

Contents

(Click on an item/ page no. to be taken directly to your choice of article)

News from around the world 2	Social and Policy News
Obituary: Federico Leighton Puga, MD 3	Do peers' parents matter? A new link between positive parenting and adolescent substance use 25
Is it merely a myth that alcoholic beverages such as red wine can be cardioprotective? by Creina Stockley 4	Health Behaviour in School-Aged Children Study (HBSC): 2009/2010 report 26
Medical News	New licensing provisions in force in the UK 29
Intake of alcohol and risk of adult-onset asthma 11	Night time switch for new Drinkaware site
Risk and severity of liver disease reduced by modest alcohol consumption 12	Sunset clause for minimum pricing in Scotland
Poor impulse control may be pre-wired in some teens 13	Update on French consumption habits 30
Intervention in Emergency Room setting found to be effective 12 months on	EU-wide alcohol marketing rules planned for social media, marketing
Alcohol is associated with a lower pneumonia rate after traumatic brain injury 14	TABC launches alcohol look up database for consumers 31
Impact of alcohol intake on total mortality and mortality from major causes in Japan	ETSC policy paper on drink driving
Study suggests that alcohol is linked to slower progression of relapsing onset Multiple Sclerosis 15	Programme for new driver ceremonies in Virginia
Do lifestyle choices explain the effect of alcohol on bone mineral density in women around the menopause?	California Traffic Safety Report Card - Alcohol 32
Protein could explain why alcohol may be a risk factor for breast cancer 16	US re-examines alcohol ads in social media era
An update on the association of alcohol consumption with risk of breast cancer 17	Teen alcohol use - Parents have more influence than they think
Swedish study supports a "U-shaped" association of alcohol consumption with risk of pre-diabetes and diabetes mellitus 19	UK Drinkaware survey
Alcohol consumption may help creativity 22	Parents are the leading influence in a kid's decision to not drink alcohol according to US survey 33
Resveratrol's ability to boost the body's cell energy is dependent on gene SIRT1	Survey indicates that Australians drinking less
Moderate alcohol consumption both prior to, and following, a myocardial infarction is associated with lower risk of mortality 23	Pub beer sales suffer under big Beer Tax hikes in UK - BBPA Beer Barometer 34
	European Travel Retail Council publish Alcohol Code of Conduct
	New data show beer sales in convenience stores in the US grew by more than \$200 million in 2011

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Chile

Chilean Government officials released data from their first quarterly road safety report for 2012 showing that road traffic crash fatalities have fallen by 85% since reducing the blood alcohol concentration (BAC) limit. Transport Minister Pedro Pablo Errázuriz said that the figures indicated a successful cultural shift among drivers.

Quebec

A zero alcohol limit for drivers aged 21 and younger in Quebec came into force in April. Drivers under 22 face an immediate three-month driving suspension if they are found driving within the legal blood-alcohol limit of .08 per cent and they could be fined between \$300 and \$600 — and lose four demerit points — if they exceed the .08 limit.

Malta

Minimum prices are being considered within the context of a National Alcohol Policy, which is currently being drawn up in Malta. A government spokesman emphasised that the new policy is being drafted “in consultation with all stakeholders”. While supporting the introduction of minimum price controls, the Malta Health Network said it believed alcohol pricing control should be coupled with an education campaign and training for professionals.

Ireland

Legislation introduced on 1 May in Northern Ireland requires young people to show a passport, photocard driving licence or an electoral identity card before they can buy alcohol in an off-licence. The move puts the onus on sellers to make sure people are old enough to buy alcohol and that teenagers do not use fake IDs. The legislation also requires off-licences to display notices setting out the offences relating to the sale of alcohol or its purchase by those under 18.

US

In the United States, The National Football League (NFL) has recommended to all of its 32 clubs that fans who are ejected from stadiums should be made to pay for and take an online conduct and alcohol awareness class before attending future games. The four-hour classes cost up to USD \$100 and focus on responsible drinking behaviours and tolerance for visiting fans.

Argentina

The Buenos Aires Legislature Traffic and Transportation Commission has submitted legislative amendments that would reduce the legal blood alcohol concentration (BAC) limit for new drivers to zero. Under the proposal, drivers would not be permitted to consume any alcohol before driving for a two year probationary period after receiving their driver's licence.

Obituary: Federico Leighton Puga, MD:

Physician, scientist, dedicated to understanding and disseminating how food and lifestyle can influence people to be happy, healthy and positive.



Federico Leighton Puga, MD, Professor and Director of the Center for Molecular Nutrition and Chronic Diseases at the Catholic University of Chile in Santiago, died on 27 April 2012 at the age of 74 years. Dr Leighton was noted for his seminal work in nutrition, antioxidants, the health

aspects of a Mediterranean diet, including moderate wine consumption, and public health approaches for the prevention of chronic diseases.

Dr Frederick Leighton Puga's work aimed at improving the health of Chileans by changing their lifestyles. Dr Ines Urquiaga, who was his student and colleague, described how his work benefitted his home country:

"Since 2000 Dr Leighton was dedicated to promoting Mediterranean food in the country, researching the effects and benefits, and creating programmes that introduced and encouraged this healthy diet -- to both white and blue collar labourers. In this way, he sought to improve the health of all Chileans." His investigations included improving the diet of poor Chilean miners who had historically needed a diet of 8,000 calories a day to maintain their highly physical work, but due to mechanisation of mining were sedentary in their lifestyles, eating badly and well beyond their dietary needs.

His intervention improved the food offered in their canteen to that of a Mediterranean style and combined with education formed part of a 'food and work' initiative. Their health was measured in terms of predictors for 'The metabolic syndrome' (a combination of metabolic and lipid disorders common in obese and sedentary subjects, a prelude to chronic diseases such as type II diabetes and cardiovascular diseases). 25% of the 150 workers had MS. Twelve months later after the 'Mediterraneanisation' of their diet, the workers had slimmed, had a redistribution of fat away from their abdomens, had lower blood pressure and better antioxidant activity (reduced oxidative stress) – their risk of MS fell by 32%. The

miners asked for their wives and families to be taught about a 'heart healthy lifestyle'.

Among the notable achievements of Dr Leighton's scientific career were numerous experiments in humans investigating the effect of moderate wine and alcohol consumption on risk factors for cardiovascular disease. In a key publication in 2005, Dr Leighton and his colleagues demonstrated a central role of eNOS in the protective effect of wine against metabolic syndrome. His research demonstrated beneficial effects of wine/alcohol intake on lipid factors (HDL cholesterol, triglycerides, omega-3/omega-6 fatty acids ratio); hemostasis (fibrinogen, PAI-I, thrombosis, factor VIIIc); endothelial function; blood pressure; inflammation (PCR hs, cytokines and others); oxidative stress (damage to DNA, lipids and proteins, antioxidant levels); insulin sensitivity; anthropometric parameters (BMI, abdominal circumference).

