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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			
Transition Probabilities			
First-ever			
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).
Recurrent			
MI			
men women	0.19 0.21	(None)	calculated based on Acute Myocardial Infarction (MITRA) Registry and the Myocardial Infarction Registry (MIR) (35).
stroke			
men women	0.14 0.06	(None)	calculated based on the Ischaemic Stroke Patients (SCALA) study (36).
Fatal			
MI stroke lung cancer COPD death due to other diseases	Appendix 4	(None)	calculated based on (25), (26), (27), and (34).
Odds ratios or relative risks of			
First ever MI in			
smokers			
men	3.33 [Ages: 35-55]	Log-Normal (1.2; 0.34)*	Yusuf et al.

		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
First ever stroke in					
	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
Lung cancer in					
	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

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

Death from other causes	€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			
		Lifetime cost of health care use per capita	
Never smoker	*Before discounting*	€18,471	€17,881
	After discounting (at 3.5%)	**€4,709**	**€4,092**
		(1,931-10,192)	(1,249-10,113)
Smoker	*Before discounting*	€26,816	€24,762
	After discounting (at 3.5%)	**€8,669**	**€7,086**
		(3,455-19,229)	(2,115-18,216)
Ex-smoker	*Before discounting*	€20,135	€21,234
	After discounting (at 3.5%)	**€5,605**	**€5,185**
		(2,183-30,122)	(1,263-35,060)
		Cost difference on population level (smokers vs. never smokers)	
Excess cost of smoking	*After discounting (at 3.5%)*	€41.6bn	
II. Scenario - Implementing WHO FCTC policies			
		Cost-difference on population level (smokers vs. ex-smokers)	
Strong health warnings	*After discounting (at 3.5%)*	€1.7bn	
Comprehensive marketing bans	*After discounting (at 3.5%)*	€2.2bn	
Cessation treatment policies	*After discounting (at 3.5%)*	€18.9bn	

