

ALCOHOL AND PHYSICAL HEALTH – A COMPLEX EQUATION

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Alcohol is our favourite drug. As well as the complex interactions of benefit and risk on a social and behavioural level, the balance as applied to physical health is not always clear. There is a danger that the reported population benefits of 'a couple of glasses of red wine a day' can be taken as a *carte blanche* by individuals for whom the balance of risk is clearly in the other direction.

Alcohol can damage every organ system in the body, and is a factor in almost a third of all accidents. Liver cirrhosis is the best known of the physical risks, but affects only 10-20% of heavy drinkers, and genetic factors are also likely to be important. About half of patients presenting with alcoholic cirrhosis are not dependent drinkers, and would have stopped or moderated consumption with better information. Most concerning at present is the trend to present with problem drinking at a younger age and the rapid rise in alcohol misuse in women.

The beneficial effects on ischaemic heart disease are well known, but have to be set against the other cardiovascular effects of alcohol, especially hypertension where the fraction attributable to alcohol is about 15%. The risk of ischaemic cerebrovascular accidents (strokes) is reduced in moderate consumers but the risk of haemorrhagic strokes is increased, particularly in binge drinking.

The balance of risk and benefit of differing levels of consumption are critically dependent on age, sex and socio-economic circumstance. In developing countries, the benefits never outweigh the deleterious effects on the health of the population. In Western societies the beneficial effects overall are seen only in the over 70's age group. When analysed by level of consumption, the benefits of drinking at the upper limit of 'safe levels' are apparent only in men over 55 and women over 65. Theoretical tables can be constructed for the consumption associated with the lowest overall risk for each sex and age group. Patterns of drinking add a further level of complexity, with evidence that binge drinking, when adjusted for total consumption, can increase all-risk mortality 3-fold and mortality from acute myocardial infarction 6-fold.

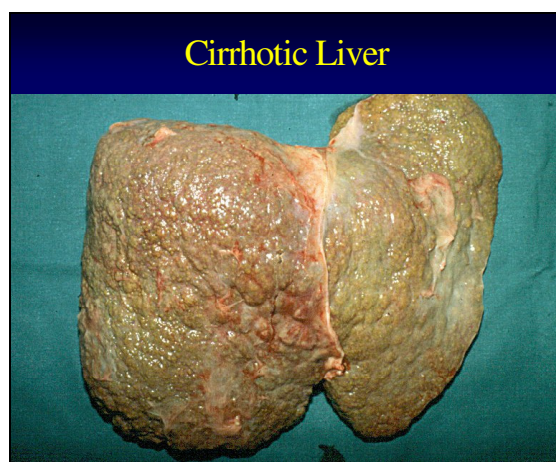
These complex interactions have to be taken into account when developing any public health message or educational programme. Such strategies need urgent development to take advantage of the increasing evidence that early interventions can influence drinking patterns.

ALCOHOL AND ACCIDENTAL INJURY

- Alcohol is a factor in 20-30% of all accidents.
- Alcohol is associated with 15% of all drownings.
- Alcohol is associated with 39% of deaths in fires; people anaesthetised by alcohol do not wake up so quickly and are more likely to die from smoke inhalation.
- There are 550 deaths and 2940 serious casualties each year resulting from drink driving.
- 37% of pedestrians killed on the road had drunk over the legal limit for driving.

