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

EQUIPT ROI Tool Technical Manual and Annexes

The EQUIPT Study Group

October 2016

EQUIPTMOD Technical Manual Appendix - SPAIN

This is a technical appendix to the main report describing the EQUIPT ROI Tool available from:
http://equipt.eu/deliverables

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

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EQUIPTMOD Technical Manual
Appendix - SPAIN

This is a technical appendix to the main report describing the EQUIPT ROI Tool available from:
http://equipt.eu/deliverables

Country	**Spain**
Person responsible to complete this report	**Muñoz, C**
Version	**1.1**
Date	**October 2016**
Verified by:	**Trapero-Bertran, M**

For **each parameter**, the following information is provided:

1. Name of the parameter	**State the name and provide following info:**
1.1. Source	List the full reference of the study. If the source is unpublished or the value comes from your own analysis, you must indicate so here
1.2 Parameter value(s)	Indicate the base value in bold and provide all other values suggested for sensitivity analyses
2. How was the value obtained?	**Please provide info on the following:**
2.1 Target population/sub-group	Describe characteristics of the population and/or sub-groups from which the above value was obtained
2.2 Setting and location	Where was the study from which you have obtained the above value conducted? What were characteristics of (healthcare) system in that setting? If it is not possible to find this information in the source material, state 'not found'
2.3 Perspective	State whether the source study had any perspective, e.g. healthcare, societal, etc. If not applicable, state 'NA'
2.4 Interventions and comparators	Is the above parameter is related to an intervention and comparator, describe those as in the source material. If not applicable, state 'NA'.
2.5 Time horizon	State the time horizon related to the above parameter in the source material. If not applicable, state 'NA'.
2.6 Discount rate	State discount rate as applied in the source material. If not applicable, state 'NA'.
2.7 Choice of outcome	State how the source material chose (health or other relevant) outcomes to derive the above value? If not applicable, state 'NA'.
2.8 Measuring outcome	How was the outcome measured in the source material? Was it based on a single outcome or synthetic estimate? Was the outcome measured using preference-based method? If yes to one or more, provide details. If not applicable, state 'NA'.
2.9 Year	In which year the source study was conducted? Was the parameter value reflect the same year or different year (specify)?
2.10 Conversion	Was any conversion involved in deriving the above value? If yes, describe method of conversion. If no, state, 'NA'.

2.11 (Statistical) model	Was the above value calculated using any (statistical) model? If yes, describe method of analysis. Include the following: • How was the skewed, missing or censored data handled in the source material? • How was extrapolation done (if any)? • What statistical technique (e.g. ANOVA, OLS, Logistic regression, etc.) was used? • How was the uncertainty measured, e.g. via 95% confidence interval? If no, describe the non-model based calculation method.
3. Assumptions	**List all assumptions underpinning the above value, as described in the source materials.**
4. Limitations	**List all important limitations of source materials**
5. Transferability	**Is there anything from the source material that may have implications in relation to applying/generalizing the value to EQUIPT countries?**
6. Conflict of interest	**Look at the Conflict of Interest section in the source material and identify if there is anything that we should be aware of in using the above parameter value in the EQUIPT project (e.g. the value comes from pharma-sponsored study).**

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Abbreviations

ACS	Acute Coronary Syndrome
AOM	Acute Otitis Media
ATS	American Thoracic Society
CHD	Coronary Heart Disease
CNPT	Comité Nacional de Prevención del Tabaquismo
COPD	Chronic Obstructive Lung Disease
DRG	Diagnosis-Related Group
EES (WSS)	Encuesta de Estructura Salarial (Wage Structure Survey)
ENS (SNHS)	Encuesta Nacional de Salud (Spanish National Health Survey)
FEV1	Forced Expiratory Volume in 1 second
FVC	Forced Vital Capacity
GEMA	Guía Española para el Manejo del Asma
GINA	Global Initiative for Asthma
GOLD	Global Initiative for Chronic Obstructive Lung Disease
HECOS model	Health and Economic Consecuences of Smoking model
ICD10	International Classification of Diseases 10th Revision
ICD9	International Classification of Diseases 9th Revision
LC	Lung Cancer
LRT infection	Lower Respiratory Tract infection
NEJM	New England Journal of Medicine
P/I ratio	Prevalence/Incidence ratio
PAF	Population Attributable Fraction
QALY	Quality-Adjusted Life Year
RR	Relative Risk
TIA	Transient Ischemic Attack
WHO	World Health Organization

1. General data

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1. Name of the parameter	**Population**
1.1. Source	National Statistics Institute. Population figures 2013. [Accessed 04.12.2014] Available from: http://www.ine.es/jaxi/tabla.do?path=/t20/p321/serie/def/l0/&file=02001.px&type=pcaxis&L=0
1.2 Parameter value(s)	See Table 1.1 in Appendix
2. How was the value obtained?	
2.1 Target population/sub-group	These data were presented for all ages (and grouped by 15+, 16+ and 35+), sex and Autonomous Community.
2.2 Setting and location	Spain
2.3 Perspective	NA
2.4 Interventions and comparators	NA
2.5 Time horizon	NA
2.6 Discount rate	NA
2.7 Choice of outcome	NA
2.8 Measuring outcome	NA
2.9 Year	2013, yearly updated
2.10 Conversion	NA
2.11 (Statistical) model	NA
3. Assumptions	Ceuta and Melilla may be excluded from the analysis by regions.
4. Limitations	NA
5. Transferability	Country-specific data
6. Conflict of interest	NA

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1. Name of the parameter	**Mortality rates**
1.1. Source	National Statistics Institute. Main Demographic Indicators. Mortality 2013 [Accessed 09.12.2014] Available from: http://www.ine.es/jaxiT3/Tabla.htm?t=1412&L=0
1.2 Parameter value(s)	See Table 1.2 in Appendix
2. How was the value obtained?	
2.1 Target population/sub-group	Figures are grouped by sex and age of death
2.2 Setting and location	Spain
2.3 Perspective	NA
2.4 Interventions and comparators	NA
2.5 Time horizon	NA
2.6 Discount rate	NA
2.7 Choice of outcome	NA
2.8 Measuring outcome	Data on causes of death is collected in three questionnaires: Medical Death Certificate/Statistical Death Register, Judicial Statistical Death Register and Statistical Bulletin of Infants who died within 24 hours.
2.9 Year	2013, yearly updated
2.10 Conversion	NA
2.11 (Statistical) model	The basic cause of death is coded using the ICD10.
3. Assumptions	NA
4. Limitations	Information on the background cause of death or mortality rate among those who are smokers (or former smokers) is not available; this may be a valuable information having that many people could die from lung cancer which have been caused by smoking.
5. Transferability	Country-specific data
6. Conflict of interest	NA

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1. Name of the parameter	**Smoking prevalence**
1.1. Source	National Statistics Institute. Spanish National Health Survey (SNHS) 2011-2012. Available from: http://www.ine.es/jaxi/menu.do?type=pcaxis&path=%2Ft15%2Fp419&file=inebase&L=1
1.2 Parameter value(s)	See Table 1.3 in Appendix
2. How was the value obtained?	
2.1 Target population/sub-group	Presented by sex and age group (15-24; 25-34; 35-44; 45-54; 55-64; 65-74; 75 and over). Participants were asked to define their smoking status as: "Smokes daily", "Smokes, but not daily"; "Does not currently smoke, but was a smoker"; "Does not smoke, and never smoked regularly"
2.2 Setting and location	Spain
2.3 Perspective	NA
2.4 Interventions and comparators	NA
2.5 Time horizon	NA
2.6 Discount rate	NA
2.7 Choice of outcome	NA
2.8 Measuring outcome	NA
2.9 Year	2012
2.10 Conversion	NA
2.11 (Statistical) model	NA
3. Assumptions	For incorporating into the model, data were classified into three groups: current smokers (including those who declared that "smokes daily" and "smokes, but not daily"), former smokers (who declared that "does not smokes, but was a smoker") and never smokers (who stated that "does not smokes, and never smoked daily")
4. Limitations	Participants declared their own smoking status; therefore data should be taken carefully as they were not derived according the official definition of smoker, former smoker and never smoker.
5. Transferability	Country-specific data
6. Conflict of interest	NA

