

ling and NRT or bupropion range from £655 to £2458 per life-year saved. Thus the figures from this study using real-life services are even better than estimates from studies based on research evidence.

DISCUSSION

The challenges of service development

Because of the short lead time for such a huge project, the new service coordinators struggled to manage many different and conflicting aspects of service development under severe time pressure. That they did so well and succeeded in achieving the services running at full capacity within a few years is testimony to their commitment and hard work. However, some of the problems could have been avoided with strategic planning, for which a longer lead time would have been helpful.

The clearest examples were the lack of trained staff when the services were launched and the piecemeal way the medications were made available, with bupropion coming onto NHS prescription only in the second year and NRT in the third. There were no national training standards in 1999 so training was left to 'market forces', with no attempt to regulate quality. Service development would have been easier and faster if training capacity and standards had been organized, and if bupropion and NRT had also been made available on prescription, before they were launched. Both would have reduced coordinators' work-loads and allowed them to concentrate on issues such as hiring staff, finding premises, achieving throughput targets and targeting priority groups. Training standards for England were published by the Health Development Agency in 2003 [16].

Creating these new services outside existing structures made it more difficult for existing NHS staff to move in and out of them and thus made it more difficult to attract staff with clinical and counselling qualifications. Countries and organizations considering establishing such services may be advised to locate them within existing structures so that they are better connected to other parts of the health care service although, of course, this will depend on the structure of individual systems.

The fixed-term nature of the funding caused problems including job insecurity and staff loss. This will not be easy to remedy in real life as funding is essentially a political issue. On one hand, the government provided central funding to establish these new services, without which they would certainly not have been created. On the other hand, it was always desirable in principle for the funding to become mainstream. As long as funding for stop smoking treatment remained outside normal NHS funding it would be difficult for the services to become part of

mainstream NHS provision and to be seen—and accepted—as an integral and essential part of the NHS.

However, as soon as funding goes mainstream there is a risk of it not being used for its intended purpose and of funds being diverted to more glamorous and immediately needed acute services. Funding for these smoking services went mainstream in April 2003, and although the government indicated the level of funding it thought should go into the services, PCTs are not forced to spend the money on smoking treatment services. The government's main mechanism for ensuring that it is, is to set demanding cessation targets. It is too early to say if this approach will work. There is always the risk that demanding targets will produce target meeting behaviour rather than high quality services, something that appears to have become a problem in other parts of the NHS.

It is not yet clear how best to resolve these tensions. Initial protected funding should be for long enough to enable the services to become embedded into the national health care system and to demonstrate their effectiveness. On the basis of the English experience we recommend that initial funding should be for at least 5 years.

Targeting and reaching disadvantaged groups

Service coordinators were under pressure to develop new services and meet cessation targets very quickly while at the same time being asked to target priority groups likely to use resources more intensively. They appear to have coped quite well with these twin goals, at least in the sense that by the end of the third year they were achieving their cessation targets and reported making efforts to reach disadvantaged smokers.

It will be remembered that formal targets were not set for these priority groups and that coordinators first prioritized targets that were monitored formally. If it is important to attract priority groups then targets must be set and monitored, adequate resources provided and guidance given on how to reach these groups. This was not carried out in England except for pregnant smokers, for whom extra money was provided in years 3 and 4. It seems clear that this money enabled the services to prioritize pregnant smokers. Care needs to be taken in setting targets and a rational basis for them should exist and be explained. As has been mentioned, the cessation targets were increased very significantly from 2003 onwards and this worried some coordinators.

