Some Economics of Health Promotion: What We Know, Don't Know and Need to Know Before Spending to Promote Public Health

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As defined by the World Health Organization, health promotion is the process of enabling people to increase control over the determinants of health and thereby improving their health. Building a superficial economic case for increased spending on health promotion is not difficult. First, the burden of chronic disease is large and ever increasing. Second, this burden is linked to the large, ever-increasing and allegedly unsustainable levels of spending on health care. Third, most chronic diseases are preventable by nature. Sometimes the argument stops there. The implication is that since disease is both costly and preventable, spending more on health promotion to prevent disease will save money. In other cases, the argument is bolstered by calculating the savings that could be made if just a small proportion of the current burden of disease was prevented and by citing examples of relevant preventive interventions that generate net savings in health care costs.

A good illustration of this approach is provided by the Centers for Disease Control. They report that more than 125 million Americans are living with chronic dis-

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eases such as diabetes and cardio-vascular disease.[1] Chronic disease kills more than 1.7 million Americans each year. It is responsible for 70% of all deaths, 30% of potential years of life lost and 75% of all health care expenditures. The direct medical care costs of treating diseases associated with just three risk factors—tobacco use, obesity and physical inactivity—exceed $250 billion annually. After factoring in the value of production that is lost because people are sick or die prematurely, the social cost of chronic disease nearly doubles in magnitude. The evidence seems to suggest that health promotion is undoubtedly a cost-effective alternative.

In defense of this approach, each of the three risk factors highlighted by the CDC is preventable, and evidence exists to suggest that preventive interventions represent good monetary investments. For example, comprehensive work-place health promotion programs that address all three risk factors together often report a net return in excess of $3 for every $1 that is spent by the company.[2] Even when preventive programs do not save money, they often represent remarkably good value in terms of the health gains that they buy. For example, tobacco cessation programs often cost less than $5,000 for every year of healthy life gained.[3] The value of these programs can be seen when they are compared with standard health care interventions such as kidney transplantation ($24,000 per year of healthy life gained) or liver transplantation ($51,000 per year of healthy life gained).[4,5]

Yet despite the apparent ease with which such economic cases can be made, the US, Canada, Australia and the UK spend less than five cents in every health dollar on prevention, despite the role that health promotion might play in dealing with perceived crises in health care spending.[6] If the economic case for health promotion is as easy to make as we have suggested in our opening paragraphs, then why has the message not been picked up by the policymakers? Is the economic evidence not as strong as it seems, or are there other reasons why the evidence has not yet been translated into policy?

The answer to the latter question is a little bit of both. The economic evidence is not as uniformly supportive of health promotion as selected picks from the literature would have one believe. A good economic case can be made for increased spending on disease prevention and health promotion, but it is not nearly as simple as we suggest in our introduction. Evidence of cost-effectiveness is necessary but not sufficient. Other factors besides efficiency are also important, such as who pays the costs and who benefits from the intervention. In addition, there are barriers to policy implementation that also need to be considered. The economic evidence that is available often needs to be translated to fit local context. Most importantly, spending more on health promotion means spending less on something else, and reallocation of resources is a politically contested activity. In this article, we set out to review the economic evidence as it relates to health promotion. We explore what is known about the economic value of health promotion, what is not known and what needs to be known to advocate an increase in the amount of resources spent on preventing disease.