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1. Name of the parameter	**Relative Risks**
1.1. Source	1. Thun MJ, Carter BD, Feskanich D, Freedman ND, Prentice R, Lopez AD, et al. 5 Trends in Smoking-Related Mortality in the United States. New England Journal Medicine. 2013 2013/01/24;368(4):351-64. 2. U.S. Department of Health and Human Services. The Health Consequences of Smoking —50 Years of Progress: A Report of the Surgeon General. Atlanta, GA: U.S. Department of Health and Human Services, Centres for Disease Control and Prevention, National Centre for Chronic disease Prevention and Health Promotion, Office on Smoking and Health, 2014.
1.2 Parameter value(s)	See Table 1.4 in Appendix
2. How was the value obtained?	
2.1 Target population/sub-group	Age groups according to those proposed in sources: 35-54; 55 and over
2.2 Setting and location	US
2.3 Perspective	NA
2.4 Interventions and comparators	NA
2.5 Time horizon	In Thun NEJM 2013, the follow up strategy was explained: Follow up began on January 1, 2000 and ended on or before December 31, 2010.
2.6 Discount rate	NA
2.7 Choice of outcome	
2.8 Measuring outcome	
2.9 Year	2013
2.10 Conversion	NA
2.11 (Statistical) model	Age-specific risks were tabulated throughout Thun NEJM 2013. Cox proportional hazards regression were used to calculate age-adjusted and multivariable-adjusted relative risks estimates according to smoking status, the intensity and duration of smoking among current smokers and to age at the time of quitting among former smokers. Multivariable-adjusted analyses were stratified according to cohort and age at baseline and were further adjusted according to race and educational level.
3. Assumptions	NA
4. Limitations	The main limitation of data from Thun NEJM 2013 is that the data is only based on people 55 years and older for this reason, for those who are 35 to 54 years, Surgeon General's report 2014 Table 12.3 was used. The only

	drawback is that the data from the Surgeon General's report does not have confidence intervals. Using the contemporary cohort appears a good approach to reflect current risks of smoking and cover most of cases of disease.
5. Transferability	Data from USA, incorporated for all EQUIPT countries.
6. Conflict of interest	NA

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1. Name of the parameter	**Discount rate for costs and utilities**
1.1. Source	López-Bastida J, Oliva Moreno J, Antonanzas Villar F, Garcia-Altes A, Gisbert R, Mar J. Propuesta de guía para la evaluación económica aplicada a las tecnologías sanitarias. Gac Sanit. 2010;24(2):154-70.
1.2 Parameter value(s)	See Table 1.5 in Appendix
2. How was the value obtained?	
2.1 Target population/sub-group	NA
2.2 Setting and location	Spain (guidelines to perform health technologies assessment and economic evaluations form several countries were revised by authors in order to propose a set of rules on the technical issues of economic evaluations)
2.3 Perspective	NA
2.4 Interventions and comparators	NA
2.5 Time horizon	NA
2.6 Discount rate	NA
2.7 Choice of outcome	NA
2.8 Measuring outcome	NA
2.9 Year	2010
2.10 Conversion	NA
2.11 (Statistical) model	NA
3. Assumptions	NA
4. Limitations	NA
5. Transferability	As this proposal was developed according the international guidelines, the values of this parameter seem transferable to all EQUIPT countries.
6. Conflict of interest	None of the researchers participating in the study have declared conflict of interest.

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1. Name of the parameter	**Threshold value for QALY**
1.1. Source	Vallejo-Torres L, García-Lorenzo B, Serrano-Aguilar P et al. Estimating a cost-effectiveness threshold for the Spanish NHS. Draft available at: https://www.ucl.ac.uk/dahr/pdf/HESG/Paper_A31.pdf
1.2 Parameter value(s)	21000€ - 24000€
2. How was the value obtained?	
2.1 Target population/sub-group	Spanish population
2.2 Setting and location	National Health Service (NHS)
2.3 Perspective	National Health Service (NHS)
2.4 Interventions and comparators	NA
2.5 Time horizon	NA
2.6 Discount rate	NA
2.7 Choice of outcome	NA
2.8 Measuring outcome	€/QALY
2.9 Year	2016
2.10 Conversion	
2.11 (Statistical) model	A panel of 5 years of data on region-level information across the 17 regional health services in Spain was created. The dependent variable was Quality-Adjusted Life Expectancy (QALE). QALE were regressed against health spending, and controlling for region and year fixed effects and a comprehensive set of time- and region-variant indicators, applying a one-year lag to expenditure. An instrumental variable approach to test for potential remaining endogeneity was used.
3. Assumptions	
4. Limitations	There are data restrictions, especially with respect to HRQoL of the Spanish population that was collected using the EQ-5D instrument only in 2011/12.
5. Transferability	Calculations contain data from Spanish sources, such that it would not be completely transferable to other EQUIPT countries.
6. Conflict of interest	NA

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1. Name of the parameter	**Inflation rates**
1.1. Source	National Statistics Institute. National Price Index (IPC) 2013 [Accessed 01.10.2015]. Available from: http://www.ine.es/jaxiT3/Datos.htm?t=10013
1.2 Parameter value(s)	See Table 1.6 in Appendix
2. How was the value obtained?	
2.1 Target population/sub-group	NA
2.2 Setting and location	Spain
2.3 Perspective	NA
2.4 Interventions and comparators	NA
2.5 Time horizon	Yearly updated
2.6 Discount rate	NA
2.7 Choice of outcome	NA
2.8 Measuring outcome	
2.9 Year	Annual inflation rates from 2002 to 2013, 2011 as base year
2.10 Conversion	NA
2.11 (Statistical) model	
3. Assumptions	
4. Limitations	
5. Transferability	Country-specific data
6. Conflict of interest	

I.e.: To inflate cost (1000€) from 2011 to 2014, having that Annual index 2011 = 100 and annual index 2014 = 103,732. Cost in 2014 = (1000 * Annual Index 2014) / (Annual Index 2008) = 1037,32€

2. Disease Prevalence

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1. Name of the parameter	**Prevalence of lung cancer**
1.1. Source	1. GLOBOCAN 2012 [Internet]. 2012. Available on: http://globocan.iarc.fr/Pages/online.aspx 2. National Statistics Institute. Hospital Morbidity Survey 2013. Available from http://www.ine.es/jaxi/tabla.do?path=/t15/p414/a2013/l0/&file=01021.px&type=pcaxis&L=0
1.2 Parameter value(s)	See Table 2.1 in Appendix
2. How was the value obtained?	
2.1 Target population/sub-group	5-year LC prevalence (per 100.000 pop). Figures are grouped by age (<35, 35-69, 70-74 and >74) and sex (male; female)
2.2 Setting and location	Spain
2.3 Perspective	Population
2.4 Interventions and comparators	NA
2.5 Time horizon	NA
2.6 Discount rate	NA
2.7 Choice of outcome	NA
2.8 Measuring outcome	Prevalence measures the absolute number (or relative proportion) of individuals in the population affected by a given disease and requiring some form of medical care. LC prevalence is, therefore, the proportion of persons (per 100.000 population) affected by lung cancer in 2012 and diagnosed within the previous 5 years
2.9 Year	2012
2.10 Conversion	NA
2.11 (Statistical) model	NA
3. Assumptions	GLOBOCAN Database provides 1-year, 3-year and 5-year prevalence of lung cancer in every country. 5-year LC prevalence is presented according to duration from diagnosis (4–5 years earlier). Lung cancer is defined as ICD-10 code: Trachea, bronchus and lung (C33–34). Values are disaggregated by gender, but no specific data are provided for age groups. Thus, it would not be unreasonable to apply the age distribution of patients admitted in hospital due to LC (using the same ICD-10 code) from the Hospital Morbidity Survey 2013.

4. Limitations	
5. Transferability	Since we work with country-specific information for Spain, lung cancer prevalence parameter is not entirely transferable to other contexts, however, is comparable. We used the GLOBOCAN Database, in which the International Classification of Diseases ICD10 is used to well define what we have assumed by lung cancer, thus the process of obtaining this data is completely replicable across countries.
6. Conflict of interest	NA

