

Judging whether public health interventions offer value for money

<http://publications.nice.org.uk/lgb10>

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Introduction

This briefing summarises the economic and health benefits that can be gained from public health interventions and the methods that can be used to measure them. It is for local authorities and partner organisations. It is particularly relevant to health and wellbeing boards.

Public health interventions cannot, however, be viewed solely in terms of value for money because of the broader and longer-term impact they have on general wellbeing – not only of individuals but also the wider community. Such factors also need to be taken into account by local decision-makers.

This briefing (and its linked documents) also highlights what could be gained by placing greater emphasis on 'prevention rather than cure' in relation to health. An approach advocated by the all-party parliamentary inquiry group (primary care and public health) [Report into the sustainability of the NHS](#) (July 2013).

For a summary of the benefits of public health interventions see [Funding public health protects our communities and children, saves lives... and can save money](#).

For further advice and information see [How NICE measures value for money in relation to public health interventions](#).

The National Institute for Health and Care Excellence (NICE) provides national guidance and advice to improve health and social care.

All NICE guidance is based on evidence of effectiveness and cost effectiveness. In addition, NICE methods recognise the importance of other factors including stakeholder knowledge, existing policy commitments and [ethical values](#).

For further information on how to use this briefing and how it was developed, see [About this briefing](#).

Support for planning, review and scrutiny

NICE publishes a cost-impact report for each piece of public health guidance. You can access the reports from the [published public health guidance](#) listing on our website.

A range of online tools to help in making decisions on spending are also available via [Into practice](#) on our website.

Key messages

Public health activities can save money

Preventing premature death and preventable diseases can boost the economy

The economic consequences of premature death and preventable illness are considerable. Typically they include loss of productivity in the workplace and can include the costs of crime and antisocial behaviour.

Examples of the estimated overall annual costs for society are:

- Smoking (UK): £13.7 billion ([Cough up: balancing tobacco income and costs in society](#))
- Alcohol (England): £20 billion ([Alcohol Harm Reduction Strategy for England](#))
- being obese or overweight as a result of poor diet or inactivity (UK): £7 billion ([Health – third report](#))

- Physical inactivity: £6.5 billion ([Start active, stay active: a report on physical activity from the four home countries' Chief Medical Officers](#)).
- Stroke (England): £7 billion a year. This comprises direct NHS costs of £2.8 billion (around £5.5 million per 100,000 population), £2.4 billion in informal care and £1.8 billion in lost productivity and disability
- Diabetes (UK): £8.4 billion a year (absenteeism from work); £6.9 billion a year (early retirement); £0.152 billion (social benefits); £13.75 billion (treatment). See [Cost of diabetes](#).

Spending now can lead to future savings

Funding public health programmes and interventions **now** can avoid the risk of storing up costly problems for the future.

- Based on current trends, around 40% of people living in Britain will be obese by 2025. In today's money this will cost wider society an estimated £37.2 billion a year. Encouraging people to adopt a healthy diet and be more physically active could prevent this happening.
- In England in 2010, there were an estimated 1.44 million consultations for depression. This cost the economy around £10.96 billion: £8.97 billion in loss of earnings and a further £1.47 billion in loss of earnings for people who eventually commit suicide as a result of their depression. It cost the NHS more than £520 million. (House of commons report on [Cost of depression in England 2011](#)).
- In 2006, an estimated 175 million working days were lost in Britain as a result of sickness absence (Health, Work and Wellbeing Programme 2008). Dame Carol Black's [review of the health of Britain's working-age population](#) estimated that the annual costs of sickness absence and worklessness associated with working-age ill health were over £100 billion. This is greater than the annual budget of the NHS (Health, Work and Wellbeing Programme 2008).
- It is estimated that the US-based [Nurse–Family Partnership](#), a programme for the children of high-risk families, made savings by the time those children had reached the age of 15. These savings, which were over 5 times the cost of the programme itself, resulted from reduced expenditure in the welfare and criminal justice systems, higher tax revenues and improved physical and mental health.