CIRRHOSIS OF THE LIVER

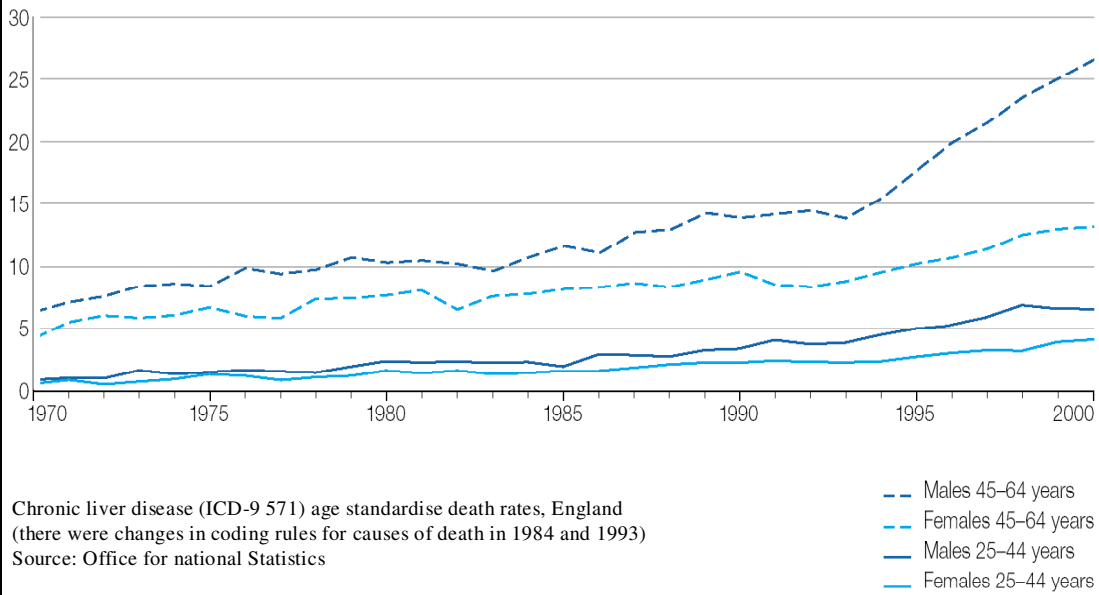
- 30% of those with cirrhosis of the liver do not acquire it as a result of alcohol consumption. 70% of cirrhosis in the UK is a direct result of alcohol.
- Only 20% of those who grossly misuse alcohol acquire cirrhosis of the liver. Strong genetic factors influence this, e.g. different ways of metabolising alcohol.
- 50% of patients presented with alcoholic liver disease are not dependent on alcohol. This affirms the importance of brief interventions, as some people will stop drinking if the risks they are taking are drawn to their attention.
- People are generally aware of alcohol units but grossly overestimate what a unit is. They are not aware of the consequences of not adhering to guidelines on sensible consumption and expect to be warned in advance of dangerous drinking behaviour. Unfortunately, many people only seek help when it is too late.
- The warning signals associated with alcoholic liver disease, namely jaundice and abdominal swelling often occur late when cirrhosis is already established.



- Death rates from cirrhosis in England have been increasing slowly since the 1970s but have started increasing more rapidly in the last 10 years.
- The Chief Medical Officer expressed concern in 2001 about the rising incidents of cirrhosis in young men but there is now evidence suggesting that a similar marked increase is observable in young women.

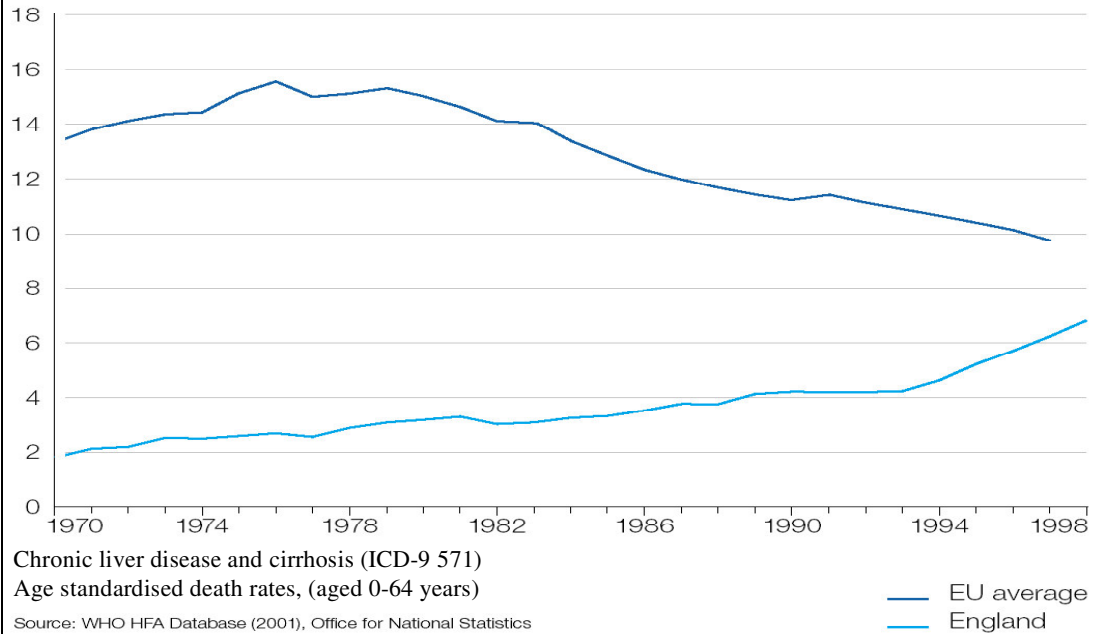
Death Rates from cirrhosis in England, 1970 – 2000 (CMO's report 2001)

