

Alcohol - the risk to life and death

Peter Anderson

Amsterdam, 23 September 2010.

- 1.The overall health burden that alcohol causes
- 2.The overall risk to the individual

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GLOBAL HEALTH RISKS

Mortality and burden of disease attributable to selected major risks

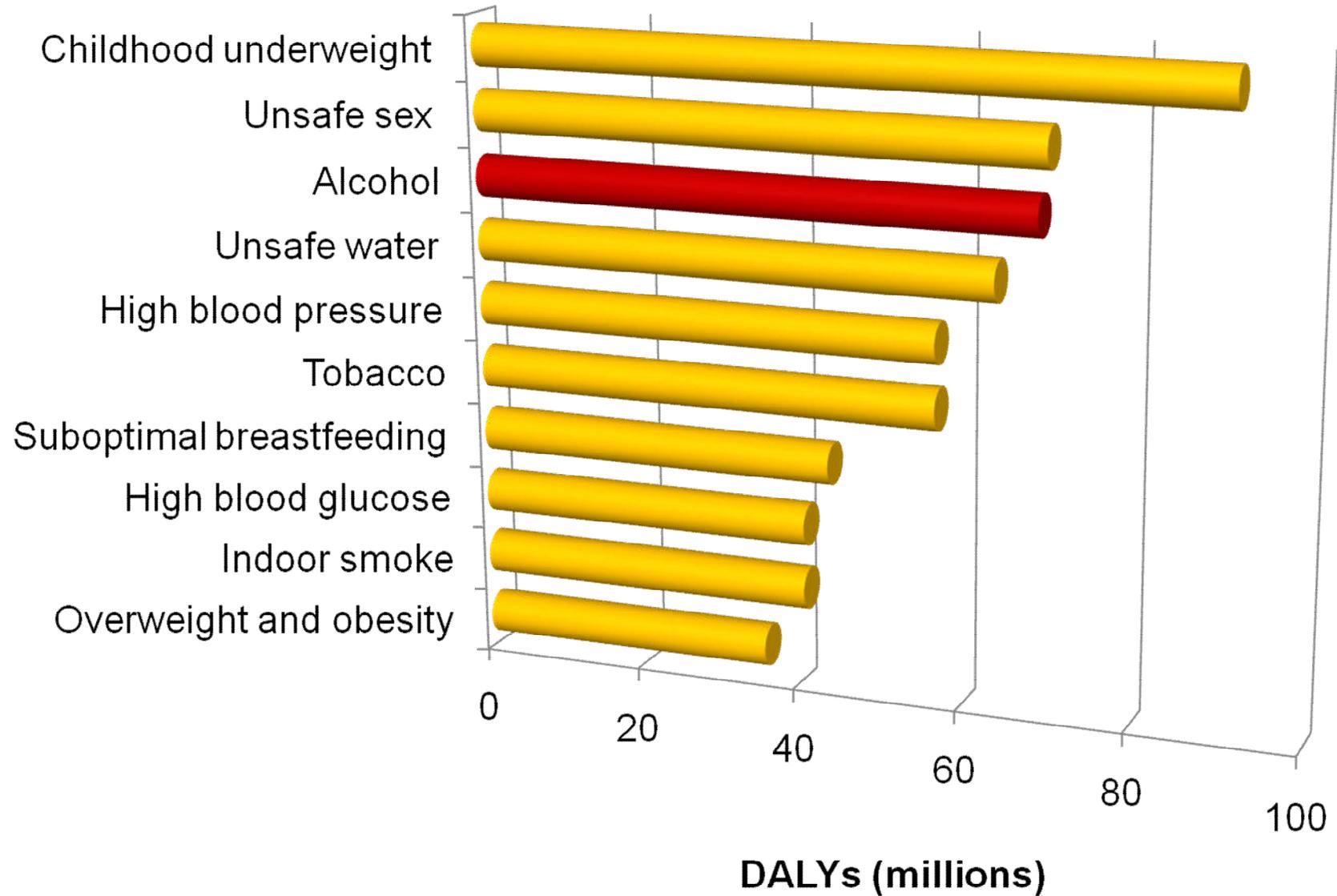


Disability adjusted life year (DALY)

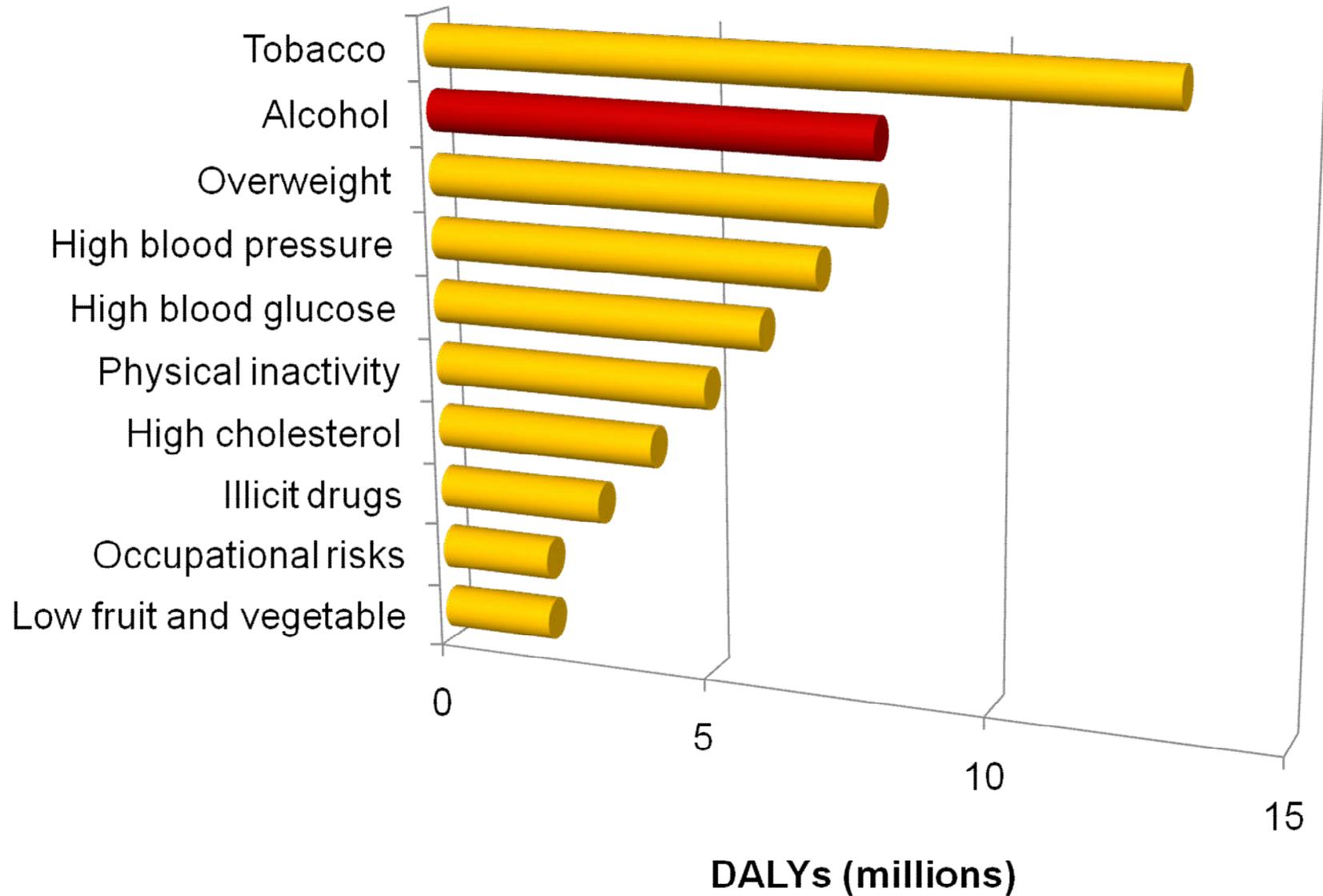
One year of ill-health (adjusted for the severity of ill-health) or premature death).

It measures a gap between how healthy we are and how healthy we could be

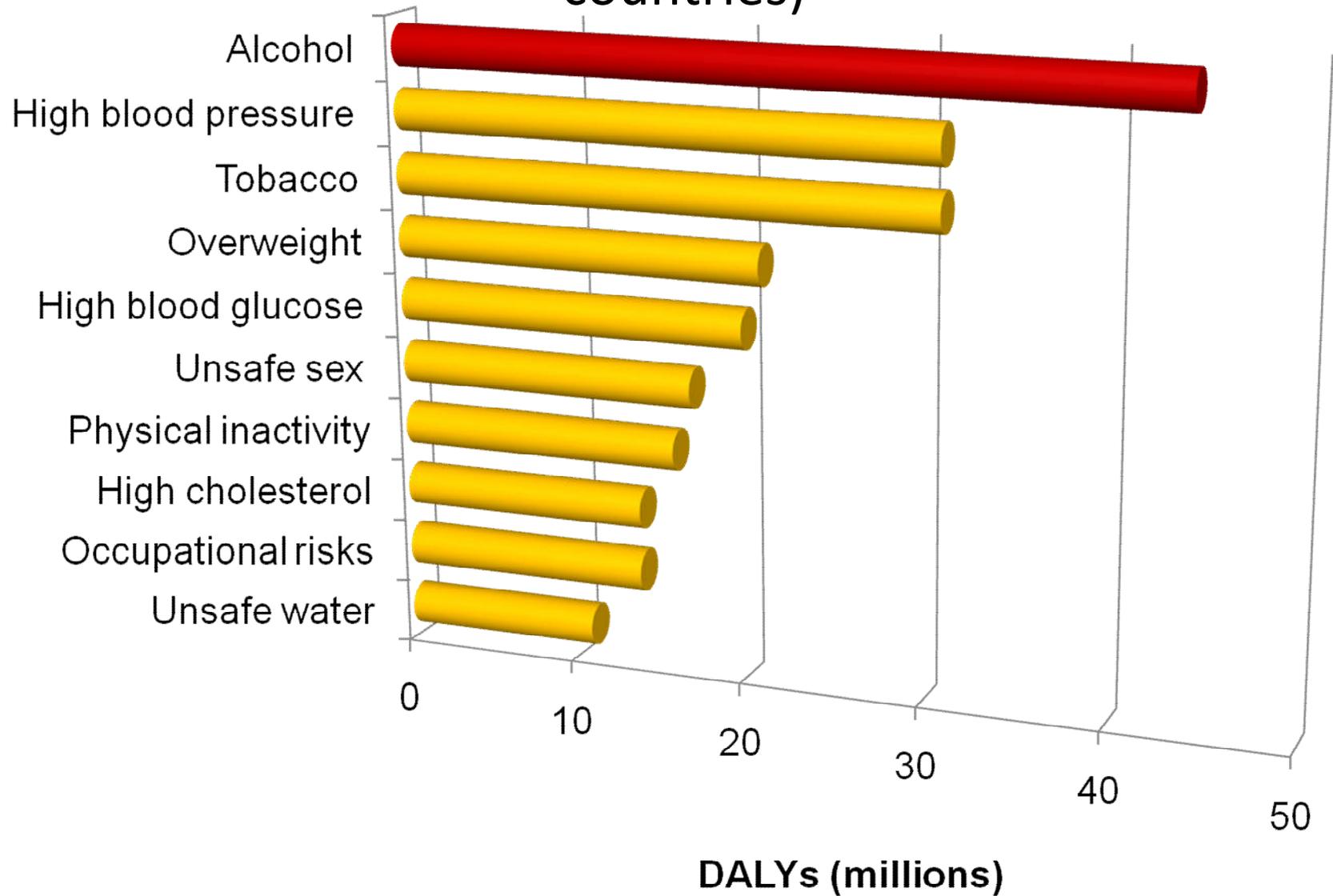
Top 10 risk factors for DALYs (world)