Public health activities are good value for money

Most activities aimed at improving the public's health are extremely good value for money – and generally offer more health benefits than the alternatives tested, even though some of the benefits may not be realised in the short term.

Such activities include: stop smoking services, healthy eating initiatives, physical activity programmes, alcohol interventions, mental health at work and safe sex initiatives.

Some activities (including the examples above) can be 'cost saving', that is, in the long run they reduce costs by more than the total spent on them.

Smoking tobacco poses a considerable burden on society in terms of lost production, absenteeism at work and school, costs to the NHS and fire services and reduced quality of life. Hence, tackling smoking is one of the most cost effective of all preventive strategies.

There is also strong evidence that:

- The cost of smoking adds to the hardship experienced by adults and children in families on income support.
- Illegal tobacco (that is, smuggled, bootlegged or counterfeit tobacco) is making it easier for children to smoke and become addicted.
- Children who buy cheap tobacco can come into contact with criminals and may be exposed to other illegal activities.

Judging the cost effectiveness of public health activities

The overall aim of cost-effectiveness analysis of public health activities is to help decision makers choose those that maximise the health benefits, given the resources available – and ensure no resources are wasted in the process. However, a balance must be struck between ensuring resources are allocated efficiently, on the one hand, and an equitable allocation of those resources, on the other.

NICE's approach to assessing public health interventions

Cost–utility analysis

Up to 2012, based on [Methods for the development of NICE public health guidance \(2nd edition\)](#), cost–utility analysis was NICE's main method of determining the cost effectiveness of public health interventions. This considers someone's quality of life and the length of life they will gain as a result of an intervention. The health benefits are expressed as quality-adjusted life years (QALYs).

Generally, we consider that interventions costing the NHS less than £20,000 per QALY gained are cost effective. Those costing between £20,000 and £30,000 per QALY gained may also be deemed cost effective, if certain conditions are satisfied. (see [section 6.4.1](#) of 'Methods for the development of NICE public health guidance' 3rd edition).

NICE does not accept or reject interventions on cost effectiveness grounds alone, but assessing effectiveness and cost effectiveness is an integral part of the way we develop guidance.

Cost–consequences and cost–benefit analyses

Drawing on experience gained from producing public health guidance, the latest (3rd edition) of 'Methods for the development of NICE public health guidance', published in 2012, places more emphasis on cost–consequences and cost–benefit analyses when assessing public health interventions.

This dual approach aims to ensure all relevant benefits (health, non-health and community benefits) are taken into account. The idea is to help local authorities (and other organisations interested in improving people's health) better judge whether or not a public health intervention represents value for money

Cost–utility analysis is also used, when needed, to make comparisons with previous economic analyses, as well as to compare treatment and prevention programmes.

Timeframes

It may take several years before the health benefits of some public health interventions start to have an impact, although the costs may need to be incurred 'up front'.

Such interventions may be cost effective or even cost saving over the medium to long term and so would be recommended for funding on that basis, using the cost effectiveness threshold. However, they may not be deemed to be value for money in the short term in a simple return on investment analysis (cost savings minus cost of intervention).

Where possible, we report on costs and benefits over the short, medium and long term time horizon.

For further advice and information see [How NICE measures value for money in relation to public health interventions](#).

