

Recent evolutions in drinking guidelines across the world: the facts and drivers of these decisions

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Beer and Health

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BEER AND HEALTH SYMPOSIUM



The context

The highest per capita alcohol consumption is observed in developed countries, it has, however, decreased in most developed countries over the past 25 years

- It has correspondingly increased in developing countries and the countries of Central and Eastern Europe (WHO 1999, 2000, Bloomfield et al. 2003, WHO 2004, WHO 2014).
- The mean adult global per capita consumption of 'pure' alcohol is 6.2 L per year, which has not appreciably changed in the past 25 years. This translates into 13.5 g of 'pure' alcohol per day, of which 50% is in the form of spirits, 35% as beer and 8% as wine (WHO 2014). Worldwide, approximately two billion people consume alcoholic beverages such as wine, beer and spirits
- The mainly beer-drinking regions are European, North American and South American countries
- The mainly wine-drinking regions are primarily the wine-producing European and South American countries. Spirits are mainly consumed by the South East Asian and Western Pacific countries



Why do we have guidelines on low risk levels of alcohol consumption?

- selected foods that have a dose dependent risk on our health and lifestyles such as salt, fats, sugar and alcohol

- Recommendations on drinking levels considered “minimum risk” for men and women exist in many countries globally. Official drinking guidelines are issued by governments and public health entities to advise on levels of alcohol consumption considered “safe”, “responsible,” or “low-risk” for healthy adults.
- Information included in guidelines may also define a standard drink (which differs from country to country) and offer advice to particular populations deemed to be at an increased risk for harm.
- They do not apply to those under the legal drinking age, where other guidelines may exist
- Most contain guidance on when not to drink such as when pregnant or in combination with certain medications.



Variance in size of standard drink across Europe

And no single international standard for safe or unsafe alcohol drinking levels

Graph 1. RARHA survey on low risk drinking guidelines in European countries: Standard Drinks in grams of pure alcohol, 2014. [3]