In addition to his human experiments examining the effects of a Mediterranean diet and wine consumption on cardiovascular risk factors, Dr Leighton tested important public health measures in Chile. One project, 'Science, Wine and Health', promoted the health benefits of the Mediterranean Diet and of moderate wine consumption. An evaluation after completion of the public campaign revealed that while the total amount of alcohol consumption by the Chilean people changed very little, they were more likely to consume smaller amounts of alcohol more frequently, and with meals, than before the public program. Binge drinking decreased. Thus, his work was instrumental in convincing the public to adopt healthier patterns of alcohol consumption and to avoid its adverse effects.

Professor Fulvio Ursini, fellow International Scientific Forum on Alcohol Research (ISFAR) member said of his colleague *"Federico was a great scientist motivated by curiosity and the desire to be useful for his country. His culture and education and intellectual rigour were well integrated into his humanity and the sweetness of his character."*

Is it merely a myth that alcoholic beverages such as red wine can be cardioprotective?

by Creina Stockley MSc MBA, AIM Council and International Scientific Forum on Alcohol Research member

Abstract

It has been suggested that although the negative impact of alcohol consumption varies from person to person, on a global level the adverse effect of alcohol on cardiovascular disease outweighs any protective effect by between two- and three-fold. This is inaccurate. There is a proven positive relationship between alcohol consumption and cardiovascular disease that is acknowledged by the World Health Organisation. For example, moderate alcohol consumption reduces the risk of cardiovascular disease by approximately 25%, such that alcohol consumption per se accounts for -4.7% of the total cardiovascular disease burden in Australia. Correspondingly, cardiovascular disease accounted for 34% of the total number of deaths in Australia in 2008, and 18% of the overall burden of disease in Australia in 2003, with coronary heart disease and stroke contributing over 80% of this burden. Australia is not substantially different from other developed countries having similar demographics to, and the same leading causes of burden as, other high-income developed countries. This article examines the suggestions and evidence surrounding the relationship between light-to-moderate alcohol consumption and benefits to human health.

Introduction

It is well documented and cannot be disputed that the immoderate use of an alcoholic beverage such as wine, i.e. above the (Australian) National Health and Medical Research Council's (2009) recommendations of not more than two standard drinks per day for both men and women (20 g alcohol per day), is associated adverse health effects.¹ These can be short-term effects as accidents, drowning and suicides generally associated binge drinking patterns, i.e. a large amount consumed in a small period of time; or long-term effects associated with continuous heavier consumption, over many years, such as alcohol-related cardiovascular disease, certain cancers, liver cirrhosis and pancreatitis.

It is also well documented in peer-reviewed published data over more than three decades that light-to-moderate alcohol consumption, i.e. approximately corresponding to the recommended level of not more than two standard drinks per day for both

men and women, is associated with a reduced risk of developing and dying from cardiovascular diseases, certain cancers, diabetes, and cognitive function disorders such as dementia.²⁻⁹

This equates to a reduced risk of dying from all or any causes, and is in comparison to abstainers and heavy consumers. These relationships have best been described as j-shaped and most relevant for individuals aged over 40–45 years, i.e. in particular for those who are at greater risk of cardiovascular disease.¹⁰⁻¹³ The risk of adverse health effects increases, however, when alcohol consumption increases from light-to-moderate to heavy.¹⁴⁻¹⁸ A meta-analysis by Klutzy and Udaltsova¹⁹ suggests that the benefit extends to approximately four standard drinks per day (40 g alcohol per day), as does that of Mukamal et al.²⁰ and Doll et al.²¹

Contested?

A paper by Jackson et al.²² and subsequent papers by Fillmore et al.^{23,24} suggested that 'this view is contested', and argued that 'any coronary protection from light to moderate drinking will be very small and unlikely to outweigh the harms'.

The meta-analysis by Fillmore et al.²³ of 54 previously published epidemiological studies on all-cause mortality and 35 on coronary heart disease mortality has suggested, however, that confounding has led to bias in the majority of studies showing less cardiovascular disease among light-to-moderate drinkers, and consequently that the cardioprotection afforded by alcoholic beverages may have been overestimated. For example, studies may have misclassified ex drinkers, who are a higher risk of coronary heart disease, in the abstainer category, thereby inflating the mortality in abstainers compared with moderate drinkers. They also suggested that calculations of mortality from heavier drinking may also be overestimated. Indeed, while they conceded that 'alcohol [among other substances, lifestyles and behaviours] conveys benefit to the heart' they also concluded that 'the actual outcomes in human populations for cardiac benefit have been exaggerated'. In addition, in further communications from Fillmore et al.,²⁴ they suggested that if there is a protective effect of light-to-moderate alcohol consumption against the incidence of coronary heart disease or any other diseases, we currently do

not know enough to recommend regular alcohol consumption for health reasons, and, from 2006, this should be taken into account in both policy and clinical practice.

Evidence?

Evidence, i.e. sound scientific data over more than three decades, suggests, however, that moderate alcohol consumers are at considerably lower risk of cardiovascular disease, and newer studies also indicate that they are at lower risk of other diseases of ageing.^{19,25,26} Analysis of 84 longitudinal cohort studies of cardiovascular disease comparing alcohol consumers with abstainers, for example, showed that the pooled adjusted relative risks for alcohol consumers relative to abstainers in random-effects models for the outcomes of interest were: '0.75 (95% confidence interval 0.70 to 0.80) for cardiovascular disease mortality (21 studies), 0.71 (0.66 to 0.77) for incident coronary heart disease (29 studies), 0.75 (0.68 to 0.81) for coronary heart disease mortality (31 studies), 0.98 (0.91 to 1.06) for incident stroke (17 studies), and 1.06 (0.91 to 1.23) for stroke mortality (10 studies).²⁷ (If the relative risk was 1.0, the risk would be the same for alcohol consumers and abstainers.) This analysis also showed that alcohol consumption at 2.5–14.9g per day was consistently associated with a 14–25% reduction in the risk of all outcomes assessed compared with abstaining from alcohol. Consistent with a j-shaped relationship, risk increased with increased consumption, but differed for different cardiovascular disease outcomes. The cardioprotective association with alcohol was consistently observed in diverse patient populations and in both men and women, and was apparent when controlling for known confounders such as cigarette smoking, diet and exercise.