The fact that smoking cessation services were effectively reaching disadvantaged smokers is noteworthy. Evidence from other studies has demonstrated that providing access to services in these areas can be extremely difficult [17]. Given the challenges inherent in providing access in disadvantaged areas, it is worth asking why

NHS smoking cessation services appear to be doing better than might be expected. A range of approaches is being employed to target disadvantaged smokers, including basing smoking cessation advisers in primary care venues in deprived areas, advertising the service in these areas, using a range of community venues such as libraries and community centres and training local people from poorer neighbourhoods to be smoking cessation advisers. Perhaps more importantly, however, services were asked by the Department of Health from the very beginning to reach disadvantaged smokers, and service coordinators accepted from the beginning that this was an important goal. The impact of this success in reaching disadvantaged smokers may be mitigated, however, by their lower success rate. For the services to have an impact in reducing inequalities they will probably need to improve cessation rates in disadvantaged smokers.

Outcome

The validated 1-year abstinence rate of 15% is consistent with results from clinical trials [9,18–21] and the week 4 to week 52 relapse rate of 75% is also consistent with published studies [22]. Thus there is a strong case for relying on research data to extrapolate from short- to long-term outcome and not asking the treatment services to collect long-term follow-up data, which can be expensive and time-consuming and distract the services from treating smokers. Our recommendation is that centrally funded research should periodically investigate long-term outcome in selected services. This will be especially important in seeing if these treatment services can achieve good cessation rates with disadvantaged smokers. We believe services should collect CO validated 4 week quit rates routinely, as these are a good indicator of longer-term outcomes. Were this recommendation to be accepted then CO testing at 4 weeks would have to be mandatory and self-reported smokers whose smoking status is not validated would have to be recorded as smoking. It cannot be conducted on a voluntary basis: biases would creep into the data whereby services that were more conscientious and devoted more effort to rigorous validation might consequently be, or appear to be, less successful.

Cost-effectiveness

The cost-effectiveness results confirm that treating dependent smokers is extremely cost-effective and represents excellent value for money compared with many other health care interventions. In fact it is one of the most cost-effective of *any* intervention provided by the English health care system and, on these figures, by a long way. These services are treating smokers more than

10 times more cost-effectively than the informal benchmark of £20 000 per quality adjusted life-year saved, which the English agency National Institute for Clinical Excellence (NICE) has been using to approve new health care interventions [23]. The figure from the government monitoring data of an average cost per treated smoker of around £200 also shows that helping smokers stop is a remarkably low-cost intervention [24]. Thus treatment for dependent smokers is excellent value for health care systems and, we suggest, should be introduced into all national health care systems.

LESSONS

To what extent can this English experience be reproduced in other countries or regions and organizations? It occurred within a tradition of relatively well-funded addictions research and health education, the active support of many campaigning and professional organizations over more than 30 years, governments which accepted the desirability of combating tobacco, the existence of a national health service with a well-developed infrastructure [1] and in a wealthy country.

From a historical perspective the role of the medical profession was critical in developing tobacco control policy generally and in supporting treatment [1]. The lesson to smoking cessation specialists and tobacco control advocates is: work and campaign with doctors at as high a level as possible. If they need educating first then do that first, because in many countries the medical profession is extremely influential. The national treatment guidelines published by the Health Education Authority in 1998 were not only evidence-based but were also formally endorsed by more than 20 professional organizations, including medical, nursing, dental and pharmacy bodies. This enhanced the authority and influence of the guidelines and helped put evidence-based treatment into the government White Paper.

The effectiveness and cost-effectiveness evidence was also influential and the real-life results from this evaluation back up that research evidence [13]. Treating dependent smokers is one of the most cost-effective interventions that a health service can deliver [8,13]. If health care systems offer these services they will eventually release resources (no longer needed to treat lung cancer, for example) for other uses.

In spite of the excellent cost-effectiveness research evidence, when the government were developing plans for these treatment services the finance ministry insisted on careful estimates of how much the services would cost and on good monitoring data, so that they would know how effective the services were. Thus it may be worth pointing out to governments how cheap smoking

treatment services are (for example they do not require expensive high-tech equipment).