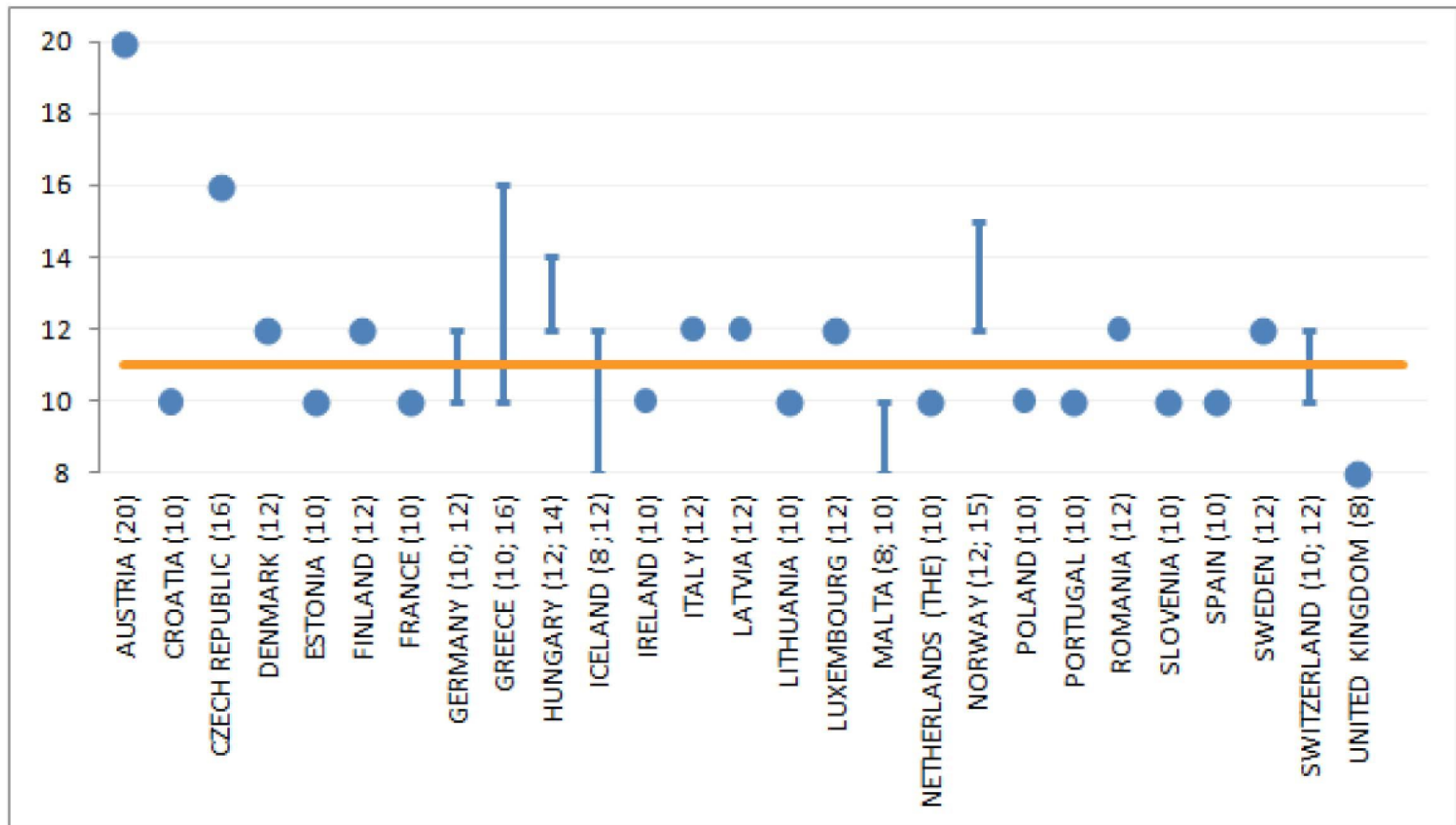
