Smoking out the incentives for tobacco control in managed care settings

Kenneth E Warner

Introduction
There is a widespread perception that managed care organisations (MCOs) are not particularly interested in providing disease prevention and health promotion services consisting primarily of behavioural interventions. The belief is that MCO managers see the cost associated with such interventions, but not the effectiveness and not the cost-effectiveness. Indeed, they may be looking for something more than cost-effectiveness: they may want evidence of cost savings to endorse the provision of such services.

This reflects the dilemma of prevention more generally: the benefits of effective prevention measures are abstract. (Which recipients of the intervention avoided illness as a consequence of the intervention?) And they are deferred, often occurring years into the future. The costs, however, are tangible and immediate. This situation stands in striking contrast to the benefits and costs of disease-promoting behaviours: the benefits are tangible and immediate (that piece of chocolate cake is exceedingly pleasing to the palate), while the costs are abstract and deferred (will my having eaten the cake contribute to occluded arteries that will eventually result in my premature demise?).

Smoking cessation services constitute an excellent example of this phenomenon as it applies to managed care organisations. If an MCO implements a smoking cessation programme, the organisation incurs the cost upfront. The cost is self-evident and, in and of itself, obviously undesirable. The financial benefit takes the form of reduced expenditures on smoking-produced diseases. However, the lion’s share of this benefit will not accrue until two or three decades have passed, the time required to realise the avoidance of smoking-related illnesses. Further, that such health and economic benefits will accrue must be taken as something of an article of faith since, reflecting the abstraction of such benefits, no-one will be able to identify precisely which of the participants in the smoking cessation programme would have become ill had they not quit smoking as a result of programme participation.

Cost-effectiveness of smoking cessation
How should MCOs respond to members who smoke? From the viewpoint of health care per se, the answer is clear: MCOs should offer cessation services to their smokers. There is a wealth of evidence that smoking cessation is one of the most cost-effective interventions in the medical armamentarium. David Eddy, one of the United States’ leading practitioners of healthcare cost-effectiveness analysis, has labelled smoking cessation “the gold standard of health care cost-effectiveness.” Examining the literature on a wide array of smoking cessation interventions, ranging from public health media campaigns to resource-intensive, physician-led office interventions, one observes a consistent pattern of findings in which the cost per life-year saved is less than, or at least no greater than, virtually all of the healthcare interventions for which cost-effectiveness has been assessed.

To illustrate, consider the estimates reported in table 1. Depending on their resource intensity, smoking cessation interventions cost from a few hundred to a few thousand dollars per life-year saved (LYS). Other, commonly practiced preventive interventions cost from $1500 to $15 000 per LYS. Mammography, widely accepted as an appropriate and desirable intervention, is more costly, while much cholesterol screening and treatment is even more so. For conventional secondary and tertiary care procedures, the cost per LYS runs from $20 000 to $100 000 or more.

The characterisation of the cost per LYS rising for smoking cessation as the resource intensity of the intervention increases, as indicated in the table, reflects evidence garnered from a number of studies. An important recent contribution to the literature found a contrasting result. A cost-effectiveness analysis (CEA) of the Agency for Health Care Policy and Research smoking cessation guideline and

Table 1 Cost per life-year saved (LYS), smoking cessation and other healthcare interventions (in 1993 US$)

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Cost per LYS ($)</th>
</tr>
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<tbody>
<tr>
<td>Smoking cessation</td>
<td></td>
</tr>
<tr>
<td>Low intensity*</td>
<td>100–500</td>
</tr>
<tr>
<td>Brief advice from MD</td>
<td>1000–3000</td>
</tr>
<tr>
<td>High intensity†</td>
<td>6000–15 000</td>
</tr>
<tr>
<td>Common disease prevention</td>
<td>1500–15 000</td>
</tr>
<tr>
<td>Secondary and tertiary care</td>
<td>20 000–100 000+</td>
</tr>
</tbody>
</table>

*For example, self-help cessation guides; brief advice, non-MD; broadcast media campaigns.
†Nicotine gum as adjunct to practice-based MD counselling.
References
cluded that more intensive physician-directed interventions were more cost-effective than less intensive physician interventions. Although this discrepancy remains to be resolved, two essential points warrant emphasis. First, in either case, the cost-effectiveness of all evaluated smoking cessation interventions remains highly attractive: on grounds of cost-effectiveness, all of these measures represent desirable healthcare services.