Klatsky and Udaltsova¹⁹ reworked previously published data^{28,29} to address the purported confounding and potential overestimation of a health benefit from moderate alcohol consumption claimed by Fillmore et al.,^{23,24} and showed a shallower but still significant j-shaped relationship between alcohol consumption and all-cause mortality risk. The data were of 21,535 deaths through to 2002, where the follow-up included 2,618,523 person-years of observation with a mean follow-up of 20.6 years. Their reanalysis reconfirmed the relationship previously published with an increased risk for individuals consuming more than three (14 g) drinks per day and a reduced risk at three or fewer drinks (14 g) per

day, almost always due to a reduced risk of death from cardiovascular disease. Former consumers were observed to be at increased risk of death from non-cardiovascular disease and occasional consumers were observed to have a risk similar to lifelong abstainers.

Most recently, Fuller²⁶ aimed to determine the extent to which the 'confounding and bias' in early epidemiological studies led to potentially erroneous conclusions about the inverse association between moderate alcohol consumption and cardiovascular disease. The analysis was based on prospective data for more than 124 000 persons interviewed in the US National Health Interview Surveys of 1997 – 2000 and was designed to avoid the 'errors' of some earlier studies including those identified by Fillmore et al.²³ The results support the significant majority of prospective studies and indicate that moderate alcohol consumers have a lower risk of cardiovascular diseases and all-cause mortality. Fuller²⁶ contends that these results lend credence to the argument that the inverse association between moderate alcohol consumption and mortality is causal.

There are also other relatively recent studies where neither type of 'error' studied by Fillmore et al.²³ was present. For example, a study by Mukamal et al.²⁰ on a large group of older adults which separated lifetime abstainers from former drinkers, and occasional drinkers from regular light drinkers, demonstrated reductions in the risk of a variety of cardiovascular outcomes from moderate consumption, as did Di Castelnuovo et al.³⁰ In another study on older people by Tolvanen et al.,³¹ where ex drinkers were separated from lifetime abstainers, total mortality was highest in the ex drinkers and lifetime abstainers, and 30 – 40% lower in current consumers. In addition, another study by Klatsky et al.³² which identified lifetime abstainers and separated occasional drinkers from regular light drinkers showed that consumption of one to two drinks per day was associated with 40% less risk of heart failure associated with coronary artery disease. Further, another study by Holahan et al.,³³ which assessed total mortality in 1,824 middle-aged and older people followed for 20 years, even controlling for a wide range of traditional and non-traditional confounding factors associated with abstinence, including those identified by Fillmore et al.,²³ ex drinkers and lifetime abstainers and heavy drinkers (>42 g alcohol per day) continued to show increased mortality risks of 51% and 45%, respectively,

compared to moderate drinkers (14 to <42 g alcohol per day).

Eight commentaries were subsequently published in the February 2007 edition of the journal *Addiction Research and Theory* following a panel discussion at the Symposium on Moderate Alcohol Consumption: Health Risks and Benefit on 17–18 May 2006.^{25,34,35} One of the salient points to come out of the commentaries, as well as from the May 2007 edition of the *Annals of Epidemiology*, is that there is evidence for plausible biological mechanisms for protection against coronary heart disease by moderate alcohol consumption which adds credence to a causal hypothesis. These mechanisms include effects via high-density lipoprotein cholesterol, improved haemostatic factors, improved endothelial function, and a lower risk of diabetes mellitus, and are primarily imparted by the alcohol component common to all alcoholic beverages.^{36–39} These were well summarised by Brien et al.,⁴⁰ who stated: 'Favourable changes in several cardiovascular biomarkers (higher levels of high density lipoprotein cholesterol and adiponectin, and lower concentration of fibrinogen) provide indirect pathophysiological support for a protective effect of moderate alcohol use on coronary heart disease.'

Further Evidence?

An earlier meta-analysis of 42 experimental studies, which examined the effects of alcohol consumption on cardiovascular biomarkers, attributed the cardioprotective effect of light-to-moderate alcohol consumption: 60% to effects on high-density lipoprotein, 20–30% to fibrinogen, 5–10% to insulin and 0–5% to other haemostatic factors.¹⁴ The meta-analysis also estimated that 30 g alcohol per day would increase the plasma concentration of high-density lipoprotein by approximately 4 mg dL⁻¹, which would be associated with a 17% reduction in risk of coronary heart disease. It would also decrease the plasma concentration of fibrinogen by approximately 0.075g L⁻¹, which would be associated with a 12.5% reduction in risk of coronary heart disease.⁴¹ This translated into an overall 24.7% reduction in the risk of coronary heart disease from the consumption of 30g alcohol per day. Klatsky and Udaltsova¹⁹ further translated this into a 10% reduction in risk of all-cause mortality. Interestingly, in their reply to the eight commentaries on this point, Fillmore et al.²⁴ do not dispute the evidence for plausible biological mechanisms and merely suggest

that 'the lot falls to epidemiology to establish whether human populations will benefit greatly from the use of alcohol and if they should be advised to use the substance for medicinal purposes'.

Amount Or Pattern Of Alcohol Consumption?

Essentially all epidemiological studies that have considered patterns of alcohol consumption have shown that regular moderate consumption is allied to a lower risk of diseases rather than occasional consumption,^{42–46} while episodic heavy consumption, considered as binge drinking, negates any beneficial health effect.^{47–51} For example, from the 2003 and 2005 studies by Mukamal et al.,^{44,52} men who consumed light-to-moderate amounts of alcohol at 3–4 or 5–7 days per week had decreased risks of myocardial infarction and ischaemic stroke compared with men who consumed alcohol less than once per week. This is a similar observation to that of Tolstrup et al.,⁵³ where for the same average consumption of alcohol an infrequent intake implied a higher risk of mortality than a frequent one, and also to that of Baglietto et al.,⁵⁴ who investigated associations between average volume of alcohol consumption, beverage type and consumption pattern, and all-cause mortality. After adjustment for total amount of alcohol consumed, the number of drinking days was inversely associated with the risk of dying in men, confirming previous observations about the effect of average volume of alcohol and beverage type and suggest that consumption pattern is an independent risk factor for all-cause mortality. The beneficial health effects of alcohol may thus be limited or linked to certain patterns of consumption,^{55,56} as are the harmful effects. Even Shaper,⁵⁷ on whose 1988 hypothesis the Fillmore et al.²³ meta-analysis is based, concludes in his commentary that 'there is no evidence that light drinking, one to two per day for men and one for women, has any untoward effects and most would accept that this level of alcohol intake provides both individual and social pleasure'.

Similarly, the World Health Organisation's Global Status Report on Alcohol⁵⁸ recognises that both the amount and pattern of alcohol consumption influence the potential health benefits of alcohol consumption and includes the following statement: 'The relationship between alcohol consumption and cardiovascular diseases is complex. Light to moderate drinking can have a beneficial impact on morbidity and mortality for ischaemic heart disease and ischaemic

stroke. However, the beneficial cardioprotective effect of drinking disappears with heavy drinking occasions. Roerecke and Rehm (2010)⁵⁹ have shown, based on meta-analyses, that, on average, light to moderate drinkers experienced no protective effect if they reported at least one heavy drinking occasion per month. Moreover, alcohol consumption has detrimental effects on hypertension, cardiac dysrhythmias and haemorrhagic stroke, regardless of the drinking pattern.⁶⁰

Is Wine Different?