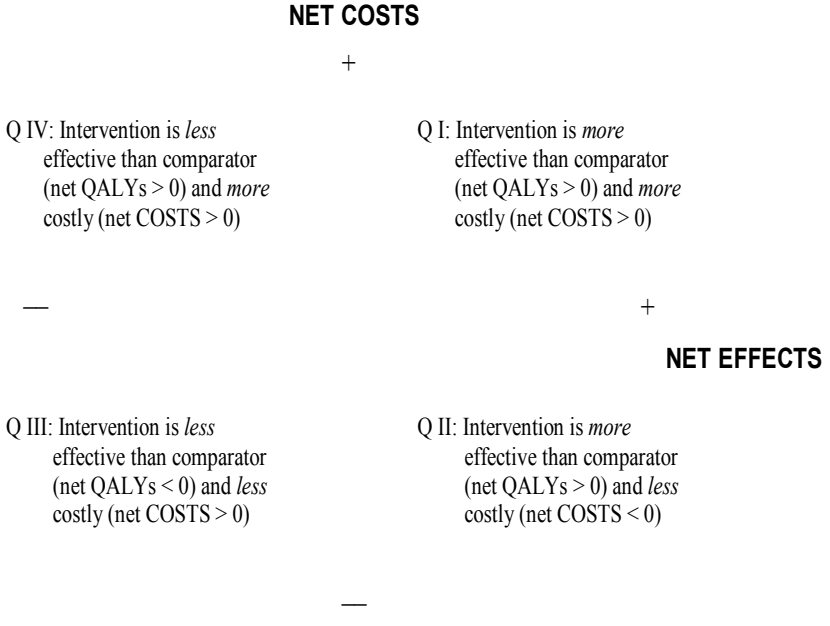
A Primer on Economic Evaluation

Economic evaluation involves a comparison of two or more programs in a cost-benefit analysis. For the sake of illustration, we assume that only health outcomes count, and that these can be measured in terms of quality-adjusted life-years (QALYs). A QALY is the equivalent of one year of life in full health. There are problems with the QALY approach, but these need not concern us here.[7] More problematic still is the restriction that only health outcomes matter, which we will discuss later.[8]

Since policymakers often consider whether it is worthwhile to introduce a new program or to expand an existing program, the basis of comparison in an economic evaluation is usually the current situation. That is, one must examine how implementation of the new program will change the status quo. What effect will the policy have on net health spending (costs of the new program less any savings or cost offsets in health care), and how will it change health outcomes? Ignoring the case that the new program costs the same as the current situation and/or is equally effective, one of four outcomes is possible (Figure 1). Compared with the status quo, the new program will be more or less effective and more or less costly.

The status quo is positioned in the center of Figure 1. After measuring the effect that the new program has on costs (along the vertical axis) and QALYs gained (along the horizontal axis), the new program can be positioned on the chart accordingly. Preventive programs that fall into quadrant II improve outcomes and lead to a reduction in spending because they generate savings in health care that exceed the costs of the

Figure 1: Potential Results of Economic Evaluations



prevention program. In contrast, programs that fall into quadrant IV are clearly worse than the status quo. They are less effective and more expensive. Decision making is easy in these two cases. If the new program falls into quadrant IV, then there is no economic reason to implement it. If it falls into quadrant II, then it should be implemented, unless there is a compelling non-economic reason to forego implementation.

Quadrants I and III depict the cases that are more problematic but also more common. In quadrant I, the new intervention costs more than the current situation, but it improves health. Here, the policymaker has to consider whether the health gains are worth the extra cost and whether or not the intervention is affordable. In quadrant III, the new intervention is not as effective as the status quo, but it also costs less. Here the policymaker must decide whether the savings that could be made by switching to the new program are enough to justify the health outcomes that must be sacrificed. The answer will of course depend on how the savings will be used and what benefits they bring.

What We Know about the Cost-Effectiveness of Health Promotion

As the opening argument suggested, there are a number of health promotion activities that both promote health and save resources, i.e. that fall into quadrant II. Needle and syringe exchange programs fall into this category,[9] as do some vaccination programs.[10] The early evaluations of the MMR vaccine, for example, suggested that the costs of the program would be paid for fourteen times over in savings in health care.[11] Vaccinating seniors against pneumococcal disease also promotes health and saves resources.[12] Some health promotion interventions also fall into quadrant IV. Despite sounding good in theory, programs such as universal screening for hepatitis C in asymptomatic adults and the use of hip protectors in elderly men were both found to be less effective than comparator strategies whilst consuming more resources.[13,14] However, as an indication of how difficult it can be to generalize about the economic value of health promotion, hip protectors for elderly women fell into quadrant II: they were more cost-saving than the status quo.[14] Most new interventions fall into quadrant I: their implementation offers the prospect of improving health at an increased cost. Such interventions may still reduce demand on health care services, and as such generate savings in medical care, but the value of these savings is not sufficient to offset the costs of the program.