The second point is a subtle one, often not appreciated by healthcare practitioners. Effectiveness and cost-effectiveness need not move hand-in-hand. If, as is characterised in table 1, the least resource-intensive interventions are the most cost-effective, this does not mean that they are the most effective. To the contrary, they may be among the least effective. Consider a televised anti-smoking campaign, for example. Its proportionate effectiveness in reducing smoking is small; it may cause only 3% of viewers who smoke to quit. However, its reach is so enormous—thousands, perhaps tens or hundreds of thousands, of smokers will be exposed—that the absolute number of quitters may be substantial. For the cost involved, which is very small compared with the number of smokers reached, the amount of cessation achieved may be highly cost-effective.

By comparison, consider an intensive office-based treatment consisting of physician counselling, use of nicotine replacement therapy, and follow-up (maintenance) counselling by nurses or other office staff. The effectiveness rate of such an intervention may be very high; possibly 30% or more of the patients may quit smoking. But the cost per patient will be substantial, at least compared with the cost per viewer of the television campaign. As a consequence, the cost per quitter may be greater for the individual counselling intervention, although it is more effective. If the cost per quitter (or per LYS) is higher, this simply means that cost increased more rapidly than effectiveness as one moves from the television campaign to the office-based counselling.

There is room for the entire range of cost-effective smoking cessation interventions, however. Cost-effectiveness data, although providing a good guideline for resource allocation in general, can never inform practitioners and policy makers as to which smokers will respond to which types of interventions. Since those who benefit from the least resource-intensive interventions are likely to differ from the group who respond to the most intensive, the attractive cost-effectiveness of all studied methods of smoking cessation recommends the use of each of them. A significant refinement in dealing with smoking cessation would entail successfully differentiating which types of smokers respond to which types of interventions.

Why providers do not view smoking cessation as effective

Controlled trials demonstrate that if a physician who has no special training in behavioural counselling spends only two minutes advising his or her patients to quit smoking, approximately twice as many patients will quit smoking as would have done so without the advice. In the United States, about 2% of smokers quit annually. This means that a physician counselling patients to quit will induce approximately an additional 2.5% to quit.

There are few, if any, medical procedures or practices that can save life-years at this minimal investment of medical system resources. Despite this, there are surveys in which 25 to 50% of smoking patients say that they have not been counselled by their physicians not to smoke. Although physicians' own recall of their counselling practices conflicts with these findings, the collective evidence suggests that many physicians are not consistently discussing smoking with their patients. Why is this? It is because none of the interested parties is genuinely eager for such counselling to occur.

Consider, first, the front-line providers. Physicians are not trained to counsel. They do not find counselling effective or interesting. They believe that their patients already know that they should quit smoking and that counselling makes their patients uncomfortable. And under many payment programmes, they are not reimbursed for counselling per se. If their healthcare programme will not cover time devoted to counselling, either they are going to have to charge their patients out-of-pocket for the service or simply not be compensated for it.

Why do physicians view counselling as ineffective? Consider the implications of the data presented above. If a physician counsels 100 patients to quit smoking in a given year, five of them are going to quit ("background" quitting by 2.5, plus counselling-induced quitting by another 2.5). How does the physician interpret what has happened? The following year, 95 of the 100 counselled patients return to the office still smoking. To the physician, counselling appears to be an utter failure, a complete waste of time.

But what has actually been accomplished? Of the 2.5 counselling-induced quitters, approximately one will avoid a premature smoking-related death as a consequence. That individual is going to gain about 15 years of life expectancy. The cost of this benefit will be the physician's having spent three hours and 20 minutes in counselling (two minutes per 100 patients).

As suggested above, there are few if any medical procedures that compare with this in terms of the cost-effective use of physicians' time. Yet consider again how this is perceived by the providers: there is an 95% failure rate; the extension of the patient's life does not occur until many years into the future; and that life-extension is not evident; no-one will ever know which patient realised this large, but abstract, benefit.

Patients are the second party to the counselling transaction. As their physicians expect, most of them do know that they should quit smoking. Further, again as the physicians believe, they will feel embarrassed if advised to quit. If they are interested in quitting, they want the proverbial magic bullet, not “advice”.