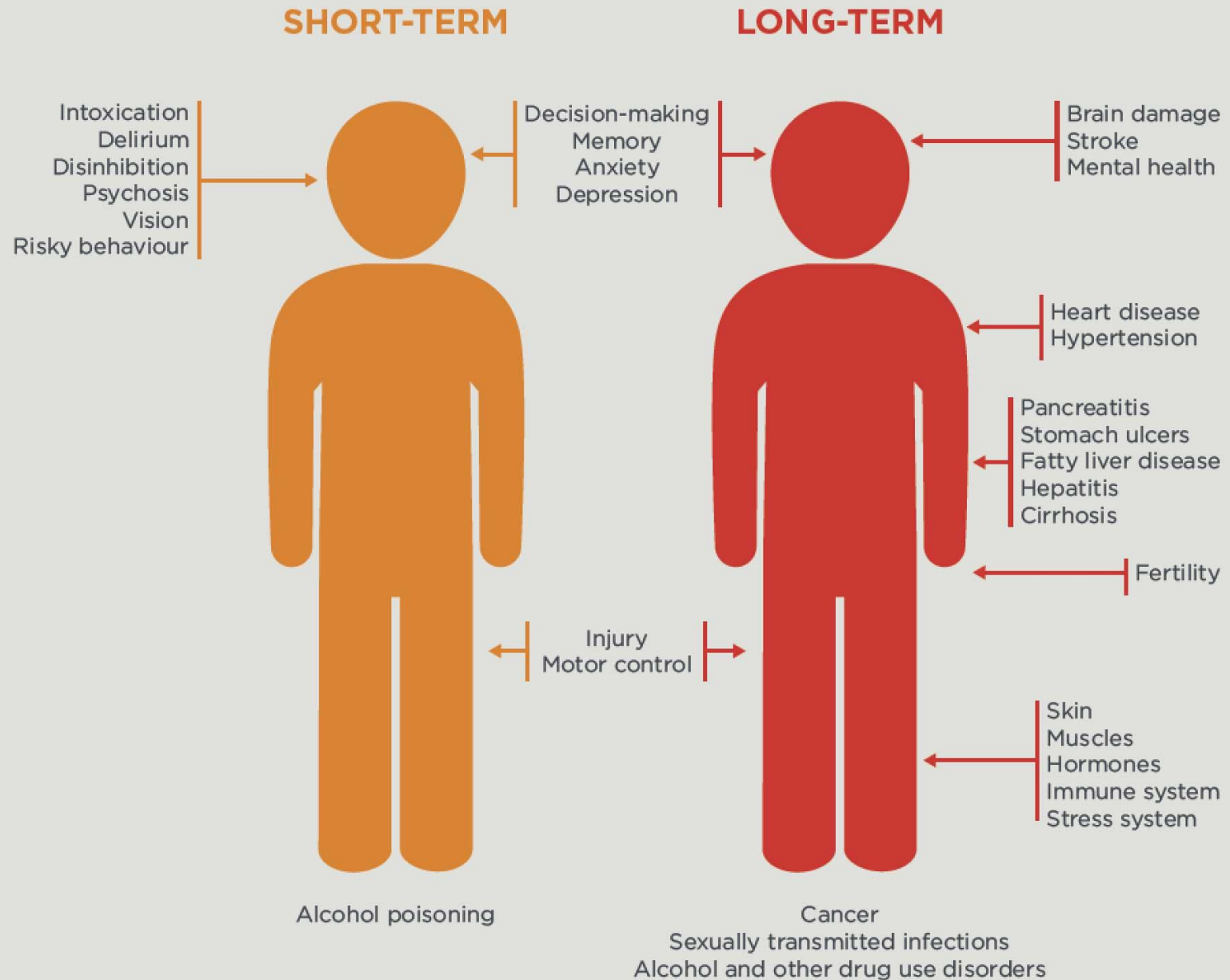


