Description of the economic model (EQUIPTMOD) to assess the impact of tobacco cessation in five European countries

EQUIPT ROI Tool Technical Manual

The EQUIPT Study Group

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European-study on Quantifying Utility of Investment in Protection from Tobacco www.equipt.eu

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Background:

Tobacco smoking is the cause of a wide range of diseases including especially neoplasms, cardiovascular and respiratory diseases (1). Smoking is the single largest preventable cause of cancer (2); tobacco accounts for 85% of the deaths caused by cancer of the trachea, bronchus and lung (3). The burden of tobacco use is continuous and enormous: it claims about 700,000 lives every year in Europe (4). It also causes a huge economic burden both by direct medical care costs and indirect costs such as workday losses, which may reach similar or even larger orders of magnitude. In addition, smoking is considered a leading cause of health inequalities in Europe which must be considered in prevention strategies (5).

Still some 28% of the EU population smokes (4). In 2015, the prevalence of smoking varies from high including countries such as Spain and Hungary over medium such as Germany to low such as UK and the Netherlands (6).

Policy makers all across Europe are in need of bespoke information on the economic and wider returns of investing in evidence-based tobacco control, including smoking cessation agendas. There is a broad spectrum of policy measures in the EU and in the Member States including the regulation of tobacco products, advertising restrictions, the creation of smoke-free environments, tax measures, activities against illicit trade and anti-smoking campaigns (4). However, not only prevalence of smoking but also tobacco control varies widely within the EU though the causes are not yet fully understood (7). Massive lobbying of tobacco industry has to be taken into account (8). An important international step, the Framework Convention on Tobacco Control by the World Health Organization has established a landmark reference but only parts of this comprehensive framework have indeed been accomplished (9): For example, just about a third of those (all) European countries that managed to increase tobacco taxes also have established laws on smoke-free public places, and even less offer cessation programmes.

In consequence, a lot remains to be done in tobacco control. With smoking prevalence differing as well as existing control measures, tobacco control has to be country-specific. It has to focus appropriate target groups with appropriate means, and given the broad spectrum of approaches to consider different strategies. Studies across Europe identified issues such as mass media campaigns being widely underused, poor provision of services for smokers trying to quit, and gaps in price policies by licit and illicit cheap supplies (10). Especially, the need to improve access to cessation aids has been raised (11). Accordingly, effective design of appropriate measures is a key point in tobacco control. Furthermore, due to the different situations in countries, the health and economic impacts of smoking cessation measures may differ widely between countries, again requiring country-specific analysis (12).

While starting situation and policies may differ, there is a lot common in tackling similar types of problems in different countries, though necessarily in a country-specific adaption. Common issues include a complex setting of smoking epidemic, disease impact, and health

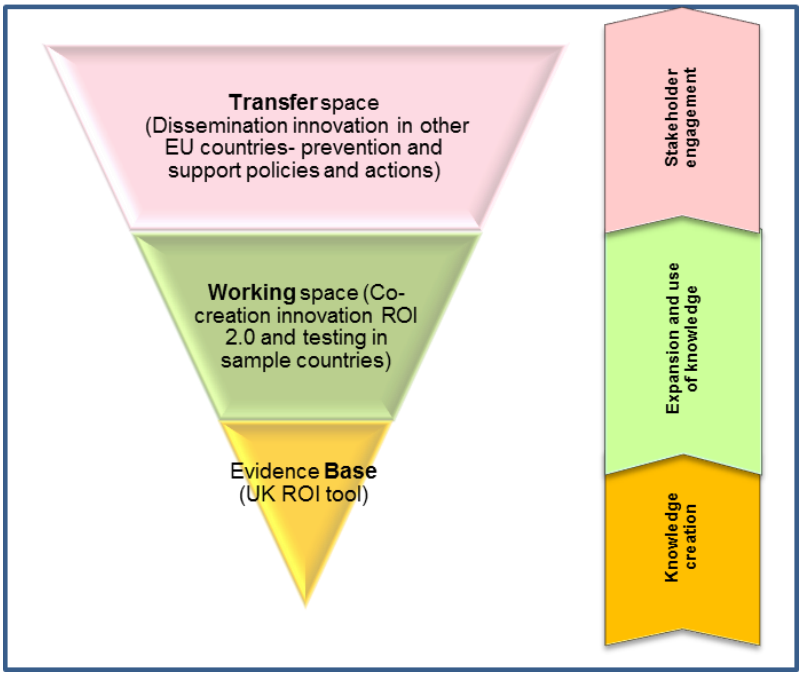
care and cost consequences. Accordingly, medical and epidemiological issues have to be brought together with social, psychological and economic ones. For an evidence-based management, such a setting requires complex scientific tools to understand how smoking and its consequences may be influenced by which measures. Mathematical modelling is such a tool to cope with complexity. But just as important it is to enter the relevant policy issues into these analyses, and to make results accessible to policy makers and other stakeholder in tobacco control.