Interventions that fall into this category vary widely in their cost-effectiveness (Figure 2). These data have been taken from the Tufts-New England Medical Center Cost Effectiveness Analysis (CEA) Registry. Figure 2 can be regarded as a price list that illustrates what must be paid in order to purchase one QALY. Interventions at the top of the list (i.e. those interventions that show less than $0 for each QALY) promote health and save resources. These are the interventions that fall into quadrant II in Figure 1. Moving down the list of interventions (i.e. those interventions that show greater than $0 for each QALY),

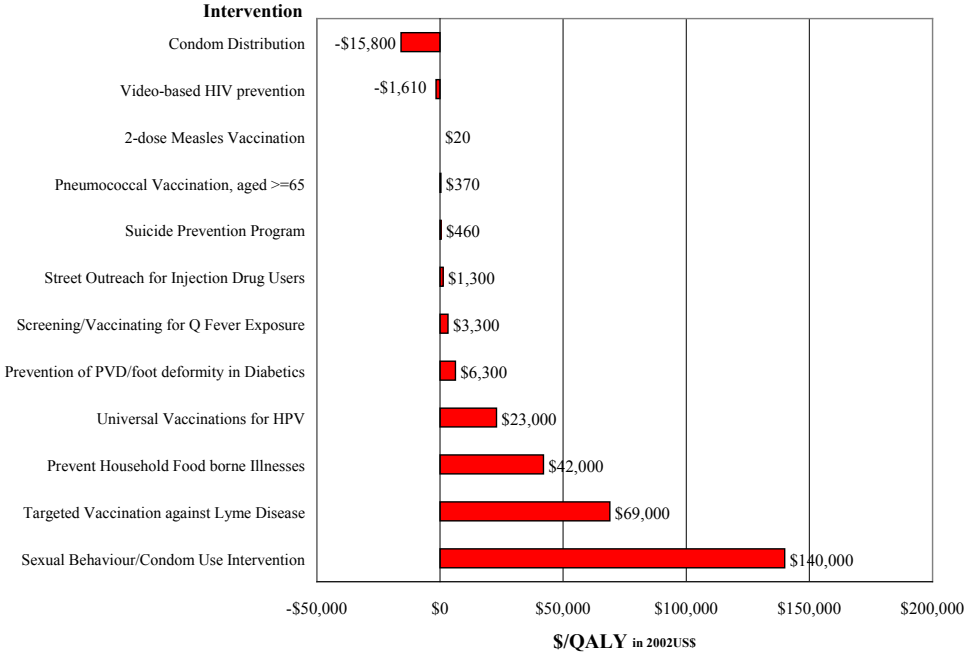


Figure 2. Cost per Quality-Adjusted Life-Year Gained for Selected Health Promotion Interventions

the price that must be paid for one unit of health gain increases. These interventions fall into quadrant I of Figure 1.

Figure 2 shows the unit cost of each intervention per QALY rather than the total cost of the intervention—how much must be spent in total to secure any benefit. This information does not indicate whether or not the intervention is affordable.[15] Thus, it becomes difficult to generalize that entries towards the top of the list necessarily represent good value. For example, the most cost-effective tobacco cessation interventions are not the most effective. As one moves from less resource intensive interventions, such as self-help guides, to more intensive interventions, such as behavioral counseling, costs and effects increase, but costs do so at a faster rate. In these cases, more resource-intensive interventions are less cost-effective.[16] However, resource-intensive smoking cessation interventions that fall further down the QALY league table may still be cost-effective interventions since some people may fail to respond to less resource-intensive interventions. Setting these exceptions aside, the general trend demonstrates that health promotion interventions that generate a high level of QALYs are considered "good buys."