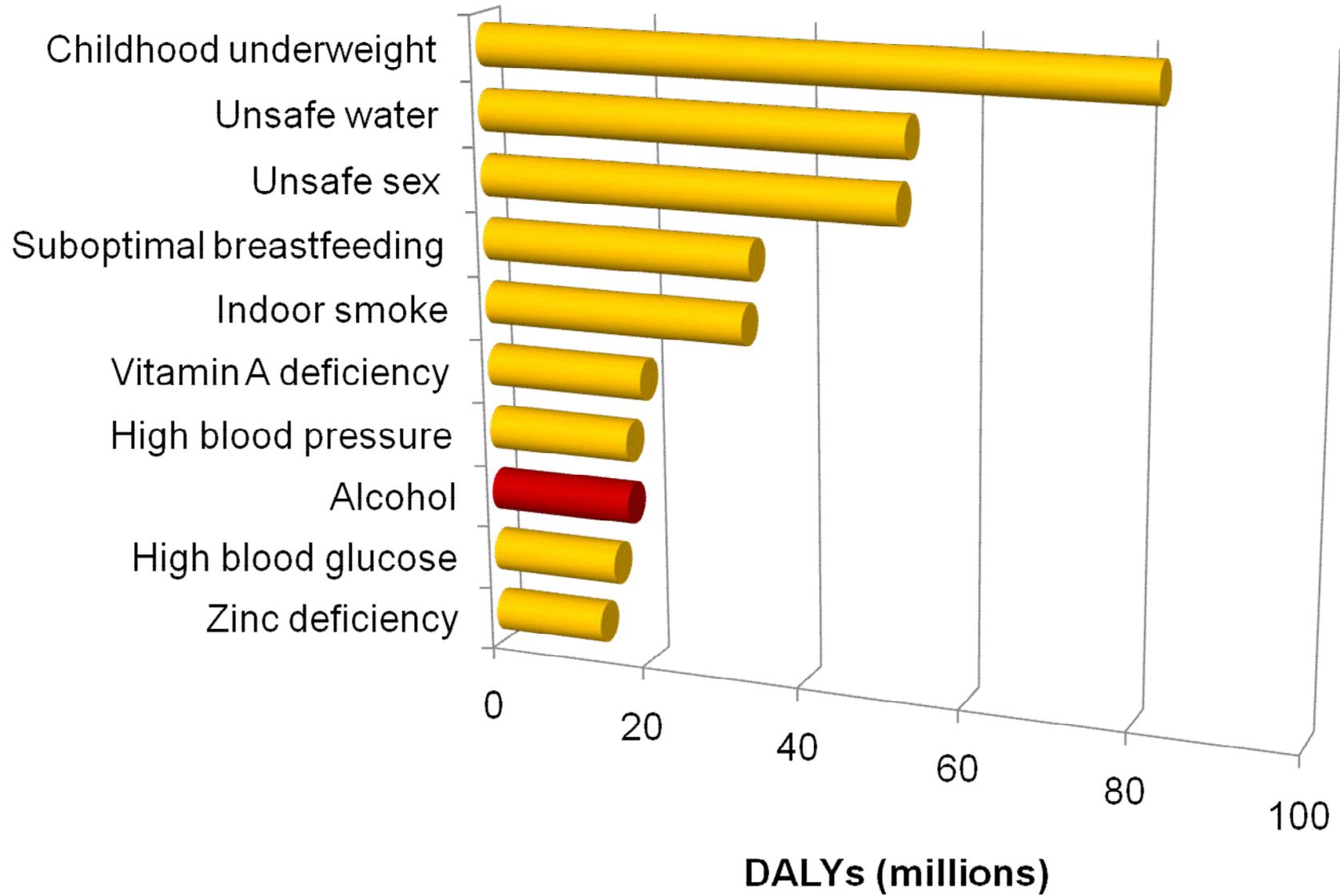
Top 10 risk factors for DALYs (high income countries)



Top 10 risk factors for DALYs (middle income countries)



Top 10 risk factors for DALYs (low income countries)



1.The overall health burden that alcohol causes

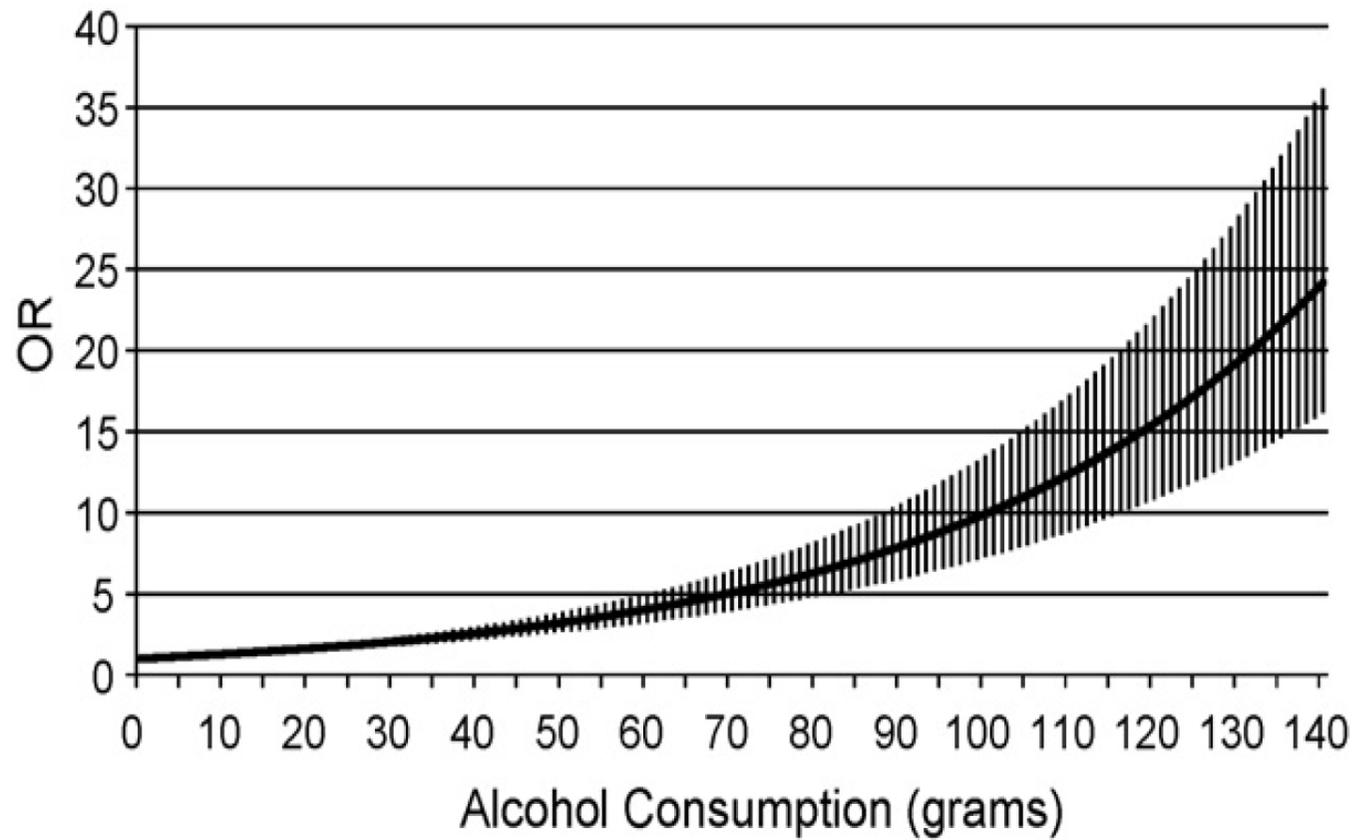
2.The overall risk to the individual

The overall risk to the individual

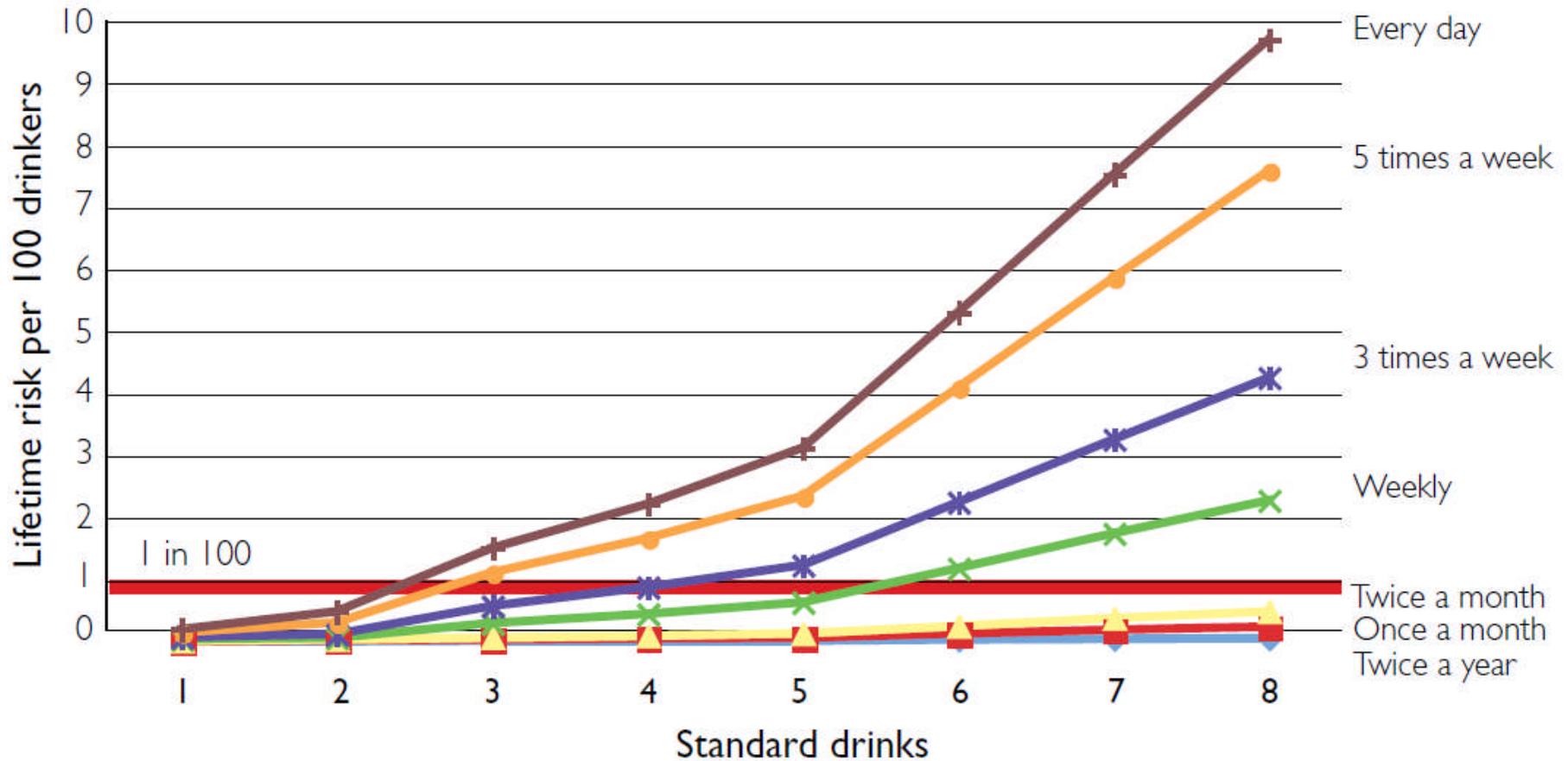
1. Look at accidents
2. Look at impaired mental health
3. Touch on cancers and liver cirrhosis
4. Touch on heart disease and strokes
5. Look at the risk of dying
6. Look at who dies and how bad it can get

The overall risk to the individual

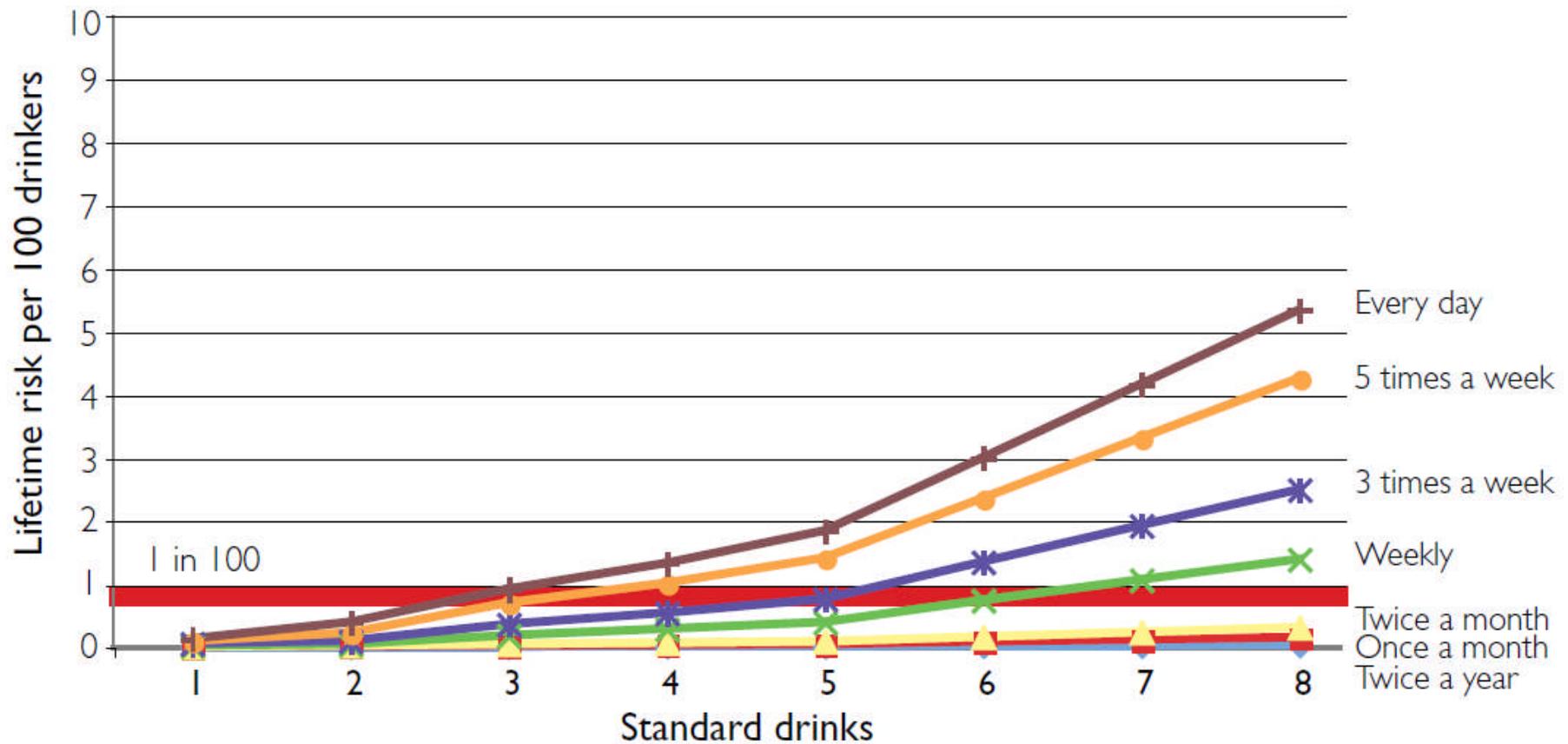
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The risk of a **non**-motor vehicle accident injury related to the amount of alcohol consumed during the last 3 hours.



