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Tables and Figures

German EstSmoke: Estimating adult smoking-related costs and consequences of smoking cessation for Germany

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Table 1: Prevalence of never, current and ex-smokers by age group and sex

Cigarette smoking status	Age groups	Men (%)	Women (%)
Never smoker	18-24	50	54
	25-34	34	40
	35-44	35	44
	45-54	30	40
	55-64	31	51
	65-69	34	61
	70 and over	34	73
	ALL	35	52
Current smoker	18-24	38	34
	25-34	48	38
	35-44	43	34
	45-54	40	34
	55-64	27	24
	65-69	17	15
	70 and over	12	7
	ALL	34	26
Ex-smoker	18-24	11	12
	25-34	18	22
	35-44	22	22
	45-54	30	26
	55-64	24	25
	65-69	49	24
	70 and over	54	20
	ALL	31	22

Table 2: Parameter values for Markov model and distribution of Monte Carlo Simulation

Model parameter	Parameter value	Distribution used Monte Carlo Simulation	Source
I. Epidemiology			
<i>Transition Probabilities</i>			
<i>First-ever</i> MI stroke lung cancer COPD	Appendix 2	(None)	calculated based on i) MONICA/KORA MI Registry (25), ii) Erlangen Stroke Project (ESPrO) (26), iii) the Association of Population-based Cancer Registries in Germany (GEKID) Atlas (27), and iv) the European Community Respiratory Health Survey (ECRHS) (28).
<i>Recurrent</i> MI stroke	men women men women	0.19 0.21 0.14 0.06	(None) (None)
<i>Fatal</i> MI stroke lung cancer COPD death due to other diseases	Appendix 4	(None)	calculated based on Acute Myocardial Infarction (MITRA) Registry and the Myocardial Infarction Registry (MIR) (35). calculated based on the Ischaemic Stroke Patients (SCALA) study (36).
<i>Odds ratios or relative risks of</i>			
<i>First ever MI in</i> smokers men	3.33 [Ages: 35-55]	Log-Normal (1.2; 0.34)*	Yusuf et al.

<i>First ever stroke in</i>	women	2.52 [Ages: >55] 4.49 [Ages: 35-64] 2.14 [Ages: >65]	Log-Normal (0.92; 0.31)* Log-Normal (1.5; 0.72)* Log-Normal (0.76; 0.90)*	2004
	ex-smokers#	2.00 [Ages: 35-39] 1.63 [Ages: 40-49] 1.67 [Ages: 50-59] 1.51 [Ages: 60+]	Log-Normal (0.69; 0.67)* Log-Normal (0.49; 0.39)* Log-Normal (0.51; 0.38)* Log-Normal (0.41; 0.40)*	Yusuf et al. 2004
	time since quit	1.88 (>1-3 years) 1.65 (>3-10 years) 1.61 (>10-15 years) 1.44 (>15 years)	Log-Normal (0.63; 0.35)* Log-Normal (0.50; 0.36)* Log-Normal (0.48; 0.29)* Log-Normal (0.36; 0.24)*	Yusuf et al. 2004
	smokers			
	men	2.01	Log-Normal (0.70; 0.66)*	Chiuve et al.
	women	2.59	Log-Normal (0.95; 0.36)*	2008
	ex-smokers#	1.12	Log-Normal (0.11; 0.22)*	Chiuve et al. 2008
	time since quit	0.73 (<2 years) 0.59 (2-4years) 0.59 (>5 years)	Log-Normal*	Kawachi et al. 1993
	smokers			
	men	23.6	Log-Normal (3.16; 0.28)*	Pesch et al.
women	7.8	Log-Normal (2.05; 0.27)*	2011	
ex-smokers#				
men	7.5	Log-Normal (2.01; 0.29)*	Pesch et al.	
women	2.8	Log-Normal (1.03; 0.31)*	2011	
time since quit	18.3 (2-5 years, men) 10.8 (6-10 years, men) 2.9 (26-35 years, men) 6.7 (2-5 years, women)	Log-Normal (2.91; 0.35)* Log-Normal (2,38; 0.35)* Log-Normal (1.06; 0.37)* Log-Normal (1,90; 0.55)*	Pesch et al. 2011	