Table 2. Schematic summary of expert views of the most relevant purposes of “low risk”, “high risk” and “single occasion” drinking guidelines as identified in the RARHA Delphi survey.^[4] The relative relevance is indicated by the number of √ signs.^h

Purposes \ Focus of guidelines	Low risk from consumption over time	Risk from heavy drinking on a single occasion	High risk from consumption over time
To influence attitudes and thereby drinking habits in the whole population.	√	√	√
To inform alcohol consumers and others about alcohol related risks.	√√√	NA	NA
To draw all alcohol consumers' attention to the risks that may be involved in their drinking habits.	√√	√√	√√√
To provide advice to consumers who want to keep their alcohol consumption at a level where the risks remain small.	√	NA	NA
To help reduce the risk of accidents and injuries due to intoxication.	NA	√√√	NA
To help reduce the risk of social harms to the drinker due to drunkenness.	NA		NA
To help reduce the risk of social harms to others due to someone's drunkenness.	NA	√	NA
To encourage "at risk" drinkers reduce the amounts of alcohol they are consuming.	NA	NA	√√√
To help health professionals identify "at risk" drinkers and provide them advice on how to reduce alcohol consumption.	NA	NA	

EXAMPLES OF POTENTIAL HEALTH IMPACTS



CANADA'S LOW-RISK ALCOHOL DRINKING GUIDELINES RECOMMEND THAT:

To reduce risks of short-term injury and harm:

- Women should have no more than 3 standard drinks on any single occasion.
- Men should have no more than 4 standard drinks on any single occasion

To reduce long-term health risks:

- Women should have no more than 10 standard drinks a week, with no more than 2 drinks a day on most days.
- Men should have no more than 15 standard drinks a week, with no more than 3 drinks a day on most days.

Due to the health risks involved, abstinence is recommended:

- During pregnancy or when planning to become pregnant, and before breastfeeding;
- Before and while driving or using machinery and tools;
- When complications with medications or other drugs are possible;
- When living with mental or physical health problems; and
- Before and during any activities that need judgment, physical skill, balance and endurance.

WHAT IS A STANDARD DRINK?

REGULAR BEER

341 mL = 12 oz
5% alcohol

WINE

142 mL = 5 oz
12% alcohol

FORTIFIED WINE

85 mL = 3 oz
16-18% alcohol

HARD LIQUOR

43 mL = 1.5 oz
40% alcohol



Youth should delay drinking alcohol as long as possible, at least until reaching the legal drinking age.

Recent evolutions in drinking guidelines: adoption of alcohol free days

based largely on the theories that:

Habitual drinking will build dependence on alcohol

US and UK *'The expert group recommended a weekly alcohol guideline rather than a daily one because most people do not drink every day'*

the importance of a 'Liver holiday'

WHO responsible drinkers should spread the number of units they drink throughout the week, with one or two alcohol free days per week

Finland: Do not consume alcohol every day.

Germany Two alcohol free days per week are recommended for both men and women.

Latvia: Both men and women should refrain from drinking for at least three days a week.

Czech Republic 2 days per week without alcohol

Luxembourg It is advised not to drink alcohol 2-3 days per week.

Poland: Two alcohol free days per week are recommended

Switzerland: It is advisable to have several days each week with no alcohol.

Austria: At least two days a week should be alcohol-free.



The evidence base for this?