Lifetime risk of death from alcohol-related injury per 100 male Australian drinkers, by number of standard drinks per occasion (one drink contains 10g alcohol) and frequency of occasions.



Lifetime risk of death from alcohol-related injury per 100 female Australian drinkers, by number of standard drinks per occasion (one drink contains 10g alcohol) and frequency of occasions.

The overall risk to the individual

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THE GLOBAL BURDEN OF DISEASE

2004 UPDATE



Table 11: Leading global causes of YLD, high-income and low- and middle-income countries, 2004

Low- and middle-income countries				High-income countries			
Cause	YLD (millions)	Per cent of total YLD		Cause	YLD (millions)	Per cent of total YLD	
1	Unipolar depressive disorders	55.3	10.4	1	Unipolar depressive disorders	10.0	14.6
2	Refractive errors	25.0	4.7	2	Hearing loss, adult onset	4.2	6.2
3	Hearing loss, adult onset	23.2	4.4	3	Alcohol use disorders	3.9	5.7
4	Alcohol use disorders	18.4	3.5	4	Alzheimer and other dementias	3.7	5.4
5	Cataracts	17.4	3.3	5	Osteoarthritis	2.8	4.1
6	Schizophrenia	14.8	2.8	6	Refractive errors	2.7	4.0
7	Birth asphyxia and birth trauma	12.9	2.4	7	COPD	2.4	3.5
8	Bipolar disorder	12.9	2.4	8	Diabetes mellitus	2.3	3.4
9	Osteoarthritis	12.8	2.4	9	Asthma	1.8	2.6
10	Iron-deficiency anaemia	12.6	2.4	10	Drug use disorders	1.7	2.4

COPD, chronic obstructive pulmonary disease.

Prevalence of comorbidity in adults

	OR to suffer any Mental Disorder	Lifetime depression	Lifetime anxiety	Lifetime Personality Disorder
Alcohol use disorder	1.7 – 4	16% – 29%	21% - 41%	17% -26%
Alcohol Dependence	2.2 – 6.7	23% - 36%	30% - 45%	28% -37%

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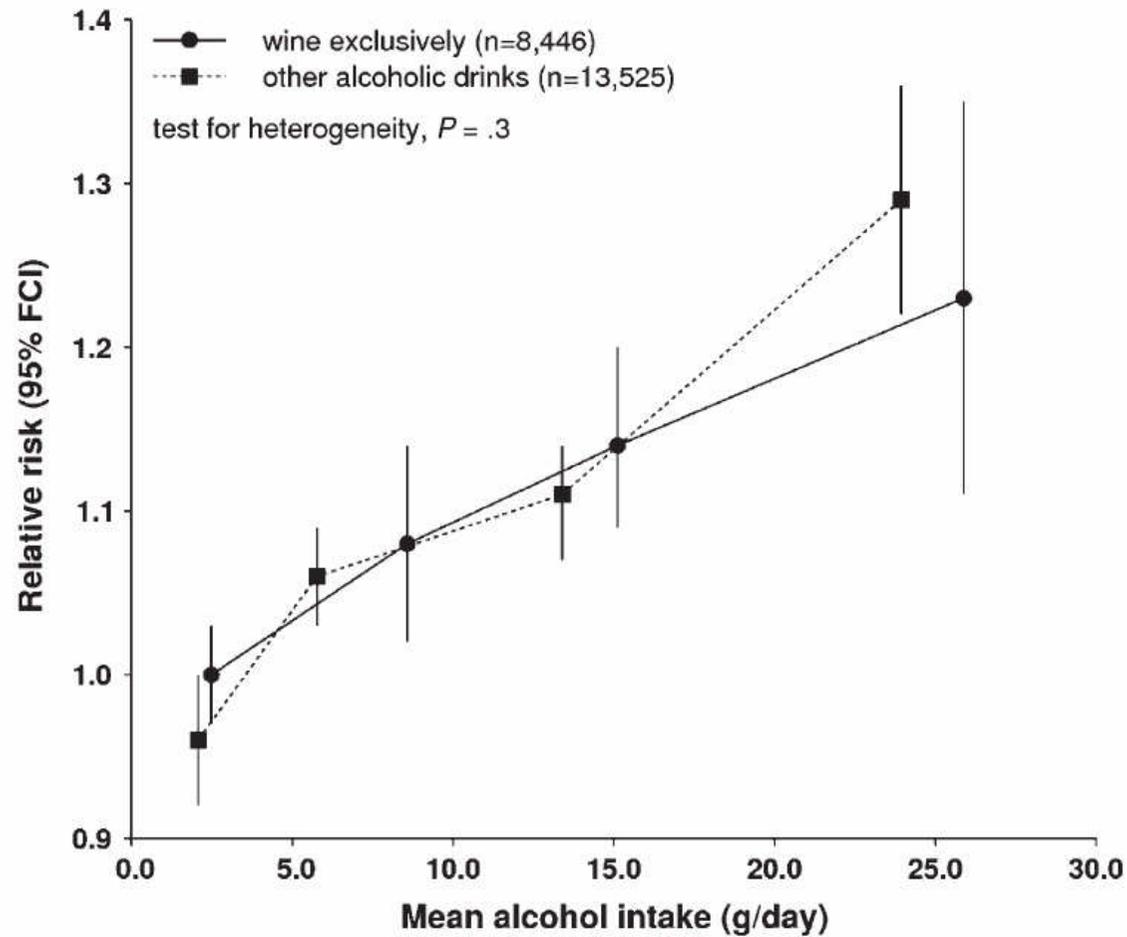
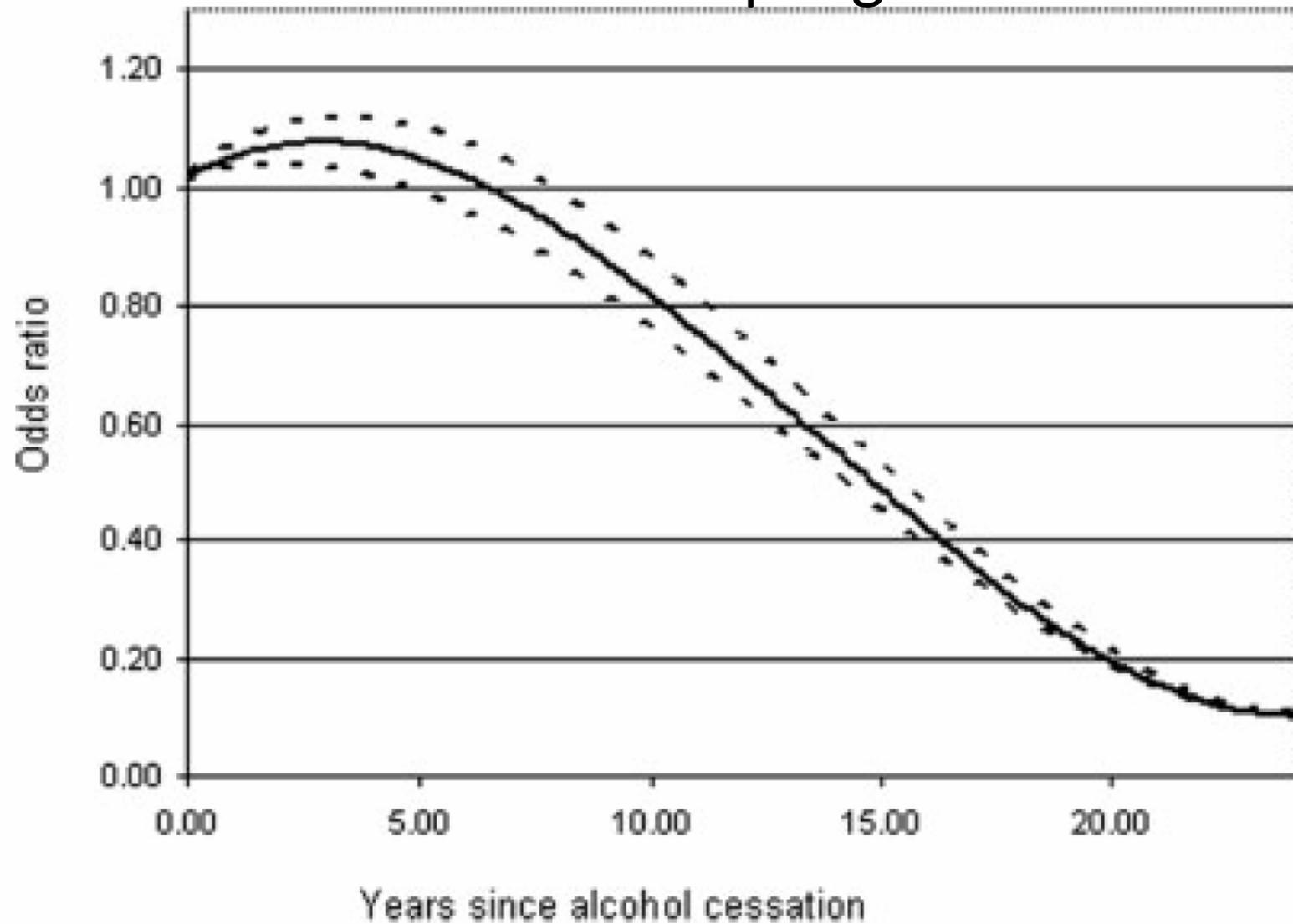


Figure 3. Relative risk (95% floated confidence interval) of breast cancer by amount and type of alcohol consumed (drinkers only). The relative risk is plotted against the mean remeasured value of alcohol intake (g/d) in each category. Analyses are adjusted for age, region of residence, socioeconomic status, body mass index, smoking, physical activity, use of oral contraceptives and hormone replacement therapy. FCI = floated confidence interval. "Other alcoholic drinks" is defined as drinkers of beer and/or spirits exclusively or a mixture of wine, beer, and/or spirits.

