

The future of lung cancer

Manfred Neuberger



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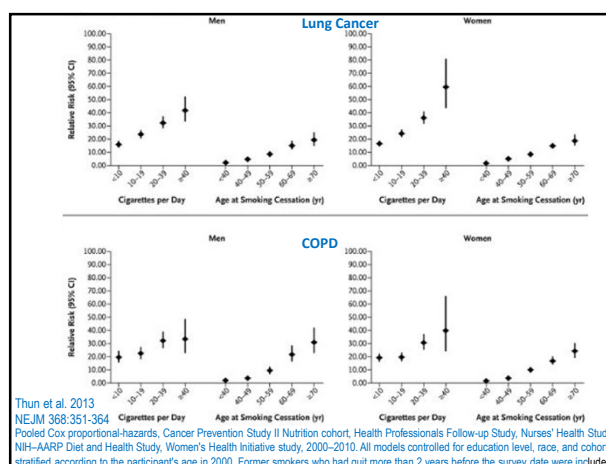
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MAIN CAUSES OF HUMAN LUNG CANCER

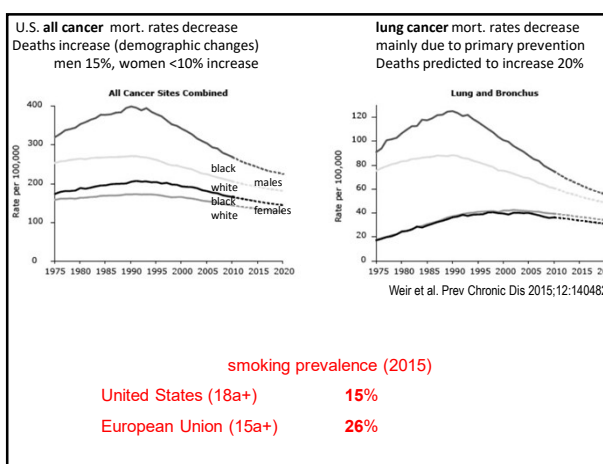
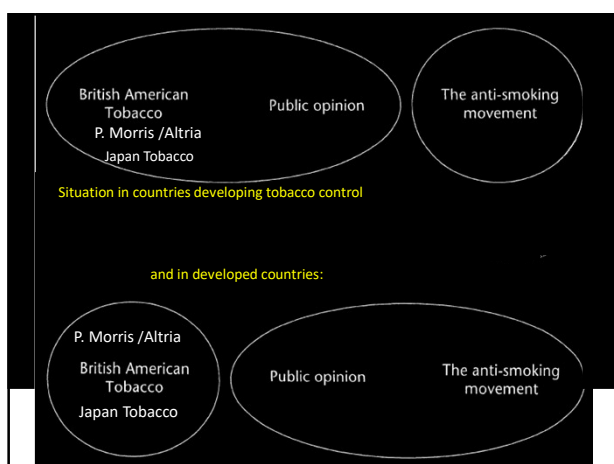
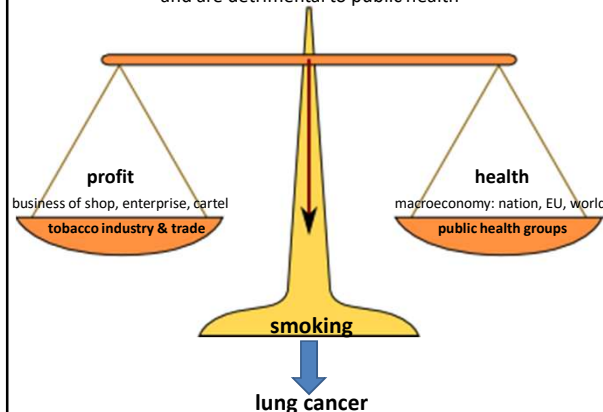
Agent	Attributable Fraction	Reference(s)
Tobacco smoking	70-90%	ALS (2013); Parkin et al. (2011); WHO (2013)
Residential radon	3-14%	Brand et al. (2005); Menzler et al. (2008); WHO (2013)
Particulate air pollution	5-13%	Evans et al. (2013); Veneis et al. (2007); WHO (2013)
Diesel emissions	6%	Vermeulen et al. (2013)
Other occupational exposures	3-15%	ALS (2013); Parkin et al. (2011)
Environmental tobacco smoke	3%	ALS (2013)
Radiation	<1%	Parkin et al. (2011)