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1. Name of the parameter	**Prevalence of CHD**
1.1. Source	1. Alonso JJ, Muñiz J, Gómez-Doblas JJ, et al. Prevalence of Stable Angina in Spain. Results of the OFRECE Study. Rev Esp Cardiol (Engl Ed). 2015 Aug;68(8):691-9
1.2 Parameter value(s)	See Table 2.2 in Appendix
2. How was the value obtained?	
2.1 Target population/sub-group	Figures are grouped by age (40-49; 50-59; 60-69; 70-79; 80+) and sex (male; female)
2.2 Setting and location	Spain
2.3 Perspective	NA
2.4 Interventions and comparators	NA
2.5 Time horizon	NA
2.6 Discount rate	NA
2.7 Choice of outcome	NA
2.8 Measuring outcome	Prevalence of Stable Angina (Definite Angina According to Rose Questionnaire)
2.9 Year	2013
2.10 Conversion	NA
2.11 (Statistical) model	NA
3. Assumptions	ACS results in two main discharge diagnoses: unstable angina (UA) and acute myocardial infarction (AMI). Definite angina: when participants were classified as having definite angina by the Rose Questionnaire. The Rose Questionnaire has 7 test-type questions with 4 to 7 possible answers. Based on the answers, the patients were classified as: a) without angina; b) having definite angina; c) having possible angina, and d) having a typical angina. Patients were only considered to have angina if they met all ‘‘definite angina’’ criteria.
4. Limitations	The prevalence of stable angina is difficult to establish because its diagnosis is eminently clinical and complex, expensive population studies are required for a reliable estimation. The choice of the health care areas analysed in each province was not random. This would have a minimal effect, if any, because the prevalence of angina would be unlikely to vary markedly in adjacent areas.
5. Transferability	Rose Questionnaire is recommended by the World Health Organization for epidemiological studies and has been validated for use in Spain. This

	questionnaire is useful because it shows a good correlation with cardiovascular morbidity and mortality and has been validated and used in many countries, allowing comparisons with other historical Spanish series and data from other countries.
6. Conflict of interest	NA

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1. Name of the parameter	**Prevalence of COPD**
1.1. Source	1. Miravitlles M, Soriano JB, García-Río F et al. Prevalence of COPD in Spain: impact of undiagnosed COPD on quality of life and daily life activities. Thorax 2009;64:863–868. doi:10.1136/thx.2009.115725
1.2 Parameter value(s)	See Table 2.3 in Appendix
2. How was the value obtained?	
2.1 Target population/sub-group	Figures are grouped by age (40-49, 50-59, 60-69, 70-80) and sex (male; female)
2.2 Setting and location	Spain
2.3 Perspective	EPI-SCAN study: Patients who agreed to join the study were contacted by phone by the local investigator to schedule a clinical visit.
2.4 Interventions and comparators	NA
2.5 Time horizon	NA
2.6 Discount rate	NA
2.7 Choice of outcome	According to (ATS) recommendations.
2.8 Measuring outcome	Each subject answered a detailed written questionnaire. Data obtained included: demographic information; educational level; respiratory history and symptoms; smoking and family history; occupation; medication; and use of health services. Lung function (FEV1 and FVC) was measured before and 15–30 min after inhalation of 200 mg of salbutamol
2.9 Year	2008
2.10 Conversion	NA
2.11 (Statistical) model	NA
3. Assumptions	COPD was defined as proposed by GOLD: a postbronchodilator FEV1/FVC (forced expiratory volume in 1 s/forced vital capacity) ratio below 0.70. Patients were classified into three different study groups: COPD (stages I–IV)
4. Limitations	
5. Transferability	Transferability of these data may be taken carefully. There are significant differences in COPD prevalence that are may be related, at least in part, to differences in genetic background, smoking habits and exposure to other environmental risk factors, and are accompanied by differences in diagnostic rates and in management of the disease around the world. There are controversies over the use of the GOLD definition for COPD, particularly in the elderly population as the FEV1/FVC ratio falls with age; therefore, using this definition may result in overdiagnosis of COPD. However, this definition definition was used to be able to compare the results with the

	majority of recently published studies on COPD prevalence.
6. Conflict of interest	One of the authors is a full-time employee of GlaxoSmithKline, drug manufacturer and sponsor of the study. However, the subject of the study is epidemiological with no drugs involved. The remaining authors do not have any conflict of interest with relation to the contents of the manuscript.

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1. Name of the parameter	**Prevalence of Stroke**
1.1. Source	1. Diaz-Guzman J, Egido JA, Gabriel-Sánchez R et al. Stroke and transient ischemic attack Incidence rate in Spain: The IBERICTUS Study. Cerebrovasc Dis 2012;34:272–281 DOI: 10.1159/000342652 2. González-Enríquez J, et al. Morbilidad, mortalidad y costes sanitarios evitables mediante una estrategia de tratamiento del tabaquismo en España. Gac Sanit 2002;16(4):308-17
1.2 Parameter value(s)	See Table 2.4 in Appendix
2. How was the value obtained?	
2.1 Target population/sub-group	Figures are grouped by age (<18; 19-24; 25-34; 35-44; 45-54; 55-64; 65-74; 75-84; >84) and sex (male; female)
2.2 Setting and location	Spain
2.3 Perspective	Patients.
2.4 Interventions and comparators	NA
2.5 Time horizon	NA
2.6 Discount rate	NA
2.7 Choice of outcome	NA
2.8 Measuring outcome	Subjects >17 years of age who suffered a first-event stroke TIA were identified between January and December 2006. In five centres (Segovia, Talavera, Lugo, Mallorca Almeria) as a sample to represent the north, south, central and Mediterranean areas of Spain.
2.9 Year	2006
2.10 Conversion	NA
2.11 (Statistical) model	NA
3. Assumptions	Within the Diaz-Guzman study, stroke was identified using 430-438 codes in the ICD9. Gonzalez-Enriquez adopted the model Health and Economic Consequences of Smoking sponsored by the WHO (HECOS model) to evaluate new smoking cessation intervention with pharmacological treatment. The diseases studied were: lung cancer, heart disease, stroke, chronic obstructive pulmonary disease, asthma exacerbation, and low birth weight. The smoking related cases of disease and of averted death and the reduction in healthcare expenditure due to the intervention were estimated. P/I rate was calculated by prevalence and incidence per 100.000 population

	throughout Gonzalez-Enriquez. P/I rate is assumed to remain constant overtime.
4. Limitations	Prevalence and Incidence data from Gonzalez-Enriquez were obtained from studies conducted in different Spanish regions: Prevalence was obtained from the Health Survey of Catalonia, the main limitation of using a health survey is that the statements of the participants might not be completely accurate.
5. Transferability	Centres participating in the study were selected to provide a representative overview of Spanish Healthcare System. The areas were selected on the basis of possible differences in stroke incidence among the different regions, so it seems that the data fits to the Spanish context, transferability of results should be taken carefully.
6. Conflict of interest	The study used to derive incidence data was sponsored by Sanofi-Aventis via donation to the Spanish Neurology Society.

3. Disease Costs

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1. Name of the parameter	**Lung cancer costs**
1.1. Source	Corral J, Espinàs JA, Cots F, et al. Estimation of lung cancer diagnosis and treatment costs based on a patient-level analysis in Catalonia (Spain). BMC Health Serv Res. 2015 Feb 21;15:70. doi: 10.1186/s12913-015-0725-3.
1.2 Parameter value(s)	See Table 3.1 in Appendix
2. How was the value obtained?	
2.1 Target population/sub-group	A subset of 232 patients from the main patient sample was randomly selected from the 9 teaching hospitals (out of the 10 with a thoracic surgery unit in Catalonia) that diagnose over 50 patients per year. A total of 232 cases of lung cancer were analysed, of which 74.1% corresponded to non-small cell lung cancer (NSCLC) and 11.2% to small cell lung cancer (SCLC); 14.7% had no cytohistologic confirmation.
2.2 Setting and location	Catalonia, Spain
2.3 Perspective	Hospital budget impact perspective
2.4 Interventions and comparators	NA
2.5 Time horizon	NA
2.6 Discount rate	The year of diagnosis was considered the baseline year (Year 0) with costs from later calendar years being discounted at 3%.
2.7 Choice of outcome	NA
2.8 Measuring outcome	Resource utilisation data were collected by means of patient files from nine teaching hospitals. Aggregate and mean costs per patient were calculated over the first three years following diagnosis or up to death. Both aggregate and mean costs per patient were analysed by histology, stage at diagnosis and cost type.
2.9 Year	2015
2.10 Conversion	The annual inflation rate published was used to inflate the cost from €2008 to €2015.
2.11 (Statistical) model	NA
3. Assumptions	Patients were categorised based on histology as either NSCLC or SCLC. Random samples were drawn proportionally to the percentage of patients diagnosed at each hospital in 2008. The Minimum Basic Data Set (MBDS). To assess the cost of the episodes of care in the period considered, unit costs from 2008 were obtained from two sources: from one hospital (Hospital del Mar) with a detailed analytical accounting system implemented over 10 years ago, and from the Spanish Network of Hospital.

	Costs Database (RECH), which has data from 13 hospi- tals in Spain and it has been registered and accredited by the Spanish Ministry of Health
4. Limitations	Only teaching hospitals were included, and therefore a larger number of patients requiring complex treatment would be expected. Although our study covers a period of three years of follow-up after diagnosis, it doesn't provide costing information by time period.
5. Transferability	Calculations contain data from Spanish sources, such that it would not be completely transferable to other EQUIPT countries.
6. Conflict of interest	This study work was funded by an unrestricted grant of AstraZeneca Spain to the Department of Health of Catalonia, which had no role in study design, data collection, data analysis, data interpretation, writing of the report or the decision to submit the manuscript for publication.

