

THE **E**-CIGARETTE SUMMIT

Science, Regulation & Public Health

The Royal Society, London, November 12th 2013

E-Cigarettes a disruptive public health phenomenon:

Ethics, risk and the precautionary principle

Antoine Flahault, MD, PhD, Professor of Biostatistics, Descartes School of Medicine

Conflicts of Interest:

- direct = none

- indirect = institutional research grant from Sanofi ; a member of my family works at the French Association of Pharma Manufacturers



Many definitions of the PP exist

- *“Caution in advance”, “Caution practised in the context of uncertainty”, or “Informed prudence”*
- **Principle #15 of the Rio Declaration**

*"In order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are **threats of serious or irreversible damage, lack of full scientific certainty** shall not be used as a reason for postponing **cost-effective measures** to prevent environmental degradation"*

“...threats of serious or irreversible damage...”

Key facts

- Tobacco kills up to half of its users.
- Tobacco kills nearly 6 million people each year. More than five million of those deaths are the result of direct tobacco use while more than 600 000 are the result of non-smokers being exposed to second-hand smoke. Unless urgent action is taken, the annual death toll could rise to more than eight million by 2030.
- Nearly 80% of the world's one billion smokers live in low- and middle-income countries.
- Consumption of tobacco products is increasing globally, though it is decreasing in some high-income and upper middle-income countries.

Deadly chemicals

Tobacco smoke contains over 4,000 chemicals, some of which have marked irritant properties and some 60 are known or suspected carcinogens.

| Tobacco smoke includes | as found in |
|------------------------|--------------------|
| Acetone | paint stripper |
| Ammonia | floor cleaner |
| Arsenic | ant poison |
| Butane | lighter fuel |
| Cadmium | car batteries |
| Carbon monoxide | car exhaust fumes |
| DDT | insecticide |
| Hydrogen cyanide | gas chambers |
| Methanol | rocket fuel |
| Napthalene | moth balls |
| Toluene | industrial solvent |
| Vinyl chloride | plastics |

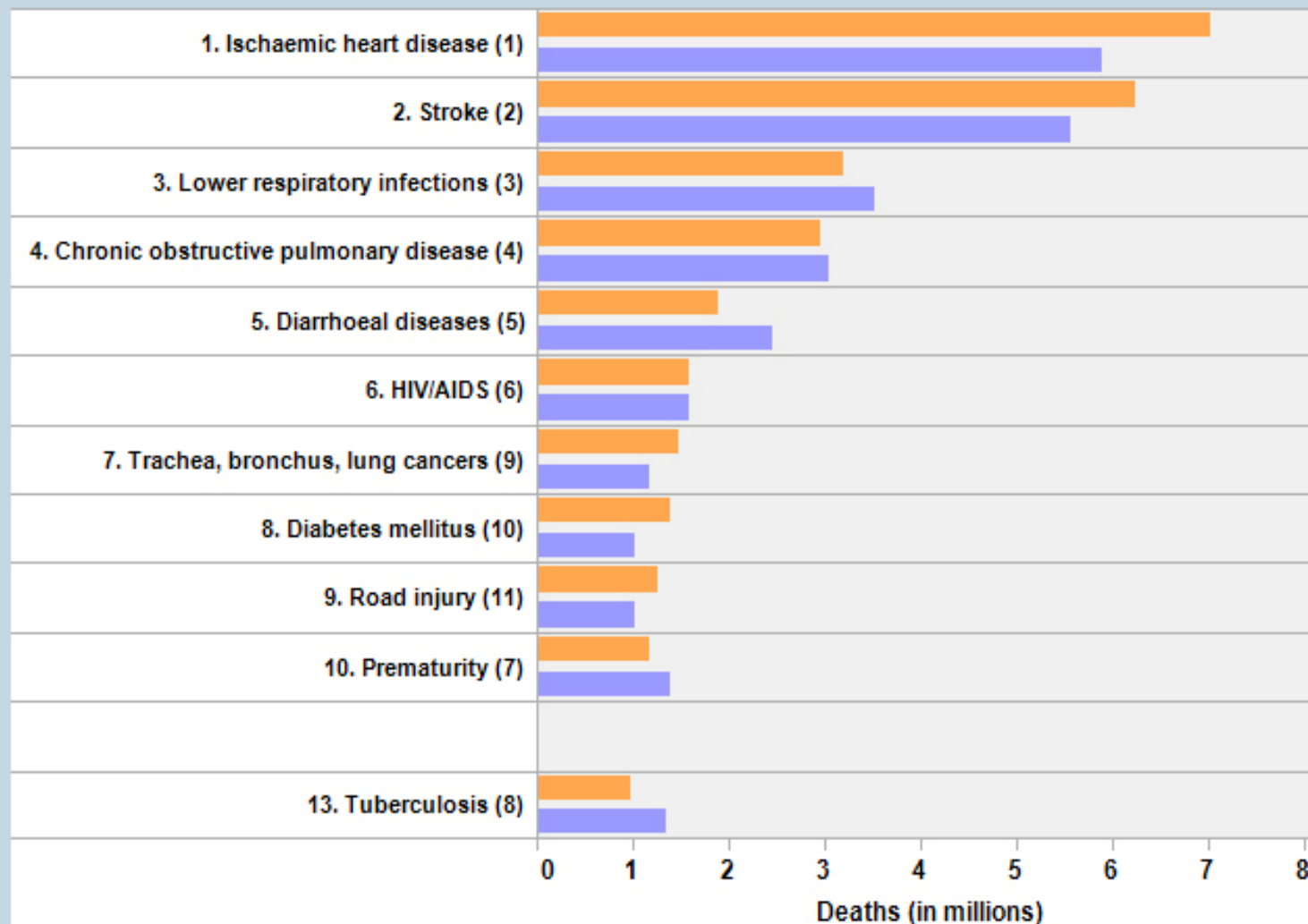
“...threats of serious or irreversible damage...”