Securing adequate funding for smoking treatment services will always be difficult because health care spending tends to be driven by treating illness, so the effectiveness and cost-effectiveness evidence will be crucial in persuading governments of their value. In England, smoking costs the health service about £1500 million each year [13]. The smoking treatment services are costing approximately £50–55 million a year including medications [1]. Funding smoking treatment services will have a knock-on effect and reduce other health care expenditure. Thus the lesson is: present the evidence and arguments until they are accepted. The English experience suggests that this can be achieved, although we believe that the English experience depended critically on key people being in the right place at the right time. Initiatives such as this will usually need champions.

Government commitment is necessary to develop a treatment system nationally. In England this took from 15 to 36 years, depending on when the clock started. It was 36 years from publication of the first Royal College of Physicians report on smoking and health [25] until the launch of these services, and 15 years from a report published by the Health Education Council, which surveyed the provision of treatment to help smokers stop and called for a comprehensive national treatment system [26]. It need not take so long in other countries. Much of the evidence and arguments are now available (for example, see *The case for commissioning smoking cessation services* [27]) and we hope this *Addiction* supplement will help.

Recommendations

- 1 *Lead time*: allow from 6 to 12 months to plan and launch the services;
- 2 *Training*: set national training standards and increase capacity *before* launching the services;
- 3 *Medications*: standardize the provision of pharmaceutical treatments and make them as widely available and accessible as possible (this includes make them affordable) *before* launching the services;
- 4 *Initial funding*: give the services *five years* to become well established;
- 5 *Monitoring*: monitoring is extremely important but it should not be so much of a burden that it detracts from developing a quality service; 4-week validated success rates should be monitored by the treatment services; however, we think that monitoring of 1-year success rates should not be conducted routinely by all by the services; it should be conducted on a subsample of service clients through a central research body;

6 *Targets*: targets for smokers stopping through the services can be helpful in ensuring that they are prioritized in the health care system; however, care needs to be taken that they are reasonable; if reaching key groups, such as deprived smokers, is a priority then targets should be set and monitored formally for this, and these targets should not conflict with throughput targets; targets must not be so demanding that they produce target-meeting-behaviour or cheating rather than real improvements in health outcomes; and

7 *Give guidance on service development*: the Department of Health gave guidance on various aspects of service development; this guidance was successful and, *inter alia*, encouraged services to keep to evidence-based treatment.

As we go to press, the services are in their sixth year and their second year without central 'dedicated' funding. Further research will be needed to establish if they can survive in their new 'unprotected' environment. The government controls that helped maintain quality standards are now weaker and it is not yet clear if the more demanding targets will produce better performance or simply target meeting behaviour. Nevertheless, we believe the lessons from this English experience will be useful to others and that evidence-based treatment for dependent smokers will become a normal part of all health care systems.

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References

- 1 McNeill, A., Raw, M., Whybrow, J. & Bailey, P. (2005) A national strategy for smoking cessation treatment in England. *Addiction*, 100 (Suppl. 2), 1–11.
- 2 Coleman, T., Pound, E., Adams, C., Bauld, L., Ferguson, J. & Cheater, F. (2005) Implementing a national treatment service for dependant smokers: initial challenges and solutions. *Addiction*, 100 (Suppl. 2), 12–18.
- 3 Bauld, L., Coleman, T., Adams, C., Pound, E. & Ferguson, J. (2005) Delivering the English smoking treatment services. *Addiction*, 100 (Suppl. 2), 19–27.
- 4 Pound, E., Coleman, T., Adams, C., Bauld, L. & Ferguson, J. (2005) Targeting smokers in priority groups: the influence of government targets and policy statements. *Addiction*, 100 (Suppl. 2), 28–35.
- 5 Chesterman, J., Judge, K., Bauld, L. & Ferguson, J. (2005) How effective are the English smoking treatment services in reaching disadvantaged smokers? *Addiction*, 100 (Suppl. 2), 36–45.