<i>COPD in</i>	smokers	4.00 (6-10 years, women)	Log-Normal (1.39; 0.58)*	Cerveri et al. 2001
		1.00 (26-35 years, women)	Log-Normal (0.00; 0.96)*	
<i>Other diseases</i>	men	6.32	Log-Normal (1.84; 0.80)*	Cerveri et al. 2001
		3.06	Log-Normal (1.12; 0.71)*	
	ex-smokers#	1.38	Log-Normal (0.32; 0.97)*	Cerveri et al. 2001
		1.08	Log-Normal (0.08; 0.92)*	
	smokers	2.25	Log-Normal (0.81; 0.15)*	calculated based on Mons 2011
	ex-smokers#	1.55	Log-Normal (0.44; 0.16)*	Kenfield et al. 2008
II. Costs				
<i>MI</i>				
Initial treatment acute MI	€15.386	Gamma distribution	Brueggenjuergen et al. 2005, 2011	
MI state (1 year)	€8.560		Annemans et al. 2006	
After MI state (2 year and after)	€2.323			
Cost of death from MI (fatal MI)	€3.446			
<i>Stroke</i>				
Acute stroke management	€6.048	Gamma distribution	Brueggenjuergen et al. 2005	
Post-stroke (1 year)	€14.996		Annemans et al. 2006	
Post-stroke (year 2 and after)	€6.486			
Fatal stroke	€2.270			
<i>Lung cancer</i>				
Annual cost	€621	Gamma distribution	Schwarzkopf et al. 2015	
Lung cancer (Initial treatment)	€11.987		calculated based on US EPA 2006	
Lung cancer (terminal care)	€13.860			
<i>COPD</i>				
Annual cost	€2.495	Gamma distribution	Menn et al. 2012	
Cost of death from COPD	€2.040		Nowak et al. 2004	

<i>Death from other causes</i>	€4.801	Gamma distribution	calculated based on Doesler et al. 2011
III. Discount rate	0.035	(None)	

* Log-Normal (ln mean, ln SE), SE Standard Error, # overall risk of ex-smokers compared to never smokers

Table 3: Lifetime costs of health care resource use due to MI, stroke, lung cancer, COPD and economic consequences of implementing WHO FCTC policies (2015)

Policy/Scenario	Discounted (yes/no)	Men	Women
I. Baseline scenario - current German tobacco policies			
Never smoker	<i>Before discounting</i>	Lifetime cost of health care use per capita €18,471	€17,881
	<i>After discounting (at 3.5%)</i>	€4,709 (1,931-10,192)	€4,092 (1,249-10,113)
Smoker	<i>Before discounting</i>	€26,816	€24,762
	<i>After discounting (at 3.5%)</i>	€8,669 (3,455-19,229)	€7,086 (2,115-18,216)
Ex-smoker	<i>Before discounting</i>	€20,135	€21,234
	<i>After discounting (at 3.5%)</i>	€5,605 (2,183-30,122)	€5,185 (1,263-35,060)
Excess cost of smoking	<i>After discounting (at 3.5%)</i>	Cost difference on population level (smokers vs. never smokers) €41.6bn	
II. Scenario - Implementing WHO FCTC policies			
Strong health warnings	<i>After discounting (at 3.5%)</i>	Cost-difference on population level (smokers vs. ex-smokers) €1.7bn	
Comprehensive marketing bans	<i>After discounting (at 3.5%)</i>	€2.2bn	
Cessation treatment policies	<i>After discounting (at 3.5%)</i>	€18.9bn	

Projected lifetime costs of health care resource use, 2015, mean=deterministic, range=2.5 and 97.5 sensitivity bounds (Monte Carlo Simulation), 10,000 runs, bn=billion

Figure 1: Markov structure for four clinical pathways related to smoking and quitting smoking