smoking is responsible for

- 90% of all lung cancer
- 75% of chronic bronchitis and emphysema
- 25% of cases of ischaemic heart disease



The 10 leading causes of death, 2000 and 2011*



■ 2011
■ 2000

* The number shown before the cause name denotes the rank in 2011. The rank in 2000 is noted in bracket after the cause name.

“...lack of full scientific certainty...”

- The safety of Electronic cigarettes (ECs) or electronic nicotine delivery systems (ENDS) has *not* been scientifically demonstrated;
- Adverse health effects for third parties exposed (second-hand exposure) cannot be excluded because the use of electronic cigarettes leads to emission of fine and ultrafine inhalable liquid particles, nicotine and cancer-causing substances into indoor air;
- The benefits of e-cigarettes have not been scientifically proven. To date, very few studies have assessed ECs/ENDS as a harm reduction and cessation aid and with conflicting findings;



Uncertainties or wrong messages?

diseases. If they chew tobacco, they risk cancer of the lip, tongue and mouth.



Swedish males and the cultural use of oral tobacco

Sweden

13% smokers (WHO target < 20%) (1)

19% use of snus (% of male pop.) (2)

Lung cancers (37/100,000 in males) lowest rate in Europe (63 in Germany, UK 73 in France /100,000) (1)

Oral cancers (0.6/100,000) lowest rate in Europe (4/100 000)