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

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

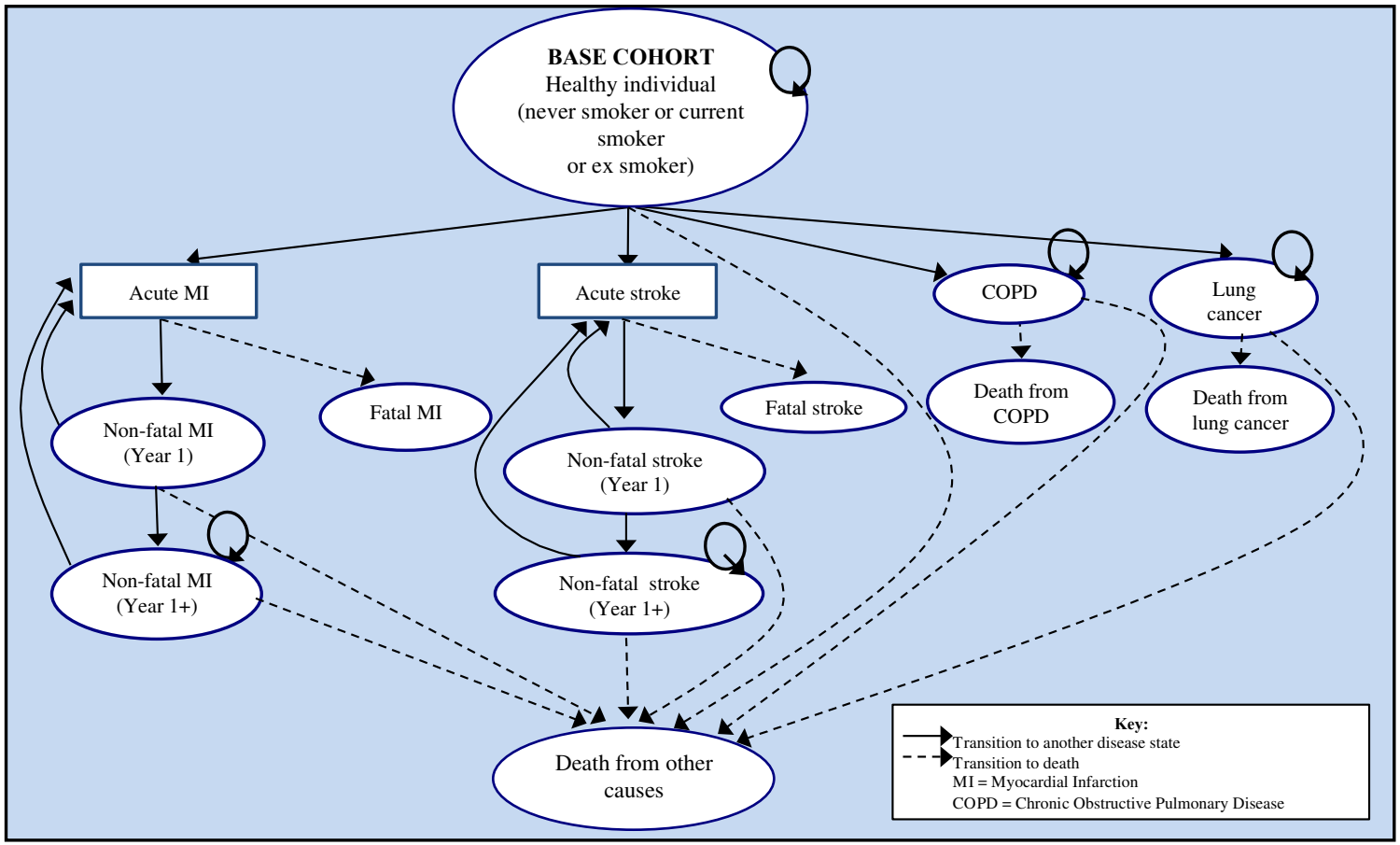

Figure 2: Distribution of cumulative health care costs in smokers and ex-smokers over lifetime

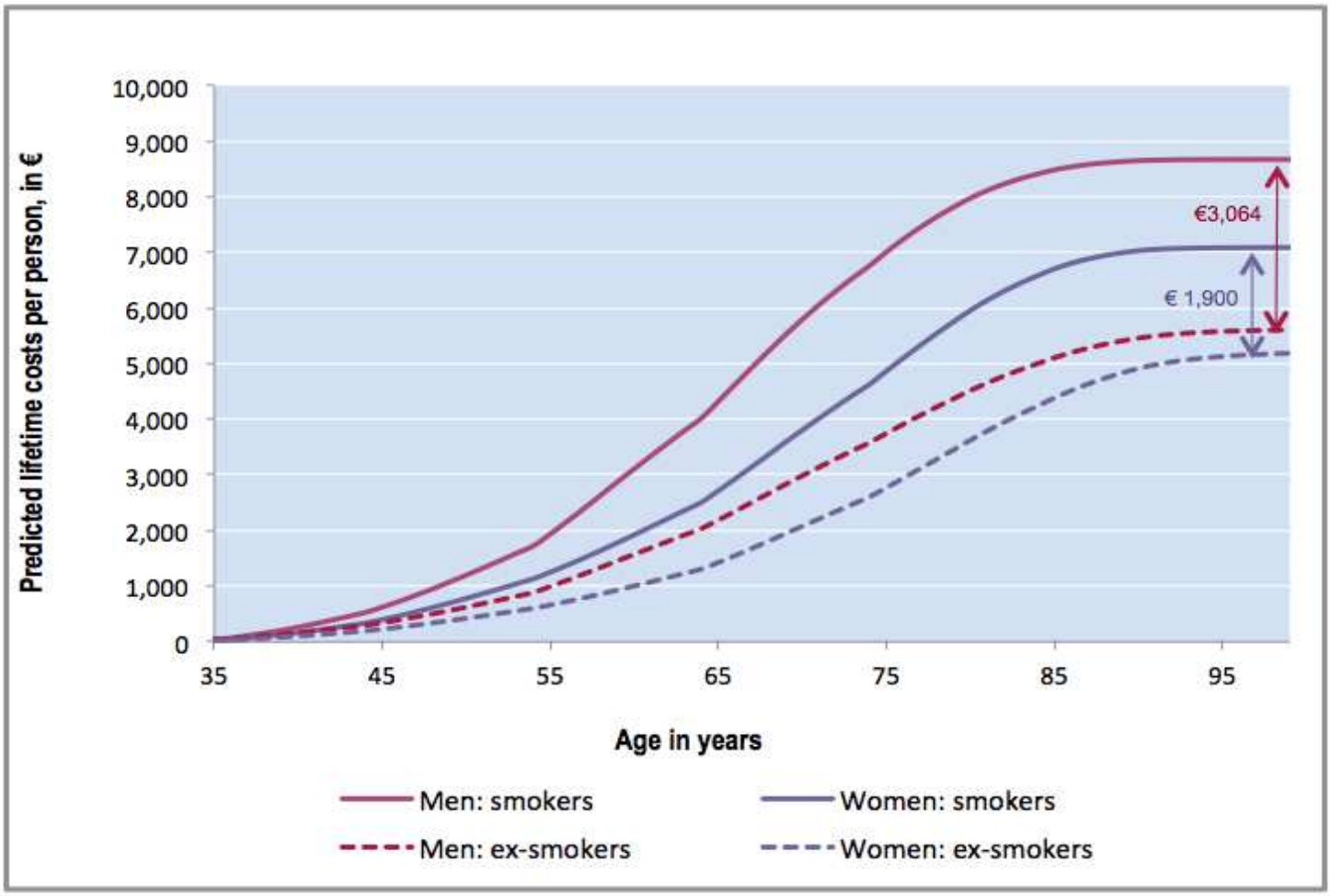

Figure 3: Predicted survival of smokers and ex-smokers