THE ECONOMIC ARGUMENT

Brunel University’s Dr Subhash Pokhrel and Dr Lesley Owen of NICE on the tobacco return on investment tool that helps local decision makers build their business case for tobacco control

One of the biggest research achievements of the 1950s was the understanding that ‘smoking kills’. Six decades on, we still have to face the same problem that tobacco smoking continues to take the lives of thousands of people every year. In fact, tobacco smoking kills about 700,000 people in Europe alone and one in two smokers die, on average, 14 years earlier than they would have had they not smoked tobacco.

Those smokers who are lucky enough to survive would have a very high chance of developing long-term health conditions such as lung cancer, heart diseases and respiratory illnesses as well as having a stroke. The presence of these long-term health conditions often means compromised quality of life among smokers. For example, a heavy-smoker (one who smokes 20 or more cigarettes a day) is 70% more likely to report some or severe problems in self-care and 86% more likely to report some levels of anxiety/depression, compared with someone who has never smoked. Interestingly, this strikingly high likelihood of compromised quality of life among smokers is evident after we take into account the presence of any long-term illnesses and socioeconomic differences that may have affected their quality of life. In other words, smoking not only takes one’s life prematurely, it also makes them live in a compromised state of health before they die. Both outcomes are undesirable for us as a society in general and as (health) policy makers in particular.

‘Local decision makers need locality-specific information as to how much return any package of interventions they want to invest in will yield. Before that, they need to know whether there is an economic argument for investing in tobacco control.’

The European statistics in tobacco smoking are fascinating from the policy and practice point of view. The available estimates suggest that tobacco smoking costs the EU an estimated €98bn to €130bn each year which is just above 1% of the EU Gross Domestic Product. It would be misleading to say that Europe has not made any progress in controlling tobacco use and saving resources. There has been incredible success as demonstrated by declining rates of tobacco smoking in many European countries. In the UK for example, the rate of adults who smoke fell from 52% in 1948 to 28% in 1998, and the rate continues to drop; in 2010 20% of adults smoked. Nevertheless, the number of people who smoke is still high. Just less than 30% of the adult EU population are smokers. Almost the same proportion of young Europeans aged 15-24 smoke. Smoking prevalence is higher in countries where healthcare needs are greatest and the state of tobacco control is poor (i.e. mostly, Central and Eastern European countries (Fig. 1)). From a policy perspective, this situation calls for more investment in tobacco control in countries at higher risk as the potential number of lives saved is much higher.

Clearly, there appears to be sound health and wellbeing arguments for tobacco control. However, in the austerity climate that we all are in currently, decision makers are increasingly seeking answers to the question whether any euro spent on tobacco control is worth it. In other words, are there any economic arguments for making tobacco control a priority health practice?

**Tobacconomics**

Unfortunately, the answer to the above question is not as straightforward as it appears at the first sight. No doubt, there is a vast body of research showing the value for money of most of the available tobacco control measures, including smoking cessation interventions. However, this type of research is often tailored towards informing national policy debate with very little resonance to local practice where most of these interventions are...
implemented. Local decision makers need locality-specific information as to how much return any package of interventions they want to invest in will yield. Before that, they need to know whether there is an economic argument for investing in tobacco control. The current austerity climate has made this even more important as tobacco control needs to compete with many other public health interventions. Moreover, local decision makers face a strong challenge from tobacco industries who often argue that the economic value of tobacco control is not as high as the industries’ contribution in terms of revenue and employment generation.

Action on Smoking and Health (ASH) recently published a report entitled ‘Tobacconomics’, which weighed up the economic arguments for and against tobacco control. It concluded that: “contrary to the claims of the pro-tobacco lobby, public health policies are not incompatible with economic development and increasing government tax revenues”.

The current tobacco ROI tool evaluates a package of tobacco control interventions and models the economic returns that can be expected in different payback timescales.³

In fact, research has shown that smoke-free legislation has contributed positively to hospitality businesses and is saving unnecessary hospitalisations in those workers who would otherwise be exposed to second hand or passive smoking. Going back to the research of the 1950s that showed smoking kills, it is worthwhile to supplement this with additional evidence gained in the last six decades that any tobacco control measure will save, not only lives, but also healthcare and wider resources. Ideally, we would quantify the economic value of such measures that are relevant to local practice where most of such interventions happen.

The tobacco ROI tool
It is this need for quantification of ‘economic value’ of saved lives and resources, that the Health Economics Research Group (HERG) at Brunel University, UK, and the UK’s National Institute for Health and Care Excellence (NICE) have teamed up with a number of other organisations (see Box out 3: Tobacco ROI research partnership) to develop an economic tool with the aim of helping local decision makers to build their economic arguments for funding tobacco control programmes.