EQUIPT was designed to test the transferability of one such economic evidence base – the English Tobacco Return on Investment (ROI) Tool (13) – to other EU member states. EQUIPT is a multi-centre, inter-disciplinary, comparative effectiveness research (CER) study in public health (14). The Tobacco ROI tool already developed in England by the National Institute for Health and Care Excellence (NICE) was adapted to meet the needs of European decision makers, following transferability criteria described in Pokhrel et al. (14). Stakeholders' needs and intention to use ROI tools in sample countries (Germany, Hungary, Spain and the Netherlands) collected via interviews and surveys were analysed. This analysis was complemented by secondary analysis of the contextual and other factors. Informed by this contextual analysis, country-specific ROI tools have been developed in sample countries using a mix of economic modelling and Visual Basic programming. The ultimate aim of the EQUIPT study is to make this tool available to European stakeholders to support decision making in tobacco control. The EQUIPT ROI Tool can be used to compare various policy scenarios, including new or continued investment strategies or disinvesting from services that are less effective.

This report summarises the approach taken to model the EQUIPT tool.

Transferability pathways

EQUIPT incorporates the 'inverted cone' framework (14) in which:



(i) the tip represents the NICE ROI tool (i.e. economic evidence);

(ii) the middle section represents the working space (i.e. the extent to which this evidence can be applied in sample countries); and

(iii) the top level represents the extended benefit (i.e. the extent to which the policy recommendations coming out from sample countries can be transferred to other out-of-sample EU countries).

At the heart of this approach is the translational research framework, which allowed us to utilise different quantitative and qualitative methods while benefitting from the experience and expertise of multi-disciplinary consortium members.

In terms of modelling, therefore, the approach taken is to adapt, to the extent possible, the existing Markov-based economic model – widely known as the NICE Tobacco Return on Investment (ROI) Tool (13) developed and used in England – to meet the needs of other European countries.

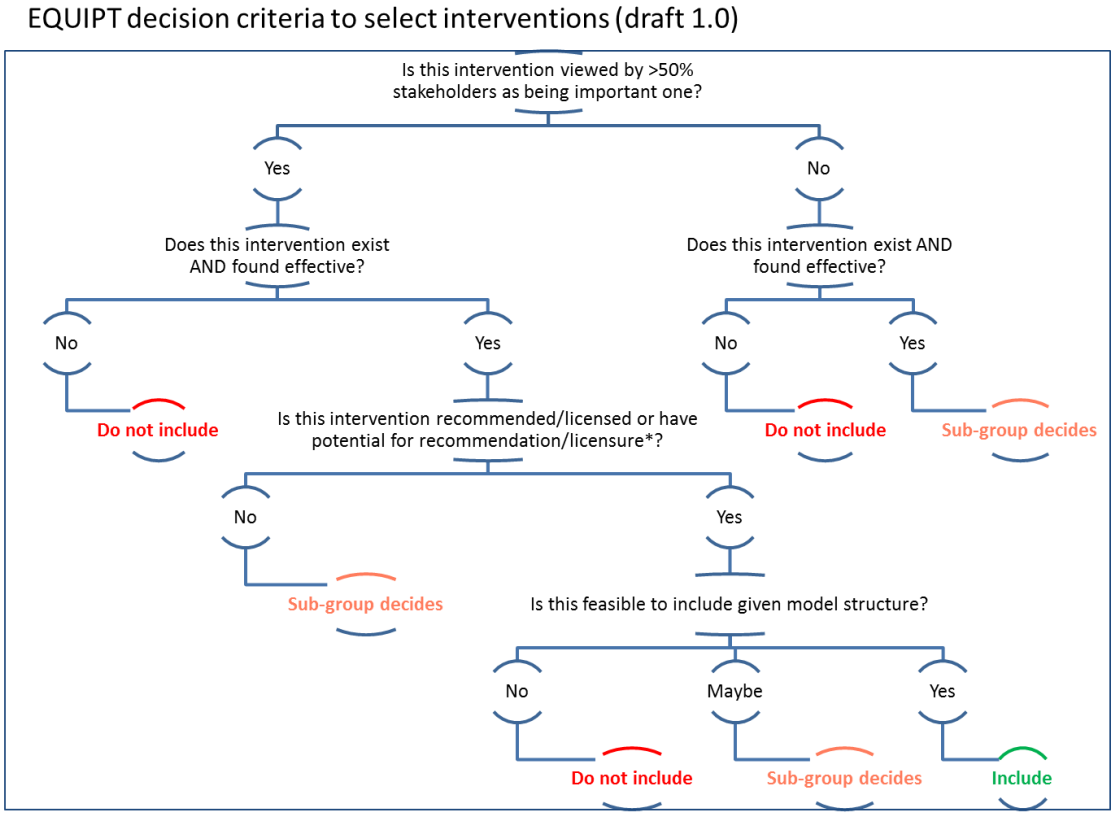
Early engagement with stakeholders to evaluate their intention to use an ROI tool (15-17), coupled with desk reviews, parameter importance and intervention relevance analyses and intervention effectiveness review (18), informed the adaptation process.