Stopping drinking reduces the risk of cancer of the oesophagus



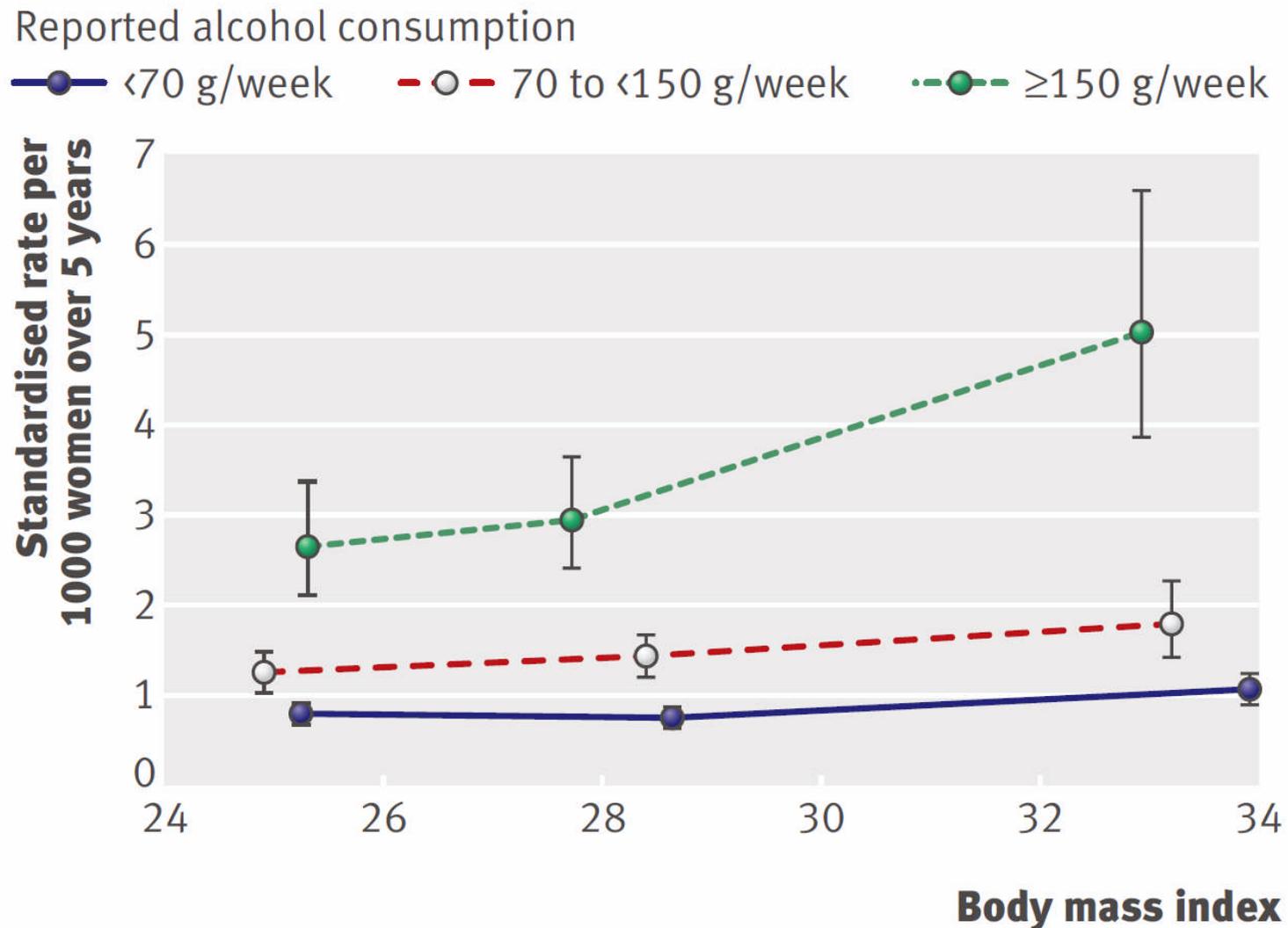
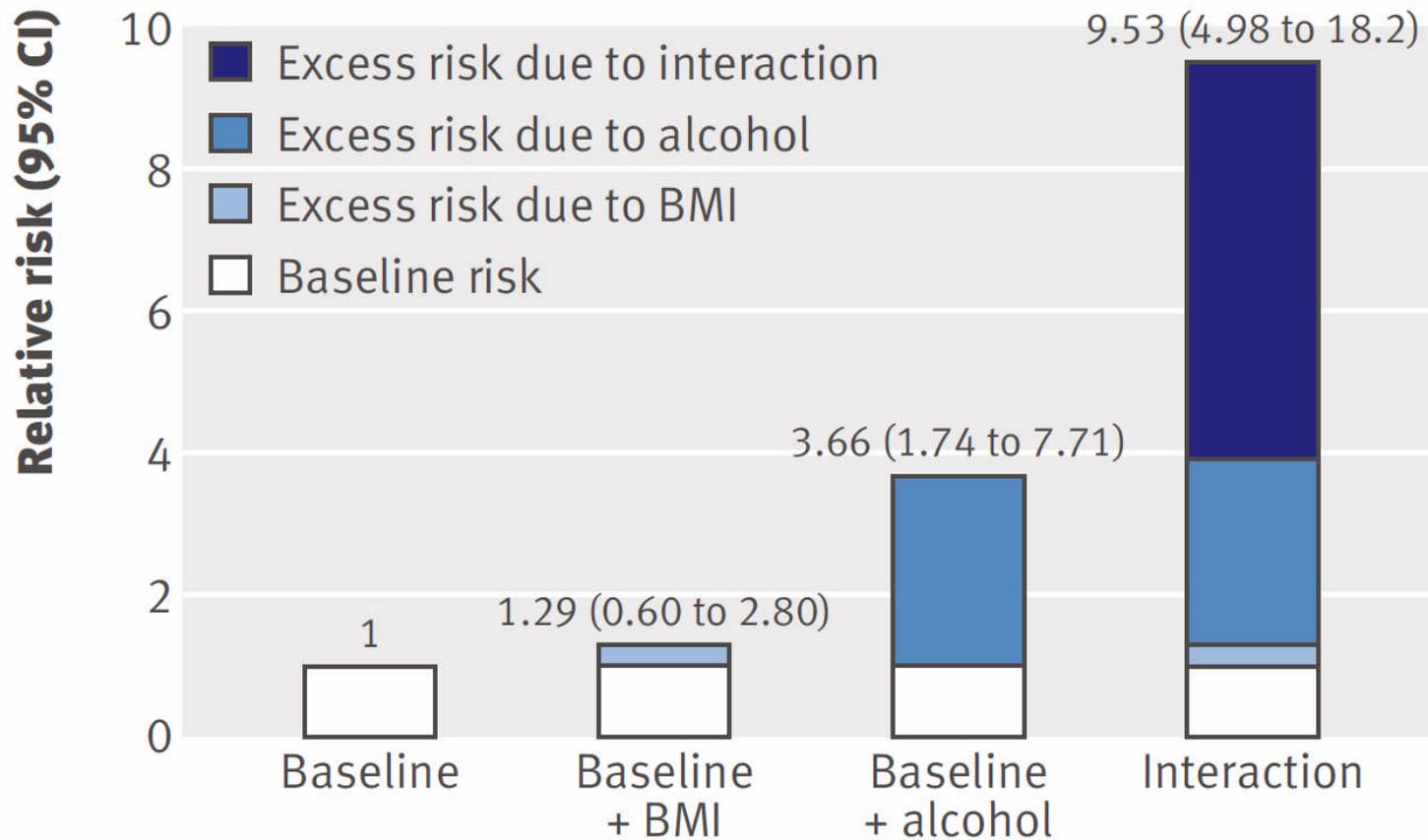


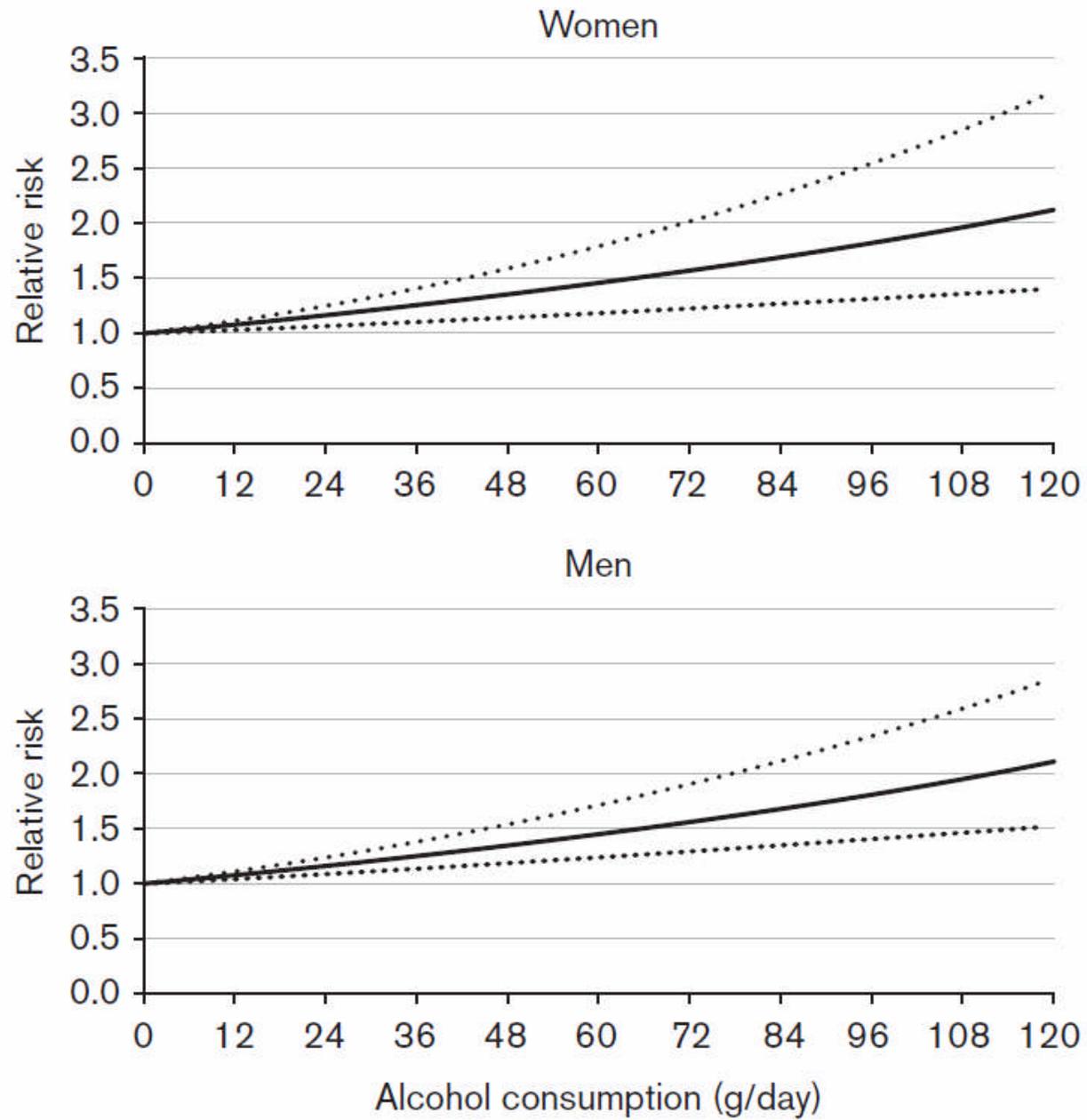
Fig 2 | Standardised rates (with 95% CI) for liver cirrhosis per 1000 women over 5 years by body mass index (BMI) and alcohol consumption. Rate plotted against mean measured BMI in each BMI category (see methods)



Relative risks of contributions of BMI and alcohol to liver disease mortality (adjusted for all risk factors).

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Dose-response relationship between alcohol consumption and risk of atrial fibrillation (continuous analysis using fractional polynomials).

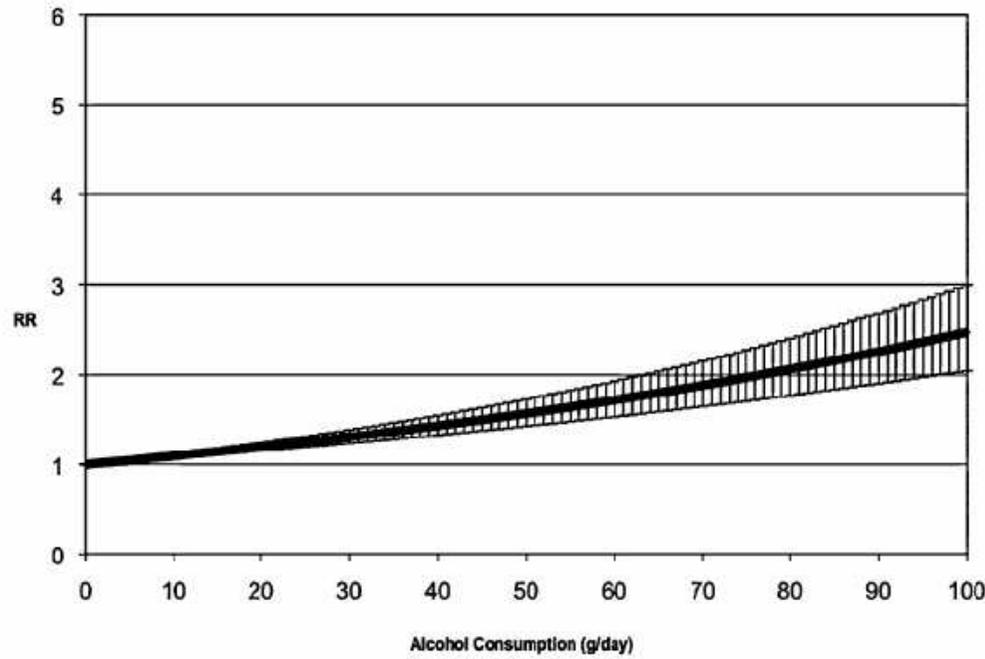


Figure 4 Meta-analysis of eight studies showing the linear dose-response relationship between alcohol and hypertension among men. RR: relative risk