- In terms of alcohol consumption the most healthful pattern of consumption **is little and often**: a drink a day for women and up to two drinks a day for men. The protective effect applies to those men over 40 and post menopausal women, where the risk of heart disease is higher.
- **It is all a matter of dose**: a daily drink, in any form, favourably alters the balance of fats or lipids in the blood, by stimulating the liver to produce the 'good' high density lipoprotein cholesterol (HDL). HDL removes the 'bad' low density lipoprotein cholesterol (LDL) from arteries and veins for disposal via the bile, which is referred to as reverse cholesterol transport.
- Alcohol also inhibits excessive coagulation or the clotting together of red blood cells by reducing their 'stickiness', and facilitates the breakdown of blood clots. Drinking alcohol with a meal can reduce the sudden rise of a protein called fibrinogen produced by the liver. Fibrinogen increases the likelihood of harmful blood clots forming, called thrombosis.
- Red wine, dark beer and traditional ciders also contain phenolic compounds or antioxidants. Phenolic compounds also inhibit excessive coagulation and enhance the relaxation of blood vessel walls, allowing better blood flow.
- **Drinking more than at this level does not increase the protective effect** - and only leads to long term health harms. Drinking heavily can lead to irregular heart beat, sudden heart death and significantly increases the risk of a haemorrhagic stroke. Heavy episodic drinking (more than 6 standard drinks per drinking session), significantly increases systolic blood pressure, which significantly increases the risk of coronary heart disease or stroke.

Less acceptance benefits of moderate alcohol consumption a downward trend in low risk thresholds

UK: The net benefits from small amounts of alcohol are less than previously thought (with substantial uncertainties around the level of protection) and are significant in only a limited part of the population (females over 55).

Canada: These beneficial effects may not be directly due to alcohol consumption with recent research raising many questions about this association

Table 1. Changes in alcohol intake guidelines in Italy from 1979 to 2014

	Nutritional references	LARN	Dietary guideline	LARN	Dietary guideline	Dietary guideline	LARN
	1979	1987	1986	1996	1997	2003	2014
	Wine ml	Ethanol g	Wine ml	Ethanol g	Wine ml	Alcohol units	Alcohol units
Men	500	43.5- 41.4	646-437	40	450	2-3	2
Women	300	30,7	371-270	30	350	1-2	1
Older men	220	28,5	311	30		1	-
Older women	180	24,2	194	25		1	-
Pregnant/ lactating w.	300	0	-	0		0	0

A small number of regularly published authors in a small number of publications

Led by Canada and Australia

Room R et al (2017) Lifetime risk of mortality due to different levels of alcohol consumption in seven European countries: implications for low-risk drinking guidelines
J Addiction

Fillmore K et al. (2006) Moderate alcohol use and reduced mortality risk: systematic error in prospective studies. *Addiction Research and Theory*

Stockwell T et al. (2016) Do "Moderate" Drinkers Have Reduced Mortality Risk? A Systematic Review and MetaAnalysis of Alcohol Consumption and All-Cause Mortality.
J Stud Alcohol Drugs

Stockwell T et al (2016) Has the leaning tower of presumed health benefits from 'moderate' alcohol use finally collapsed? *J Addiction*



A move away from all cause mortality – i.e our risk of dying from any cause that is attributable to alcohol – to a disease specific approach, with a particular focus on cancer

UK: *Drinking alcohol increases the risk of developing a range of cancers. The Committee on Carcinogenicity recently concluded that ‘drinking alcohol increased the risk of getting cancers of the mouth and throat, voice box, gullet, large bowel, liver, of breast cancer in women and probably also cancer of the pancreas’. These risks start from any level of regular drinking and then rise with the amounts of alcohol being drunk.*

Further move to no safe level of consumption based on the linear association with some cancers:

UK: No drinking is safe for your health

Denmark No alcohol is safe for your health Do not drink alcohol for the sake of your health (**National Board of Health, Feb 2015**)

The Netherlands: Do not drink alcohol, or at least no more than one glass per day

The Health Council of the Netherlands



The evidence base for this?

There is no doubt that prolonged heavy consumption of alcohol increases cancer risk. However, the overall relationship between alcohol consumption and cancer is complex, and there may be threshold effects in the relationship between alcohol consumption and the risk of cancer (Breslow et al. 2011, Cao and Giovannucci 2016).