Summary of pre-adaptation work

Pre-adaptation work	Main findings	Key recommendations for model adaptation
Desk review	Desk reviews conducted to understand different contexts of sample countries in relation to transferability of the ROI concepts and tools identified some factors as being important for the WP2 task. They were: the context in which tobacco sits in each country; the stage at which tobacco control is currently; and availability of interventions and smoking prevalence data. Together, they meant that each country was likely to have slightly different requirements for the ROI tool in order for it to be fit-for-purpose.	• Consider sourcing country-specific contextual data, e.g. smoking prevalence, perspectives for analysis, decision thresholds, and available interventions • Consider inclusion of regional/provincial levels, as they might be decisionally-important
Existing survey data analysis	Analysis of the Spanish Health Survey Data to estimate the 'net' utility (health-related quality of life, measured by EQ-5D) in current smokers, former smokers, and never-smokers, controlling for presence of the five smoking-attributable diseases included in the NICE model. This was to avoid double counting in estimating utility benefits.	• Consider using the estimated values in the EQUIPT model, either as primary input data or as sensitivity analysis parameter
Stakeholder interviews	Applying the Integrated Change Model [I-Change Model], factors that determined intention to use model-based economic evaluations, such as the Return on Investment (ROI) tool were identified by surveying 93 stakeholders in five European countries (the Netherlands, Hungary, Germany, Spain, and the UK). Significant differences in beliefs were found between non-intenders and intenders. These included risk perception, attitude, social support, and self-efficacy towards using the tool. Context (country), attitude and social support were significant predictors of the intention to take up the tool.	• Consider providing metrics indicating: burden of tobacco as well as effectiveness, cost-effectiveness and budget impact of tobacco control agenda/portfolio. • Consider providing bespoke reports, as intention to adopt the tool varies significantly across countries • Consider provision of training/support in using the tool, post-adaptation
Analysis of Stakeholder Interviews data	Stakeholders' views were explored to understand the value that they place on tobacco control interventions. The aim was to evaluate the extent to which such evidence was transferable to other settings - in particular, to assess whether those interventions are valued by end-users (stakeholders) in the new settings	• Consider what intervention is actually available in a country • Consider exclusion of interventions that are judged 'not-relevant' by stakeholders

	as much as the cost-effectiveness ranking would suggest. Therefore, 'importance score' given by stakeholders to an intervention was compared with 'cost-effectiveness ranking' derived from published sources. The ranking of interventions based on stakeholders' views was similar to the ranking based on respective costs per QALY as evidenced in the published literature. Compared with the United Kingdom, stakeholders in other countries were less likely to view some interventions - such as bupropion or mobile phone-based interventions - as important to their settings. Non-conventional therapies such as hypnosis ranked low on importance. There was a strong correlation between perceived availability and judged relevance of interventions.	
Parameter importance analysis	A Monte Carlo simulation was applied to the existing UK ROI model to create a set of values for all input parameters and outcomes in terms of the net benefit of a tobacco intervention package compared to no interventions. In the importance analysis, the following input parameters turned out to be the most influential: background quit rate, intervention uptake rate, relapse rate, cost of interventions, productivity losses due to smoking, utility associated with smoking status and relative risk of stroke and CHD. Cost of smoking attributable diseases was found to be of less importance. Other parameters in the model were of negligible importance.	• Consider collecting country-specific data for the variables that have been found sensitive enough for ROI estimates • Consider repeating the importance analysis for each country and compare results before moving on to web-based tool development
Background work on the User Interface	The NICE tool's GUI is reprogrammed to incorporate feedback from stakeholders/team members, as a part of usability testing	• Consider cutting down on the length of reports • Consider ways to improve GUI • Fix major usability problems indicated by second round interviews
Intervention selection	Based on WP1/2 work and wider deliberations with the team, a flowchart (Figure below) was developed to select the interventions	• Consider using the flowchart to decide which interventions to include in the tool
Effect size estimates	A separate Effectiveness sub-group reviewed the evidence and estimated the effect sizes for selected interventions (see Appendix I)	• Consider using the effect sizes as estimated