Rates per 100,000 population



Trends in cirrhosis deaths between England and EU, 1970 – 1998 (CMO's report, 2001)

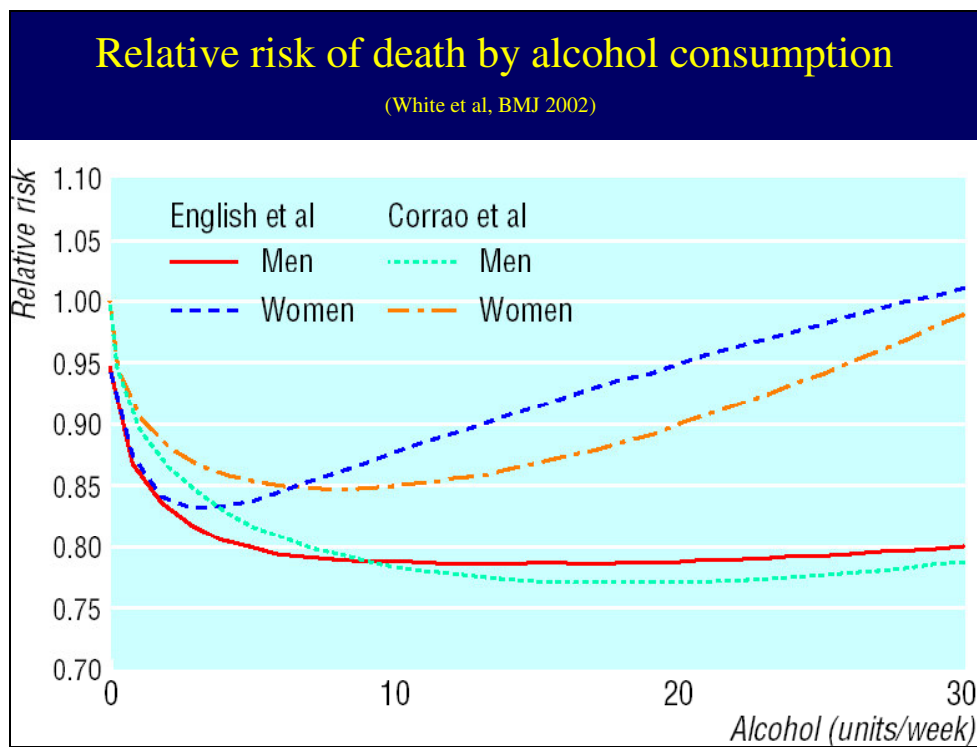
Rates per 100,00 population



- The UK is catching up with the rest of Europe, with numbers of cirrhosis deaths increasing every year in England, while the European Union average is steadily declining.
- Some countries, including Italy and France, have reduced their per capita consumption by nearly 50% in the last few decades. It is important to establish how this has been achieved.

POTENTIAL BENEFITS

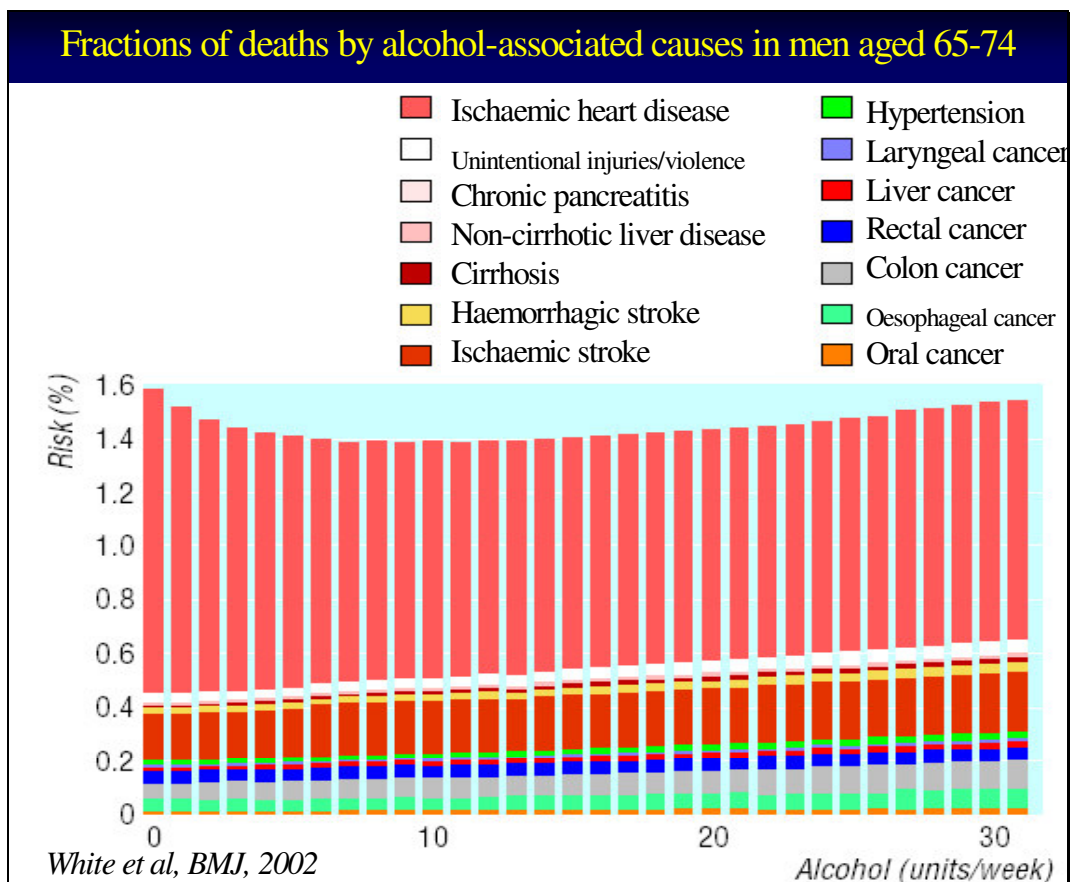
- Evidence from epidemiological and pathological studies suggests that alcohol consumption may actually reduce the risk of dying. In women, this trend reverses over approximately 10 units but in men, there is little increased risk of mortality with increased consumption up to 30 units a week. This is called the J-Shaped curve or Physician's friend.



