based investment in prevention, large knowledge gaps in the existing literature—particularly related to policy- or lifestyle-based interventions—need to be urgently addressed.

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