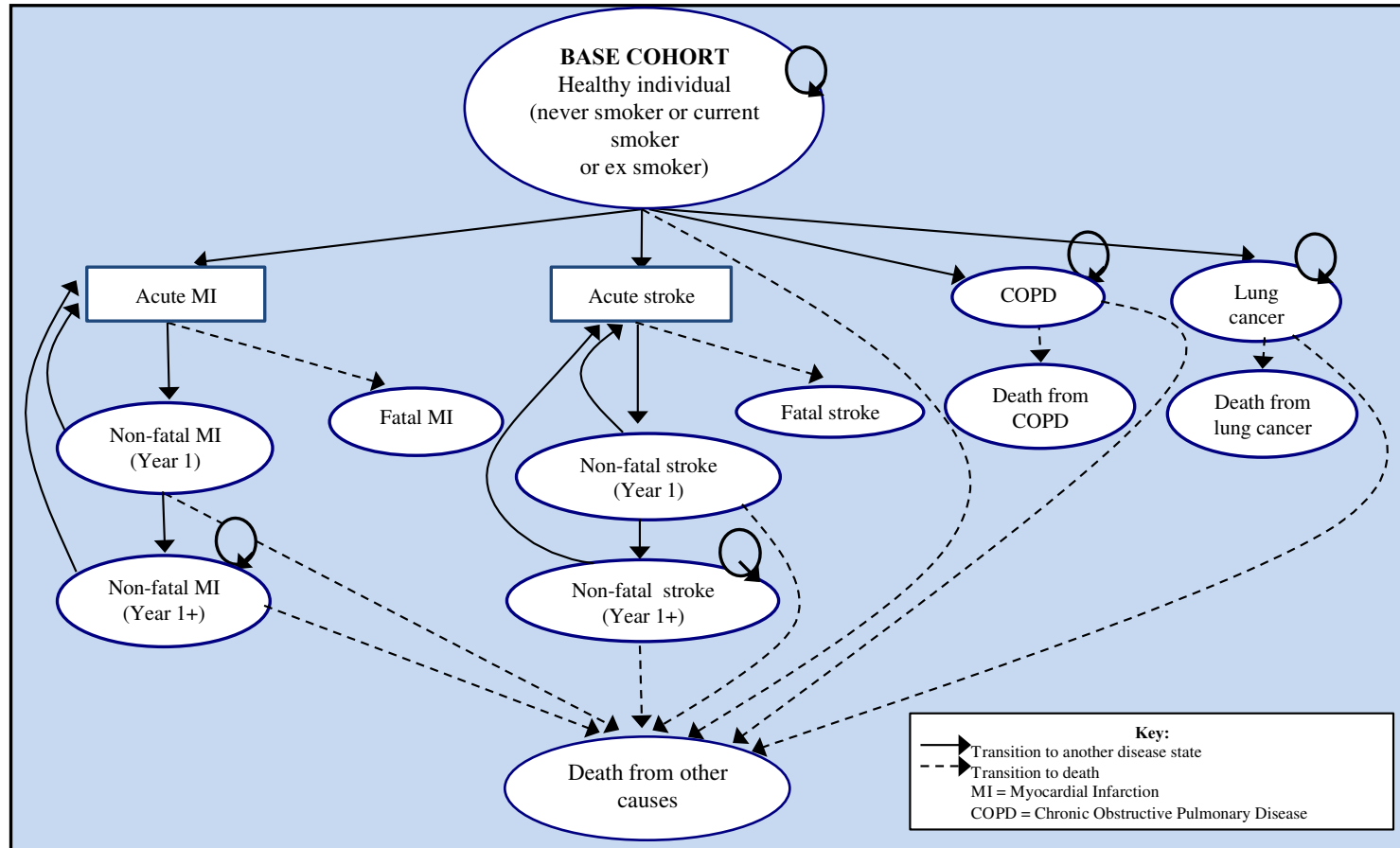


Figure 2: Distribution of cumulative health care costs in smokers and ex-smokers over lifetime