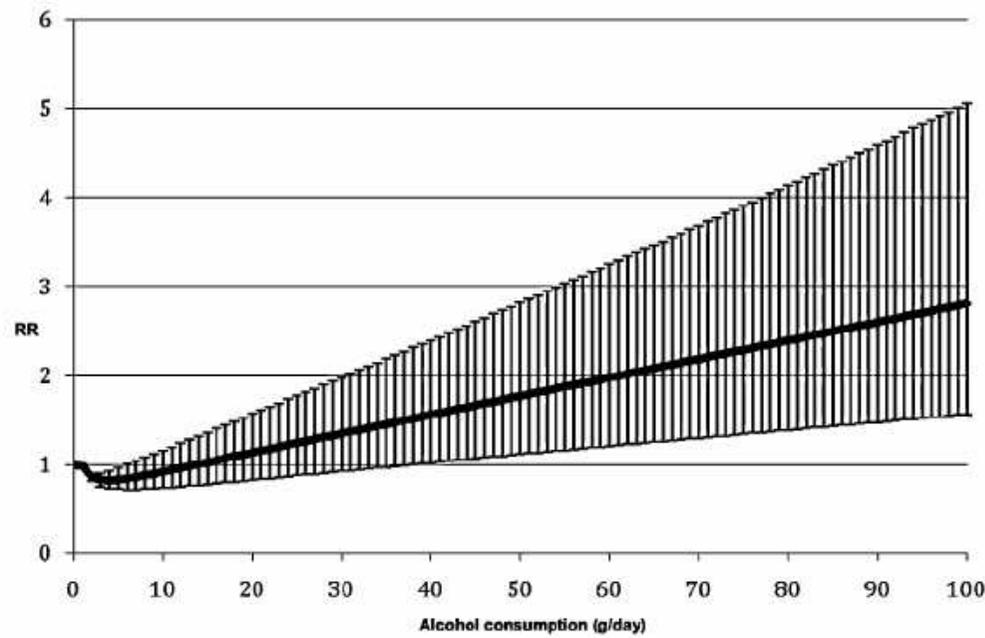
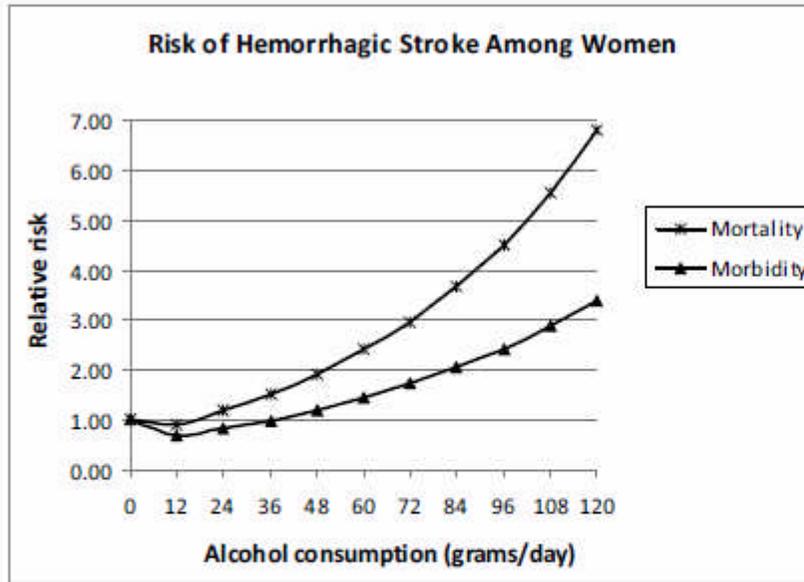


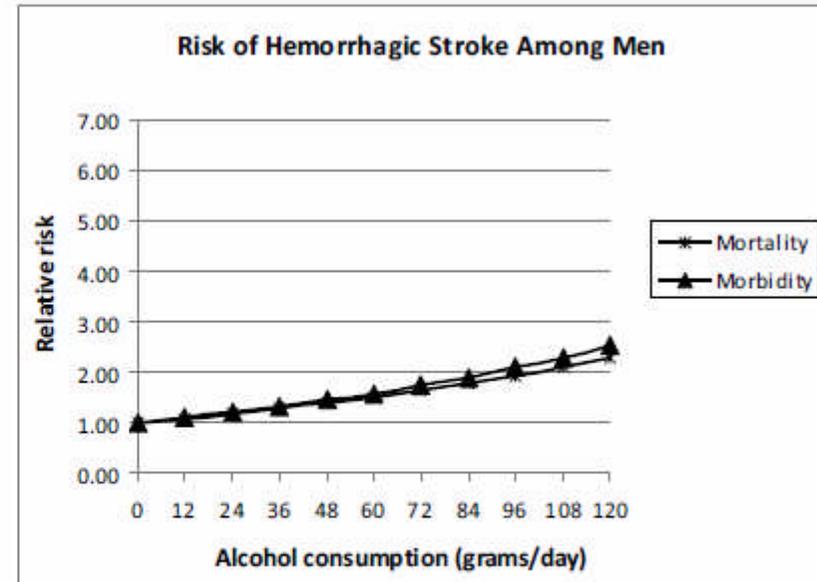
Figure 5 Meta-analysis of eight studies showing the modest J-shaped dose-response relationship between alcohol and hypertension among women. RR: relative risk

A.



Mortality: J-shaped dose-response, $f(\beta_1 \log(x) + \beta_2 x)$
Morbidity: J-shaped dose-response, $f(\beta_1 x^{-5} + \beta_2 x^{-5} \log(x))$

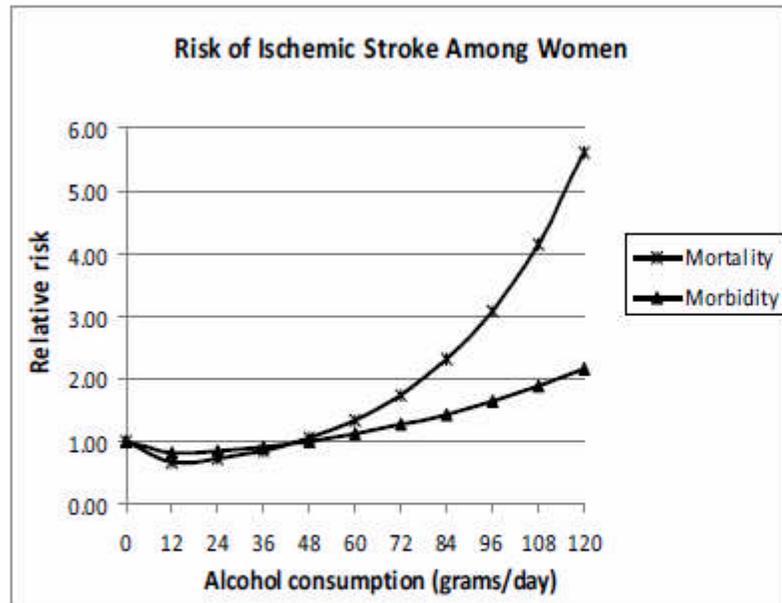
B.



Mortality & Morbidity: Linear dose-response, $f(\beta_1 x)$

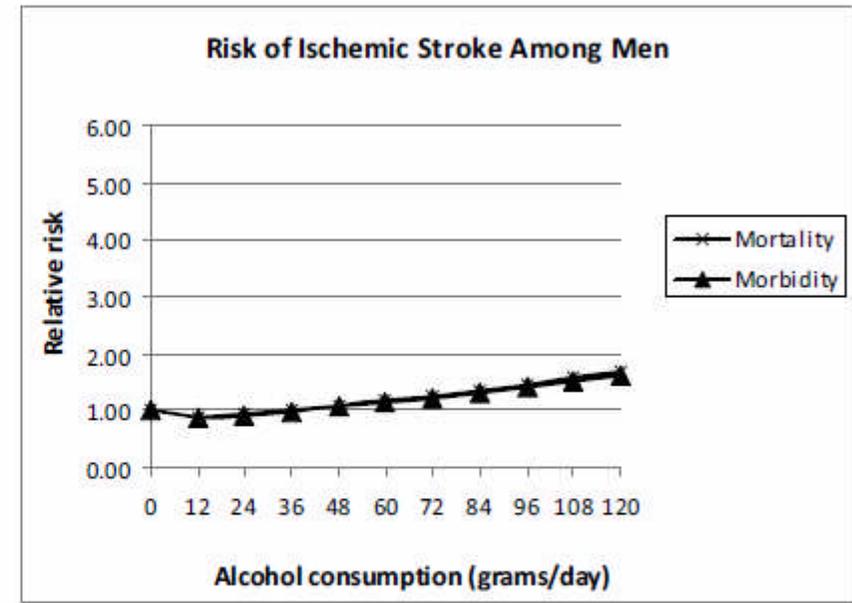
Figure 6 Meta-analysis showing the dose-response relationship between alcohol and hemorrhagic stroke by sex and by endpoint.

A.



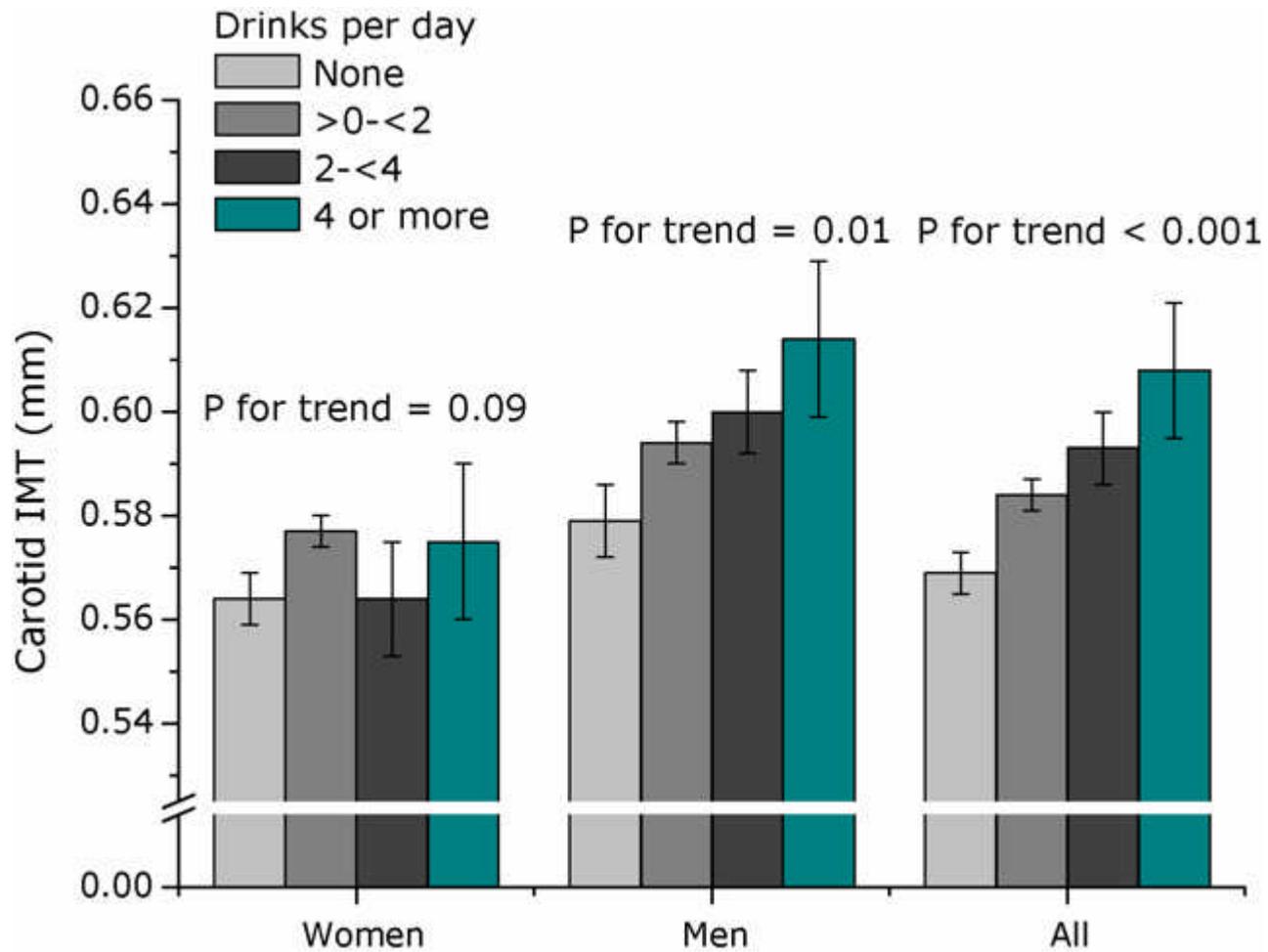
Mortality & Morbidity: J-shaped dose-response,
 $f(\beta_1 x^{-5} + \beta_2 x)$

B.