Of all lifestyle factors related to cancer, the attributable risk for tobacco was 20.1%, physical inactivity 5.6%, body mass 3.9%, and **alcohol 3.1%** (Begg et al. 2007, Begg et al. 2008).

Alcohol and breast cancer: Dietary folate may play a protective role in carcinogenesis (Lin et al. 2013, Chen et al. 2014, Tio et al. 2014). four to five drinks consumed per session may increase/double risk by 50% compared to only one drink consumed per session.

Alcohol and colorectal cancer: review of 7,000 peer-reviewed papers on lifestyle factors and cancer by World Cancer Research Fund and American Institute for Cancer Research (2007) found increased risk for colorectal cancer above 30 g alcohol/day for both men and women (Bagnardi et al. 2013, Klarich et al. 2015).

Alcohol and the upper aero digestive tract: tobacco and alcohol use together accounted for 73% of total UADT cancer burden in the European Union, of which tobacco use alone accounted for 28.7%, **alcohol use alone accounted for only 0.4%**, but the combination of smoking and drinking accounted for 43.9% (Anantharaman et al. (2011) Hashibe et al. (2009),

Move away from the physiological effects of alcohol on the body and blood alcohol concentration to a lifetime risk of drinking– to where the risk of alcohol attributed disease is as close to zero as possible

Significant as means a move to the same low risk guidelines for men and women (Australia and UK)

UK: 'This advice on regular drinking is based on the evidence that if people drink at or above the low risk level advised, overall any protective effect from alcohol on deaths is cancelled out and the risk of dying from an alcohol-related condition would then be expected to be at least 1% over a lifetime'

Australia

Australian Guidelines to Reduce Health Risks from Drinking Alcohol (National Health and Medical Research Council Guidelines)

For healthy men and women: Drinking no more than two standard drinks per day (20g) reduces the lifetime risk of harm from alcohol-related disease or injury

The UK Chief Medical Officers recommend adults do not regularly drink more than 14 units per week



Table 1. Implied guideline consumption thresholds using different approaches

		Units per week		Units per day	
Threshold	Drinking days per week	Males	Females	Males	Females
Canadian: RR=1.0	1	3.4	10.0	3.4	10.0
	2	5.8	12.0	2.9	6.0
	3	7.4	12.8	2.5	4.3
	4	8.2	13.2	2.1	3.3
	5	8.9	13.4	1.8	2.7
	6	9.4	13.6	1.6	2.3
	7	9.8	13.6	1.4	1.9
Australian: Proportion of deaths attributable to alcohol=1%	1	6.0	12.0	6.0	12.0
	2	9.4	14.0	4.7	7.0
	3	11.3	14.8	3.8	4.9
	4	12.3	15.2	3.1	3.8
	5	13.1	15.4	2.6	3.1
	6	13.7	15.6	2.3	2.6
	7	14.1	15.7	2.0	2.2

Taken from *Mortality and morbidity risks from alcohol consumption in the UK: Analyses using the Sheffield Alcohol Policy Model (v.2.7) to inform the UK Chief Medical Officers' review of the UK lower risk drinking guidelines* [6]

The evidence: men and women

There are physiological gender differences in body size and the distribution of fat and water, as well as in alcohol metabolism that determine that for a given amount of alcohol, the resultant BAC is greater in women than in men.

The maximal BAC may be approximately 10-16% greater in women compared to men. In addition it should also be stated that women's organs and tissues are more susceptible to the toxic effects of alcohol and its metabolite such that harmful effects of regular heavy drinking are observed earlier in women.

Women generally have smaller livers, and less alcohol dehydrogenase (the enzyme which breaks down alcohol to acetaldehyde in the stomach and liver before it is broken down into CO₂ and water) and therefore women are advised to drink less alcohol than men.



Lower guidelines for older populations

Older populations specific guidelines only exist in 7 countries at present

There have been suggestions that the elderly should reduce their alcohol consumption to below daily drinking guidelines. This is based on the fact that they have less body water than younger adults. However, moderate, regular consumption, within the guidelines helps protect against cardiovascular disease, cognitive decline and all cause mortality, especially among post menopausal women and men over 40. The UK has modified its advice to apply to women over 55 only.