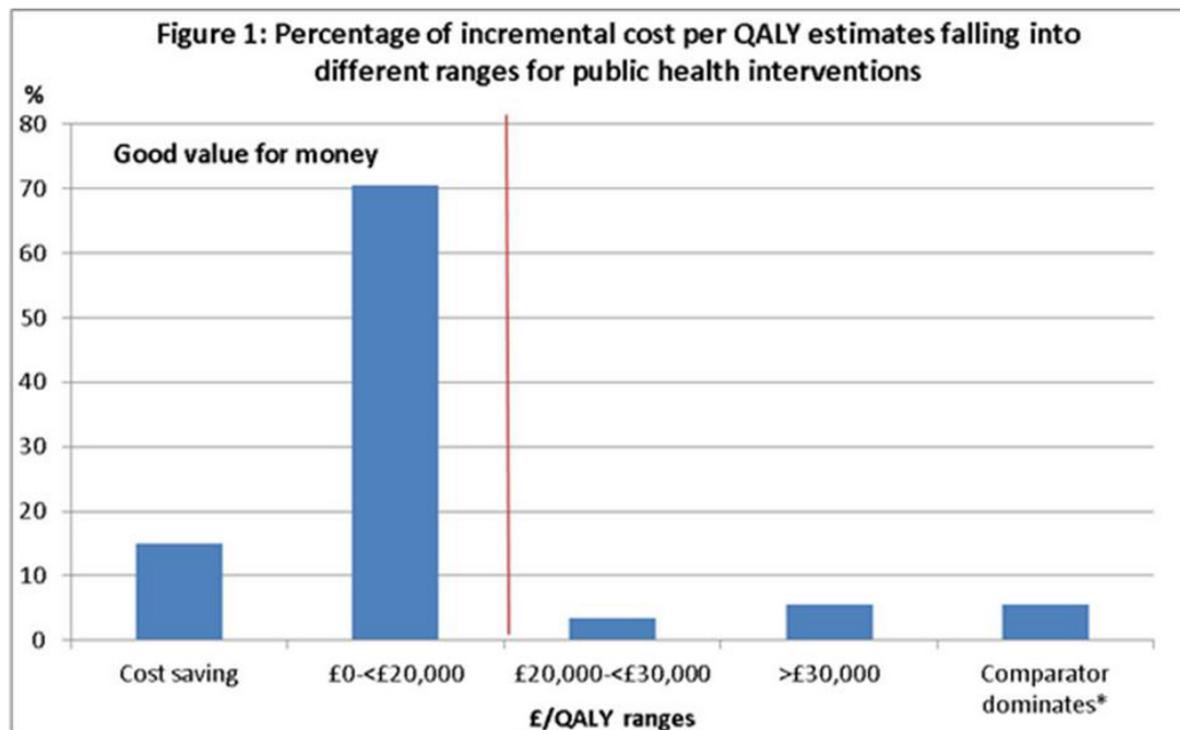
NICE's analyses show that public health interventions are a good use of public money

We analysed 200 cost-effectiveness estimates of various interventions that informed public health guidance published by NICE between 2006 and 2010 (see figure 1 and table 1 below). We found that:

- 30 (15%) were cost saving
- 141 (70.5%) were good value for money. In other words, they cost less than £20,000 per QALY gained ([The cost-effectiveness of public health interventions](#))
- 7 (3.5%) cost between £20,000 and £30,000 per QALY gained (see figure 1 below).

The remainder either exceeded the threshold for what is considered cost effective for the NHS or were more costly and less effective than the comparator.

These figures do not take into account the monetary gains from the employee being able to go back to work (or able to work longer).



* 'Comparator dominates' means the comparator (or control) is more effective and less expensive than the intervention against which it was compared.

Although most interventions were aimed at adults, action aimed at children and young people was also good value for money.

Overall, of the interventions NICE has assessed, we found that those aimed at a whole population, such as mass-media campaigns to promote healthy eating and legislation to reduce young people's access to cigarettes, were among the most cost effective. Nevertheless, some targeted approaches to tackle health inequalities, such as interventions to reduce substance misuse among vulnerable young people or to help people return to work following long-term sickness absence, were also found to be cost effective.

Table 1 below provides examples of specific initiatives assessed by NICE. For more examples please see [The cost-effectiveness of public health interventions](#) (Owen et al. 2012).