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1. Name of the parameter	**CHD costs**
1.1. Source	Ramirez de Arellano A, Coca A, de la Figuera M, et al. Economic Evaluation of Cardio inCode, a Clinical-Genetic Function for Coronary Heart Disease Risk Assessment. Appl Health Econ Health Policy. 2013; 11(5): 531–542. Sicras-Mainar A, Velasco-Velasco S, González-Rojas Guix N, Rodriguez-Cid JL. [Clinical and economic evaluation in accordance with the level of cardiovascular risk in subjects appertaining to Spanish population setting]. Med Clin (Barc). 2008 Jun 28;131(4):158-9.
1.2 Parameter value(s)	See Table 3.2 in Appendix
2. How was the value obtained?	
2.1 Target population/sub-group	The study population was composed of patients from 7 Primary Care Centers. All patients over 55 years with prior RCV, who demanded assistance in 2006 were included in the study.
2.2 Setting and location	Spain
2.3 Perspective	Primary Care
2.4 Interventions and comparators	NA
2.5 Time horizon	NA
2.6 Discount rate	NA
2.7 Choice of outcome	NA
2.8 Measuring outcome	Retrospective analysis of medical records of patients followed in an primary care setting. The unit was for final calculation was the cost/patient treated during the study period. The rates used came from studies conducted with cost accounting within the organization or prices set by the CatSalut.
2.9 Year	2008
2.10 Conversion	The annual inflation rate was used to inflate the cost from 2011 to €2015. Original data were calculated in € 2006
2.11 (Statistical) model	NA
3. Assumptions	Cardiovascular Risk was calculated using the Framingham-Wilson equation adapted for the primary care, patients were classified at low risk (<10), moderate (10-19), high (20-29) and very high (> 30).It is assumed that the cost of the state of chronic CHD corresponds to a very high CHD risk (C30 % on the Framingham scale).
4. Limitations	No specialized care was not taken into account and the possible variability of the centers in coordination with other care levels were not recorded.
5. Transferability	The calculations contain data from a representative sample of Primary Care Centers in Spain, such that it would not be transferable to other EQUIPT countries.
6. Conflict of interest	A. Ramirez de Arellano, A. Gracia, and Boldeanu were employees of the company Ferrer Incode. Sicras-Mainar et al. study was partially funded by Boehringer-Ingelheim and the Health Research Fund of Social Security (PI 05/2837)

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1. Name of the parameter	**COPD costs**
1.1. Source	Izquierdo JL. The burden of COPD in Spain: results from the Confronting COPD survey. Respir Med. 2003 Mar;97 Suppl C:S61-9.
1.2 Parameter value(s)	Using the healthcare resource utilization data collected from the Spanish sample, the annual cost of COPD to the healthcare system was estimated at €3238.18 per patient. See Table 3.3 in Appendix
2. How was the value obtained?	
2.1 Target population/sub-group	A telephone interview survey was carried out in a sample of 3265 patients and 905 physicians from Canada, France, Germany, Italy, the Netherlands, Spain, the U.K. and the U.S.A. In each country, patients were asked questions about their COPD-related hospitalizations, emergency room visits, primary care consultations, treatment, and laboratory tests, for the I2-month period prior to the survey.
2.2 Setting and location	Spain
2.3 Perspective	National Health Service perspective
2.4 Interventions and comparators	NA
2.5 Time horizon	NA
2.6 Discount rate	NA
2.7 Choice of outcome	NA
2.8 Measuring outcome	Unit costs applicable to healthcare resource use in Spain were derived by local experts. The unit cost was composed of healthcare resource use/contacts (primary care practitioner visit, specialist visit, impatient hospitalization and emergency room visit), treatment for COPD (regular prescription medication) and laboratory test (chest X-ray, finger stick test of blood oxygen, hypodermic needle test).
2.9 Year	2003
2.10 Conversion	The annual inflation rate was used to update the cost to €2014.
2.11 (Statistical) model	NA
3. Assumptions	An economic analysis of a large international survey, Confronting COPD in North America and Europe, was conducted.
4. Limitations	This approach only takes into account those costs caused by hospital admissions, but information on Primary Care cost, Emergencies and Outpatient consultations were not included.
5. Transferability	Data come from an international survey. Some variability in costs between separate studies of COPD patients in the same country will inevitably arise from differences in the methods used to assess healthcare resource utilization (e.g. self-report versus patient databases).
6. Conflict of interest	NA

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1. Name of the parameter	**Stroke costs**
1.1. Source	Álvarez-Sabin, 2014: Health Economics Association Conference presentation. Mar J, Álvarez-Sabín J, Oliva J, et al. The costs of stroke in Spain by aetiology: the CONOCES study protocol. Neurologia. 2013 Jul-Aug;28:332-9.
1.2 Parameter value(s)	See Table 3.4 in Appendix
2. How was the value obtained?	
2.1 Target population/sub-group	Patients aged over 18, a clinical diagnosis of a first established ischaemic or haemorrhagic stroke, time from stroke onset less than 24 hours, admission to a stroke unit.
2.2 Setting and location	Spain
2.3 Perspective	Societal perspective, including both the healthcare and social costs of the disease.
2.4 Interventions and comparators	NA
2.5 Time horizon	NA
2.6 Discount rate	Discount rate applied to base case: 3%. Costs updated according to the year in which the analysis is performed.
2.7 Choice of outcome	Hospital costs of stroke based on resource consumption, Healthcare costs up to 12 months after event, Formal and informal social costs in the first year after stroke, Loss of productivity among patients who had experienced a stroke in the previous year.
2.8 Measuring outcome	Health costs were measured by multiplying unit costs of healthcare resources by the number of natural units used. Unit costs were obtained from a number of Spanish sources: the database for Spanish healthcare costs (eSalud),official fee schedules from Spain's autonomous communities (especially those in which participating stroke units are active), and published preliminary studies. Drug costs were obtained from the Official College of Pharmacists of Madrid.
2.9 Year	2013
2.10 Conversion	NA
2.11 (Statistical) model	A probabilistic model for discrete events simulation (DES). DES is a mathematical model for representing the natural history of a disease. The model enables to calculate care costs for a cohort with the characteristics listed for the CONOCES sample from the date of the event to the patient's death with and without a yearly discount rate.
3. Assumptions	NA
4. Limitations	Inclusion of only patients in stroke units and other limitations inherent to its naturalistic design.
5. Transferability	CONOCES study focuses on a sample of patients in stroke units. The care these patients receive is quite homogeneous, this provides considerable external validity, but less internal validity than would be the case with experimental designs.
6. Conflict of interest	Study financed with an unconditional grant provided by Boehringer Ingelheim España.

4. Pharmacotherapy Interventions Costs

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1. Name of the parameter	**Nicotine replacement therapy: single form**
1.1. Source	Centro de Información online de Medicamentos de la AEMPS - CIMA. Agencia Española de Medicamentos y Productos Sanitarios. Ministerio de Sanidad, Servicios Sociales e Igualdad. [Accessed 08.02.2016] Available from: http://www.aemps.gob.es/cima/fichasTecnicas.do?metodo=detalleForm Documento de Consenso para la Atención Clínica del Tabaquismo en España. Comité Nacional para la Prevención del Tabaquismo, 2013. Listado de Precios de los medicamentos (Octubre 2015), Colegio Oficial de Farmacéuticos de Pontevedra. [Accessed 20.12.2015] Available from: http://www.cofpo.org/index.php/medic-es.html
1.2 Parameter value(s)	Weighted average single form (drug only): 276.38€
2. How was the value obtained?	
2.1 Target population/sub-group	Smokers who want to stop smoking
2.2 Setting and location	Spain NRT therapies are not reimbursed in Spain. Smokers can buy it without prescription in pharmacies.
2.3 Perspective	Patient perspective
2.4 Interventions and comparators	**Chewing gums:** Nicorette (McNeil), Nicotinell (Novartis Consumer Health), Nicokern. **Transdermal patches:** Nicorette (McNeil), Nicorette Clear, Nicotinell (Novartis Consumer Health), NiQuitin (GSK Consumer Healthcare). **Nicotine lozenges:** Nicorette (McNeil), Nicotinell (Novartis Consumer Health), NiQuitin (GSK Consumer Healthcare). **Oral spray:** Nicorette (McNeil)
2.5 Time horizon	One quit attempt
2.6 Discount rate	NA
2.7 Choice of outcome	NA
2.8 Measuring outcome	Net Price=Market Price-VAT
2.9 Year	2015
2.10 Conversion	NA
2.11 (Statistical) model	**Chewing gum:** If the patient smokes 20 or less cigarettes a day, 2mg nicotine gum is indicated. If more than 20 cigarettes per day are smoked, 4mg nicotine gum will be needed. 8-12 pieces a day is usually appropriate. Do not exceed of 24 chewing gums a day (15 if they are 4mg). Normally, treatment should continue for a minimum of 3 months. **Transdermal Patches:** Assuming one nicotine patch daily. Guides from the National Committee on Tobacco Preventions (CNPT) and technical data sheets were consulted to derive the correct dosage of transdermal patches. If the patch is for 24 hours, CNPT guide: 4 weeks 21mg; 2 weeks 14mg; 2 weeks 7mg (smoking more than 20 cigarettes a day). Technical data sheet: 4 weeks 14mg; 2 weeks 7mg; 2 weeks 7mg (smoking less than 20 cigarettes a