Diet is also a significant source of variation in cardiovascular risk and is accordingly a risk factor that can be readily modified to reduce cardiovascular risk, as well as the impact of other important cardiovascular risk factors.^{61–65} From a 30-year follow-up study in seven countries, the risk of cardiovascular disease was at least two- to three-fold lower in countries consuming a Mediterranean-style diet compared to that in northern Europe and the USA, where the diet was generally higher in fat.⁶⁶ The core components of a Mediterranean-style diet include the high consumption of cereals, fruits, legumes, vegetables and wine, which typically contain a high concentration of phenolic compounds, and have previously been associated with a reduced risk of cardiovascular disease.^{67–69} For example, subjects placed on a Mediterranean-style diet for 46 months had a 50–70% lower risk of recurrent cardiovascular disease, compared to control subjects on a higher-fat diet.⁶⁸ Furthermore, 55% of patients with metabolic syndrome (high blood pressure, a high cholesterol concentration and a high body mass index) who followed a Mediterranean diet for 2 years were symptomless and had a reduced risk of cardiovascular disease at follow-up compared with only 14% of patients in the control group.⁷⁰

Epidemiological or population studies have indicated that consumers of wine have a reduced risk of cardiovascular disease and all-cause mortality,^{71–74} similar but additive to that for consumers of a traditional Mediterranean diet. The studies do not differentiate between wine styles and types. This is exemplified in an epidemiological study assessing the geographical distribution of cardiovascular disease in Spain, one of the 18 Mediterranean countries. A higher rate of cardiovascular disease was observed in those Spanish regions with the lowest per capita wine consumption, despite having, overall, a Mediterranean-style diet. The rate

of cardiovascular disease was, however, still less than that of countries consuming a higher fat and lower phenolic compound diet.⁷⁵

The components of wine that might confer a reduced risk of cardiovascular disease, by enhancing endothelial function and exerting anti-inflammatory and anti-atherosclerotic effects, are represented by the phenolic compounds. These compounds, also present in the fruit and vegetable components of a Mediterranean-style diet, have been associated with a reduced risk of cardiovascular disease.⁶⁹ There are approximately 10 classes of phenolic compounds in grapes, which are pulp, seed and skin derived. Their amount in grapes and wine is dependent upon a complex interaction of viticultural and oenological variables.⁷⁶ Catechin, quercetin and resveratrol represent some of the primary phenolic compounds in both red and white wine.⁷⁷ Several test tube (in vitro) and animal studies have demonstrated that catechin, quercetin and resveratrol, administered either as single or multiple doses, exert significant beneficial effects on established biological markers of cardiovascular disease risk such as endothelial function^{78–83} and blood pressure,^{84–87} as well as more broadly on blood clotting and flow factors.^{88,89}

Proposed Mechanisms

The potential biological mechanisms for the cardioprotection appear to be misunderstood by the popular press, which continuously cites that antioxidation is solely responsible for the cardioprotection of wine-derived phenolic compounds and hence wine. The data actually suggest that phenolic compounds, while antioxidative in the test tube, are not so in vivo, leading to suggestions that wine is not a different type of alcoholic beverage or does not confer additional protection against cardiovascular disease.

Antioxidation is not the primary mechanism associated with preventing cardiovascular disease, and it is not the primary cardioprotective mechanism associated with light-to-moderate wine consumption.

Cardiovascular disease involves a complex interplay between multiple altered cellular and molecular functions in heart muscle (such as cardiomyocytes), blood vessels (such as endothelial cells), vascular smooth muscle cells, blood cells (such as platelets and monocytes) and plasma components (such as lipoproteins, and blood clotting and blood flow

factors) as well as gene function.⁹⁰

Accordingly, there are multiple biological mechanisms involved in reducing the risk of cardiovascular disease, including haemostatic effects on a blood pressure and blood flow, anti-inflammatory effects and enhanced endothelial function, i.e. the ability of the artery wall to expand and contract, thus providing a protective effect during the early phases of atherosclerosis.^{70,91–93}

The lining of the artery wall (endothelium) plays a crucial role in regulating blood flow and the supply of oxygen to organs and tissues through the production of nitric oxide.⁹⁴ Nitric oxide regulates arterial tone, i.e. how much the arteries resist being stretched, and exerts significant anti-inflammatory and anti-atherosclerotic effects.⁹⁴ Endothelial dysfunction, which is the inability of the lining of the artery wall to expand and contract, has been shown to be an independent predictor of cardiovascular disease even after adjusting for traditional risk factors such as hypertension and hypercholesterolaemia, which are characterized by an impairment of endothelium-dependent vasodilatation.⁹⁵ Therefore, improving haemostatic effects, anti-inflammatory effects and endothelial function by means of drug and non-drug therapies such as moderate wine consumption with food might represent an important therapeutic target.^{95,96}

Conclusions that can be drawn

In addition to reducing the risk of cardiovascular disease and certain cancers, for example, light-to-moderate alcohol consumption reduces the risk of dying from all or any causes (all-cause mortality). A recent study of 16,958 US individuals followed for 18 years by the US Centers for Disease Control and Prevention (CDC) examined the relationship between four low-risk behaviours and mortality. 'Moderate consumption of alcohol' was considered as one of 'four healthy lifestyle behaviours that exert a powerful and beneficial effect on mortality'.⁹⁷ Moderate or low-risk alcohol consumption was defined as less than or equal to 2 drinks per day but more than 0 for men and less than or equal to 1 drink per day but more than 0 for women. The other low-risk behaviours were non smoking, eating a healthy diet and physical activity. These CDC study authors stated that: 'The number of low-risk behaviours was inversely related to the risk for mortality. Compared with participants who had no low-risk behaviours, which included abstinence from alcohol as well as excessive alcohol consumption,

those who had all four experienced significantly reduced all-cause mortality, mortality from malignant neoplasms [cancers], major cardiovascular disease, and other causes'; i.e. the men and women were 63% less likely to die, 66% less likely to die from a malignant neoplasms, 65% less likely to die from major cardiovascular disease and 57% less likely to die from other causes. Considering the potential dangers of excessive drinking, these CDC study authors also conducted sensitivity analyses omitting moderate alcohol use; the mortality risk for those who also consumed alcohol was significantly lower than for those having only the three other behaviours. Chiuve et al.⁹⁸ also included light-to-moderate alcohol consumption (5 – 10 g per day) as one of five low-risk behaviours associated with a reduced risk of coronary heart disease irrespective of concurrent medication for hypertension or hypercholesterolaemia. These behaviours were based on the Healthy Eating Index (HEI), created by the US Department of Agriculture to assess how well the US population met dietary recommendations based on the Food Guide Pyramid and the Dietary Guidelines for Americans. The HEI defined moderate alcohol consumption of 1.5–2.5 drinks per day as ideal servings for men and 0.5–1.5 drinks per day as ideal for women on the basis of the lower risk of cardiovascular disease associated with moderate alcohol consumption.⁹⁹