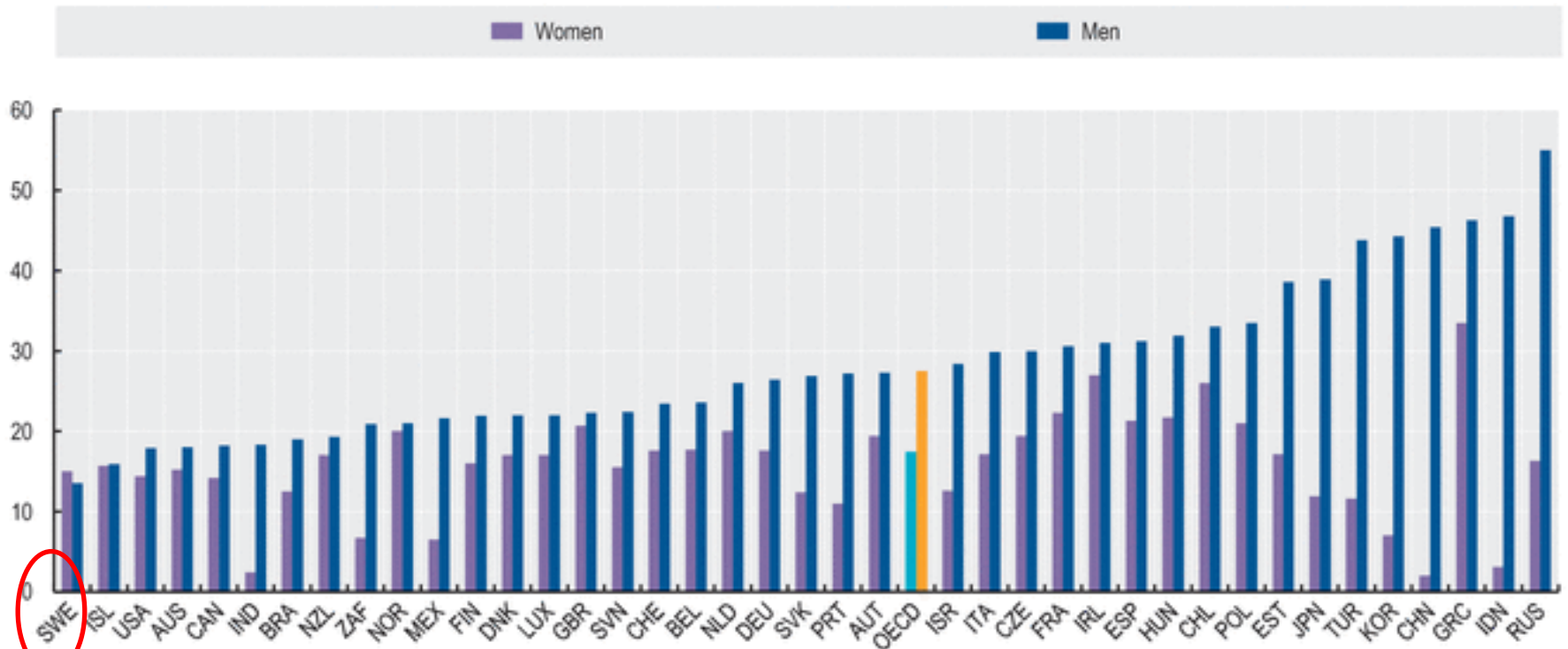
(1) OECD statistics, 2011, 2012

(2) Furberg H. Addiction, 2006

Oral tobacco in Sweden is not a gateway for smoking tobacco!

Adult population smoking daily by gender

Percentage, 2009 or latest available year



WHO statistics, 2009

“...cost-effective measure...”

“There were 172,000 lung cancer deaths among men in the EU in 2002. If all EU countries had the LCMR of men in Sweden, there would have been 92,000 (54%) fewer deaths.”

Rodu B, Scand J Public Health, 2009

“...Caution practised in the context of uncertainty” - “Informed prudence...”

Electronic cigarettes

- How harmful are E-cigs?
- What about secondhand vapor?
- Will they lead to smoking cessation?
- Will they reinforce the tobacco smoking habit?

Cigarettes

- Cigs kill half of their users
- Secondhand smoke does kill too (600,000 deaths/yr)
- A plateau in smoking prevalence seems to be reached everywhere
- Preliminary stats show decrease in cigarettes sales when E-cig increases its share

=> More science is needed and will come in the near future

Conclusions

- **Ethics**

- Recording 6 Mn deaths/yr: a failure to assist persons in danger?

- **Risks**

- Cigarette is a well known major killer facing a competitor (E-cig) which may dramatically reduce the risk, although at an unknown level

- **Precautionary Principle**

- There are known and certain **threats of serious and irreversible damage** with smoking tobacco
- The **lack of full scientific certainty** (on E-cigs) **shall not be used as a reason for postponing** recommending the use of electronic cigarettes in addition to other tobacco control measures **to prevent** further smoking tobacco devastation