6. Judge, K., Bauld, L., Chesterman, J. & Ferguson, J. (2005) The English smoking treatment services: short-term outcomes. *Addiction*, 100 (Suppl. 2), 46–58.
7. Ferguson, J., Bauld, L., Chesterman, J. & Judge, K. (2005) The English smoking treatment services: one-year outcomes. *Addiction*, 100 (Suppl. 2), 59–69.
8. Godfrey, C., Parrott, S., Coleman, T. & Pound, E. (2005) The cost-effectiveness of the English smoking treatment services: evidence from practice. *Addiction*, 100 (Suppl. 2), 70–83.
9. Raw, M., McNeill, A. & West, R. (1998) Smoking cessation guidelines for health professionals. *Thorax*, 53 (Suppl. 5, Part 1), S1–S17. Available at: <http://www.nelh.nhs.uk/guidelinesdb/html/Smoking-ft.htm>.
10. Action on Smoking and Health (ASH) (2003) *ASH response to Securing Good Health for the Whole Population*. London: ASH. Available at: <http://www.ash.org.uk>.
11. West, R., McNeill, A. & Raw, M. (2004) *Smoking Cessation Guidelines for Scotland: 2004 update*. Edinburgh: NHS Health Scotland. Available at: <http://www.healthscotland.com/tobacco>.
12. Cromwell, J., Bartosch, W. J., Fiore, M. C., Hassleblad, V. & Baker, T. (1997) Cost-effectiveness of the clinical practice recommendations in the AHCPR guideline for smoking cessation. *JAMA*, 278, 1759–1766.
13. Parrott, S., Godfrey, C., Raw, M., West, R. & McNeill, A. (1998) Guidance for commissioners on the cost effectiveness of smoking cessation interventions. *Thorax*, 53 (Suppl. 5, Part 2), S1–S38. Available at: <http://www.nelh.nhs.uk/guidelinesdb/html/Smoking-ft.htm>.
14. Orme, M., Hogue, S. L., Kennedy, L. M., Paine, A. C. & Godfrey, C. (2001) Development of the Health and Economic Consequences of Smoking (HECOS) interactive model. *Tobacco Control*, 10, 55–61.
15. Woolacott, N. F., Jones, L., Forbes, C. A., Mather, L. C., Sowden, A. J., Song, F. J., Raftery, J. P., Aveyard, P. N., Hyde, C. J. & Barton, P. M. (2002) The clinical effectiveness and cost effectiveness of bupropion and nicotine replacement therapy for smoking cessation: a systematic review and economic evaluation. *Health Technology Assessment*, 6, 49–61.
16. Health Development Agency (2003) *Standard for training in smoking cessation treatments*. London: Health Development Agency. Available at: http://www.hda-online.org.uk/documents/smoking_cessation_treatments.pdf.
17. Bauld, L., Mackinnon, J. & Judge, K. (2002) *Community Health Initiatives: Recent Policy Developments and the Emerging Evidence Base*. Glasgow: Health Promotion Policy Unit, University of Glasgow. Available at: <http://www.detr.gov.uk>.
18. Fiore, M. C., Bailey, W. C., Cohen, S. J., Dorfman, S. F., Goldstein, M. G., Gritz, E. R., Heyman, R. B., Jaen, C. R., Kottke, T. E., Lando, H. A., Mecklenburg, R. E., Mullen, P. D., Nett, L. M., Robinson, L., Stitzer, M. L., Tommasello, A. C., Vilejo, L. & Wewers, M. E. (1996) *Smoking Cessation*. Clinical Practice Guideline, no. 18, publication no. 96-0692. Rockville, MD: Agency for Health Care Policy and Research, US Department of Health and Human Services.
19. Fiore, M. C., Bailey, W. C., Cohen, S. J., Dorfman, S. F., Goldstein, M. G., Gritz, E. R., Heyman, R. B., Jaen, C. R., Kottke, T. E., Lando, H. A., Mecklenburg, R. E., Mullen, P. D., Nett, L. M., Robinson, L., Stitzer, M. L., Tommasello, A. C., Vilejo, L. & Wewers, M. E. (2000) *Treating Tobacco Use and Dependence*. Clinical Practice Guideline. Rockville: US Department of Health and Human Services.
20. West, R., McNeill, A. & Raw, M. (2000) National smoking cessation guidelines for health professionals: an update. *Thorax*, 55, 987–999. Available at: <http://www.ash.org.uk/html/cessation/servicescase.pdf>.
21. Lancaster, T., Stead, L., Silagy, C. & Sowden, A. (2000) Effectiveness of interventions to help people stop smoking: findings from the Cochrane Library. *BMJ*, 321, 355–358.
22. Stapleton, J. (1998) Cigarette smoking prevalence, cessation and relapse. *Statistical Methods in Medical Research*, 7, 187–203.
23. National Institute for Clinical Excellence (NICE) (2004) *Guide to the Methods of Technology Appraisal*. London: National Institute for Clinical Excellence. Available at: http://www.nice.org.uk/pdf/TAP_Methods.pdf (para 6.2.6.10).
24. Stapleton, J. (2001) *Cost Effectiveness of NHS Smoking Cessation Services*. London: ASH. Available at: <http://www.ash.org.uk/html/cessation/ashcost.html>.
25. Royal College of Physicians (1962) *Smoking and Health*. London: Pitman Medical Publishing.
26. Raw, M. & Heller, J. (1984) *Helping People Stop Smoking: the Development, Role and Potential of Support Services in the UK*. London: Health Education Council.
27. Raw, M., McNeill, A. & Watt, J. (2001) *The Case for Commissioning Smoking Cessation Services*. London: WHO Europe Partnership Project and SmokeFree London. Available at: <http://www.ash.org.uk/html/cessation/servicescase.pdf> and <http://www.ash.org.uk/html/cessation/servicescase.html>.