	day). If the patch is for 16h, CNPT guide: 4 weeks 15mg; 2 weeks 10mg; 2 weeks 5mg. Technical data sheet: 12 weeks 15mg; 4 weeks 10mg; 4 weeks 5mg (smoking more than 20 cigarettes per day); 8 weeks 15mg; 4 weeks 10mg; 4 weeks 5mg (smoking less than 20 cigarettes per day). **Nicotine lozenges:** According technical data sheet: The usual dosage is 8-12 lozenges a day. The maximum dosage is 30 lozenges a day. Normally, treatment should continue for a minimum of 3 months. **Oral spray:** 4 sprays per hour can be applied. Patients should not exceed 2 sprays per application or 64 sprays in 24 hours (4 sprays per hour for 16 hours).
3. Assumptions	Assuming a weight of 80% for patch + 5% for Gum and 15% for Others, based on the report entitled "Nicotine Replacement Therapy UK Market Review". One-time additional dispensing cost was included in the cost (10.70€).
4. Limitations	NA
5. Transferability	Drug prices are higher in Spain than in the UK. In Spain, all these drugs are not reimbursed products and there is no price regulation.
6. Conflict of interest	NA

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1. Name of the parameter	**Nicotine replacement therapy: dual form**
1.1. Source	Centro de Información online de Medicamentos de la AEMPS - CIMA. Agencia Española de Medicamentos y Productos Sanitarios. Ministerio de Sanidad, Servicios Sociales e Igualdad. [Accessed 08.02.2016] Available from: http://www.aemps.gob.es/cima/fichasTecnicas.do?metodo=detalleForm Documento de Consenso para la Atención Clínica del Tabaquismo en España. Comité Nacional para la Prevención del Tabaquismo, 2013. Listado de Precios de los medicamentos (Octubre 2015), Colegio Oficial de Farmacéuticos de Pontevedra. [Accessed 20.12.2015] Available from: http://www.cofpo.org/index.php/medic-es.html
1.2 Parameter value(s)	Average dual form (drug only): 284.35€
2. How was the value obtained?	
2.1 Target population/sub-group	Smokers who want to stop smoking
2.2 Setting and location	Spain NRT therapies are not reimbursed in Spain. Smokers can buy it without prescription in pharmacies.
2.3 Perspective	Patient perspective
2.4 Interventions and comparators	**Chewing gums:** Nicorette (McNeil), Nicotinell (Novartis Consumer Health), Nicokern. **Transdermal patches:** Nicorette (McNeil), Nicorette Clear, Nicotinell (Novartis Consumer Health), NiQuitin (GSK Consumer Healthcare). **Nicotine lozenges:** Nicorette (McNeil), Nicotinell (Novartis Consumer Health), NiQuitin (GSK Consumer Healthcare). **Oral spray:** Nicorette (McNeil).
2.5 Time horizon	One quit attempt
2.6 Discount rate	NA
2.7 Choice of outcome	NA
2.8 Measuring outcome	Net Price=Market Price-VAT
2.9 Year	2015
2.10 Conversion	NA
2.11 (Statistical) model	**Chewing gum:** If the patient smokes 20 or less cigarettes a day, 2mg nicotine gum is indicated. If more than 20 cigarettes per day are smoked, 4mg nicotine gum will be needed. 8-12 pieces a day is usually appropriate. Do not exceed of 24 chewing gums a day (15 if they are 4mg). Normally, treatment should continue for a minimum of 3 months. **Transdermal Patches:** Assuming one nicotine patch daily. Guides from the National Committee on Tobacco Preventions (CNPT) and technical data sheets were consulted to derive the correct dosage of transdermal patches. If the patch is for 24 hours, CNPT guide: 4 weeks 21mg; 2 weeks 14mg; 2 weeks 7mg (smoking more than 20 cigarettes a day). Technical data sheet: 4 weeks 14mg; 2 weeks 7mg; 2 weeks 7mg (smoking less than 20 cigarettes a day). If the patch is for 16h, CNPT guide: 4 weeks 15mg; 2 weeks 10mg; 2 weeks 5mg. Technical data sheet: 12 weeks 15mg; 4 weeks 10mg; 4 weeks 5mg (smoking more than 20 cigarettes per day); 8 weeks 15mg; 4 weeks

	10mg; 4 weeks 5mg (smoking less than 20 cigarettes per day). **Nicotine lozenges:** According technical data sheet: The usual dosage is 8-12 lozenges a day. The maximum dosage is 30 lozenges a day. Normally, treatment should continue for a minimum of 3 months. **Oral spray:** 4 sprays per hour can be applied. Patients should not exceed 2 sprays per application or 64 sprays in 24 hours (4 sprays per hour for 16 hours).
3. Assumptions	**Patches + Chewing gums:** Assume 80% patch + 20% gum **Patches + Lozenges:** Assume 80% patch + 20% lozenge **Patches + Oral spray:** Assume 80% patch + 20% oral spray One-time additional dispensing cost was included in the cost (10.70€).
4. Limitations	NA
5. Transferability	Drug prices are higher in Spain than in the UK. In Spain, all these drugs are not reimbursed products and there is no price regulation.
6. Conflict of interest	NA

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1. Name of the parameter	**Varenicline: Standard duration**
1.1. Source	Documento de Consenso para la Atención Clínica del Tabaquismo en España. Comité Nacional para la Prevención del Tabaquismo, 2013. Listado de Precios de los medicamentos (Octubre 2015), Colegio Oficial de Farmacéuticos de Pontevedra. [Accessed 20.12.2015] Available from: http://www.cofpo.org/index.php/medic-es.html
1.2 Parameter value(s)	Average cost of varenicline (std) per quit attempt: 298.33€
2. How was the value obtained?	
2.1 Target population/sub-group	Smokers who want to stop smoking
2.2 Setting and location	Spain Varenicline therapy is not reimbursed in Spain. Smokers can buy it with prescription in pharmacies.
2.3 Perspective	Patient perspective
2.4 Interventions and comparators	**Varenicline:** Champix
2.5 Time horizon	One quit attempt
2.6 Discount rate	NA
2.7 Choice of outcome	NA
2.8 Measuring outcome	Net Price=Market Price-VAT
2.9 Year	2015
2.10 Conversion	NA
2.11 (Statistical) model	Provision of varenicline (Champix): 0.5mg once daily for days 1-3, 0.5mg twice daily for days 4-7. Then 1mg twice daily for 11 weeks. Starting at least 1-2 weeks prior to target quit date with total treatment duration of 12 weeks.
3. Assumptions	One-time additional dispensing cost was included in the cost (10.70€).
4. Limitations	NA
5. Transferability	This approach used is similar to that within the UK model, could also be applied in other EQUIPT countries. Taking into account that drug prices are higher in Spain than in the UK. In Spain all these drugs are not reimbursed products and there is no price regulation.
6. Conflict of interest	NA

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1. Name of the parameter	**Varenicline: Extended duration**
1.1. Source	Documento de Consenso para la Atención Clínica del Tabaquismo en España. Comité Nacional para la Prevención del Tabaquismo, 2013. Listado de Precios de los medicamentos (Octubre 2015), Colegio Oficial de Farmacéuticos de Pontevedra. [Accessed 20.12.2015] Available from: http://www.cofpo.org/index.php/medic-es.html
1.2 Parameter value(s)	Average cost of varenicline (std) per quit attempt: 608.29€
2. How was the value obtained?	
2.1 Target population/sub-group	Smokers who want to stop smoking
2.2 Setting and location	Spain Varenicline therapy is not reimbursed in Spain. Smokers can buy it with prescription in pharmacies.
2.3 Perspective	Patient perspective
2.4 Interventions and comparators	**Varenicline:** Champix
2.5 Time horizon	One quit attempt
2.6 Discount rate	NA
2.7 Choice of outcome	NA
2.8 Measuring outcome	Net Price=Market Price-VAT
2.9 Year	2015
2.10 Conversion	NA
2.11 (Statistical) model	Provision of varenicline (Champix): 0.5mg twice daily for 1 week then 1mg twice daily for 23 weeks. Starting at least 1 week prior to target quit date with a total treatment duration of 23 weeks.
3. Assumptions	One-time additional dispensing cost was included in the cost (10.70€).
4. Limitations	NA
5. Transferability	This approach used is similar to that within the UK model, could also be applied in other EQUIPT countries. Taking into account that drug prices are higher in Spain than in the UK. In Spain all these drugs are not reimbursed products and there is no price regulation.
6. Conflict of interest	NA