A similar, little-publicised Australian study of 7,989 individuals aged 65–83 years followed for 5 years showed consistent results with this CDC study.¹⁰⁰ The eight selected low-risk behaviours included having no more than two alcoholic (total 20 g alcohol) drinks per day. Individuals with five or more of the selected low-risk behaviours had a lower risk of death from any cause within 5 years compared with those having less than five. More importantly, the study showed that while most individuals already have some healthy habits, almost all could make changes to their diet and lifestyle to improve their health. The study did not suggest abstinence from alcohol, and avoidance of heavier alcohol consumption is also inferred.

In addition, Lee et al.¹⁰¹ showed that although light-to-moderate drinkers may have better risk factor profiles than non-drinkers, including higher socioeconomic status and fewer functional limitations (such as activities of daily living, instrumental activities of daily living and mobility), which explain some of the survival advantage associated with alcohol consumption, light-to-

moderate drinkers still maintain their survival advantage even after adjustment for these factors.

Further, Sun et al.⁴⁶ recently showed that, in addition to lower mortality, women moderate alcohol consumers surviving to age 70 years and older generally had less disability and disease, and more signs of 'successful ageing'. For 'regular' light-to-moderate alcohol consumers (on 5–7 days per week), there was an approximately 50% greater chance of such successful ageing compared with non-drinkers.

Epilogue

Population ageing is occurring on a global scale, with faster ageing projected for the coming decades than has occurred in the past. Globally, the population aged 60 years and over is projected to nearly triple by 2050, while the population aged 80 years and over is projected to experience a more than five-fold increase. In Australia, between now and 2050 the number of older individuals (65–84 years) is expected to more than double; and very old individuals (85 and over) are expected to more than quadruple from 0.4 million people today to 1.8 million in 2050 (www.treasury.gov.au/igr/igr2010). Increased numbers of older individuals may have implications for associated expenditure on income support, housing and health services, although a healthy, independent older population can also form a valued social resource, for example in providing care for others, sharing skills and knowledge and engaging in volunteer activities. Consequently, simple dietary measures such as moderate alcohol and wine consumption to supplement a healthy exercise and nutrition routine, or as an adjunct to prescription medicines when appropriate, may thus be needed to maintain an ageing population.

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Intake of alcohol and risk of adult-onset asthma

A study from Denmark examined the association between intake of alcohol and risk of adult-onset asthma. Using data from two multidisciplinary questionnaire surveys the researchers prospectively studied 19,349 twins, 12–41 years of age, from the nationwide Danish Twin Registry.

The eight-year incidence of asthma was 4.3%. After adjustment for sex, age, BMI, physical activity, educational level and smoking, the risk of new-onset asthma was significantly related to overall alcohol intake in a U-shaped manner with the lowest risk observed in the group with a moderate weekly intake of alcohol (1–6 units/week). The highest risk of asthma was observed in rare/never drinkers (<1 unit/month) OR = 1.59, whereas the risk of asthma in heavy daily drinkers (≥4 units/day) was also increased, however

not statistically significant, OR = 1.13. The risk of new-onset asthma was lower for subjects with wine preference (3.3%) compared with beer preference (4.3%) or no preference (4.4%). After multivariable adjustment, wine preference was inversely related to incident asthma compared with beer preference. However, this finding was not statistically significant, OR = 0.87.

The authors conclude that alcohol intake is associated with new-onset asthma in adults with a U-shaped association between amount of alcohol intake and the risk of asthma.

Source: Intake of alcohol and risk of adult-onset asthma. Lieberoth S, Backer V, Kyvik KO, Skadhauge LR, Tolstrup JS, Grønbaek M, Linneberg A, Thomsen SF *Respir Med*. 2012 Feb;106(2):184–8. Epub 2011 Nov 29.

Risk and severity of liver disease reduced by modest alcohol consumption

People with nonalcoholic fatty liver disease (NAFLD) who consume alcohol in modest amounts are half as likely to develop hepatitis as non-drinkers with the same condition, reports a national team of scientists led by researchers at the University of California, San Diego School of Medicine. The findings are published in the April 19, 2012 online issue of *The Journal of Hepatology*.

NAFLD is the most common liver disease in the United States, affecting up to one third of American adults. It's characterised by abnormal fat accumulation in the liver. The specific causes are not known, though obesity and diabetes are risk factors. Most patients with NAFLD have few or no symptoms, but in its most progressive form, known as nonalcoholic steatohepatitis or NASH, there is a significantly heightened risk of cirrhosis, liver cancer and liver-related death. NAFLD is also a known risk factor for cardiovascular disease (CVD). Patients with NAFLD are approximately two times more likely to die from coronary heart disease than from liver disease. The study's authors investigated whether the well-documented heart-healthy benefits of modest alcohol consumption outweighed alcohol's negative.

"We know a 50-year-old patient with NAFLD has a higher risk of CVD," said Jeffrey Schwimmer, MD, associate professor of clinical pediatrics at UC San Diego, director of the Fatty Liver Clinic at Rady Children's Hospital-San Diego and senior author. "Data would suggest modest alcohol consumption would be beneficial (in reducing the patient's CVD risk) if you don't take liver disease into account. When you do take liver disease into account, however, the usual medical recommendation is no alcohol whatsoever."

"Our study showed that those people with modest alcohol intake - two drinks or less daily - had half the

odds of developing NASH than people who drank no alcohol," said Schwimmer. "The reasons aren't entirely clear. It's known that alcohol can have beneficial effects on lipid levels, that it increases 'good' cholesterol, which tends to be low in NAFLD patients. Alcohol may improve insulin sensitivity, which has a role in NAFLD. And depending upon the type of alcohol, it may have anti-inflammatory effects."

The study also found that in patients with NAFLD, modest drinkers experienced less severe liver scarring than did lifelong non-drinkers.

The paper is based on analyses of 600 liver biopsies of patient's with NAFLD by a national panel of pathologists who had no identifying clinical information about the samples. The study excluded anyone who averaged more than two alcoholic drinks per day or who reported consuming five or more drinks in a day (binge-drinking) at least once a month. All of the patients were at least 21 years of age.