Economics of smoking cessation

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ABC of smoking cessation

Economics of smoking cessation

Steve Parrott, Christine Godfrey

Smoking imposes a huge economic burden on society—currently up to 15% of total healthcare costs in developed countries. Smoking cessation can save years of life, at a very low cost compared with alternative interventions. This chapter reviews some of the economic aspects of smoking cessation.

Who benefits from cessation?

The most obvious benefits of smoking cessation are improvements in life expectancy and prevention of disease. However, cessation also improves individuals' quality of life as smokers tend to have a lower self reported health status than non-smokers, and this improves after stopping smoking.

There are also wider economic benefits to individuals and society, arising from reductions in the effects of passive smoking in non-smokers and savings to the health service and the employer. These wider benefits are often omitted from economic evaluations of cessation interventions, which consequently tend to underestimate the true value for money afforded by such programmes.

Economic burden of smoking

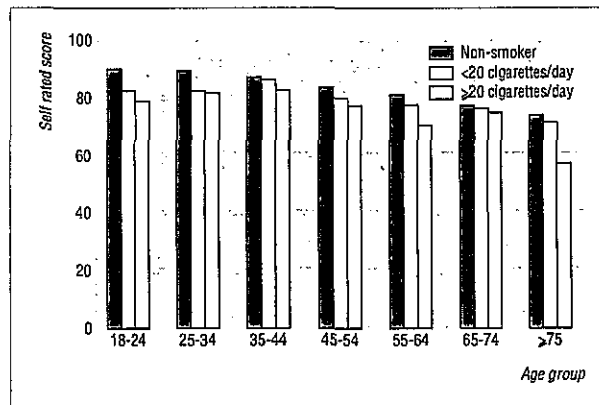
Many estimates have been made of the economic cost of smoking in terms of health resources. For the United States they typically range from about 0.6% to 0.85% of gross domestic product. In absolute terms, the US public health service estimates a total cost of \$50bn (£29bn; €42bn) a year for the treatment of smoking related diseases, in addition to an annual \$47bn in lost earnings and productivity. Estimated total costs in Australia and Canada, as a proportion of their gross domestic product, are 0.4% and 0.56% respectively. In the United Kingdom, the treatment of smoking related disease has been estimated to cost the NHS £1.4bn-£1.5bn a year (about 0.16% of the gross domestic product)—including £127m to treat lung cancer alone.