- Potential benefits are mainly mediated through atherogenesis, preventing cholesterol being laid down on the arterial walls.
- Levels of HDL (good) cholesterol increase in people that drink moderately and levels of bad cholesterol go down.
- It has a similar effect on platelet function to aspirin and the effects can be additive, making it even more beneficial on atherogenesis.
- The same pattern is found in all laboratory research and can be generalised to all types of alcohol, not just red wine as is commonly thought.
- Moderate alcohol consumption decreases the chances of atherosclerosis, cardiomyopathy, and ischaemic strokes.

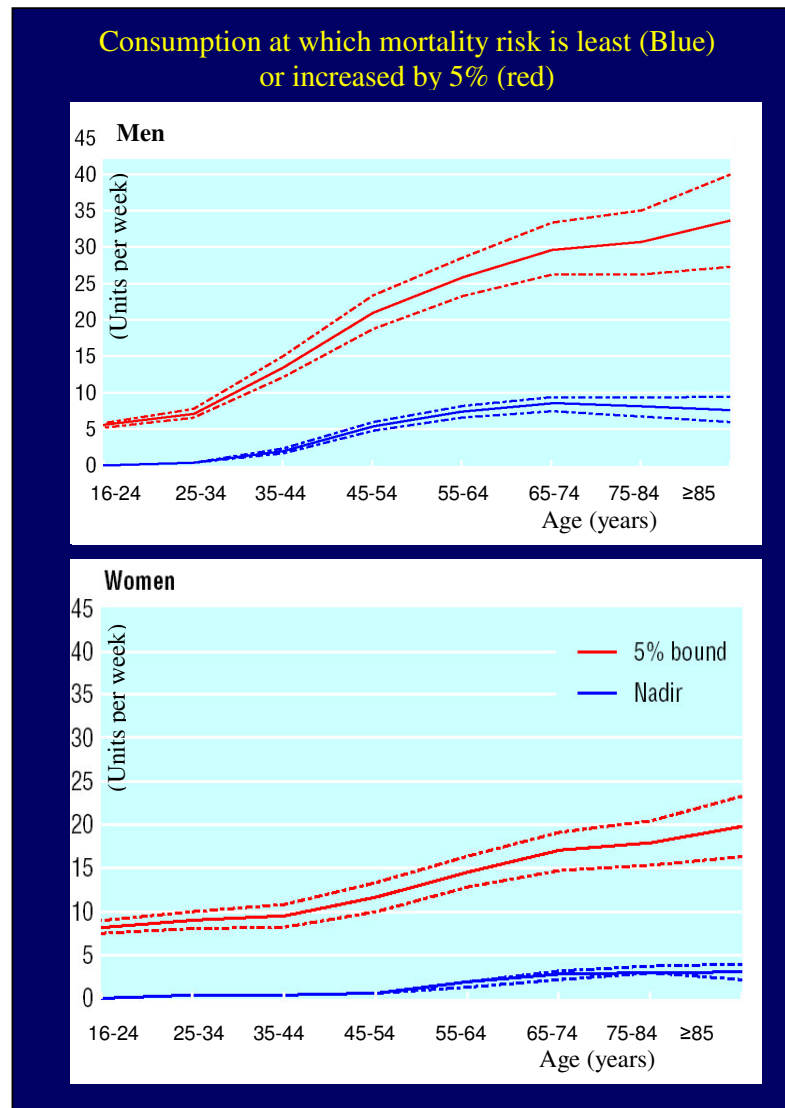
OTHER ALCOHOL-RELATED HEALTH RISKS

- The immediate risk of alcohol is trauma NOT cirrhosis. Injury and trauma swamp any other effects of alcohol in the early years of consumption.
- Many different systems are affected by alcohol consumption and damage is not always related to the volume drunk. Even very small amounts can predispose to some diseases like chronic pancreatitis.
- Systems affected by alcohol include the heart and blood vessels, liver, pancreas, gut, brain and peripheral nerves, muscle and bone, endocrine and reproductive systems, and the blood.
- Alcohol increases the chances of potentially fatal arrhythmias. Post-drinking exercise may be dangerous because the heart is so unstable.
- Alcohol is a major contributory factor to hypertension, causing 15% of all problems, creating a major burden on the NHS.
- Alcohol damages the cardiac muscle and can weaken the heart to a point of not withstanding major surgery, which can limit the use of liver transplantation.
- Haemorrhagic stroke linked to increased hypertension is also increased.