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Table 2  Simulated programme cost and firm’s health care expenditure savings, workplace smoking cessation programme, manufacturing work force of 10 000 employees (cumulative dollars, selected years; programme run annually for 5 years)

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Year 1</th>
<th>Year 3</th>
<th>Year 5</th>
<th>Year 10</th>
<th>Year 25</th>
</tr>
</thead>
<tbody>
<tr>
<td>Programme cost</td>
<td>141 900</td>
<td>388 311</td>
<td>595 870</td>
<td>595 870</td>
<td>595 870</td>
</tr>
<tr>
<td>Firm’s healthcare savings</td>
<td>NA</td>
<td>71 657</td>
<td>290 814</td>
<td>1 085 461</td>
<td>2 084 601</td>
</tr>
<tr>
<td>Savings outside the firm*</td>
<td>NA</td>
<td>NA</td>
<td>66 101</td>
<td>620 380</td>
<td>2 329 125</td>
</tr>
<tr>
<td>Net gain for firm†</td>
<td>-141 900</td>
<td>-316 654</td>
<td>-305 956</td>
<td>+489 591</td>
<td>+1 488 731</td>
</tr>
</tbody>
</table>

NA = not applicable; NS = not statistically significant.
†Calculated as row 2 minus row 1.

Source: reference 8, table 3, page 988.

(This, of course, has been one of the great contributions of nicotine replacement therapy. By providing a drug to treat the condition of nicotine addiction, it has medicalised cessation, making the accompanying counselling more comfortable for both parties.) Clearly, patients do not want to have to sacrifice their hard-earned money to be embarrassed by their physicians’ counselling.

The third and final party to the transaction is the managed care organisation. MCOs do not want to add additional benefits to their benefits package that might force an increase in premiums. Clearly, inclusion of smoking cessation services in covered benefits will increase the MCO’s costs, at least initially. Further, managers are not convinced that getting smokers to quit is going to reduce other healthcare costs in the future, even though the evidence suggests that it will. In particular, they are not convinced that getting the insured to quit—those in whom they invest in cessation—is going to reduce their company’s future costs due to membership turnover. Members who participated in a smoking cessation programme will take their good health—and hence potential medical cost savings—with them as they move from the MCO that provided the intervention to a new one.

Implications of member turnover for return on investment

No study has yet estimated how much of the health benefit of smoking cessation is actually captured by the MCO that invests in the cessation effort. To indicate the nature of the issues and the magnitude of dollars in both directions—costs and benefits—consider the findings from a recent study that examined how a workplace smoking cessation programme influences the health and associated costs for employees of a firm. This analysis considered a variety of cost savings, such as productivity savings, reduced absenteeism, reduced life insurance (if the firm provided life insurance), and, of course, medical expenditure savings. For present purposes, we will consider only the results that apply to the healthcare cost component of this study. The medical cost issues for an MCO are almost identical to those confronted by a firm that is self-insured.

Using data representative of the United States, the authors determined turnover rates for large “blue-collar” firms [those employing large numbers of manual workers] by age and gender and entered them in a computer simulation model. The model examined the impact of a smoking cessation programme in a hypothetical company of 10 000 blue-collar employees, with a turnover rate of approximately 10%. A smoking worker was assumed to have one opportunity to participate in a smoking cessation programme each year for five years and then the programme terminated. The analysis assumed that 30% of smokers would participate each year and that 15% of the participants would quit permanently, which is a conservative number for an effective smoking cessation programme. The cost assumed was $150 per participant. If that included nicotine replacement, it would be very inexpensive. If it excluded nicotine replacement, it would be very expensive. The financial implications of this intervention are shown in table 2.

By year three, cost savings are beginning to accrue within the firm, although they are much smaller than the programme’s costs, as seen in the net return in the bottom line of the table. (All costs and benefits are discounted at 3.5% per year.) By year five, about half of the programme costs have been recouped in terms of reduced medical care expenditures. (Including other benefits as well, such as productivity savings, total programme benefits are comparable to total costs by year five.) By 10 years, it has become profitable for the firm to have invested in this intervention solely on the basis of medical expenditure savings. Note, however, that by the 10th year, many of the medical savings have “leaked” outside of the firm, due to employee turnover, $620 000 in this instance (row 3). By year 25, which approaches a steady state, the medical savings realised directly by the firm exceed the programme’s costs by a figure of 3.5 to 1. (The other benefits to the firm, the non-healthcare savings, were substantially larger than the healthcare savings on balance.) Thus, based exclusively on healthcare savings, this is clearly a profitable endeavour, even with 10% annual turnover, and even though approximately half the employees will have departed when they experience their cessation-induced healthcare cost savings, as suggested by the fact that the healthcare savings accruing outside the firm approximate those realised by the firm. The creative firm can even turn the benefits lost due to turnover into a public relations benefit: the smoking cessation programme, the firm can claim, has benefitted the health of the entire community, and not merely the company’s coffers.