Figure 1: Flow chart used to select an intervention



* by relevant authorities such as DH, HTA, AHRQ, EMA, NICE, etc.
Note: Sub-group decision will be based on availability of relevant effectiveness evidence and practicality to collect data.

The EQUIPT modelling methods

Informed by the substantive pre-adaptation work as described above, the following approach was taken to model the EQUIPT tool.

Decision Problem

The underlying model is designed to identify an optimal package of smoking cessation interventions. The specific decision problem relates to identifying those interventions which can be considered cost effectiveness. The model thus allows the determination of a range of relevant outcomes which are a factor of the estimated costs and outcomes associated with continuing and stopping smoking.

Identification and selection of interventions

The existing NICE ROI tool contains a large number of tobacco control interventions. Based on this, about 30 interventions were identified as potential candidates for inclusion in the tool. This list was tested with 93 stakeholders across 5 sample countries for stakeholders' awareness about the interventions' availability and relevance to each setting using a Likert scale. An importance score for each intervention was calculated; the agreement within and between countries was estimated using kappa coefficient; and correlation between perceived availability and judged relevance was investigated (18). The perceived importance of interventions was further compared with the importance one would place on those interventions based on the published, robust cost-effectiveness evidence. This analysis helped us to rank order the 30 interventions according to the importance. A selection flow-chart was then developed to select the interventions for inclusion in the tool (see the chart above).

Population

The population of interest is the current smoking population within the five core European countries (Germany, Hungary, the Netherlands, Spain and the UK). England was included as the home country for the UK. The population is stratified by age (by individual birth year) and sex with estimates weighted by the actual number of smokers in each stratum.

Comparators

A variety of potential packages of smoking cessation interventions can be compared. Default data relating to the currently implemented tobacco control intervention package within the selected country or region (Current Investment Scenario), a minimal investment package which relates to no continued funding of interventions (Zero Investment Scenario) and a user-defined package (Prospective Investment Scenario). To create a Prospective Investment Scenario, users can customise the investment in existing tobacco cessation interventions and can incorporate new previously unfunded interventions into the package. In addition, users can change default parameters such as discount rates and threshold values for a QALY via the interface. Once the scenario is determined, different potential ROI metrics for each permissible time horizon can be estimated.

Perspectives (on outcomes and on costs)

The model adopts a broader quasi-societal perspective in which costs and benefits to the healthcare system realised both by smokers upon quitting and with respect to reduced exposure to passive smoking are incorporated in addition to productivity gains due to reduced smoking. However, the model is flexible enough to provide metrics by narrower perspectives such as those from the payer or healthcare providers.

Time horizon and discounting

The model has been designed so that it can be customised within the interface to provide estimates of costs and outcomes at various time points including 2 years, 5 years, 10 years and a lifetime (until an individual is 100 years of age).

The default discounting rate within the model for both costs and QALYs is country specific, although a custom rate can be incorporated by users within the interface.

