

Cost effectiveness of NHS smoking cessation services

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Summary

Calculations based on the reported performance of the NHS specialist smoking cessation services suggests they are highly cost effective – a cost of less than £800 per life-year saved.

This is a calculation of the cost effectiveness of the NHS smoking cessation services. During the period April 2000 - March 2001, 126,800 smokers made a quit attempt while attending cessation services (1). Of these, 48% were abstinent at the end of 4 weeks. The cost was £21.4m. To estimate the cost effectiveness of treatment (cost per life year saved) the cost per patient treated is divided by the estimated life years saved per patient treated.

Cost per patient treated

The figure of £21.4m probably includes start-up and monitoring costs, which would normally be removed when calculating the cost-effectiveness of treatment. Leaving these costs as treatment costs gives a cost per patient treated of £169. This does not include the cost of prescription medication (NRT / bupropion), only free NRT vouchers. Assuming that those prescribing are being responsible and only giving medication to those who are benefiting (ACT - type model(3)), then approximately 5 - 6 weeks of medication will have been given to each patient who started treatment, at a cost of about £50. Thirty-six percent of those setting a quit date received NRT vouchers, but most will not have received the whole course free. A reasonable assumption might be that only 20%, rather than 37%, of medication cost is included in the £21.4m. The extra cost per patient is therefore about £40. The total cost to the NHS is therefore £169 + £40 = £209 per patient treated. The saving from the NHS prescription charge has been ignored in these estimates, although not inconsiderable at £6.10 per script for those not exempt.

Effectiveness

Effectiveness is based on expected years of life saved (LYS) by quitting permanently at various ages. Using LYS as the measure of health gain is conservative, because only mortality is counted. If we used quality-adjusted life years saved (QUALYs), which includes all health gains, then the cost effectiveness ratio would be better. However, QUALYs are more difficult to estimate with accuracy.

Assuming 60% - 65% of 4-week successes will have relapsed by 12 months, the net improvement in cessation at 12 months will be about 17% (2). Subtracting from this a relapse rate of 35% (5) after 12 months gives a net gain of about 11% life-long quitters. This equates to about 0.348 discounted life-years saved for each 35 – 44 year old treated, and 0.273 discounted life-years for each 45 – 54 year old treated (3). These estimates of LYS by stopping are based on

non-discounted estimates by Doll(4). The Doll figures need to be discounted at a rate of 1.5% per annum until expected age of death, because future health gains are not valued as highly by society as immediate ones. Lastly, the LYS have been reduced by subtracting the estimated LYS due to “unaided” cessation throughout a person’s life (i.e. those treated who would have stopped on their own at a later date). This is based on a 1.5% annual cessation rate until age of expected death (3).

Cost-Effectiveness

The cost per life-year saved is therefore:

$£209 / 0.348 = £601$ for those aged 35 – 44

and

$£209 / 0.273 = £766$ for those aged 45 - 54

Conclusion

Like most cost-effectiveness estimates, these must be regarded as approximate figures. They contain additional costs and conservative estimates in places, and are almost certainly too high. Also, two significant elements have been ignored which would make the true cost-effectiveness ratio lower. First, the services tend to treat more heavily dependent smokers. These are at greater risk of smoking-related death and would probably save more life years by stopping than those in Doll’s study (GPs). Second, the services treat many not counted in the DoH monitoring returns as having “set a quit day”. Many will have attended pre-quit sessions, then quit without returning to the services. Others will have been helped to a stage where they are more likely to quit on their own in the future. These probably increase “official” treatments by at least 20%. Additionally, the services probably support and encourage GPs to do more (6). All this work is not being credited to the services and is not included as health gain here.

Comparisons

Even so, the estimate of cost-effectiveness is extremely low by comparison with almost all NHS treatments. For instance, Orlistat, a new anti-obesity drug, was recently estimated by NICE to save quality adjusted life years at a cost of £46,000 each (7). Smoking cessation treatments are probably the most effective way that the NHS currently spends money. The question arises as to why the NHS is not spending more to maximise health gain?

Recent reports [8] suggest that National Institute of Clinical Excellence has been using a benchmark cost-effectiveness figure of £30,000 in its health technology assessments for acceptability for NHS expenditure. The figures for smoking cessation services suggest a cost effectiveness of 40-50 times better than the NICE threshold.

References:

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