US dietary guidelines 2010 *In most Western countries where chronic diseases such as CHD, cancer, stroke and diabetes are the primary causes of death, results from large epidemiological studies consistently show that alcohol has a favorable association with total mortality especially among middle age and older men and women*

Findings from: Alcohol Consumption at Midlife and Successful Ageing in Women: (Nurses' Health Study) following 14,000 older women for 16 years. Those who consumed between 15g and 30g of alcohol regularly had a 28% better chance of 'successful ageing versus abstainers or light occasional drinkers

(<http://www.plosmedicine.org/article/info:doi/10.1371/journal.pmed.1001090>)

Moderate drinking was associated with considerably lower risk of all-cause mortality. In comparison with "moderate drinkers" (subjects reporting up to 3 drinks/day), abstainers had 51 % higher mortality risk and heavy drinkers had 45% higher risk. .(Holahan CJ et al. *Late-Life Alcohol Consumption and 20-Year Mortality. Alcoholism: Clinical and Experimental Research* 2010;34)

Good evolutions in guidelines:

the importance of pattern of drinking and drinking with food:

UK: Chief Medical Officer recommend that *"To keep short term health risks from single drinking occasions to a low level, men and women can: limit the total amount of alcohol consumed on any occasion; drink more slowly, with food, and alternating with water."*

Ireland: Drinks should be spaced out over the week, not consumed in one sitting

Hungary: It is wise to drink alcoholic beverages at the time of meals, because alcohol will be then absorbed more slowly.

Realistic maximum recognised for 'special occasions' or 'nights out'

New Zealand: Reduce your risk of injury on a single occasion of drinking by drinking no more than 5 standard drinks for men on any single occasion and 4 standard drinks for women on any single occasion

Slovenia:

Men: No more than 20g/day, 50g on a special occasion.

Women: No more than 10g/day, 30g on a special occasion.

Switzerland: On exceptional occasions, men should consume no more than 5 drinks, and women no more than four drinks.

Australia: Drinking no more than four standard drinks (40g) on a single occasion reduces the risk of alcohol related injury arising from that occasion



Does the J shaped curve still holds true?

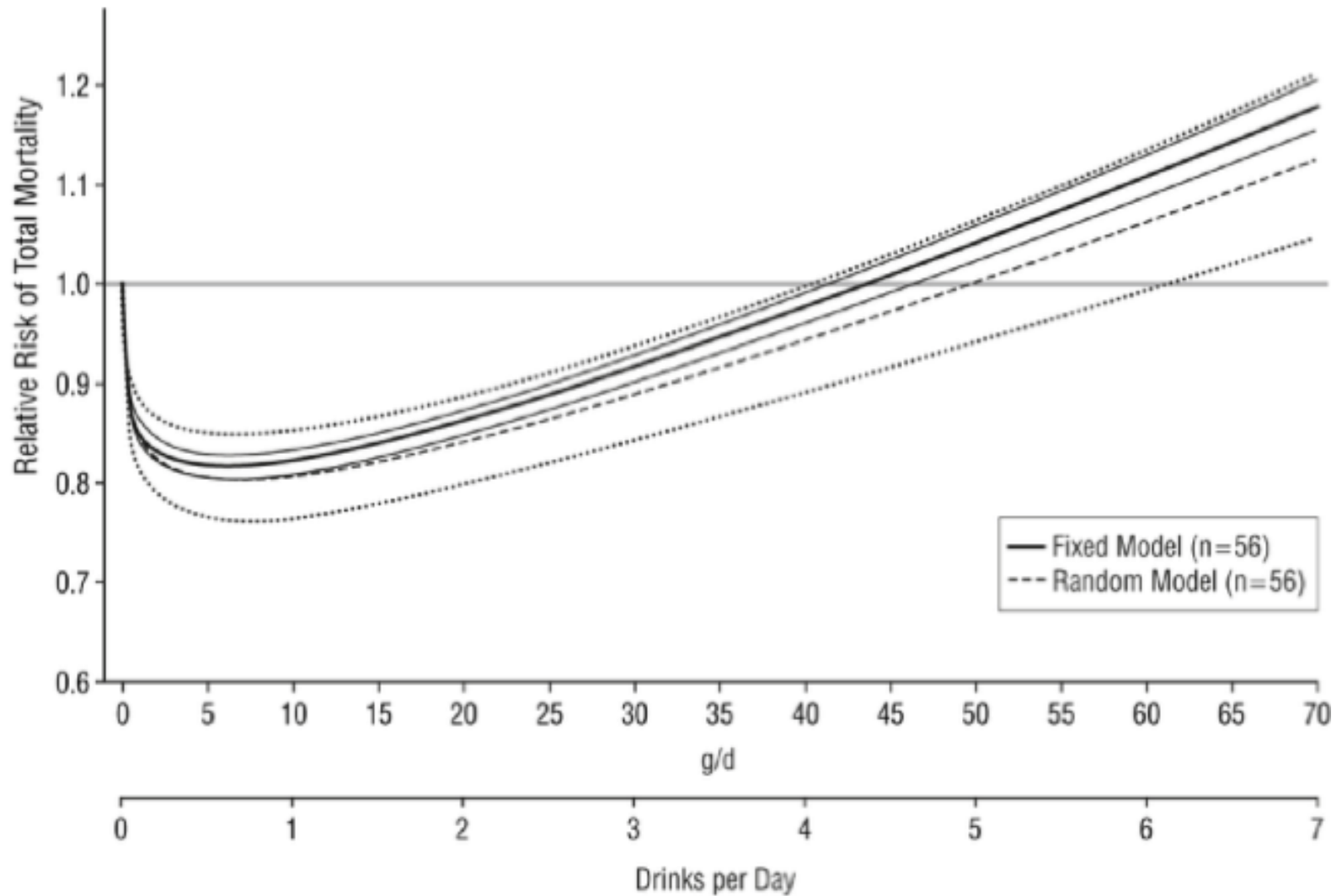
As of 2017, essentially all epidemiologic studies continue to show a J-shaped curve, especially for CVD and mortality.