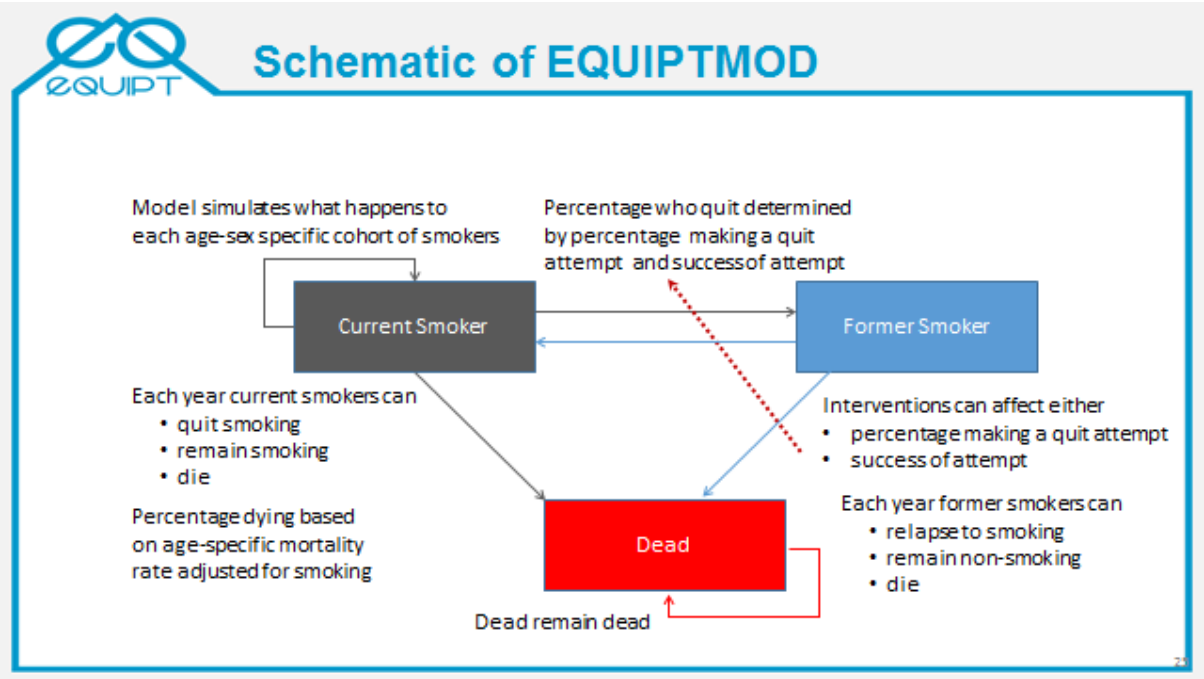
Modelling Approach

The EQUIPT ROI Tool uses a Markov state transition model in which smokers transition through three states: Smoker, Former Smoker and Death. This is an adaptation of the approach used within the NICE ROI tool (13) and necessarily requires the acquisition of similar data for all participating countries.

At the start of the simulation, the entire cohort begins as smokers. With each one year cycle the cohort is subjected to a set of transition probabilities which allow them to either

stay within their current state or move to one of the other two states. Death is an absorbing state, meaning that those who enter this state remain within the state. Within each cycle both smokers and former smokers may develop smoking attributable diseases including lung cancer, coronary heart disease, COPD or stroke. Costs and disutilities relating to these conditions are then applied to facilitate calculation of relevant outcomes. Figure 2 provides an overview of this process.

Figure 2: The underlying assumptions of EQUIPTMOD



To calculate the relevant outcomes for a package of interventions, two separate models were created to simulate the health impacts of either quitting or not quitting smoking during the first cycle of the model- i.e. the cohort of smokers who quit and those who do not quit are modelled separately, with the results being combined by weighting the outputs of the models by the country specific population and the package effectiveness and uptake. The modeling approach addresses the decision problem outlined above.

Obtaining effect sizes, cost and uptake of interventions

A behaviour change framework was applied to estimate the effect sizes. Behaviour change interventions are activities undertaken by individuals, organisations or agencies designed to influence the behaviour of individuals, groups, organisations or populations. They involve

promoting, modifying, preventing or stopping behaviours and may target one-off behaviours as well as behaviour patterns (19). This framework offered a useful way to describe and compare interventions. Therefore, each intervention was described in terms of five key attributes: amount, duration, mode of delivery, context, and target population.

Thus, a compendium of interventions providing such descriptions for inclusion in the EQUIPT model was developed, which guided the estimation of effect sizes (Appendix I). For costs and uptake data, which are more country-specific, guidance was provided to countries as to how one could source this data (see Technical Annexes). The final figures were then based on a careful deliberation by the research team.

Obtaining health and non-health outcomes

A comprehensive list of all health and non-health parameters included within the model was provided to country specific modelers in order to facilitate the gathering of this information. Modelers from each of the participating countries sourced this information and it has been incorporated within the current tool.

The health outcomes within the model include both the increased mortality associated with current smoking and being a former smoker, in addition to the increased risk of smoking attributable diseases including lung cancer, CHD, COPD and stroke.

Actuarial life tables provided by each of the participating countries were adjusted by relative risks of death by smoking status in order to estimate the mortality by age and sex and smoking status. These values were then used to model mortality associated with being both a current and former smoker.

Based on clinical data from the Cancer Prevention Study initiated by the American Cancer Society, 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, and stroke. These are allocated costs which allow the derivation of total 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 non-health outcomes included within the model include lost productivity due to smoking and the costs associated with passive smoking both in adults and children. Participating countries provided data regarding the excess number of absentee days attributable to smoking which was used in combination with country specific average wages and employment rates of smokers to arrive at an estimate of the productivity loss per smoker. Participating countries also provided the total costs of treating diseases

attributable to passive smoke exposure in children and adults. These values were adjusted by attributable risks derived from the literature to enable estimation of the disease costs in adults and children attributable to passive smoke exposure.