When expressed as a percentage of gross domestic product, the economic burden of smoking seems to be rising. In reality, however, the burden may not be increasing, but instead, as more diseases are known to be attributable to smoking, the burden attributed to smoking increases. Earlier estimates may simply have underestimated the true cost.

Passive smoking

In the United States, passive smoking has been estimated to be responsible for 19% of total expenditure on childhood respiratory conditions, and maternal smoking has been shown to increase healthcare expenditure by \$120 a year for children under age 5 years and \$175 for children under age 2 years.

In the United Kingdom an estimated £410m a year is spent treating childhood illness related to passive smoking; in adults, passive smoking accounts for at least 1000 deaths in non-smokers, at an estimated cost of about £12.8m a year at 2002 prices.



Self-rated health status (100 = best imaginable health state), by age and smoking status. Data from Kind et al. *UK population norms for EQ-5D*. York: Centre for Health Economics (Discussion paper 172)

Benefits of smoking cessation

Smokers and their families

- Improved quality and quantity of life for those stopping smoking
- Improved quality and quantity of life for those living with smokers through a reduction in the harm from passive smoking

Society

- Lower healthcare expenditure on treatment of smoking induced disease
- Less workplace absenteeism due to smoking related disease
- Less harm from passive smoking in public places
- Reduction in costs related to cleaning up after smokers (cigarette ends, ash, etc and damage from these to floors and furnishings)



In Puerto Rico, China (above), and Venezuela, the cost of smoking has been estimated as 0.3%-0.43% of the gross domestic product

Passive smoking causes illness and premature loss of life, at all ages from the prenatal period to late adult life

Cost of absenteeism

Absenteeism arising from smoking related disease is also a major cause of lost productivity, a cost incurred by employers. An annual estimated 34 million days are lost in England and Wales through sickness absence resulting from smoking related illness, and in Scotland the cost of this productivity loss is about £400m.

Cost effectiveness of cessation programmes

Clear evidence exists that smoking cessation interventions are effective. However, to show value for money, the costs as well as the effectiveness of such programmes have to be examined. The overwhelming evidence is that face to face cessation interventions provide excellent value for money compared with the great majority of other medical interventions.

Several complex factors influence cost effectiveness. For example, although a cessation programme tends to be more effective as its intensity increases, increased intensity is associated with increased costs, therefore increasing both sides of the cost effectiveness ratio. This was illustrated in a study by Parrott et al (1998) of the range of intensities of smoking cessation interventions in the United Kingdom. The researchers examined these interventions using local cost data and life years saved as predicted from the PREVENT simulation model. They looked at four interventions: a basic intervention of three minutes of opportunistic brief advice; brief advice plus self help material; brief advice plus self help material and nicotine replacement products; and brief advice plus self help material, nicotine replacement products, and a recommendation to attend a smoking cessation clinic. The most cost effective intervention was the brief advice alone (cost £159 per life year saved, £248 when discounted at 6%), although the most intensive clinical interventions still represent good value for money at £1002 per life year saved when discounted at 6%.

The cost effectiveness of putting the US Agency for Healthcare Research and Quality's clinical guidelines on smoking cessation into practice has also been estimated, for combined interventions based on smokers' preferences for different types of the five basic recommended interventions. The cost of implementation was estimated at \$6.3bn in the first year, as a result of which society would gain 1.7 million new quitters at an average cost of \$3779 per quitter, \$2587 per life year saved, and \$1915 per quality adjusted life year (QALY). In this study the most intensive interventions were calculated to be more cost effective than the briefer therapies.