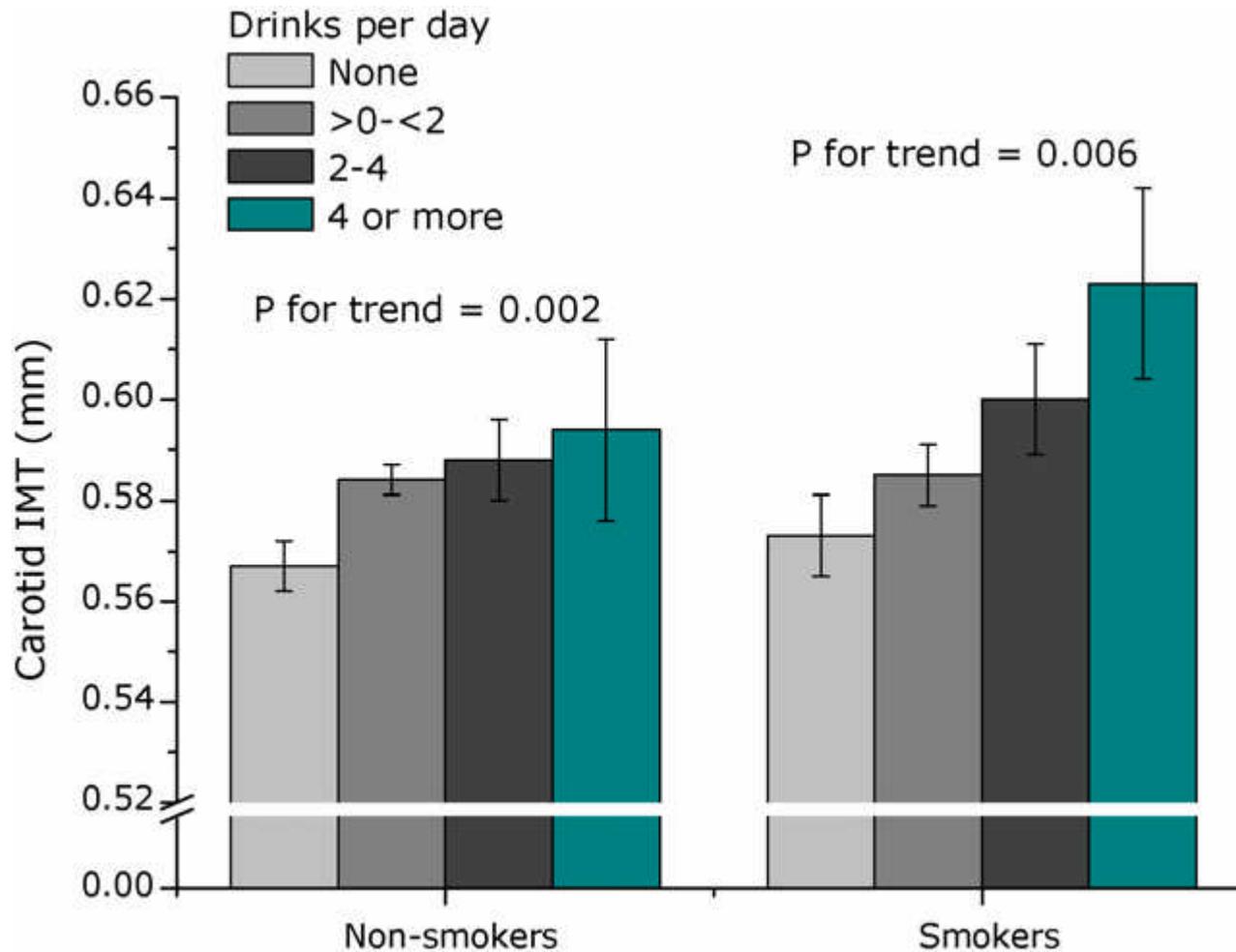


Mortality & Morbidity: J-shaped dose-response,
 $f(\beta_1 x^{-5} + \beta_2 x^{-5} \log(x))$

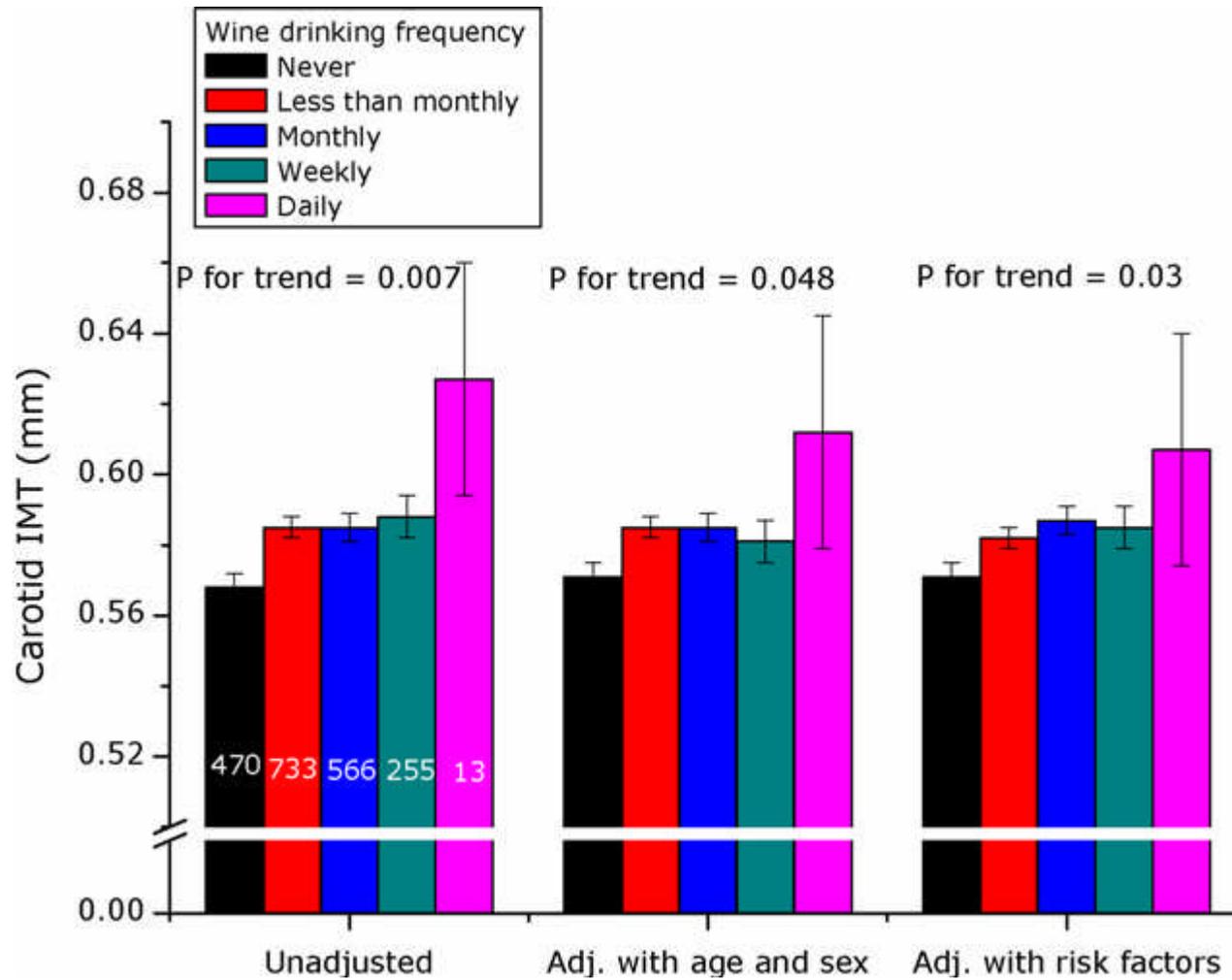
Figure 7 Meta-analysis showing the dose-response relationship between alcohol and ischemic stroke by sex and by endpoint.



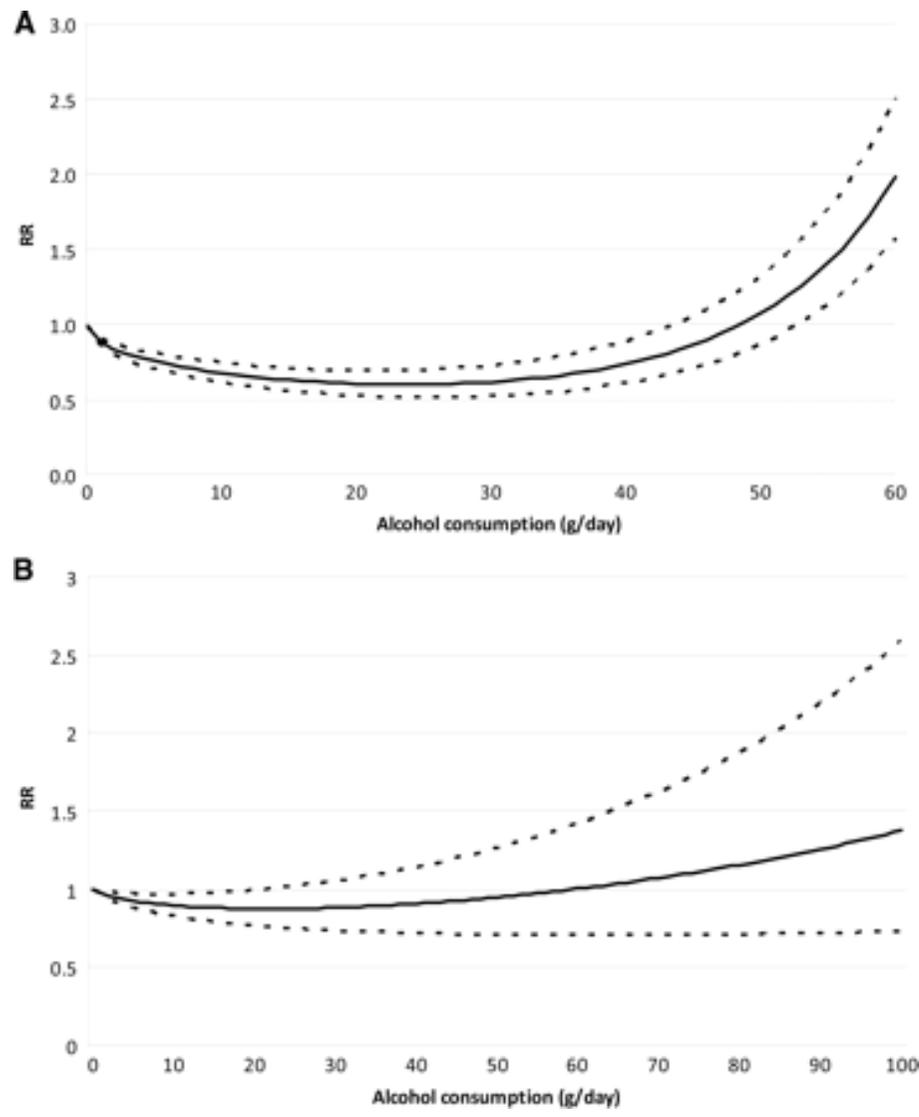
Carotid artery thickness by alcohol consumption, Finnish people aged 24-39



Carotid artery thickness by alcohol consumption,
Finnish people aged 24-39



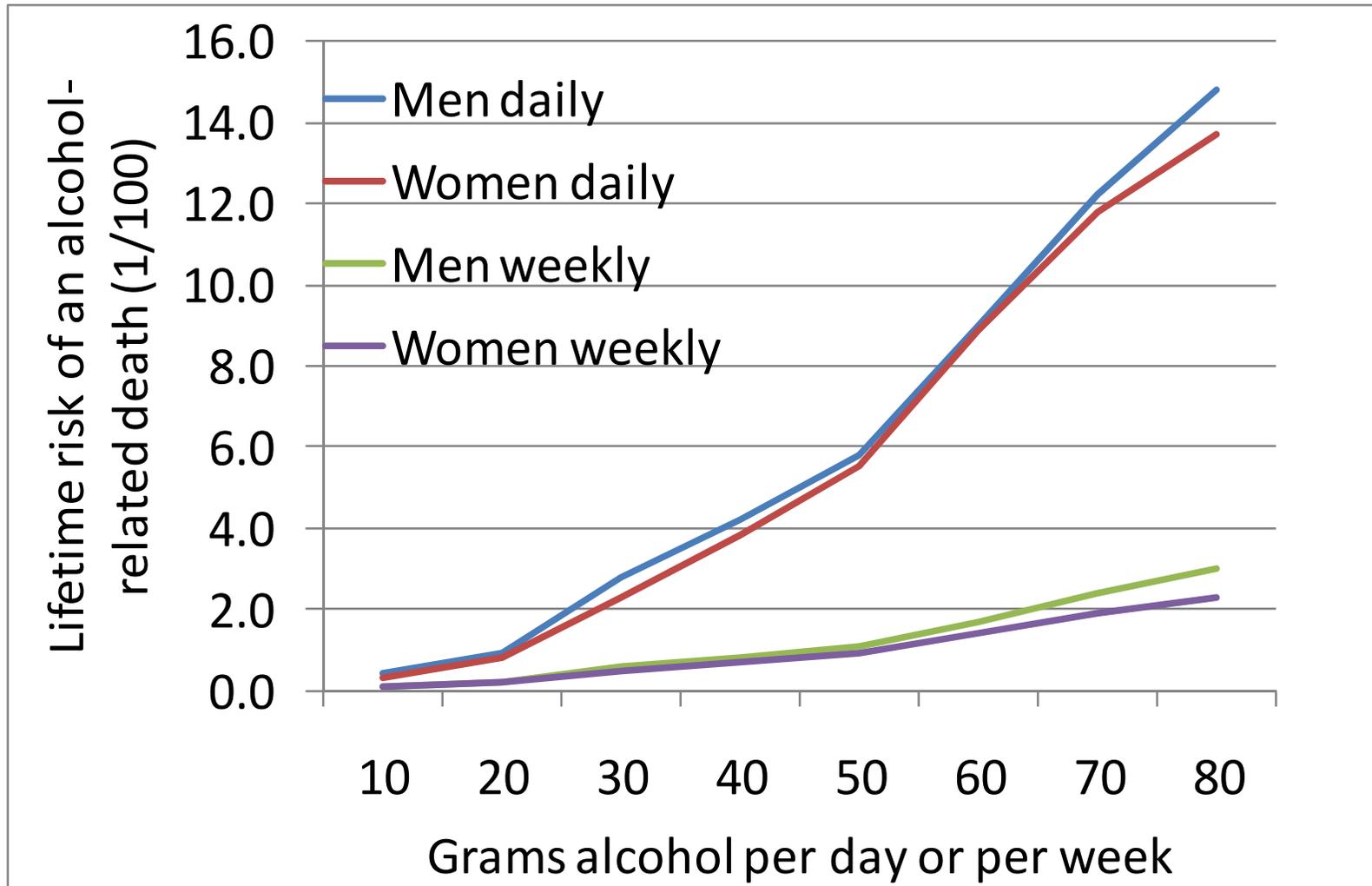
Carotid artery thickness by alcohol consumption, Finnish people aged 24-39