Some health officials suggest that the public should be advised to focus on the nadir of the J-shaped curve for making decisions about drinking. Instead, many moderate drinkers are inclined to view the point on the curve where the risk of adverse health outcomes exceeds that of abstainers, a point that indicates when the level of drinking may begin to be less healthy than the risk associated with abstinence.

Chokshi (2016) has pointed out that the marked differences between a linear curve and a J-shaped curve cause problems for public health messages. “Traditional messages such as restrict, ban, etc. work for linear relations between exposures and health (e.g., for cigarettes, illegal drugs) – ‘Just say no!’ However, they work less well for an exposure with a ‘J-shaped’ relation with health, such as alcohol.” It can be argued that, on the other hand, most people can appreciate that taking a little of something (e.g., a glass of wine, an aspirin tablet) is different from taking a lot of it (e.g., a bottle or two of wine, 100 aspirin tablets). The J-shaped curve provides an accurate portrayal of the scientific data relating alcohol to disease outcomes.

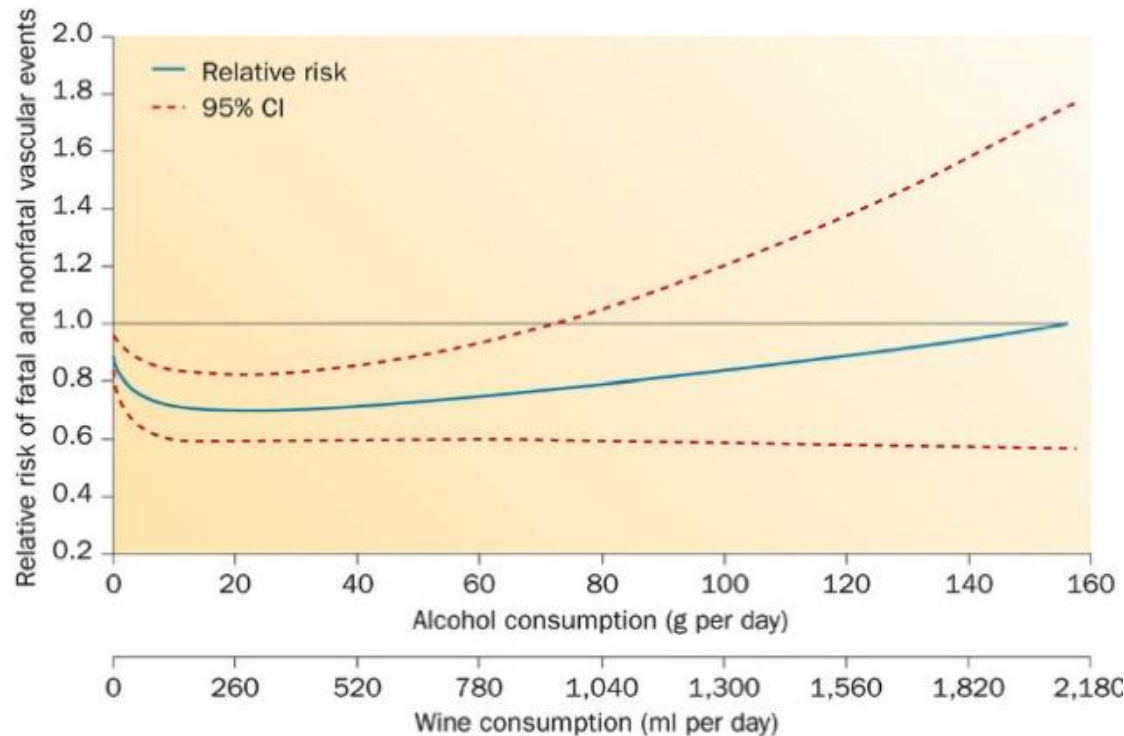


Di Castelnuovo et al, Archives of Internal Medicine 2006



The relevance of the J shaped curve

The j shaped curve shows that light and moderate drinkers of any form of alcohol live longer than those who abstain or drink heavily. The relative risk of mortality is lowest among moderate consumers (at the lowest point of the J), greater among abstainers (on the left-hand side of the J), and much greater still among heavy drinkers (on the right-hand side of the J). In addition to longevity in general, the J-shaped relationship also exists for cardiovascular deaths, specifically for coronary heart disease and ischemic stroke.



Focusing on a “Healthy Lifestyle”

Making recommendations to the public regarding alcohol consumption should always include other important lifestyle factors that affect health: smoking, obesity, diet, and exercise. Scientific data show that subjects in large epidemiologic studies who are non-smokers, are not obese, eat a Mediterranean-type diet, and get regular exercise have much lower risk of CVD and total mortality, whether or not they consume alcohol.

It appears that the role of light to moderate alcohol consumption in preventing cardiovascular disease, the leading cause of death throughout the developed world, is currently being down-played in government guidelines. Statements from scientists are carefully selected and many are thus being ignored.

“For drinkers having one to two drinks per drinking day without episodic heavy drinking, there is substantial and consistent evidence from epidemiological and short-term experimental studies for a beneficial association with IHD [ischaemic heart disease] risk when compared to lifetime abstainers. Roerecke and Rehm (2014)

“Total avoidance of alcohol, although optimum for cancer control, cannot be recommended in terms of a broad perspective of public health” Boffetta and Hashibe (2006)

When all-cause mortality is considered, the data strongly suggested that light to moderate alcohol consumption reduces the risk of death from all causes (Di Castelnuovo et al. 2006, Howie et al. 2011, Chiva-Blanch et al. 2013, Ferrari et al. 2014).



Take away messages

Differences between recommendations suggests that as the scientific evidence is not different in different countries, it may be differently interpreted. Rather than the scientific evidence base for alcohol drinking guidelines having changed recently, perhaps it is the focus that has changed.

There has been a change in focus away from individual consumer factors and influences on blood alcohol concentration (BAC), such as age, body mass index, gender and associated effects, good and bad, on human health

There has also been change in focus away from pattern of consumption compared to amount

There has been a change in focus towards risk of death over a lifetime, adding the risk of death from short-term harms together with that from longer term harms, and the focus of long-term harms has also changed away from cardiovascular diseases towards cancers (Cao and Giovannucci 2016).

The WHO (2016) suggests that the four main non-communicable disease are cardiovascular diseases, cancers, diabetes and chronic lung diseases, and these were responsible for 68% of all deaths globally in 2012.

Although cardiovascular diseases are the leading causes of adult deaths worldwide, where there is a clear j-shaped relationship between alcohol consumption and the risk of death from cardiovascular diseases (Bergmann et al. 2013, Dai et al. 2015, Klatsky 2015), cancer is now the second leading cause of death, for example, generally occurring later in life. The gap has also narrowed between the two leading causes of death and the role of alcohol in cancer causation is much less clear.

What is important regarding any risk to human health is BAC, which has been neglected in many countries' recent recommendations to its alcohol consumers. A return to guidelines that enable alcohol consumers to understand what amounts and patterns of alcohol consumption affect and influence their BAC and its associated short- and longer-term benefits and risks to their health, will serve governments and consumers alike well.



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