Full details on the included parameters and their source/estimation methods are available in the country-specific Technical Annexes.

Obtaining other input parameters

As the model is population based and is able to produce both country level and regional results, a number of additional input parameters with respect to population counts and vital statistics were required for populating the model. These included the population by age and sex, the prevalence of smokers and former smokers, and the employment rate for smokers, all at both a country and regional level. Also required were country specific life tables for calculating mortality and information regarding inflation rates for adjusting historical costs and currency conversion rates.

A comprehensive listing of the data requirements was provided to country specific modellers. They were then requested to search both administrative databases and published literature to source this data which was then incorporated within the EQUIPT tool. The modellers completed this search and provided data to the principle modeller and the data has been incorporated within the current model.

Full details on the included parameters and their source/estimation methods are available in the country-specific Technical Annexes.

Key assumptions

As is the case with all models, a number of assumptions were required to estimate the economic impact of tobacco control interventions. These are described below:

Mortality

The population based mortality rates are adjusted using the relative risks of death in smokers and former smokers, which are derived from the literature (20). Although the reference is dated and absolute mortality may have changed, the assumption that the relative effect was likely to be maintained and the choice of study was justified based on the prospective nature of the study, the sample size (n=34,439) and the years of follow up (40 years).

Time since quitting

The current model does not explicitly adjust for the time since quitting due to the absence of distributional data regarding time since quitting and duration of smoking and the risk of smoking related disease and mortality. Rather, an average risk of smoking attributable disease and mortality is applied to former smokers. As this is a cohort rather than an individual patient simulation model, the impact of this assumption may be limited.

Disease prevalence

Given the lack of data to support an alternative assumption, the prevalence of each disease is assumed to be independent of the prevalence of other diseases.

Disutility

Also, the model assumes that in the case of multiple diseases, the disutility associated with the disease with the greatest disutility is applied. This is a conservative approach in that it provides a lesser estimate of the QALY gains from smoking cessation than either a multiplicative or additive approach.

Risks

For all diseases, in people less than 35 years, the risk of smoking attributable disease was assumed to be equal across smoking groups. This was deemed to be the most appropriate assumption given that data regarding the differential rate of all diseases by smoking status was not available for this age group. This assumption is both conservative and, given the very low prevalence of disease in this group, unlikely to have significant impact on the results.

Background quit rate

The underlying quit rate, which applies to all cohorts after the first year, represents a balance of those who quit smoking each year and those who start or relapse to smoking. For all participating countries this produces an underlying quite rate of approximately 2% in the general smoking population except for within Hungary where the rate is 1%. This assumption is supported by a meta-analysis which showed that there was no difference in relapse rates after 12 months regardless as to whether the patients used an intervention to quit smoking or no intervention. (21)

Second hand smoke

With respect to the calculation of the impact of quitting smoking on passive smoke exposure, it was assumed that there is a linear relationship between the number of smokers and the number of people exposed to passive smoke. Although this is unlikely to hold true at the individual level, it is a reasonable assumption to make at the population level.

Model Outputs (ROI Metrics)

Several model outputs are included as ROI metrics. The full list is available as the Appendix of the User Guide (available from http://equipt.eu/deliverables) and reproduced below.