Care should be taken when extrapolating the results of these evaluations, as cost effectiveness estimates are likely to be time and country specific and highly dependent on the healthcare system in question. In a system of fee for service, as in the United States, monetary rewards may be necessary to encourage provision. On the other hand, if patients who stop smoking place a reduced burden on the primary care budget in future years, the incentives to provide such services may be inherent in the system.

Pharmacological interventions

The National Institute for Clinical Excellence (NICE) has recently estimated the cost effectiveness of using nicotine replacement therapy (NRT) or bupropion therapy. These estimates projected life years saved over a shorter period than the PREVENT model and hence produced generally higher figures: £1000-£2400 per life year saved for advice and NRT,

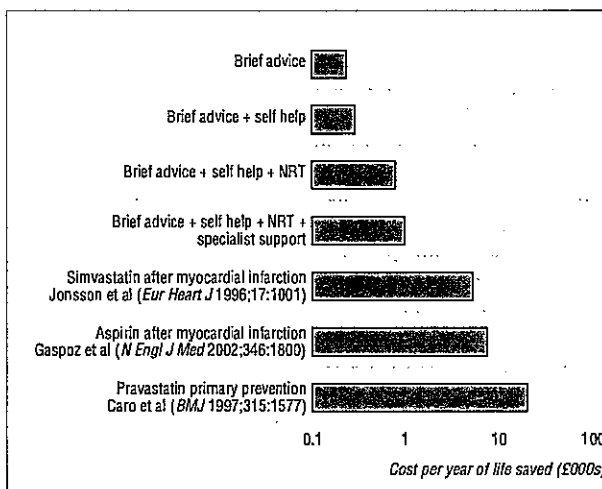
Smoking related fires cause about £151m of damage each year in England and Wales

Cost effectiveness estimates for healthcare providers

Type of intervention	Costs per life year saved (£)	
	Undiscounted	Discounted
Face to face		
Brief advice	159	248
Brief advice plus self help	195	303
Brief advice plus self help plus NRT	524	815
Brief advice plus self help plus NRT plus specialist cessation service	658	1022
Community		
"Quit and win" programme:		
Medium intensity	634	986
"No smoking" day	26	40
Broader community health promotion interventions (medium intensity)	192	295

NRT = nicotine replacement therapy. Data from Parrott et al, 1998 (see Further Reading box), revised to reflect 2001-2 prices.

Discounting is a method of adjusting for the fact that individuals prefer to incur costs in later periods and enjoy benefits in the current period. Applying a discount rate transforms future values into current values, taking this preference into account



Cost effectiveness of smoking cessation interventions compared with that of routine strategies for preventing myocardial infarction

The National Institute for Clinical Excellence is part of the NHS in England and Wales; it issues guidance on current "best practice"

£645-£1500 for advice plus bupropion, and £890-£1970 for advice, nicotine replacement, and bupropion. When QALYs are used, the ranges are £741-£1780, £473-£1100, and £660-£1460 respectively. These costs again compare favourably with a range of other healthcare interventions. Bupropion does seem more cost effective than NRT, although the evidence base for the effectiveness of bupropion is much less extensive than for NRT, and results should therefore be treated with caution.

The cost effectiveness of bupropion has been investigated in Spain with a decision model (Musin et al, eighth meeting of the Society for Research on Nicotine and Tobacco, Savannah, 2002). The model presents results in an incremental analysis over and above opportunistic advice in primary care. The findings show that if all motivated smokers in Spain were to use the therapy, over a 20 year period 44 235 smoking related deaths would be averted at a saving to the healthcare system of €1.25bn. In the United States, studies have predicted savings of between \$8.8m and \$14m over 20 years when bupropion is added to an insurance plan. In a UK study, Stapleton et al (1999) used data from a randomised placebo controlled trial of nicotine patches and a survey of resource use to show that if general practitioners were allowed to prescribe transdermal nicotine patches on the NHS for 12 weeks, the cost per life year saved would be £398 for people aged under 35, £345 for those aged 35-44, £432 for those aged 45-54, and £785 for those aged 55-65. Since Stapleton's study was published, NRT has been made available in Britain through NHS prescription. However, studies have tended to exclude potential side effects of bupropion and are again based on a more limited effectiveness database than the evidence for the effectiveness of NRT products.