Krewski 2014

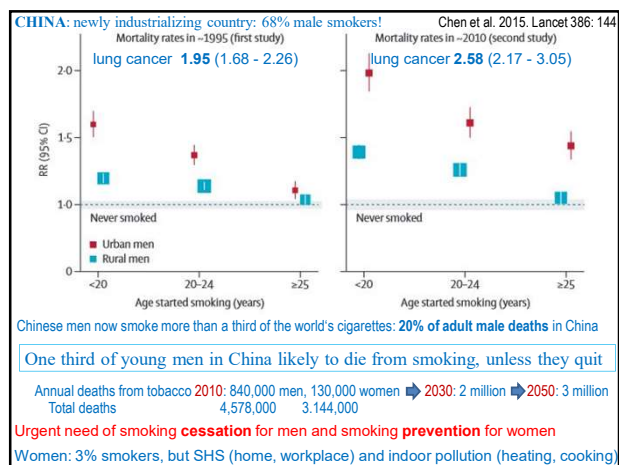
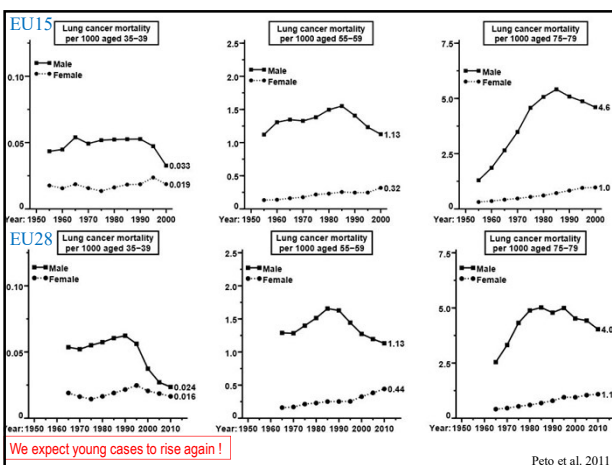
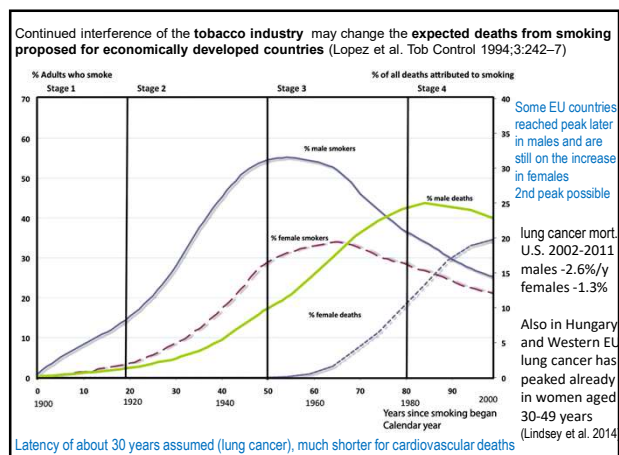
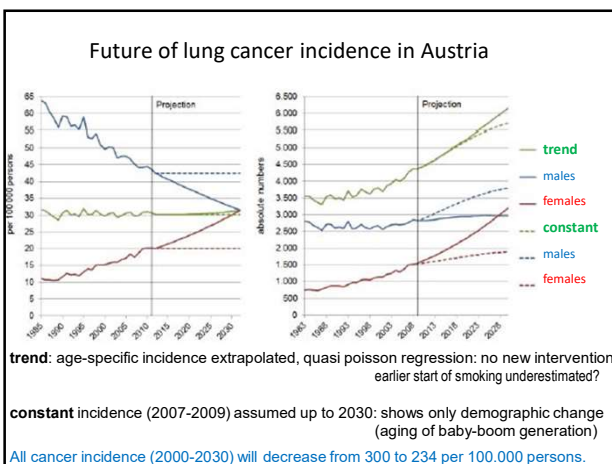
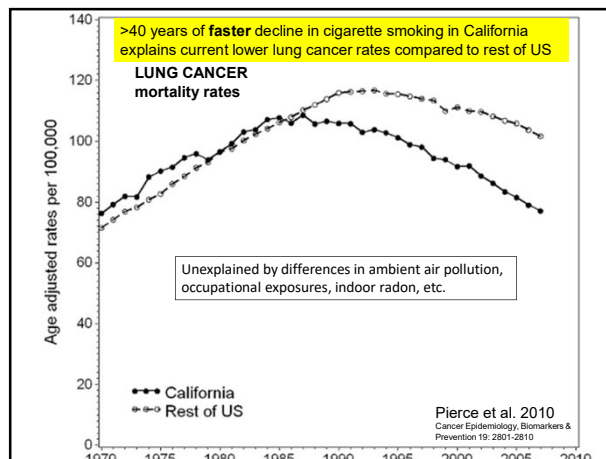
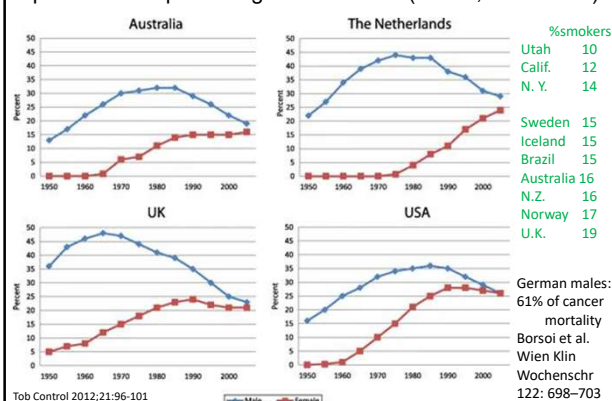
Some combined effects overadditive (smoking & radon, smoking & amphibole asbestos)
 → attributable risks sum up to > 100%
 high decrease of risk by elimination of one factor
 e.g. occupational (industry, males) environmental (Turner et al. 2014)