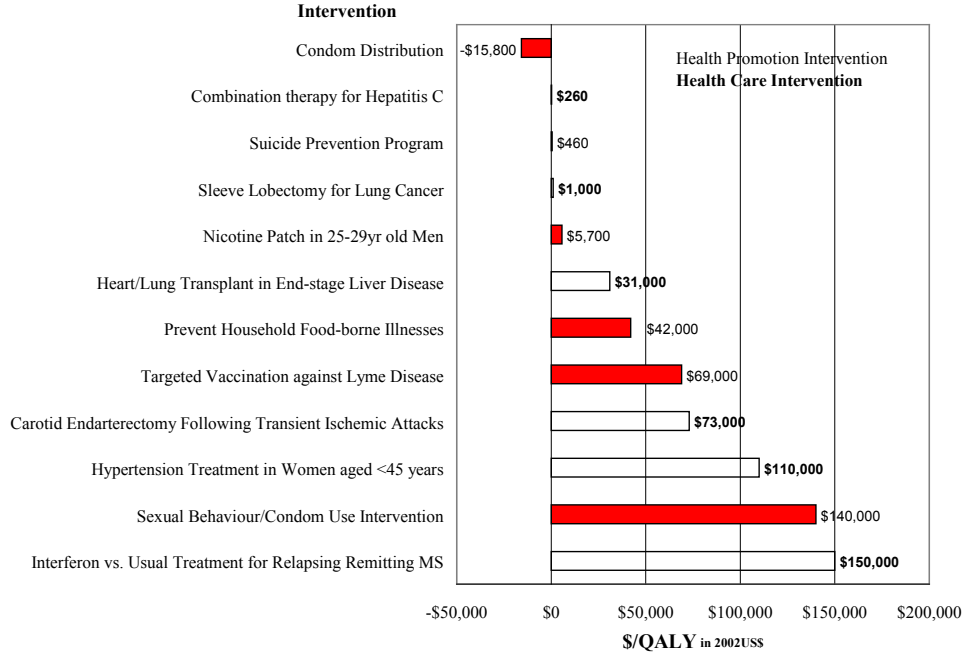
The case of HIV prevention programs illustrates how difficult it can be to assess the cost-effectiveness of a health promotion strategy. The program at the top of Figure 2 was a social marketing campaign that freely distributed condoms to the population at large.[17] The cost of the program (in $US 2002) was $3.4 million, but this

led to a 30% increase in reported condom use, which the authors estimate would result in 170 fewer HIV infections with subsequent savings in health care costs worth $38 million. The HIV/AIDS program at the bottom of the list was a more intensive, group-based intervention providing education and counseling to women at high risk of HIV infection.18 The program was considerably less expensive overall (only $140,000 in total) and less effective. (It would have generated 60 QALYS had the level of spending matched that of the first program.)

We can now formalize the comparison we made in the introduction between the cost-effectiveness of health promotion interventions and the cost-effectiveness of health care (Figure 3). Again, the data have been taken from the Tufts-New England Medical Center CEA Registry. While not a representative sample, the data show some health promoting interventions that are more valuable than health care. For example, nicotine patches buy health at a lower price than some forms of treatment for ischemic heart disease. Equally, there are examples of health care interventions that represent better buys than some forms of health promotion. This is the case when comparing combination therapy for chronic HCV infection with a program to prevent food borne illnesses in households.

On the whole, some forms of health promotion have better value than health care, while others do not. Some appear cost-effective but are expensive to imple-

Figure 3. Cost per Quality-Adjusted Life-Year Gained for Selected Health Promotion and Health Care Interventions



ment. Others' average cost per QALY is higher but implementation is less expensive. The economic value of health promotion varies even for interventions that tackle the same health issue. In short, generalizations should not be made. Prevention should not be deemed universally less costly or more effective than treatment. One must instead assess the value of each preventive intervention on a case-by-case basis.[19]