Table 1 - The definition of different metrics used in the EQUIPT ROI tool

Metric	Description
Average cost of interventions (per smoker)	Investment per smoker required to deliver the package of interventions.
Average healthcare costs (per smoker)	The costs (per smoker) associated with treating smoking-related lung cancer, chronic obstructive pulmonary disorder (COPD), coronary heart disease and strokes.
Average total costs (per smoker)	Sum of the intervention costs and healthcare costs.
Average QALYs gained (per smoker)	Rate (per smoker) of quality-adjusted life years (QALYs) gained as a result of the package of interventions.
Average Life Years gained (per smoker)	Rate (per smoker) of Life Years gained as a result of the package of interventions.
Number of quitters per 1,000 smokers	Rate (per 1,000 smokers in the population) of quitters who have successfully remained abstinent after 52 weeks as a result of the package of interventions.
Value of lost productivity (per smoker)	Cost of work days lost to absenteeism due to smoking-related illness.
Passive smoking costs in children (per smoker)	Healthcare costs associated with illness attributable to secondhand smoke in non-smokers (both adults and children).
Passive smoking costs in adults (per smoker)	Investment per smoker required to deliver the package of interventions.
Avoided Burden of Disease: QALYs gained per 1,000 smokers	The product of number of QALYs gained per person and the population reached by the intervention (the population reached is the proportion of the UK population affected by the condition). This provides an indication of the scale of the health problem that can be resolved by the intervention. In the tool, this metric is available both as a total count of QALYs gained across the whole population and as a standardised rate per 1,000 smokers.
Avoided Burden of Disease: QALYs gained across all smokers	Sum of the intervention costs and healthcare costs.
BCA: Healthcare cost savings only (return on every £1 invested)	The sum of health care cost savings per recipient divided by the cost of the intervention per recipient. A value greater than 1 indicates that the benefits of the intervention exceed its costs.
BCA: Healthcare cost savings + value of health gains (return on every £1 invested)	The sum of health care cost savings per recipient and value of health gains (monetary value of QALY multiplied by the number of QALYs gained), divided by the cost of the intervention per recipient. A value greater than 1 indicates that the benefits of the intervention exceed its costs.
ICER: Incremental Cost per Life Year Gained (per 1000 smokers)	Intervention cost minus health care cost savings divided by the number of life years saved. A negative number indicates that the health care cost savings are greater than the original cost of the intervention.
ICER: Incremental Cost per QALY gained	Intervention cost minus health care cost savings divided by the number of QALYs gained. A negative number indicates that the health care cost savings are greater than the original cost of the intervention.
Cost savings (per smoker)	Net health care cost savings per smoker (healthcare cost savings in the first year minus the cost of the intervention).
Incremental Net Benefit (per smoker)	Indicates the cost-effectiveness in relation to the decision-maker's willingness - the QALY threshold. A positive value indicates a cost-effective package of interventions.

Handling Uncertainty

The effect of parameter uncertainty on the calculated outcomes can be assessed through probabilistic sensitivity analyses involving Monte Carlo simulation (MCS) (22). For the MCS, probability distributions related to natural history parameters, relative risks and odds ratios, costs and utilities are incorporated into the model.

Analysis adopts standard methods for defining uncertainty around parameters (22). Transition probabilities are characterised by beta distributions; relative risks and odds ratios by log normal distributions; utility values specific to smoking status by beta distributions; utility decrements associated with smoking related disease by normal distributions; costs by gamma distributions. However, intervention costs are assumed fixed as will population level data.

As a default, 1,000 replications are conducted; i.e. a set of 1,000 outcome estimates are obtained. The results are displayed by a scatterplot of costs versus QALYs and by cost-effectiveness acceptability curves (CEACs) (22).

Validation and summary of revisions implemented

Model validation was an integral part of tool development and conducted in several phases:

a. Each country modellers validated the NICE ROI Tool to assess the appropriateness of adaptation to their own settings. Recommendations for adaptation to their settings were made.
b. Country modellers validated the adapted tool and identified further issues to resolve.
c. The revised tool was piloted/tested with the stakeholders. Recommendations for improved usability were made.
d. Country modellers validated the revised tool. Recommendations for further improvement were made.
e. A revised version was sent to an external health economist to validate it independently. Recommendations were made.
f. The tool was revised and sent to country modelling team for final validation.
g. The final version was created based on country recommendations.

In each validation step, both checklist based approaches (23-24) and qualitative assessments were used.

Limitations of the model

The economic model underlying the EQUIPT ROI tool has several limitations:

- Country-specific adaptation required that data were available for each participating country. As the model is data-intensive, not all parameter values were available. As such we conducted extensive work within the EQUIPT transferability framework (14) to identify those key data parameters for which country specific data is essential allowing countries with less resource to target the acquisition of the most pertinent data elements.
- Given the multi-faceted approach necessary to promote tobacco cessation, the EQUIPT ROI tool's greater application will be to facilitate assessment of alternative investment scenarios. As such, this is a decision support tool available for policy makers and not a research tool available for academics to conduct full-fledged cost-effectiveness analysis of a single intervention. However, given the existing assumptions, one could conduct such an analysis via the interface.
- The model does not include the prevention benefits that arise from the broader tobacco control measures. This clearly relates to the origin of the model in smoking cessation investment (13).
- The model does not include the full range of tobacco control measures - e.g. legal age of purchase / plain packaging / restrictions on advertising – which are mainly aimed at prevention (see Appendix I).
- The model considers only four smoking diseases where the evidence is the strongest (1). Therefore, the model outputs are conservative estimates.
- The interaction between different interventions was not considered (except pharmacotherapy and behavioural support). There was not enough data to support such interactions.
- The impact on passive smoking of smokefree legislation is likely to be of a different order of magnitude and may not be mainly through any impact on smokers quitting. In general, the opportunities for exposure are just as important as the number of smokers providing a source of passive smoke. This was not included in the model. Further adaptations could look into this possibility.