Schwimmer said the findings indicate patients with liver disease should be treated individually, with nuance. "Forty million Americans have NAFLD. Physicians need to look at their patient's overall health, their CVD risk, their liver status, whether they're already drinking modestly or not. They need to put all of these things into a framework to determine risk. I suspect modest alcohol consumption will be an appropriate recommendation for many patients, but clearly not all," he said.

Source: Winston Dunn, Arun J. Sanyal, Elizabeth M. Brunt, Aynur Unalp-Arida, Michael Donohue, Arthur J. McCullough, Jeffrey B. Schwimmer. Modest alcohol consumption is associated with decreased prevalence of steatohepatitis in patients with nonalcoholic fatty liver disease (NAFLD). *Journal of Hepatology*, 2012; DOI:

Poor impulse control may be pre-wired in some teens

Poor impulse control may be pre-wired in some teenagers, according to a new study by Dr Robert Whelan and colleagues from The University of Vermont. They researchers have identified brain networks that are linked to impulse control and drug addiction, which may exist even before someone is exposed to alcohol or drugs.

As part of this study, the researchers performed brain imaging on almost 1,900 14-year-olds. They used a functional MRI, which permitted them to see how different parts of the brain work together. The teens were asked to perform repetitive tasks, and then were asked to stop mid-task, while the researchers measured their ability to do so. People who abuse drugs or alcohol tend to perform poorly on this test.

The study identified teens who had previously been exposed to alcohol, illicit drugs or nicotine, and who could recognise specific brain patterns linked

with early experimentation with these substances. Teens who had poor impulse control, but did not have a history of substance abuse, had similar brain images to those teens who already had used these substances.

Dr Robert Whelan said the findings suggest it may be possible to identify teens at risk of substance abuse, before they start. The study also included teens with attention deficit hyperactivity disorder (ADHD). The researchers found the brain networks of teens with ADHD were different than the ones associated with early substance abuse. Previous research has indicated that people with ADHD are at increased risk of substance abuse and alcoholism.

Source: Adolescent impulsivity phenotypes characterised by distinct brain networks Robert Whelan, et al. *Nature Neuroscience* Published online 29 April 2012

Intervention in Emergency Room setting found to be effective 12 months on

Hazardous and harmful drinkers identified in Emergency Rooms (ER) in the US were more likely to reduce their alcohol consumption and cut down on binge drinking, and less likely to drive after drinking three or more alcoholic beverages, after they received counseling from an emergency medical practitioner, according to the results of a randomised, clinical trial published online in *Annals of Emergency*.

Researchers conducted a trial with 740 patients classified as hazardous and harmful drinkers. They conducted a brief negotiation interview (BNI) with 298 patients. An additional 295 patients received the BNI with a 'booster' phone call one month later. (The remaining 148 patients received standard care.) The ultimate goals of the BNI were to negotiate a drinking goal with the patient and to have the patient sign a drinking agreement to reduce his or her alcohol consumption.

Patients who received a BNI reduced their average number of drinks from 19.8 per week at baseline to 12.7 (at 6 months) to 14.3 (at 12 months). The

reduction in 28-day binge drinking episodes for the BNI group was 7.2 episodes at baseline to 4.8 episodes (at 6 months) to 5.1 episodes (at 12 months). The BNI with booster had even greater reductions but offered no significant benefit over the BNI performed at the initial emergency department visit. Rates of driving after drinking declined from 38% at baseline to 29% at 12 months in the BNI group, and from 39% at baseline to 31% at 12 months in the BNI plus booster group.

"The intervention, which lasts only 7 minutes, was still affecting these patients' lives for the better 12 months later," said lead study author Gail D'Onofrio, MD, FACEP, of the Yale University School of Medicine. "This shows that sometimes what emergency physicians say has as great an impact on our patients as what we do. Motivating people not to drink and drive is beneficial for them and society at large."

Source: *Annals of Emergency Medicine*, news release, March 28, 2012

Alcohol is associated with a lower pneumonia rate after traumatic brain injury

Recent evidence supports the beneficial effect of alcohol on patients with traumatic brain injury (TBI). Pneumonia is a known complication following TBI; thus, the purpose of this study was to evaluate the effects of alcohol on pneumonia rates following moderate to severe TBI.

From 2005 to 2009, the Los Angeles County Trauma Database was queried for all patients of 14 years of age and older with isolated moderate to severe TBI and admission serum alcohol levels. The incidence of pneumonia was compared between TBI patients with and without a positive blood alcohol concentration (BAC) level. The study population was then stratified into four BAC levels: None (0 mg/dL), low (0-100 mg/dL), moderate (100-230 mg/dL), and high (\geq 230 mg/dL). Pneumonia rates were compared across these levels.

A total of 3547 patients with isolated, moderate to severe TBI were evaluated. Nearly 66% tested positive for alcohol. The pneumonia rate was significantly

lower in the TBI patients who tested positive for alcohol (2.5%) compared with those who tested negative (4.0%, $P = 0.017$). The pneumonia rate also decreased across increasing BAC levels (linear trend $P = 0.03$). After logistic regression analysis, a positive ethanol (ETOH) level was associated with a reduced incidence of pneumonia (AOR = 0.62; 95% CI: 0.41-0.93; $P = 0.020$).

A positive serum alcohol level was associated with a significantly lower pneumonia rate in isolated, moderate to severe TBI patients. This may explain the observed mortality reduction in TBI patients who test positive for alcohol. Additional research is warranted to investigate the potential therapeutic implications of this association.

Source: Alcohol is associated with a lower pneumonia rate after traumatic brain injury, Hadjibashi AA; Berry C; Ley EJ; Bukur M; Mirocha J; Stolpner D; Salim A. *Journal of Surgical Research* Vol 173, No 2, 2012, pp212-215

Impact of alcohol intake on total mortality and mortality from major causes in Japan

A pooled analysis of six ongoing large-scale cohort studies in Japan was undertaken in order to produce concrete estimates of the quantitative contribution of alcohol consumption to all-cause and major causes of mortality in the Japanese population.

Of the 309,082 subjects, there were 35,801 deaths during 3,832,285 person-years of follow-up. Using a random-effect model, the researchers conducted a meta-analysis of the HRs of each alcohol consumption category in each study, thereby obtaining pooled estimates for the risk of total and major causes of mortality due to alcohol consumption.

There was a J- or U-shaped association for the risk of total and major causes of mortality in men, and the risk of total and heart disease mortality in women. Compared with non-drinkers, there was a significantly lower risk for total mortality at an alcohol consumption level of <69 g/day, cancer mortality at

<46 g/day, heart disease mortality at <69 g/day and cerebrovascular disease mortality at <46 g/day in men, and for total mortality at <23 g/day in women. In addition, mortality risk increased linearly with rising alcohol dose among drinkers. It was estimated that 5% of total mortality, 3% of cancer mortality, 2% of heart disease mortality and 9% of cerebrovascular disease mortality in men, but only 0–1% of these risks in women, could be prevented by reducing alcohol consumption to <46 g/day in men and <23 g/day in women.