There are various types of tobacco control interventions. In the UK, for example, providing support to smokers in different forms, often in combination between pharmacological aids and behavioural support, has been a key driver of such measures. The UK has also implemented broader tobacco control measures such as smoke-free legislation and mass media campaigns to reduce tobacco use and prevent the uptake of smoking. Typically several tobacco control measures are implemented at the same time and so it is often necessary to know the economic returns that this package or combination of interventions may provide.

The current tobacco ROI tool evaluates a package of tobacco control interventions and models the economic returns that can be expected in different payback timescales. Different interventions, including pharmacotherapies and support and advice, can be mixed and matched to see which package of interventions provides the best ‘value for money’, compared either with ‘no-services’ or with any other specified package. The purpose of the tool is to support commissioners and policy makers, in local authorities and the NHS, in their funding decisions. The user can select an area of interest using drop down menus, and the tool will automatically estimate the smoking and ex-smoking populations based on up-to-date statistics. This population composition is used to model the impact of the package of interventions on smoking on relevant endpoints, taking into account short, medium and long-term events. Thus, the tool allows the user to look at the impact of selected packages of interventions on health and non-health outcomes in the local population.

Important features of the tobacco ROI tool

- Inclusion of a range of ROI indicators, e.g. gross and net cost-savings; incremental cost-effectiveness ratio (ICER: cost/QALY); net benefit; benefit-cost ratio; avoidable burden of disease (QALYs/1,000 population);
- Explicit ROI information by payback timescales, e.g. two, five, ten years and lifetime;
- Flexibility in estimating ROI for smoking cessation interventions or comprehensive sub-national tobacco control interventions or a combination of both;
- Localised ROI estimates, i.e. the outputs are specific to local population data.

Box out 1: Important features of the tobacco ROI tool

The ROI tool is supported by an economic model. The model first estimates the proportion of the population who fall into three categories: current smokers; former smokers; and people who die. The proportion of the population who are current smokers and former smokers is based on both the background quit rate in the population and the relapse rate. The people who die is based on the differential risk of death for smokers and former smokers. This allows an estimation of the number of deaths and life expectancy for different time horizons. Based on clinical data relating to the attributable risk of smoking with respect to disease, the model provides an estimate of the number of cases each year of lung cancer, coronary heart disease, COPD, myocardial infarction and stroke. These are allocated costs which allow the derivation of the total direct healthcare costs associated with these diseases for different time horizons. These are also allocated utility values which allow estimation of the expected quality adjusted life years (QALYs) for the population. The content of the tool was informed by fieldwork with decision makers in local authority and healthcare sectors to find out what they need to support their funding decisions. This fieldwork eventually led the tool to have
How much return will my package of tobacco control interventions provide?

Example local area is in the North East of England.

- Population (18+ years): 79,016;
- Smoking prevalence: 23.52%;
- Proportion of smokers who access available stop smoking services: 26.02%;
- Current cost of local quit-support interventions: £443,484; and
- Current cost of sub-national comprehensive tobacco control programme: £30,652.

The return on investment for the local (interventions) only strategy:

<table>
<thead>
<tr>
<th>ROI INDICATORS</th>
<th>2 YEARS</th>
<th>5 YEARS</th>
<th>10 YEARS</th>
<th>LIFETIME</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net Present Value of healthcare cost savings (per smoker)</td>
<td>-£21</td>
<td>-£17</td>
<td>-£13</td>
<td>£5</td>
</tr>
<tr>
<td>Healthcare cost per QALYs gained</td>
<td>£27,165</td>
<td>£9,568</td>
<td>£3,503</td>
<td></td>
</tr>
<tr>
<td>Benefit-Cost Ratio (healthcare costs only)</td>
<td>0.12</td>
<td>0.27</td>
<td>0.47</td>
<td>1.19</td>
</tr>
<tr>
<td>Benefit-Cost Ratio (including value of health gains)</td>
<td>0.77</td>
<td>1.80</td>
<td>3.47</td>
<td>11.52</td>
</tr>
</tbody>
</table>

The return on investment for the local plus subnational tobacco control combined strategy:

<table>
<thead>
<tr>
<th>ROI INDICATORS</th>
<th>2 YEARS</th>
<th>5 YEARS</th>
<th>10 YEARS</th>
<th>LIFETIME</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net Present Value of healthcare cost savings (per smoker)</td>
<td>-£19</td>
<td>-£11</td>
<td>£1</td>
<td>£41</td>
</tr>
<tr>
<td>Healthcare cost per QALYs gained</td>
<td>£11,379</td>
<td>£2,602</td>
<td>Package is less costly and produces more benefits</td>
<td>Package is less costly and produces more benefits</td>
</tr>
<tr>
<td>Benefit-Cost Ratio (healthcare costs only)</td>
<td>0.20</td>
<td>0.55</td>
<td>1.04</td>
<td>2.74</td>
</tr>
<tr>
<td>Benefit-Cost Ratio (including value of health gains)</td>
<td>1.60</td>
<td>2.08</td>
<td>4.04</td>
<td>13.07</td>
</tr>
</tbody>
</table>

Table 1

key features, as seen in Box out 1: Important features of the tobacco ROI tool.