Further resources

A large number of further readings and resources, including the tool User Guide (both PDF and a video) are available from:

http://equipt.eu/deliverables

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Appendix I: Interventions included in the EQUIPT tool

Type	Intervention	Content	Mode of delivery	Target population	Definition of outcome
Top Level Interventions	Tax increase	Increase in duty on tobacco	Fiscal policy	Smokers	Percentage of smokers attempting to stop during the year
	Indoor-smoking ban	Ban on smoking in indoor public spaces	Legislation		
	Social marketing	Provision of verbal messaging and imagery about smoking and stopping smoking constructed in accordance with principles set out in Public Health England communication strategy document or equivalent	Printed materials, and/or broadcast media, and/or social media		
	Brief physician advice	Provision of advice to stop smoking with discussion about the best available options for stopping according to principles set out in NCSCT brief advice training	In person by a physician trained to NCSCT standard	All smokers attending a surgery or clinic for any purpose during the year	

Type	Intervention	Content	Mode of delivery	Target population	Definition of outcome
	Nicotine replacement therapy: reduce to quit	Provision of one of the many forms of NRT (chewing gum, transdermal patch, lozenge, sublingual tablet, nasal spray, inhalator, mouth spray)	In person by health professional, retailer or by post	Smokers of least 10 cigarettes per day not otherwise making a quit attempt during the year but willing to reduce consumption by 50% with a view to possible quitting	
Prescription Pharmacotherapy	Rx Nicotine replacement therapy: single form	Provision of one of the many forms of NRT (chewing gum, transdermal patch, lozenge, sublingual tablet, nasal spray, inhalator, mouth spray)	In person by health professional on prescription	Smokers of at least 10 cigarettes per day making a quit attempt during the year	Sustained smoking abstinence for 52 weeks from target quit date
	Rx Nicotine replacement therapy: dual form	Provision of nicotine transdermal patch together with one of the faster acting forms			
	Varenicline: standard duration	Provision of varenicline (Champix)			
	Varenicline: extended duration	Provision of varenicline (Champix)			
	Bupropion	Provision of bupropion sustained release (Zyban)			
	Nortriptyline	Provision of nortriptyline (generic)			

Type	Intervention	Content	Mode of delivery	Target population	Definition of outcome
	Cytisine	Provision of cytisine (generic; available brands: Tabex and Desmoxan)			
Over the Counter Pharmacotherapy	OTC Nicotine replacement therapy: single form	Provision of one of the many forms of NRT (chewing gum, transdermal patch, lozenge, sublingual tablet, nasal spray, inhalator, mouth spray)	Over the counter, in person by health professional, retailer or by post		
	OTC Nicotine replacement therapy: dual form	Provision of nicotine transdermal patch together with one of the faster acting forms			
Behavioural Support Therapy	Specialist behavioural support: one-to-one	Provision of practical advice and emotional support and encouragement based on Maudsley model	In person by a health professional trained to NCSCT standard or equivalent; provided in an office or clinic setting in-person by a single practitioner to a single client or patient	Smokers making a quit attempt during the year	
	Specialist behavioural support: group-based	Group discussion based on Maudsley model	Led by one or two health professional trained to NCSCT standard or equivalent; provided in a clinic setting to groups of between 6 and 30 smokers		

Type	Intervention	Content	Mode of delivery	Target population	Definition of outcome
	Telephone support: pro-active	Provision of practical advice and emotional support and encouragement according to principles set out in the NHS Service and Monitoring Guidance or similar	Delivered by a health professional trained to NCSCT standard or equivalent		
	SMS text messaging	Automated provision of practical advice and encouragement	Delivered by automated system		
	Printed self-help materials	Provision of practical advice and encouragement	Provided by health professional or health promotion agency free of charge		

Technical Annexes

The following technical annexes are available from the EQUIPT website:

http://equipt.eu/deliverables

EQUIPTMOD Technical Manual Appendix – GERMANY

EQUIPTMOD Technical Manual Appendix – HUNGARY

EQUIPTMOD Technical Manual Appendix – SPAIN

EQUIPTMOD Technical Manual Appendix – the NETHERLANDS

EQUIPTMOD Technical Manual Appendix – ENGLAND