The authors conclude that maintaining alcohol consumption below 46 g/day in men and 23 g/day in women appears to minimise the risks of mortality in the Japanese population.

Source: Impact of alcohol intake on total mortality and mortality from major causes in Japan: a pooled analysis of six large-scale cohort studies. *Journal Of Epidemiology And Community Health*. May 2012, Volume 66, Issue 5

Study suggests that alcohol is linked to slower progression of relapsing onset Multiple Sclerosis

A European study found that alcohol, wine, coffee and fish consumption appear to be linked to slower disability progression in people with relapsing-remitting MS (RRMS).

1372 people registered with the Flemish MS Society in Belgium answered a survey about dietary patterns. 893 of these people had RRMS. Patients were asked to assess the progression of their disability on the Expanded Disability Status Scale (the EDSS). EDSS 6.0 is the point at which assistance is needed to walk. The research showed:

- Patients with RRMS who drank at least one alcoholic drink (not wine) a week reached EDSS 6.0, 7 years later than people who did not drink at all.
- Those who drank wine reached EDSS of 6.0 four years later than those who did not drink wine.
- Those with RRMS who drank coffee daily delayed reaching EDSS 6.0 by five years.

- People with RRMS who ate fish two or more times a week reached EDSS 6.0 seven years later than people who ate fish less than once a month. Interestingly, it did not seem important if the fish was lean or fatty.

These effects were not seen in people with progressive MS, only in people with RRMS.

The researchers hypothesise that these affects may be due to anti-inflammatory properties of alcohol, wine, coffee and fish. It should be said, however, that this is not a prescription to start drinking coffee or alcohol - certainly not excessive amounts. Much more research needs to be done in this area.

The paper contains full details of the suggested mechanisms that may be involved in the links between consumption and disease progression and is available free online at: <http://onlinelibrary.wiley.com/doi/10.1111/j.1468-1331.2011.03596.x/pdf>

Do lifestyle choices explain the effect of alcohol on bone mineral density in women around the menopause?

A recent study examined the association between alcohol intake and Bone mineral density (BMD) in women around the menopause in the United Kingdom and sought to determine whether any association is independent of other lifestyle choices.

A cross-sectional study design was used to examine the relation between alcohol intake and BMD in a cohort of 3,218 women aged 50-62 from the Aberdeen Prospective Osteoporosis Screening Study. Women were grouped into clusters according to their lifestyle choices. ANCOVA was used to examine the effect of categorised alcohol intake on BMD adjusted for cluster of lifestyle and other baseline covariates. The ANCOVA was repeated for different types of alcoholic beverage (eg, beer, liquor, and wine) separately.

Three lifestyle clusters were identified and were based on different levels of the following 3 factors:

smoking pack-years, fruit and vegetable intakes, and physical activity. In the lifestyle-adjusted models, women who consumed > 1 drink/d of alcohol had a significantly greater femoral neck BMD (P = 0.008) and lumbar spine BMD (P = 0.007) than did those who never consumed alcohol. For separate alcoholic drinks, only beer had a positive significant effect on lumbar spine BMD after adjustment for lifestyle (P = 0.005).

The authors found that moderate alcohol intake appears to be positively associated with better BMD independently of the type of lifestyle led by women around the menopause.

Source: Do lifestyle choices explain the effect of alcohol on bone mineral density in women around the menopause? McLernon DJ; Powell JJ; Jugdaohsingh R; Macdonald HM American Journal of Clinical Nutrition Published early online 28 March 2012

Protein could explain why alcohol may be a risk factor for breast cancer

A research team presented findings that they say might finally explain the link between alcohol consumption and breast cancer at the annual meeting of the American Society for Biochemistry and Molecular Biology, held in conjunction with the Experimental Biology 2012 conference in San Diego. María de Lourdes Rodríguez-Fragoso, professor of pharmacology and toxicology at the Universidad Autonoma del Estado de Morelos in Mexico explained, "Cells have different mechanisms to remove toxic substances, such as ethanol, that represent a potential risk to them... Unfortunately, sometimes these mechanisms produce other toxic substances, including some that are associated with the development of different types of cancer."

Alcohol consumption has long been established as a risk factor for breast cancer. But finding the direct link that makes it so has so far proved elusive. Now, Rodríguez-Fragoso and her collaborators think that they have found the answer, a protein called CYP2E1.

"We knew that CYP2E1 could break down ethanol and that doing so created unstable, highly reactive chemicals known as free radicals," she said. Rodríguez-Fragoso's team had previously found that free radicals were associated with activation of cellular mechanisms that lead to tumor development. "The question then was, does having more CYP2E1 make you more susceptible to ethanol-induced toxicity, thereby increasing your risk of developing cancer?"

CYP2E1 is found in breast cells known as mammary epithelial cells, which are also where most breast cancers originate, suggesting to the researchers that CYP2E1 may be involved in breast cancer development. To test this hypothesis, the researchers administered ethanol to separate cultures of mammary epithelial cells that had varying levels of

CYP2E1. Cells that expressed low levels of CYP2E1 were mostly immune to the effects of the ethanol treatment; however, cells with increased amounts of CYP2E1 protein were greatly affected, suggesting that women with higher expression levels of the protein would show similar responses.

Significantly, the "results showed that ethanol-treated human mammary cells had an increase in free radical production, oxidative stress and the activation of cellular mechanisms that cause cells to increase their proliferation rate," all hallmarks of cancer. "So if you are a woman who naturally expresses higher levels of CYP2E1 and you consume alcohol, you would be at a greater risk for developing breast cancer than a woman who expresses lower amounts of CYP2E1," Rodríguez-Fragoso explained.

The research team has started investigating CYP2E1 expression levels in breast tissue obtained from healthy women who had undergone mammoplasties. "Preliminary results show that there is great variability in the expression of this enzyme among the analyzed samples," says Rodríguez-Fragoso. "This means that each individual will have a different response to alcohol, and each should take different precautions to minimise their risk of developing breast cancer."

With these results in hand, Rodríguez-Fragoso expressed confidence that her group will be able to develop a method of diagnosis that would focus on the determination of expression levels of CYP2E1 in breast tissue. "If you know the risk probability of certain behaviours on your likelihood of developing cancer, then you can better understand what preventative measures you should be taking," she said.