What is Left to Know about the Cost-Effectiveness of Health Promotion

While policymakers should ground themselves in an extensive survey of the economic evidence of health promotion, they must also be aware of the shortcomings of this evidence. Rush and colleagues[20] have compiled a census of 400 economic evaluations of primary prevention pertinent to practice in developed countries that were published between 1990 and 2001. Substantially less than the health care cases, the health promotion cases involve the two areas of health promotion that are the easiest to evaluate: clinical and behavioral programs. Out of the 400 studies, 45% of the evidence relates to clinical interventions, such as vaccines or drugs to lower cholesterol, that tackle biological risk factors. Another 40% refer to lifestyle interventions tackling risk-behaviors in individuals, as in the social marketing and condom distribution program featured in Figure 2. Less than 15% of the available evidence relates to health promotion interventions addressing social, economic or environmental risk factors. The distribution of types of economic analyses that were published in 2002 and 2003 shows a predominance of clinical and behavioral interventions.

Clinical and behavioral programs often represent high-value means of promoting health, but they are not the only way to do so. The "upstream" determinants of health in the social and physical environment and the political and economic forces that impact people's health must be evaluated. Compared to drug interventions like those to lower cholesterol, very little is known about the economic value of health promotion strategies that evaluate social interventions originating outside of the health sector, such as community development, housing policies and income support. (Notable exceptions include early child development[21] and Women, Infants, and Children programs.[22]) Worksite health promotion and tobacco control are two areas of health promotion practice that are well represented in the economic literature, while school-based health, integrated chronic disease and mental health promotion are not. Understanding these latter issues may improve population health and reduce health inequalities between social and economic groups.

A number of studies have evaluated the effect of highly cost-effective public health policies relating to the sale of tobacco, alcohol and food. For example, tax policy is an essential part of any comprehensive strategy to tackle tobacco use.[23] Generally, pricing policy is highly effective at changing health-related behaviors, though this is not always the case. For example, Horgen examined the effect of pricing policy on food choices in a worksite canteen.[24] Sub-

sidizing the price of healthy food led to desired changes in consumption (a reduction in the consumption of fat and an increase in fruit and vegetables), except when the subsidy was supported with the provision of information about what constituted a healthy choice. In this case, sales of healthy food went down. (The authors speculate that employees explained the price reduction by interpreting the label "healthy" as "tastes bad.")

The value of economic evidence of health promotion must be carefully qualified. Along with variations in the quality of evidence, there are deficiencies in study design and method, especially over what is included in the cost-effectiveness equation, that make published studies difficult to compare and verify the claims made about the value of health promotion.[25] Additionally, there are problems associated with evaluating health promotion purely in terms of its impact on health outcomes. Many health promotion interventions aim to do more than promote health. Some seek to provide people with the information that they need to make healthy choices.[26] Other interventions also seek to build capacity in organizations and individuals, in order to leave them better able to tackle new threats to health.[27] Evaluating such interventions only in terms of their effect on health outcomes would mean assigning zero value to their capacity-building activity. We also risk overestimating the value of any subsequent interventions because their effectiveness will be a function of the capacity-building investment that came before. Furthermore, policymakers are not just interested in the total amount of health that is generated, but also in its distribution—by gender, ethnicity or social class. Who benefits from the intervention and who must pay the costs are important factors. Unfortunately, few economic evaluations address these questions directly, and so there is little that we can say about how best to tackle socioeconomic inequalities in health care.[28] Finally, the results of economic evaluations are inherently context-specific. The cost-effectiveness of an intervention will depend on the socioeconomic characteristics of the population, on disease incidence, on pre-existing levels of health literacy and organizational capacity. Therefore, the results of economic evaluations often need to be standardized before they can be applied locally, which requires an organizational capacity that is often lacking in public health agencies.