- The reduction in mortality rates from alcohol consumption is due to a reduced occurrence of ischaemic heart disease BUT all other problem effects are on the increase, particularly colon, rectal, and oesophageal cancer, and haemorrhagic stroke.



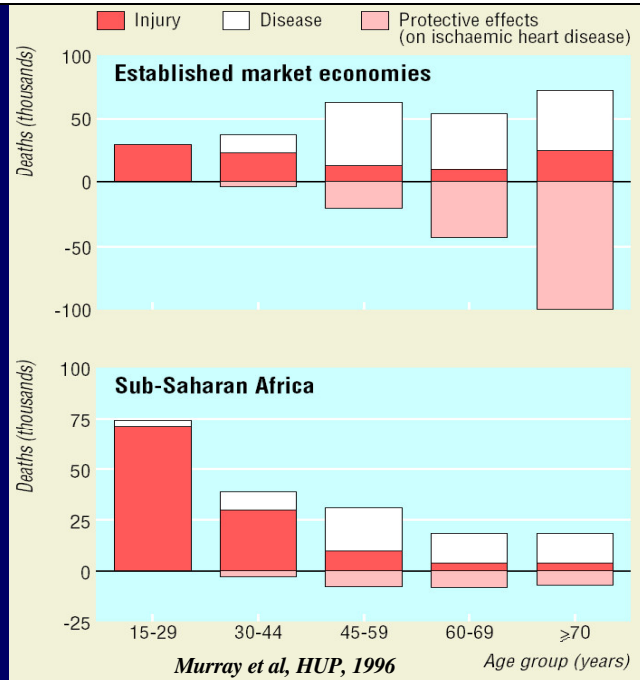
TRENDS IN DRINKING AND ASSOCIATED EFFECTS

- The J-shaped curve does not hold up to close analysis, in terms of age breakdowns.
- Drinking in men significantly increases the risk of mortality compared to non-drinkers in the under 35s and there is no overall benefit in younger age groups. In women, no overall benefit is seen until over the age of 55.
- In men, mortality risk is lowest if no alcohol is consumed until the age of 35, after this no more than 10 units a week. Accepting an increased mortality risk of 5% allows drinking between 5 and 15 units a week until the age of 45, after which point consumption can increase.



- In women, mortality risk is lowest if no alcohol is consumed until the age of 55, after this no more than 4 units a week. Increasing mortality risk by 5% allows drinking less than 10 units a week until the age of 45.
- Alcohol risks and benefits vary in different societies. In the West the reduction in ischaemic heart disease almost balances the increased risk of injury (especially seen in the young) and disease (more apparent with age). In the third world where this type of heart disease is not prevalent, the risks far outweigh any benefits.

Competing benefits and risks of alcohol in different societies



- Patterns of drinking have a significant impact on the risks even if total alcohol consumption is the same.
- Overall mortality rates were 3 times higher in those drinking more than 6 bottles of beer in a session, compared to those who never drank more than 3 bottles. Risk of death from external sources increases 7 fold. Occurrence of fatal heart attacks increases 6 fold.

Pattern of drinking and mortality risk

Kauhanen et al, BMJ, 1997