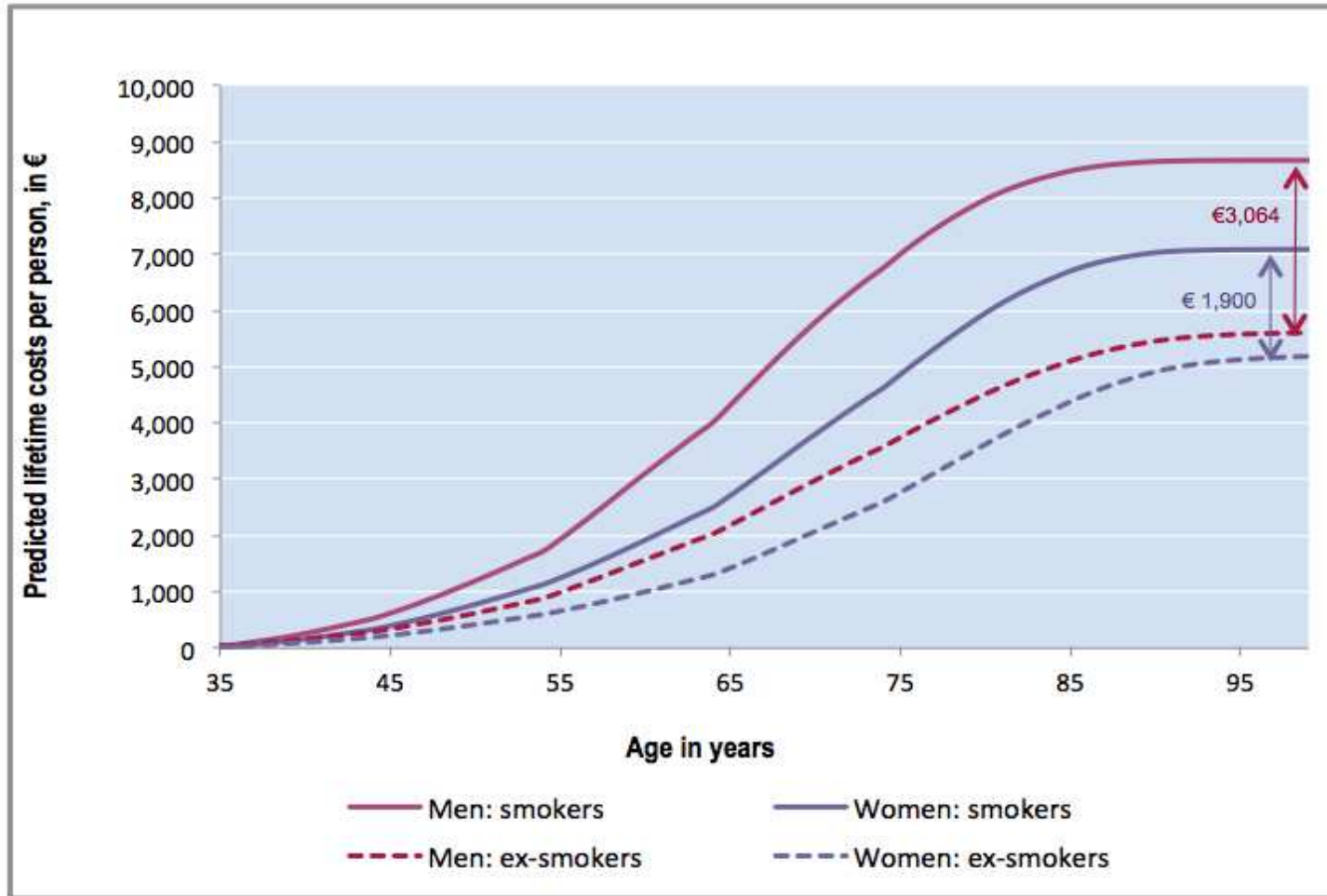


Figure 3: Predicted survival of smokers and ex-smokers