Information Gaps, Interests and Inertia: Implications for Public Health Policy

The information available to policymakers on health promotion is incomplete, of uncertain quality and questionable local applicability. While remedying these issues may be helpful, we suggest that there is another crucial barrier that has blockaded increases in spending on health promotion: competing interests. Resource allocation in the health arena is a politically contested activity. Spending on health promotion must compete with other private and public policy objectives. It competes with corporate interests, most notably in the tobacco and alcohol industries, but

also in car production, occupational safety and food production. It competes with private spending in the form of taxpayer resistance to increased public spending. It competes with other public priorities, such as education and housing, many of which also promote health. Finally, there is even competition within public health over the means to achieve agreed upon ends.

Thus, what little evidence that is available about the cost-effectiveness of health promotion will be contested. Groups whose interests lie elsewhere will challenge the evidence. Policymakers who wish to change things and spend more on health promotion will therefore encounter resistance. In these circumstances, it would not be surprising if decision-makers found inertia attractive. If the only evidence that one has to support a controversial increase in health promotion spending is incomplete, lacking in quality and not necessarily directly relevant to the local situation, then perhaps it is better not to act than to act with little support and risk upsetting powerful lobbies.

A case study better illustrates this point. One of the best known public health successes of the past twenty-five years has been the case of tobacco control. Rates of smoking and tobacco-related deaths have fallen dramatically as a result of concerted public health action and advocacy. Stanton Glantz, an academic and tobacco activist, has recently published an account of the history of tobacco control in California, focusing on the role of the state's Proposition 99.[29] He notes that Proposition 99 aimed to increase tobacco taxes considerably and channel the revenues raised into anti-tobacco health promotion messages. According to Glantz, in the eight years following the enactment of Proposition 99, there were two billion fewer cigarettes smoked, 14,000 fewer heart attacks and strokes and 10,800 fewer births of low birth-weight babies. The policy was responsible for saving over 2,500 lives and $500 million in hospital costs. Among the many interesting things about this case study are the reasons the authors give for the policy's success. They identify three key attributes: (1) creative framing of the problem and its solution; (2) power to generate resources and translate ideas into action; and (3) leadership with commitment to challenge the status quo. Economic evidence was not mentioned, despite the fact that the policies instigated under Proposition 99 are among the most cost-effective ways of improving health. Evidence was important: the US Surgeon General's report at the time had brought together an impressive body of literature documenting the effects of smoking on health that helped to re-frame the problem of tobacco control in California and provide reasons for political leaders to be committed to the fight. This evidence was necessary, but it was not sufficient, because tobacco control is not just a health promotion or health economic issue. It is also a political one.

The argument is put most eloquently by Chapman and Lupton in their book, aptly titled *The Fight for Public Health*.[30] They write:

> Political arguments are seldom won only by elegance of logic or by those who can best assemble rational arguments. These are mere strategies within a wider battlefront. The real issue is which are the overall framings of debates that best succeed in

capturing public opinion and political will.

Public health policy is not a rational process of deciding which among a choice of options is the most cost-effective. It is a politically contested act in which economic evidence plays a small albeit important part.

Final Reflections

This review of the economics of health promotion leaves us with two conclusions. The first is that we do still need more economic evidence about the cost effectiveness of a wide range of health promoting interventions. Studies must be done on the costs and effects of interventions tackling the upstream determinants of health—those in the social, physical and economic environments in which people live and work. But this is not enough. The second conclusion is that we also need a different sort of economic evidence if we are to increase resources allocated to health promotion. We need to build a body of evidence that is geared more to investigating how best to get "healthy" public policy enacted.[31]

There is still a large economic agenda to work through to compile the economic case for health promotion and provide policymakers with evidence to support their decisions. But more than this, there is also a large political agenda to work through. We need to develop a better understanding of the political economy of public health before we will see any major shift in resources and increased investment in health promotion. Part of this new body of evidence should address the values that people hold. What is it that people want from their public health systems and what are they prepared to pay to get there? What value do individuals and communities place on the competing demands and claims that are made on common resources? This information will help to create a constituency and demand for change, or it will legitimize the existing allocation of resources. A new type of discourse must generate and support political change by bringing social values into political decision making and influencing decision makers to overcome inertia and hold themselves accountable for their decisions.

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