An example of the kind of information that the ROI tool can provide to decision makers is given in the panel: how much return will my package of tobacco control interventions will provide? For illustrative purposes, we have run the tool to produce ROI estimates in a local area in the North East of England where two strategies are being considered: firstly local smoking cessation interventions are implemented without any subnational tobacco control programme; and secondly local smoking cessation interventions are implemented together with a subnational tobacco control programme.

As seen in the panel, while the selected package of intervention is cost-effective in the long run in both strategies, decision makers may value the additional information as to what point in time the package actually starts giving positive economic return. Likewise, the information as to what extent (and how early) combining subnational tobacco control programmes with local cessation interventions can provide additional benefits compared to local smoking cessation interventions only, may be helpful to the decision makers. This information can be a powerful tool to make their economic arguments when they negotiate funding tobacco control measures.

Pan-European implications

The economic evaluation of tobacco control interventions has a long history. However, the research around helping local decision makers to choose the best package of interventions to reduce the harm from tobacco in the European context is relatively new. The ROI research may therefore have profound implications for tobacco control policies and practice in other member states of the European Union.

Compared with the rest of Europe, the UK is one of the foremost in both provision and financing of quit-support interventions, coupled with implementation of broader tobacco control measures. This is one of the reasons why it performs best in terms of Tobacco Control Scale and has seen significant decline in
Economic impact of tobacco at local level
Consider a local area in the North East of England. Just over 79,000 adults (18+ years) live in this area, of whom roughly 18,500 are current smokers. The total annual smoking-attributable costs in this local area is estimated at £5.5 million, of which:
- NHS Costs: £4m;
- Costs to businesses (productivity losses): £1.4m;
- Passive smoking costs: just less than £0.1m.
The £4m in annual NHS costs are the result of:
- 20,120 GP consultations;
- 5,642 practice nurse consultations;
- 3,861 outpatient visits;
- 884 hospital admissions; and
- 11,187 prescriptions.

Box out 2: Local area level information on the burden of smoking could be an important input to tobacco control business case
smoking prevalence over the last decades. The availability of a tool that seeks to maximise the benefits that can be achieved by funding tobacco control interventions is a valuable addition. However, one may question to what extent a tool developed for use in the UK can help other EU member states?

Since the economic crisis of 2008, governments across the EU have implemented a number of austerity measures, thereby impacting hugely the availability of public funding including that in the health sector. In order to secure funding in this climate it is important to provide local, regional and national decision makers across the EU with information that will help them to make tobacco control business plans. Unfortunately, such a tool is not available widely. Because the UK context (population, prevalence and types of control measures) is significantly different from other member states, the UK ROI tool cannot be easily transferred. Research is needed to explore which components can be transferred directly and which need to be developed specific to each country. We anticipate the UK experience could have a significant impact in developing such decision-support tools for other EU member states. This approach may also apply to public health areas other than tobacco, such as physical activity, alcohol consumption and diet. It is hoped that this research will support the priorities of the EU Health Strategy and implementation of Europe 2020, the EU’s ten-year economic growth strategy of which health promotion is an integral part.

Tobacco ROI research partnership
Health Economics Research Group (HERG), Brunel University, UK;
National Institute of Health and Care Excellence (NICE), UK;
Centre for Research in Health Economics, University Pompeu Fabra, Spain;
LeLan Ltd: Analysis and Technical Communication Services, UK;
Faculty of Medicine, University of Ottawa, Canada;
Applied Health Economics Research Unit, Ottawa, Canada;
Smokefree South West, UK;
Tobacco Free Futures, UK;
Fresh North East, UK;
UK Centre for Tobacco Control Studies (UKCTCS), University of Nottingham, UK;
London Health Observatory (LHO), UK;
School for Public Health and Primary Care (CAPHRI), Maastricht University, the Netherlands;
Helmholtz Zentrum München, Germany;
Syreon Research Institute, Hungary;
National Centre for Smoking Cessation and Training, UK;
European Network for Smoking and Tobacco Prevention (ENSP), Belgium;
Agency for Quality and Accreditation in Health Care and Social Welfare, Croatia.