What are the implications of this study for managed care organisations covering smoking cessation services? To address this question, assume that membership turnover in MCOs averages about 20% a year, or twice that of the typical workplace. For this and other turnover rates, the figures in table 3 indicate the number of years it will take until an MCO has lost 50% of an initial cohort of members. Thus, an MCO contemplating covering smoking...
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Table 3  Managed care organisation (MCO) membership turnover rate and years until 50% of an initial cohort have left the MCO

<table>
<thead>
<tr>
<th>Turnover rate (%)</th>
<th>Number of years until 50% of members have left</th>
</tr>
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<tbody>
<tr>
<td>5</td>
<td>13.5</td>
</tr>
<tr>
<td>10</td>
<td>6.5</td>
</tr>
<tr>
<td>20</td>
<td>3.1</td>
</tr>
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</table>

cessation will note that, if it experiences the average turnover rate of 20%, half of its membership will have turned over after three years. If members who avail themselves of the smoking intervention are typical, this means that half of them (and, by extension, half of the programme-induced quitters) will take the benefits of quitting smoking with them to another healthcare provider. If turnover could be cut to 10%, as in the workplace, the “half-life” of the membership would be 6.5 years. The workplace study suggests that, at this rate of turnover, the smoking cessation programme would eventually more than pay for itself. If turnover could be decreased to 5%, half of an original year’s members would still be paying premiums to the MCO fully 13.5 years later. Assuming the applicability of the workplace study, coverage of smoking cessation would clearly be warranted on grounds of its financial implications alone.

Interpretation of the figures in table 3 requires care, however. Turnover is not completely random. As in the firm, it undoubtedly has important correlates, such as age. If, as in the case of the firm, turnover is much higher among younger members, an intervention like smoking cessation may yield a considerably higher pay-off than one might infer from the numbers in table 3. Suppose, for example, that an MCO’s total membership turnover of 20% per year consists of 30% turnover among the younger half of the members and 10% among the older half. Under these circumstances, cost savings would exceed those that would be associated with random turnover, because middle-aged and older smokers are more likely to want to quit (and to succeed in doing so) and they realise the health benefits of quitting much more quickly than do younger quitters. For example, if a 25 year old quits smoking, the principal health benefits will not be experienced until two to four decades later. In contrast, if a 50 year old quits, the health benefits can accrue in five or 10 years. Clearly, research on the amount, nature, and implications of turnover for MCOs’ financial returns on investments in smoking cessation (and other preventive services) is very much needed.

Other cost and benefit issues

Neither the workplace study nor this discussion has considered more complicated cost analysis issues, such as what happens to medical expenditures on children. If parents quit smoking, their children are not exposed to environmental tobacco smoke in the home. They will have less illness as a result. In addition, they are a lot less likely to become smokers at a later stage. Although the latter has minimal implications for a given MCO, the former could impact the organisation’s bottom line in very short order.

The analysis presented in this paper suggests an intriguing situation, one that is mildly discomfiting to the author of the paper in his capacity as a professional economist, but reassuring regarding the likely future of MCOs’ involvement in smoking cessation and other behaviour-related disease prevention. Quite naturally, economists are distressed by the disappearance of competition, since competition ensures availability of quality services at reasonable prices. Many health economists thus have expressed concern about the likely adverse effects for consumers of the widespread phenomenon of consolidation that is being witnessed in the American healthcare system today. In one important respect, however, the feared resultant decline of competition may actually prove very beneficial to the cause of disease prevention, specifically with regard to behaviour-related concerns such as smoking. The larger an MCO’s catchment area, the longer the organisation is going to hold on to its membership. Ultimately, if an MCO becomes a monopoly within a catchment area, or even part of a duopoly (two firms), it will maintain a very large percentage of its members for a long period of time. As a result, the eventual financial benefits of addressing members’ adverse health behaviours, such as smoking, will more clearly accrue to the MCO. The very act of consolidation will strengthen the MCO’s financial incentive to reduce behaviour-related health problems, quite independent of the organisation’s inherent concern for the physical wellbeing of its members.