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1. Name of the parameter	**Bupropion**
1.1. Source	Documento de Consenso para la Atención Clínica del Tabaquismo en España. Comité Nacional para la Prevención del Tabaquismo, 2013. Listado de Precios de los medicamentos (Octubre 2015), Colegio Oficial de Farmacéuticos de Pontevedra. [Accessed 20.12.2015] Available from: http://www.cofpo.org/index.php/medic-es.html
1.2 Parameter value(s)	Average cost of bupropion per quit attempt: 151.28€
2. How was the value obtained?	
2.1 Target population/sub-group	Smokers who want to stop smoking
2.2 Setting and location	Spain Bupropion is not reimbursed in Spain. Smokers can buy it with prescription in pharmacies.
2.3 Perspective	Patient perspective
2.4 Interventions and comparators	**Brupropion:** Zyntabac
2.5 Time horizon	One quit attempt
2.6 Discount rate	NA
2.7 Choice of outcome	NA
2.8 Measuring outcome	Net Price=Market Price-VAT
2.9 Year	2015
2.10 Conversion	NA
2.11 (Statistical) model	Provision of bupropion sustained release (Zyntabac): 150mg once daily for 6 days then 150mg twice daily for 6-8 weeks. Starting 1-2 weeks prior to target quit date with total treatment duration of 7-9 weeks.
3. Assumptions	One-time additional dispensing cost was included in the cost (10.70€).
4. Limitations	NA
5. Transferability	This approach used is similar to that within the UK model, could also be applied in other EQUIPT countries. Taking into account that drug prices are higher in Spain than in the UK. In Spain all these drugs are not reimbursed products and there is no price regulation.
6. Conflict of interest	NA

5. Motivation to quit

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1. Name of the parameter	**Smokers who made a quit attempt in the previous 12 months**
1.1. Source	National Statistics Institute. Spanish National Health Survey (SNHS) 2011-2012.
1.2 Parameter value(s)	36,49% (SE=0.0080961) CI 95%: 0.349002-0.3807456
2. How was the value obtained?	
2.1 Target population/sub-group	Adult population (15+) who reported to be smokers. Motivated smokers: Smokers who are going to try to quit smoking over the following 12 months
2.2 Setting and location	Spain
2.3 Perspective	NA
2.4 Interventions and comparators	NA
2.5 Time horizon	NA
2.6 Discount rate	NA
2.7 Choice of outcome	
2.8 Measuring outcome	Fraction of individuals who have made a quit attempt, either successful or unsuccessful, from the stock of smokers 12 months ago.
2.9 Year	2012
2.10 Conversion	
2.11 (Statistical) model	NA
3. Assumptions	Smoker 12 months ago was defined as smoker reporting to have started smoking at an age at least one year smaller than their current age or former smokers declaring to have quit smoking over the past 12 months. There is an alternative approach using the question about the quit attempts for daily smokers. The problem with this approach is that it ignores the smokers who have made a successful attempt and are therefore included in the ex-smoker group at the time of the survey.
4. Limitations	The survey asks about the quit attempts to daily smokers only. Therefore it is not possible to derive whether the smokers who had quit smoking 12 months ago were daily or non-daily smokers.
5. Transferability	The own calculations contain data from country-specific sources, such that it would not be transferable to other EQUIPT countries
6. Conflict of interest	NA

6. Passive Smoking

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1. Name of the parameter	**Cost attributable to passive smoking in children**
1.1. Source	1. Ministerio de Sanidad Política Social e Igualdad. Hospital records (CMBD-H). 2012. [accessed 09.12.2014] Available from: http://pestadistico.msc.es/PEMSC25/ArbolNodos.aspx 2. Blasco Bravo AJ, Perez-Yarza EG, Lazaro y de Mercado P, Bonillo Perales A, Diaz Vazquez CA, Moreno Galdo A. [Cost of childhood asthma in Spain: a cost evaluation model based on the prevalence]. Anales de pediatria. 2011;74(3):145-53.
1.2 Parameter value(s)	See Table 6.1 in Appendix
2. How was the value obtained?	
2.1 Target population/sub-group	According to the estimations provided in Oberg 2010, Acute Otitis Media (AOM), Lower respiratory track infections (LRT infections) and asthma, were set as passive smoking related diseases among children. More specifically: AOM (acute otitis media): Children 0-4 years old Asthma: Children 0-16 years old LRT infections (low respiratory tract infections): Children 0-4 years old With all this, total costs and prevalence of these diseases were obtained, once this is done, the Population Attributable Fraction is applied to get the overall cost incurred due to exposure to second hand smoke. Costs per patient with OAM and LRT infections were drawn from Ministry of Heath Minimum Dataset. Asthma total costs were provided from Blasco-Bravo AJ et al working paper. We used the Ministry of Health database to find the number of cases admitted in hospital.
2.2 Setting and location	Spain
2.3 Perspective	AOM: Hospital costs LRT infections: Hospital costs Asthma: Patient perspective. Primary care, outpatient, emergencies, hospital, diagnostic tests, treatments and other therapies were included in the analysis. Indirect costs (transport, care for the children).
2.4 Interventions and comparators	NA
2.5 Time horizon	NA
2.6 Discount rate	NA
2.7 Choice of outcome	
2.8 Measuring outcome	
2.9 Year	2012
2.10 Conversion	Costs were inflated to 2013 according the inflation rate officially published

2.11 (Statistical) model	NA
3. Assumptions	To calculate the costs per patient caused from AOM, hospital costs were taken into account following the IDC9 codes 381, 382 (Non supportive and supportive otitis media and Eustachian tube disorders). Asthma indirect costs were not considered for our analysis, however we took them into account for the sensitivity analysis. LRT infections costs were derived from the Ministry of Health Database on hospital admissions and it costs considering IDC9 codes 466 (Bronchitis), 480 (Viral pneumonia), 481 (Pneumococcal pneumonia), 482 (Other bacterial pneumonia). Population attributable fraction (PAF, sourced from Oberg 2010) for second hand smoking in children in European countries was applied to these data to get the total direct costs of passive smoking among children. PAF applies to lower respiratory infections (≤ 4 years), otitis media (≤ 3 years), asthma (0 to 14 years).
4. Limitations	PAF to second hand smoke of asthma among children technically applies to 0-14 years, we considered that is not unreasonable to use the total value for under 16 years of age to apply the population attributable fraction
5. Transferability	The own calculations contain data from country-specific sources, such that it would not be transferable to other EQUIPT countries
6. Conflict of interest	Blasco Bravo et al was partially supported by Abbott Laboratories, which were not involved in the development.

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1. Name of the parameter	**Cost attributable to passive smoking in adults**
1.1. Source	1. National Statistics Institute. Spanish National Health Survey (SNHS) 2011-2012. Available from: http://www.ine.es/jaxi/menu.do?type=pcaxis&path=%2Ft15%2Fp419&file=inebase&L=1 2. Martínez-Moragón E. Serra-Batlles J. de Diego A. Palop M. Casan P. Rubio-Terrés C. et al. Coste económico del paciente asmático en España (estudio AsmaCost). Arch Bronconeumol. 2009; 45:481-6.
1.2 Parameter value(s)	See Table 6.2 in Appendix
2. How was the value obtained?	
2.1 Target population/sub-group	Trough Surgeon General 2014 Report second hand smoking related diseases in adults were considered to be: Lung cancer. CHD and Asthma. Lung cancer and CHD prevalence previously calculated were used to draw the total direct cost of passive smoking in Spain. Cost per patient with Lung cancer and CHD were obtained from the Minimum Data Set in the Ministry of Health Statistics website. Asthma total costs and average prevalence for the Spanish population were obtained from Martinez-Moragón 2009. Considered together. the Population Attributable Fraction for Second Hand Smoking Diseases provided in Oberg 2010 was applied to the overall costs.
2.2 Setting and location	Spain
2.3 Perspective	Lung cancer costs per patient: Cost per patient admitted in hospital. CHD costs per patient: Cost per patient admitted in hospital. Asthma costs per patient: To calculate costs. in Martinez-Moragón the health care system perspective was used. That is, information on health care utilization: Clinic visits (primary care and specialists care). Emergency health services. Hospitalization costs. Diagnostic tests and medication prescribed for asthma
2.4 Interventions and comparators	NA
2.5 Time horizon	NA
2.6 Discount rate	NA
2.7 Choice of outcome	
2.8 Measuring outcome	
2.9 Year	
2.10 Conversion	Asthma costs were inflated from 2007 to 2013 according the inflation rate officially published. Lung cancer and CHD costs were also inflated to €2013.
2.11 (Statistical) model	NA
3. Assumptions	ICD9 codes were used to define what was considered as Lung cancer and CHD. Therefore. we used the same codes mentioned before. Lung cancer: 162 ICD9 code.