Alcohol and the risk of diabetes, for women at the top and men at the bottom

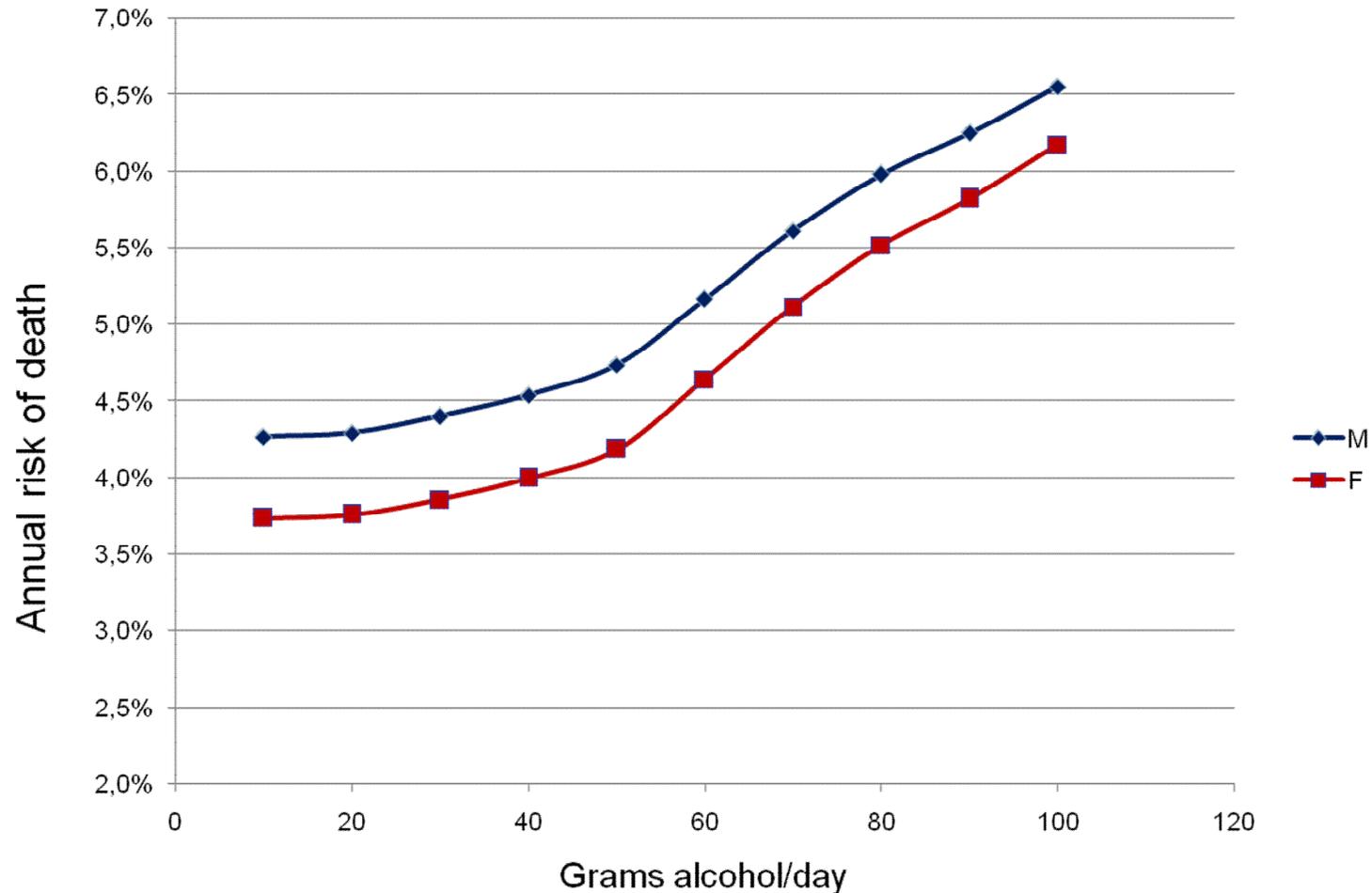
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Lifetime risk of dying from alcohol related to gram alcohol/day or /week for men and women living in Australia.

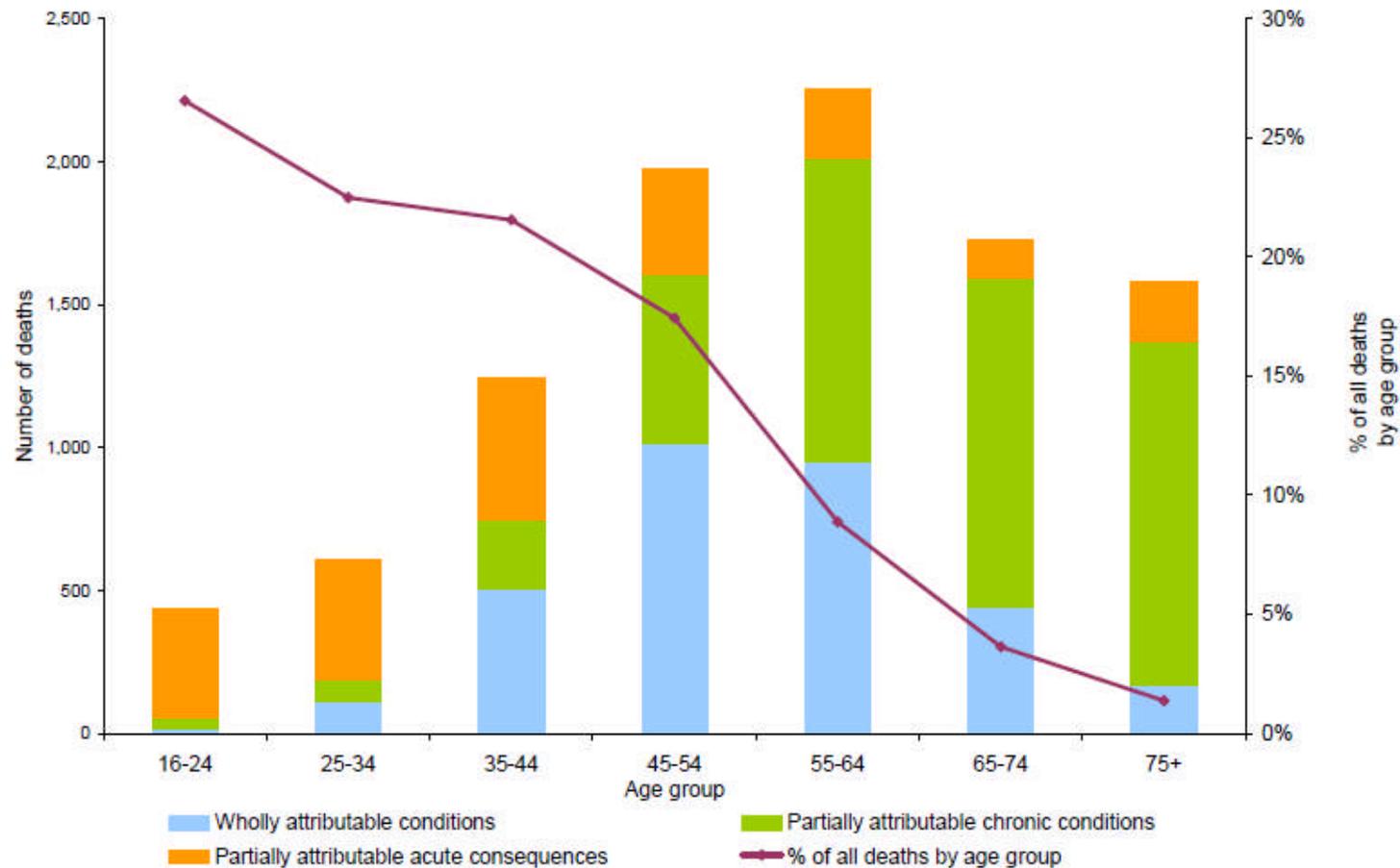
Adult annual risk of death from alcohol dependence, liver cirrhosis and alcohol-related cancers and cardiovascular diseases, EUR A&B countries



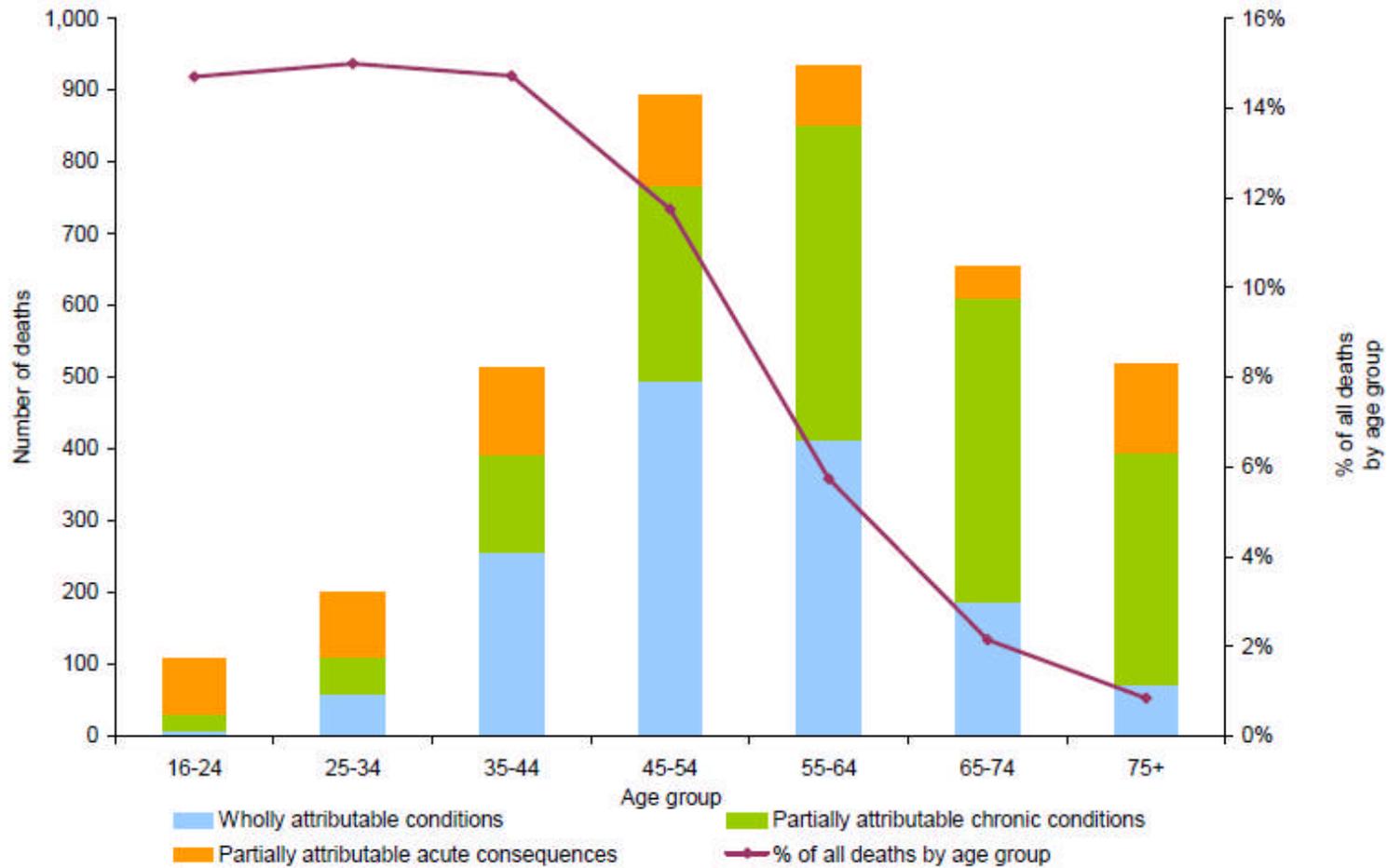
Rehm et al 2010, Addiction supplement, AMPHORA project