Economic incentives in MCOs actually are far more numerous and much more complicated than suggested up to this point. Two examples illustrate this observation. First, MCOs have to be concerned with how provision or non-provision of preventive measures affects the demand for their services. If the public desires the coverage of preventive services and an MCO does not cover them, the demand for membership may suffer. If membership declines sufficiently, it may turn out that it would have paid the MCO to incur some expense to offer those services, regardless of the presence or absence of eventual savings in healthcare costs.

Second, and relatedly, industry report cards such as HEDIS (the Health Plan Employer Data and Information Set), which are placing a new-found emphasis on prevention, can strongly reinforce the tendency to want to provide the services. If an MCO is downgraded for lack of effective prevention services, it may find its enrolments declining as a result.

Double standard applied to preventive services

MCOs’ close scrutiny of preventive interventions such as smoking cessation points to an important and troubling double standard. In secondary and tertiary care, healthcare providers insist that medical procedures be safe and
effective; recent years have witnessed an emerging interest in the cost-effectiveness of such procedures as well. In the case of preventive interventions, in contrast, providers often insist that, in addition to safety, effectiveness, and cost-effectiveness, interventions demonstrate an ability to reduce the organisation’s total expenditures, by reducing more costly care in the future.

This is an extraordinary requirement to place on any healthcare procedure. Has an MCO ever explicitly declined to perform a coronary artery bypass graft (CABG) because it was not going to reduce future healthcare costs? The burden of saving money has never been placed on secondary or tertiary care life-saving procedures, but it is applied with regularity to preventive life-saving procedures such as smoking cessation. As mentioned earlier, the benefits of the preventive interventions accrue too far into the future and are simply too abstract. An MCO can see the recipient of a CABG walking around and acknowledging the organisation’s services, undoubtedly with immense gratitude. The person who quits smoking never knows whether his or her lack of a heart attack 15 years later is owed to the MCO’s preventive intervention.

The irony, therefore, is that, although smoking cessation is probably the most cost-effective arrow that the medical profession has in its quiver, the healthcare system struggles with providing it, and with covering it as a benefit. In contrast, no MCO questions funding a host of extraordinarily expensive crisis management interventions that frankly are often of very limited value. This reflects the demands of the members, as much as those of the medical providers themselves. If patients cared enough about preventive services, if they insisted on their being included in their benefits packages, they would be included. For the reasons discussed earlier, however, patients are ambivalent too.

A role for government
There is clearly an important role for government here. As was demonstrated above, a principal problem regarding the issue of covering smoking cessation is that the organisation that does so incurs the cost, while many of the (future) benefits accrue to competitors, other healthcare organisations joined at a later date by the first MCO’s smoking programme “graduates”. Although the extent of this externality has not been evaluated to date, the analysis of the costs and benefits of mounting a smoking cessation programme in the workplace concluded that, with 10% employee turnover, approximately half of the healthcare savings were realised outside of the firm running the programme. Currently, many MCOs experience considerably higher rates of turnover than does the typical firm. Thus, one might anticipate the loss of even more than half of the medical expenditure savings. With an externality of this magnitude, there is a legitimate argument for government, in some guise—for example, state insurance commissioners—to step in and require coverage of smoking cessation.

If this is the “why” of governmental intervention, the “how” remains to be established. Time does not permit its consideration here.

Conclusion
The take-home message of this discussion is that MCO provision of smoking cessation services makes a great deal of sense from an individual as well as a public health point of view. Particularly as MCOs consolidate, capturing ever larger shares of healthcare catchment areas, inclusion of smoking cessation as a covered benefit is going to make increasing fiscal sense to the organisations themselves. Still, with over 45 million Americans continuing to smoke and over 400 000 dying annually, and with 70% of smokers claiming that they would like to quit, it is incumbent upon all of us to seek means of moving ever more rapidly towards providing the assistance that smokers need to kick the world’s most deadly addiction.

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