	CHD: 410-414 ICD9 codes. In Martinez-Moragon a prospective. 12-month observational cohort study of adult (≥ 18) patients with asthma diagnosed according to guidelines of the Global Initiative for Asthma (GINA) and adapted Spanish Criteria (GEMA) was carried out. Information on health care resources utilized (medications. medical visits. emergency care. admissions and test) was recorded. Assuming an asthma prevalence about 4.08% and an adult population (18 years of age) of 38.356.536 there would be 1.564.947 asthmatics in Spain.
4. Limitations	
5. Transferability	The own calculations contain data from country-specific sources, such that it would not be transferable to other EQUIPT countries
6. Conflict of interest	The research by Martinez-Moragón was funded by Laboratorios MSD

7. Effectiveness (quit rates)

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1. Name of the parameter	**Effectiveness of interventions (quit rates)**
Parameter value(s)	OTC Mono NRT, OTC Combo NRT, Varenicline (standard duration), Varenicline (extended duration), Bupropion, Specialist behavioural support: one-to-one, Specialist behavioural support: group-based, Telephone support: pro-active, SMS text messaging, Printed self-help materials, Brief physician advice, Taxation increase, Indoor-smoking ban, Social marketing.
Data not available for Spain. See the technical report from England for further details as the parameter are taken from the English model	

8. Productivity Loses

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1. Name of the parameter	**Work days lost per smoker**
1.1. Source	CNPT. Evaluación del Control del Tabaquismo sobre los costes empresariales y sanitarios. Madrid: Comité Nacional para la Prevención del Tabaquismo. 2009.
1.2 Parameter value(s)	6 days (2 and 10 for the Sensitivity Analysis)
2. How was the value obtained?	The data on days lost per smoker at work was obtained from a report by CNPT. which takes between 2 and 10 days lost due to smoking related diseases.
2.1 Target population/sub-group	Smokers who are employed
2.2 Setting and location	Spain
2.3 Perspective	NA
2.4 Interventions and comparators	NA
2.5 Time horizon	NA
2.6 Discount rate	NA
2.7 Choice of outcome	NA
2.8 Measuring outcome	NA
2.9 Year	2009
2.10 Conversion	NA
2.11 (Statistical) model	NA
3. Assumptions	In the CNPT report. 10-2 work days lost was assumed for Spain. The only information. We decided to use the average value that is 6 and 2-10 days for the sensitivity analysis.
4. Limitations	There is no a value calculated for Spain. In the report. a literature review is conducted and an approximate value is assumed for Spain
5. Transferability	Data from systematic literature review, transferable for all EQUIPT countries
6. Conflict of interest	

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1. Name of the parameter	**Average hourly wage**
1.1. Source	National Statistics Institute. Wage Structure Survey 2012. [Accessed on 23.12.2014] Available from: http://www.ine.es/jaxi/tabla.do?path=/t22/p133/cno11/serie/l1/&file=04001.px&type=pcaxis&L=1
1.2 Parameter value(s)	See Table 8.2 in Appendix
2. How was the value obtained?	Wage Structure Survey (EES) provides the distribution of wages. gives estimates of gross annual earnings per worker classified by different characteristics such as gender. occupation. economic activity. age. etc.
2.1 Target population/sub-group	The Annual Wage Structure Survey carries out a two-stage sampling. Statistical unit of first stage are the Social Security Accounts and the method of sampling used is random stratified with optimal fixation. Comprehensive survey of establishments with more than 500 workers. The second stage is the workers of the contribution accounts. The number of workers selected in each account depends on the size of said account. In each account individual salaried workers are selected
2.2 Setting and location	Spain
2.3 Perspective	
2.4 Interventions and comparators	
2.5 Time horizon	
2.6 Discount rate	
2.7 Choice of outcome	
2.8 Measuring outcome	
2.9 Year	2012
2.10 Conversion	Wages were inflated from 2012 to 2015 according the inflation rate officially published
2.11 (Statistical) model	
3. Assumptions	
4. Limitations	
5. Transferability	This salary information is specific and representative of the Spanish population. Therefore it is not quite transferable to other job markets with different characteristics
6. Conflict of interest	

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1. Name of the parameter	**Employment among smokers**
1.1. Source	National Statistics Institute. Spanish National Health Survey (SNHS) 2011-2012. Available from http://www.ine.es/jaxi/menu.do?type=pcaxis&path=%2Ft15%2Fp419&file=inebase&L=1
1.2 Parameter value(s)	See Table 8.3 in Appendix
2. How was the value obtained?	To find out the employment rate among. a data analysis on the SNHS 11-12 was carried out to know what was the employment situation of participants. In order to obtain the smoking status. smoking prevalence was used to cross data of each employment situation (employed. unemployed. retired. other situations).
2.1 Target population/sub-group	SNHS includes adults (18+) who live in family dwellings.
2.2 Setting and location	Spain (broken down into regional data)
2.3 Perspective	
2.4 Interventions and comparators	
2.5 Time horizon	
2.6 Discount rate	
2.7 Choice of outcome	
2.8 Measuring outcome	Percentage of smokers employed/unemployed/retired
2.9 Year	2011-12
2.10 Conversion	
2.11 (Statistical) model	
3. Assumptions	
4. Limitations	These data should be taken carefully. The SNHS was conducted in 2011-12. the labour market and unemployment rates in Spain have changed in the last three years.
5. Transferability	The own calculations contain data from country-specific sources, such that it would not be transferable to other EQUIPT countries
6. Conflict of interest	

Annexed Tables

1. General data

Population

Table 1.1		
Age	**Men**	**Women**
Total	23017758	23710132
0	233648	219646
1	245056	230560
2	248322	233093
3	254871	237960
4	268364	251245
5	258523	242495
6	256405	240755
7	250251	236681
8	248464	233385
9	242838	230734
10	233959	221035
11	231683	220010
12	233026	218262
13	226310	214528
14	221120	206769
15	220952	209264
16	218519	207498
17	219208	205914
18	223200	209188
19	232601	219266
20	240917	229477
21	241896	230924
22	245742	237947
23	253050	247016
24	260090	256576
25	267563	265078
26	276701	275837
27	290031	287894
28	304438	301433
29	317488	313170
30	339203	332502
31	357162	347067
32	377192	364815
33	389367	375931
34	410096	391443
35	417958	395433
36	424906	403532
37	422856	399739

38	419058	397694
39	408543	387403
40	406659	386039
41	398534	380189
42	393027	375501
43	387070	373434
44	383367	370849
45	383340	373861
46	372599	364155
47	368029	362847
48	371735	367894
49	353491	350226
50	339973	339573
51	330497	332224
52	331546	333985
53	321337	324869
54	312964	317991
55	303665	310586
56	282446	289806
57	272775	281184
58	258327	269322
59	258446	268386
60	257050	266500
61	238454	250570
62	232098	245260
63	238693	256454
64	249266	267943
65	226623	245325
66	214246	235495
67	222325	245955
68	210156	234058
69	204795	229915
70	175399	197954
71	159559	181997
72	191827	223839
73	124084	150678
74	138724	169579
75	151445	188689
76	159382	206529
77	151159	196781
78	144137	192827
79	140979	194177
80	132578	187470
81	118931	172393
82	110074	169188
83	96195	152289

84	86265	143824
85	72866	126215
86	64664	117637
87	53754	103080
88	45219	91963
89	37711	78708
90	30086	68321
91	23241	53389
92	16285	43129
93	10984	30620
94	8046	24863
95	5798	18260
96	4255	13617
97	2880	10221
98	2085	7623
99	1434	5192
>99	2603	9483