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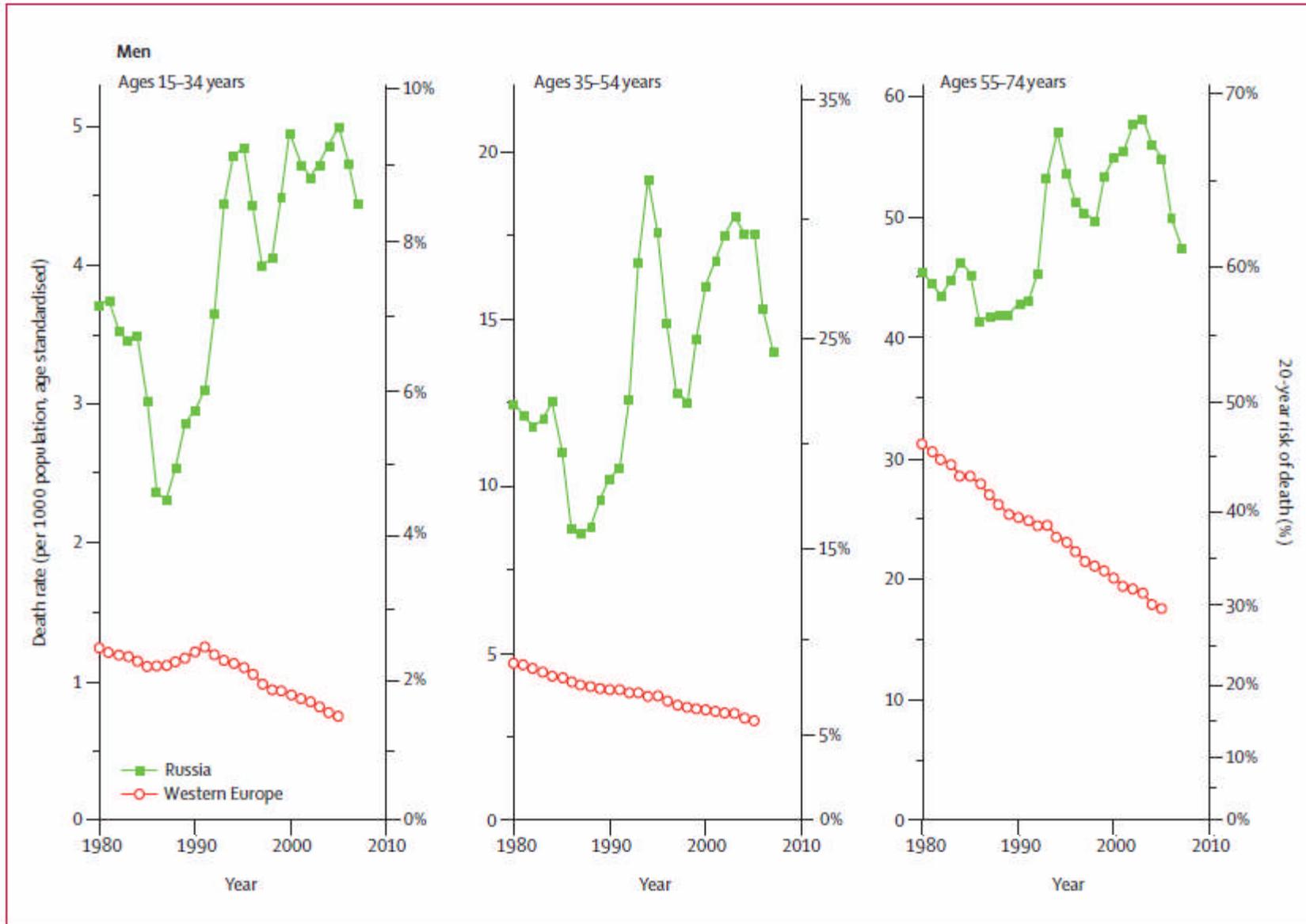


Estimated number (% of all deaths in each age group) of UK male deaths attributable to alcohol consumption by age and type of condition (2005).

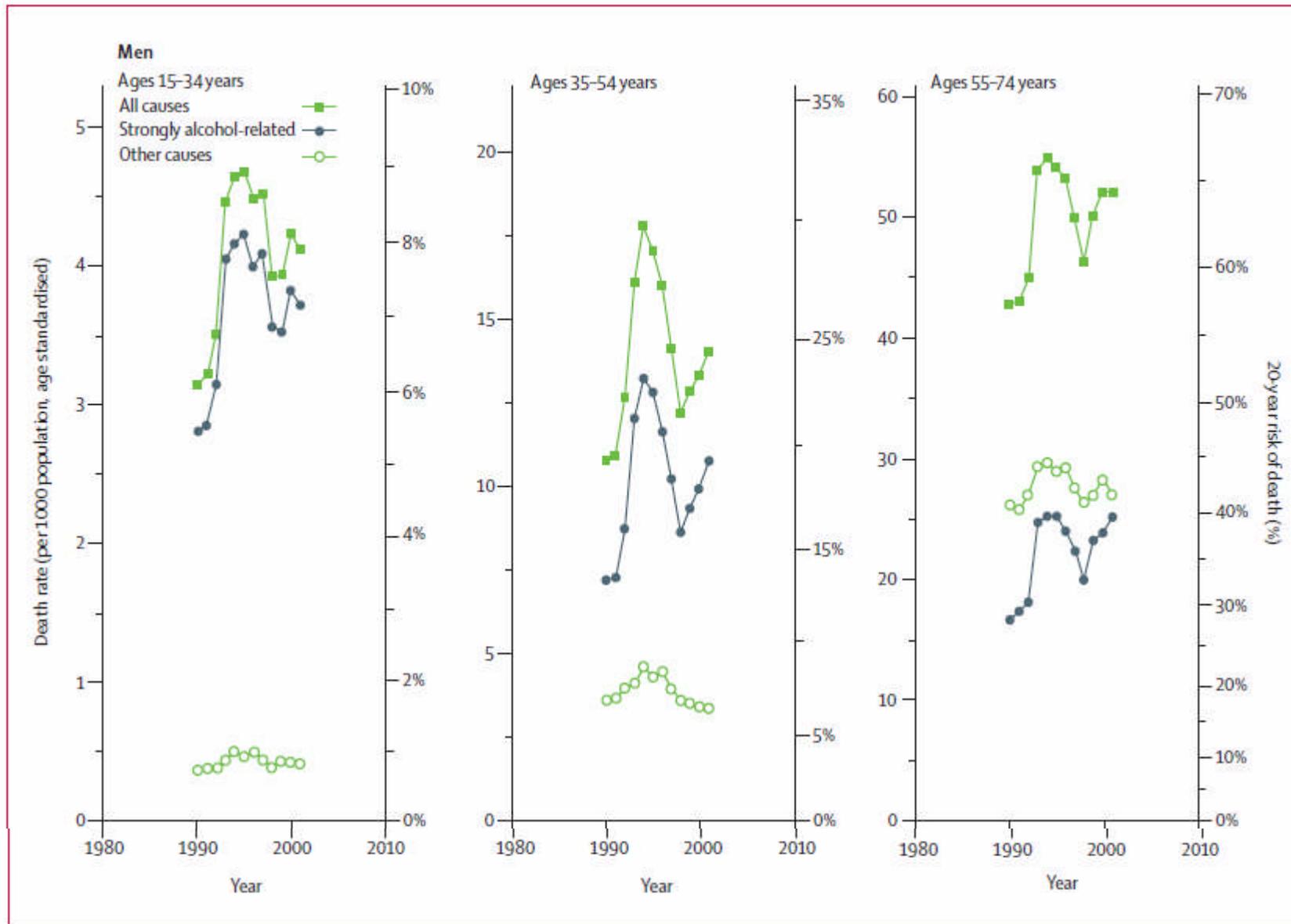


Estimated number (% of all deaths in each age group) of UK female deaths attributable to alcohol consumption by age and type of condition (2005).

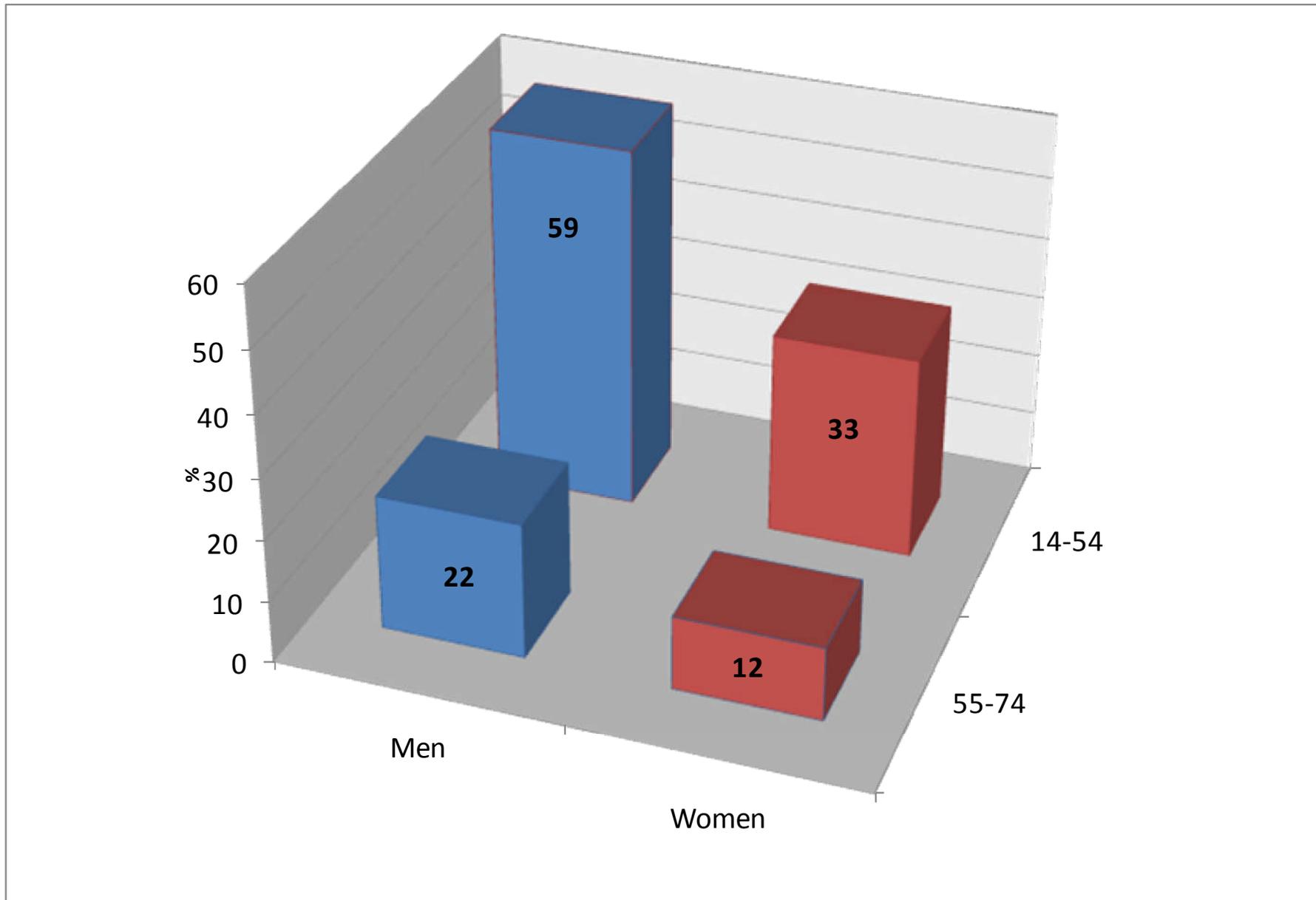
Death rate and risk of men dying in Russia



Alcohol-related death rate and risk of men dying in Russia



Per cent of all deaths due to alcohol



So, what does all this mean?

Alcohol is the **third** most important risk factor for global ill-health and premature death, after low birth weight and nearly equal with unsafe sex (alcohol is a risk factor for both unsafe sex and HIV/AIDS, not yet accounted in GBD estimates).

There are over 60 diseases and conditions caused by alcohol. For all of these, the risk increases with the amount drunk, with no level that is free of risk.

Exceptions are ischaemic heart disease and stroke, where small doses decrease the risk, but larger doses and irregular patterns of drinking increase the risk. The relation with diabetes is U-Shaped.

It does not matter what you drink - it is the alcohol that matters.

Risks are worse if you smoke or are overweight.

How much you drink over the lifetime
and how much you drink on an occasion
are both important.

Most alcohol-related deaths occur during middle age.

If you reduce your drinking, the risk to most conditions comes down immediately (accidents) or quickly (most conditions). For cancers, substantial reductions in risk are achieved by 10 years, with risks almost back to normal by 20 years.

If you keep your drinking below 20g alcohol (two drinks) a day, your lifetime risk of dying from an alcohol-related condition is less than 1 in 100.

Contrary to most perceived wisdom and popular belief, the lifetime risks of dying from an alcohol-related death are the same for men and women for each gram of alcohol consumed – if anything, they are higher for men than women, rather than the other way round.

Take home message:

Less is better