Table 1 Median and range of values of incremental cost-effectiveness estimates for some public health interventions assessed by NICE

Guidance topic classification	Comparator	Median cost/ QALY	Range (min–max)	No. of estimates included in median
PH1 Brief interventions and referral for smoking cessation				
Brief intervention only (5 minutes)	Background quit rate	£732	£577 to £1,677	8
Brief intervention (5 minutes plus nicotine replacement therapy [NRT])	Background quit rate	£2,110	£1,664 to £4,833	8
Brief intervention (5 minutes plus self-help)	Background quit rate	£370	£292 to £847	8
PH2 Four commonly used methods to increase physical activity^[a]				
Interview	Advice	£84	NA	1
Exercise prescriptions	Advice	£77	£20 to £159	4
Interviews with exercise voucher	Advice	£227	NA	1
Intensive interviews	Advice	£105	NA	1
Exercise prescription and exercise information	Advice	£425	NA	1
Exercise prescription with intensive GP training	Advice	£437	NA	1
Intensive interviews with exercise voucher	Advice	£430	NA	1
PH3 Prevention of sexually transmitted infections and under 18 conceptions				
Tailored skill session	Usual care – didactic messages	£3,200	NA	1

Accelerated partner therapy – doxycycline	Patient referral	£14,025	£9,350 to £18,700	2
Accelerated partner therapy – azithromycin	Patient referral	£19,425	£12,950 to £25,900	2
Brief counselling	Didactic messages	£12,194	£12,080 to £12,308	2

Extract from [The cost-effectiveness of public health interventions](#) (Owen et al. 2012).

^[a] This refers to the title of the guidance and not the number of interventions assessed.

Smoking cessation interventions: Bury - a case study in cost-effectiveness

To illustrate the costs of smoking – and the savings that can be achieved by tackling tobacco use, we ran an analysis for Bury Metropolitan Borough Council using NICE's [return on investment tobacco model](#). This tool was developed to help local decision-making on tobacco control.

Bury has an adult population of around 141,000. Roughly 23% smoke and 33% are ex-smokers. The model estimated the total annual cost of smoking at £10.7 million, broken down as follows:

- business – £3.7 million
- NHS – £6.8 million
- second-hand smoke – £110,000.

Investing £751,692 in smoking cessation interventions for 1 year (equivalent to current practice) would achieve estimated gross savings of £321,579 overall in the first 2 years (this does not include the cost of implementation). Cost savings were broken down as follows:

Sector	Item	Number of events saved	Cost saving (£)
Business	Days lost from smoking (excludes smoking breaks)	1272	113,162

NHS	GP and other consultations, hospital admissions and prescriptions	2135	205,004
	Passive smoking-related treatment	148	3322

The proposed package of interventions was compared with a range of background activities to combat tobacco use. Below are a selection of the outputs calculated using the tobacco return on investment tool.

Taking implementation into account, it was estimated that the package would:

- Lead to a return of 63p, £1.46, £2.82 and £9.35 over 2 years, 5 years, 10 years and a lifetime respectively, for each pound spent on the package of interventions. (This takes both NHS savings and the value of health gains into account.)
- Cost an additional £21, £19, £15 and £1 per smoker over 2 years, 5 years, 10 years and a lifetime respectively, after deducting the costs of the package. (Only NHS savings are considered here.)
- Cost an additional £9 per smoker over 2 years but lead to a saving of £11, £43 and £199 per smoker over 5 years, 10 years and a lifetime respectively, net of the costs of the package. (This takes both NHS savings and the value of the health gains into account.)
- Cost an additional £34,199 per QALY gained over 2 years, £12,574 per QALY gained over 5 years, £5040 per QALY gained over 10 years and £80 per QALY gained over a lifetime.

About this briefing

This briefing was written with advice from NICE's Local Government Reference Group and using feedback from council officers, councillors and directors of public health.

It is for local authorities and their partner organisations in the health and voluntary sectors, in particular, those involved with health and wellbeing boards. This includes local authority officers and councillors, directors of public health and commissioners and directors of adult social care and children's services. It will also be relevant to members of local authority scrutiny committees.

This briefing may be used alongside the local joint strategic needs assessment to support development of the joint health and wellbeing strategy.

This briefing is intended to be used online and includes hyperlinks to sources of data and further information.

Changes after publication

Month Year: January 2015 Minor maintenance

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