Mortality rates

Table 1.2			
Age	**Total**	**Men**	**Women**
0	2.62	2.77	2.45
1	0.22	0.20	0.24
2	0.16	0.16	0.16
3	0.10	0.12	0.08
4	0.10	0.11	0.10
5	0.08	0.08	0.07
6	0.09	0.10	0.09
7	0.09	0.08	0.10
8	0.08	0.10	0.06
9	0.09	0.09	0.09
10	0.06	0.08	0.05
11	0.08	0.08	0.07
12	0.10	0.11	0.08
13	0.10	0.11	0.08
14	0.08	0.06	0.10
15	0.13	0.17	0.10
16	0.14	0.17	0.10
17	0.15	0.19	0.11
18	0.22	0.27	0.18
19	0.20	0.31	0.09
20	0.24	0.33	0.15
21	0.25	0.35	0.14
22	0.25	0.38	0.12
23	0.23	0.33	0.13

24	0.24	0.31	0.16
25	0.27	0.38	0.16
26	0.28	0.41	0.16
27	0.30	0.39	0.20
28	0.28	0.40	0.16
29	0.32	0.44	0.20
30	0.35	0.48	0.21
31	0.32	0.40	0.23
32	0.35	0.49	0.21
33	0.41	0.56	0.25
34	0.44	0.62	0.26
35	0.47	0.59	0.33
36	0.53	0.67	0.38
37	0.56	0.64	0.47
38	0.60	0.72	0.48
39	0.72	0.88	0.57
40	0.74	0.89	0.58
41	0.86	1.10	0.62
42	1.02	1.33	0.70
43	1.09	1.40	0.77
44	1.25	1.62	0.86
45	1.48	1.94	1.00
46	1.60	2.11	1.08
47	1.84	2.38	1.30
48	2.03	2.64	1.42
49	2.30	3.07	1.53
50	2.56	3.33	1.78
51	2.78	3.76	1.81
52	3.14	4.32	1.96
53	3.34	4.37	2.33
54	3.60	4.91	2.31
55	4.00	5.51	2.52
56	4.39	6.15	2.68
57	4.68	6.53	2.89
58	4.97	6.94	3.08
59	5.44	7.64	3.33
60	6.10	8.68	3.61
61	6.34	9.05	3.75
62	6.77	9.54	4.16
63	7.53	11.06	4.22
64	8.08	11.94	4.50
65	8.99	13.34	4.97
66	9.05	13.29	5.17
67	10.07	14.44	6.11
68	10.65	15.50	6.30
69	12.31	17.40	7.78

70	13.63	19.69	8.27
71	13.69	19.46	8.63
72	15.44	22.20	9.61
73	18.03	25.67	11.62
74	19.78	27.91	13.15
75	22.55	31.94	15.00
76	24.50	34.01	17.07
77	27.45	38.10	19.31
78	30.81	42.25	22.21
79	35.59	48.75	25.97
80	40.14	53.85	30.42
81	45.13	59.19	35.41
82	52.14	67.99	41.63
83	59.10	77.14	47.68
84	67.39	86.90	55.53
85	76.13	97.35	63.80
86	89.00	110.81	76.89
87	98.00	122.24	85.22
88	115.04	140.49	102.36
89	126.31	153.78	113.20
90	144.67	173.60	131.61
91	161.26	186.62	150.37
92	179.14	208.12	167.53
93	198.41	223.85	189.18
94	211.06	232.58	203.82
95	242.08	264.76	234.91
96	259.60	279.26	253.53
97	274.55	298.14	267.62
98	291.96	313.50	286.09
99	306.42	317.79	303.34
>99	313.16	293.01	318.72

Smoking prevalence

Table 1.3				
By age	**Current**		**Former**	
	Men	**Women**	**Men**	**Women**
16-24	31.94%	28.78%	3.51%	5.12%
25-34	41.36%	33.22%	12.22%	14.98%
35-44	36.76%	31.35%	19.07%	16.29%
45-54	38.68%	33.60%	30.20%	21.97%
55-64	29.64%	19.07%	39.56%	16.08%
65-74	18.56%	5.99%	47.81%	8.13%
75+	9.38%	0.96%	49.21%	2.59%

By Region	**Current**	**Former**

SPAIN	26.96%	19.58%
Andalusia	30.20%	18.55%
Aragon	27.31%	26.54%
Asturias	26.12%	19.80%
Balearic Islands	25.53%	20.62%
Canary Islands	24.95%	19.08%
Cantabria	24.70%	22.33%
Castile Leon	25.81%	22.90%
Castile La Mancha	27.27%	17.13%
Catalonia	25.28%	20.12%
Valencia	30.05%	20.42%
Extremadura	27.55%	19.37%
Galicia	24.28%	16.42%
Madrid	24.19%	20.70%
Murcia	30.95%	8.26%
Navarre	25.95%	14.08%
Basque Country	27.13%	23.48%
Rioja	26.81%	20.70%

Relative Risks

Table 1.4

Contemporary cohort Thun 2013	**Men**		**Women**	
	Current	**Former**	**Current**	**Former**
Lung cancer	24.97	6.75	25.66	6.70
CHD	2.15	1.27	1.84	1.24
COPD	25.61	7.05	10.35	8.09
Stroke	2.10	1.15	1.92	1.92

Discount rate for costs and utilities

Table 1.5

Value	**Sensitivity analysis**
3%	0% (not to discount costs and outcomes) or 5%

Inflation rates

Table 1.6

Year	**Annual Index**	**Annual Change rate (%)**
2015 Aug 2014 - Aug 2015	103.074	-0.4
2014	103.732	-0.2
2013	103.889	1.4
2012	102.446	2.4
2011	100	3.2

2010	96.903	1.8
2009	95.19	-0.3
2008	95.464	4.1
2007	91.726	2.8
2006	89.239	3.5
2005	86.208	3.4
2004	83.399	3

2. Disease Prevalence

Prevalence of lung cancer

Table 2.1		
Age	**Male** Cases (%)	**Female** Cases (%)
<35	10.75 (0.00012%)	13.62 (0.00015%)
35-69	6229.49 (0.05554%)	2111.14 (0.01879%)
70-74	2510.07 (0.31789%)	531.19 (0.05749%)
>74	14017.69 (0.83758%)	2724.05 (0.10451%)
Total	**22768 (0.10%)**	**5380 (0.02%)**

Prevalence of CHD

Table 2.2		
Age	**Men**	**Women**
16-39	0,0%	0,0%
40-49	0,5%	0,9%
50-59	2,2%	1,2%
60-69	1,5%	2,0%
70-79	5,2%	8,6%
80+	6,1%	5,3%

Prevalence of COPD

Table 2.3		
Age	**Men**	**Women**
40-49	4.4% (2.8%-6.1%)	3.2% (1.8%-4.5%)
50-59	10.2% (7.6%-12.8%)	4.4% (2.8%-6.1%)
60-69	21.7% (17.7%-25.6%)	7.5% (5.0%-10.0%)
70-80	35.9% (30.5%-41.4%)	10.7% (7.3%-14.1%)
All	15.1%	5.6%

Prevalence of Stroke

Table 2.4		
Age	**Men**	**Women**
<18	0.00%	0.00%
18-24	0.00%	0.00%
25-34	0.00%	0.00%
35-44	0.38%	0.42%
45-54	1.02%	0.69%
55-64	2.54%	2.21%
65-74	4.73%	2.65%
75-84	9.54%	6.46%

85+	13.59%	12.67%
All	1.62%	1.17%

3. Disease Costs

Lung cancer costs

Table 3.1	
€2008	**€2013**
14,161	15.289,86

CHD costs

Table 3.2		
€2006	**€2011**	**€2015**
1.328,09	1.411	1.454,37

COPD costs

Table 3.3	
€2003	**€2015**
3238,18	4.123,75

Stroke costs

Table 3.4	
€2013	**€2015**
8.491	8.424,39

6. Passive Smoking

Cost attributable to passive smoking in children

Table 5.1				
Diseases	**PAF**	**Number of patients**	**Annual cost per case**	**Cost attributable to passive smoking (€ 2015)**
AOM	0,12	1.469	2.538	447.481
LRT infections	0,19	22.091	3.324	13.953.286
Asthma	0,14	462.882	775	44.713.932

Cost attributable to passive smoking in adults

Table 5.2						
Diseases	**PAF**		**Number of patients**		**Annual cost per case (€ 2015)**	**Cost attributable to passive smoking (€ 2015)**
	Men	Women	Men	Women		
Lung cancer	0,01	0.02	22.768	5.380	15.290	5.138.907
CHD	0,04	0,05	722.145	779.237	1.454	94.102.776
Asthma	0,11	0,13	653.212	905.574	1.533	326.588.481

8. Productivity Loses

Average hourly wage

Table 6.2	
Men (€2015)	**Women (€2015)**
15.93	13.18

Employment among smokers

Table 6.3	
Status	**%**
Employed	53.52%
Unemployed	22.53%
Retired	10.86%
Others	13.08%