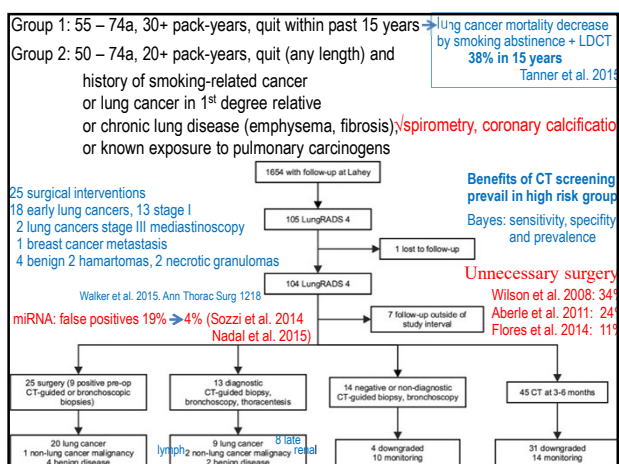
U.S. cohort 1982-88: 14% of lung cancer mortality in smokers with high PM2.5 due to interaction
 Future: Developing countries: active & passive smoking, outdoor & indoor poll. (females: cooking)

Tobacco industry's tactics are aimed at increasing tobacco consumption and are detrimental to public health



Smoking-attributed **deaths** estimated from lung cancer rates, expressed as a percentage of all deaths (CTSU, Thun et al.)





Lung cancer screening needs to be combined with smoking cessation

Misperceptions:

- Everyone who participates in screening will benefit
- Screening offers protection from lung cancer
- CT yields the same health benefits as smoking cessation
- A cancer-free test result indicates absence of personal harms of smoking
- Cancer is the only consequence of smoking
- Low personal susceptibility to the harms of tobacco

In 49% these beliefs were reinforced and potentially exacerbated by screening and lowered the motivation to participate in smoking cessation programs.

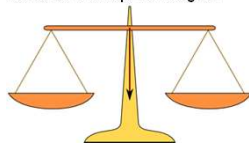
Zeliadt et al. 2015. JAMA Intern Med 175:1530-7

Lung cancer decrease expected from:

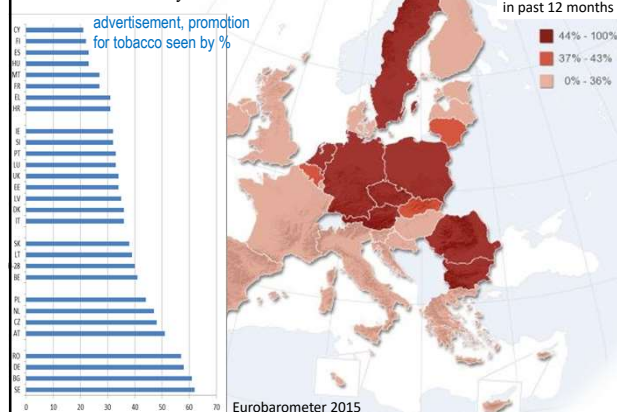
- Tobacco control according to WHO-FCTC (e.g. reform by Miklós Szócska)
- Reduction of PM_{2.5} in ambient air (outdoor and indoor)
- Ban of asbestos, ClCH₂O-CH₂Cl, COCl₂, and other occupational carcinogens
- ↓ As, Be, Cd, Cr^{VI}, Ni, SiO₂, soot, Rn and other environmental & occup. carcinogens

Lung cancer increase expected from:

- Tobacco marketing, affordability
- Gateways to nicotine addiction (shisha, e-cigarettes, etc.)
- Earlier start of regular smoking (additives, advertisement, deregulation)
- Undermining of cessation (alternatives: reduction, dual use)



Europe is still a main target of the tobacco industry



Background of tobacco industry influence on government and media

- close connections to ministry of **finance**: important tax payer, "helper" to save budget, common interest to combat smuggling, raise legal sales (A: economic loss of 750 million € / yr) price of cigarettes included in basket of representative goods and services measuring inflation
- close connections to ministry of **economy**, chamber of commerce, etc., liberal, national and conservative parties supporting free trade (WTO stronger than WHO)
- sponsoring of political **parties** (election campaigns), business for marketing & **advertising**
- approaching **smoking leaders** of political parties, unions, etc., offering help (smoking rooms,...)
- sponsoring of **media**, events, journalists, and pressure groups (effect on politicians)
- control of distribution system for **newspapers** via tobacco shops
- hiring handicapped as **tobacconists** (reversal of victim – offender relationship)
- make the hospitality industry to speaker of the tobacco industry

Main obstacles against tobacco control

Tobacco industry & trade: **corruption** of politicians and media manipulation of public opinion with help of addicts
Reactionary policy, intimidation (lobbies) and neglect
Resignation of experts!



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