The means by which the provision is financed is a crucial determinant of the effectiveness of smoking cessation products. Evidence shows that smokers are more likely to take up smoking cessation interventions if they are provided by their insurance scheme or health service than if they have to pay for them themselves. In the United Kingdom, NHS provision can reduce costs through bulk buying and discounts from pharmaceutical manufacturers. The price for a packet of seven 15 mg Nicorette patches, for example, costs £15.99 through retail outlets, compared with an NHS purchase price of only £9.07, a reduction of about 43%. It is also clear that decreases in the price of NRT products and increases in the price of cigarettes would lead to substantial increases in per capita sales of NRT products.

The photograph of the Marlboro advertisement in China is published with permission from Mark Henley/Panos.

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Competing interests: See first article in this series (24 January 2004) for the series editor's competing interests.

BMJ 2001;323:917-9

Comparative costs of other common healthcare treatments (analysis of guidance of the National Institute for Clinical Excellence)

Intervention	Incremental cost (£)	
	Per quality adjusted life year	Per life year gained
Zanamivir in managing influenza	9300-31 500	
Taxanes for ovarian cancer		6500-10 000
Taxanes for breast cancer		7000-24 000
Implantable cardioverter defibrillators for arrhythmias		26 000-31 000
Glycoprotein IIb/IIIa inhibitors for acute coronary syndromes		7000-12 000
Methylphenidate for attention-deficit/hyperactivity disorder in children	10 000-15 000	
Tribavirin and interferon alfa for hepatitis C:		
First six months' treatment	3000-7000	
Second six months' treatment	5000-36 000	
Laparoscopic surgery for inguinal hernias	50 000	
Riluzole for motor neurone disease	34 000-43 000	
Orlistat for obesity in adults		20 000-30 000

Adapted from Raftery (*BMJ* 2001;323:1300-3).

Key points

- Savings to the healthcare system, a reduction in the harm caused by passive smoking, and savings to employers are all relevant in evaluations of cessation interventions
- The economic cost of smoking in the United States may be as high as 1.15% of gross domestic product in terms of healthcare costs alone
- The estimated cost to the NHS is £1.4bn-£1.5bn
- Cessation interventions offer excellent value for money when compared with some other healthcare interventions
- Some studies have quantified outcomes in life years saved, not allowing for changes in quality of life, thereby underestimating the cost effectiveness of smoking cessation by almost half

Further reading

- Action on Smoking and Health. *Smoking and disease. Basic facts No 2*. London: ASH, 2002. www.ash.org.uk (accessed 15 Dec 2003).
- Cromwell J, Bartosch WJ, Fiore MC, Hasselblad V, Baker T. Cost-effectiveness of the clinical practice recommendations in the AHCPR guideline for smoking cessation. *JAMA* 1997;278:1759-66.
- Nielsen K, Fiore MC. Cost-benefit analysis of sustained-release bupropion, nicotine patch, or both for smoking cessation. *Prev Med* 2000;30:209-16.
- Parrott S, Godfrey C, Raw M, West R, McNeill A. Guidance for commissioners on the cost effectiveness of smoking cessation interventions. *Thorax* 1998;53(suppl 5, part 2):S1-38.
- Stapleton JA, Lowin A, Russell MAH. Prescription of transdermal nicotine patches for smoking cessation in general practice: evaluation of cost-effectiveness. *Lancet* 1999;354:210-5.

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A report of the Tobacco Advisory Group of The Royal College of Physicians

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