Source: Universidad Autonoma del Estado de Morelos in Mexico

An update on the association of alcohol consumption with risk of breast cancer

Seitz HK, Pelucchi C, Bagnardi V, La Vecchia C. *Epidemiology and Pathophysiology of Alcohol and Breast Cancer: Update 2012*. *Alcohol and Alcoholism* 2012; doi: 10.1093/alcal/ags011

Authors' Abstract

Aims: To update epidemiological data on alcohol and breast cancer, with special emphasis on light alcohol consumption, and to review mechanisms of alcohol mediated mammary carcinogenesis.

Methods: For epidemiological data, in November 2011 we performed a literature search in various bibliographic databases, and we conducted a meta-analysis of data on light alcohol drinking. Relevant mechanistic studies were also reviewed to November 2011.

Results: A significant increase of the order of 4% in the risk of breast cancer is already present at intakes of up to one alcoholic drink/day. Heavy alcohol consumption, defined as three or more drinks/day, is associated with an increased risk by 40–50%. This translates into up to 5% of breast cancers attributable to alcohol in northern Europe and North America for a total of approximately 50,000 alcohol-attributable cases of breast cancer worldwide. Up to 1–2% of breast cancers in Europe and North America are attributable to light drinking alone, given its larger prevalence in most female populations when compared with heavy drinking. Alcohol increases estrogen levels, and estrogen may exert its carcinogenic effect on breast tissue either via the ER or directly. Other mechanisms may include acetaldehyde, oxidative stress, epigenetic changes due to a disturbed methyl transfer and decreased retinoic acid concentrations associated with an altered cell cycle.

Conclusions: Women should not exceed one drink/day, and women at elevated risk for breast cancer should avoid alcohol or consume alcohol occasionally only.

Forum Comments

Background: Most observational epidemiologic studies have shown that consumers of alcohol tend to have an increased risk of developing breast cancer. A clear threshold of effect has not been shown consistently, but many studies show a slight increase in risk even among women who state that they average only one drink/day.

The percentage increase in risk associated with light drinking is rather small, generally ranging between 4 and 10%. And, it has been pointed out that even with such an increase in breast cancer risk, the net effects on total mortality of women consuming these amounts are favorable because of the greater decrease in risk of cardiovascular diseases associated with moderate amounts of alcohol.

The present paper provides an update on epidemiologic data relating alcohol with risk of breast cancer, with a focus on “light-moderate” consumption (up to an average of one drink/day). It also discusses the pathophysiology involved, and provides recommendations for women as to alcohol consumption.

Specific comments on the paper: Forum reviewers found this to be an excellent review and meta-analysis, providing a good update on the relation of alcohol consumption to the risk of breast cancer in women. It is important that the authors presented results specifically for light drinkers (up to 1 drink/day), a pattern of drinking very common in many parts of the world.

Their results indicate that even for light drinkers, there is a significant increase in risk of breast cancer, shown in both cohort studies and case-control studies. The increase in risk is approximately 4% for women who consume no more than one drink/day. Given the high prevalence of light drinking (rather than heavier drinking) among women in Europe and North America, the authors estimate that such light drinking is attributable for 1 to 2% of breast cancers occurring in these regions.

There were a number of concerns about the paper expressed by Forum reviewers:

- (1) The meta-analysis of alcohol and breast cancer goes into great detail, but does not discuss potential reasons for the substantial heterogeneity among studies (which was more common among case-control studies).
- (2) There is no discussion of the influence of folate intake on the association between alcohol and breast cancer. Many studies suggest that women with high folate levels show little or no effect of alcohol on the risk of breast cancer.¹
- (3) There is no discussion of “the alcoholism paradox,” i.e., the much lower risk of breast cancer among alcoholic women than would be expected from the projection of risk estimates from the general population.²
- (4) While the authors conclude that extra precautions should be taken regarding alcohol for women at high risk of breast cancer, they do not mention that studies have shown that alcohol consumption does

not appear to increase breast cancer risk in women carrying a BRCA gene mutation.³

A reviewer concluded that the authors could have better emphasised that pre-menopausal women have a relatively low cardiovascular risk, and get therefore a lower potential benefit from moderate alcohol; thus the risk of breast cancer should be taken into account when one is discussing alcohol consumption with such women. On the contrary, post-menopausal women have approximately four times greater risk of cardiovascular disease than of breast cancer. Thus, strictly from a health point of view, moderately drinking women may wish to pay more attention to the potential benefits of alcohol in markedly lowering cardiovascular and less to the real, but slight, increase in the risk of breast cancer.

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Forum Summary

An excellent review paper on the relation of alcohol consumption to the risk of breast cancer concludes that, overall, there is a positive dose-response relation between alcohol drinking and the risk of breast cancer. The analysis shows that an increase in risk is seen even among women reporting an average of only about one drink/day. Given the high prevalence of such light drinking in most female populations, the authors estimate that up to 1 to 2% of breast cancers in Europe and North America may be attributable to light drinking alone. Thus, while alcohol appears to be a risk factor for breast cancer, it does not explain a very high percentage of cases.

Forum members considered this to be a well-done analysis, with a good review not only of epidemiologic studies but of potential mechanisms of effect of alcohol on breast cancer risk. An increase in estrogen levels from alcohol seems to be the physiologic mechanism most commonly suggested for the increase in risk.

The meta-analysis is noteworthy in presenting risks specifically for women who consume up to one drink/day, which is the common pattern for a high proportion of women in western cultures. On the other hand, the authors failed to discuss the potential modification of alcohol effects on cancer risk from folate in the diet; in many studies, high folate levels tend to diminish or eliminate an increase in risk from alcohol. Further, the paper does not provide a discussion of the net effects of moderate drinking on mortality. In older women, the decrease in the risk of cardiovascular disease (a much more common cause of death than breast cancer) greatly exceeds the potential increase in risk of death from breast cancer.

Contributions to this critique were provided by the following members of the International Scientific Forum on Alcohol Research:

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Swedish study supports a “U-shaped” association of alcohol consumption with risk of pre-diabetes and diabetes mellitus

Cullmann M, Hilding A, Östenson CG. Alcohol consumption and risk of pre-diabetes and type 2 diabetes development in a Swedish population. *Diabet Med* 2012;29:441–452. DOI: 10.1111/j.1464-5491.2011.03450.x

Authors' Abstract

Aims: Alcohol is a potential risk factor of Type 2 diabetes. However, more detailed information on effects of alcohol types and early phases of Type 2 diabetes development seems warranted. The aim of this study was to investigate the influence of alcohol consumption and specific alcoholic beverages on the risk of developing pre-diabetes and Type 2 diabetes in middle-aged Swedish men and women.

Methods: Subjects, who at baseline had normal glucose tolerance (2,070 men and 3,058 women) or pre-diabetes (70 men and 41 women), aged 35–56 years, were evaluated in this cohort study. Logistic regression was performed to estimate the risk [odds ratio (OR) and 95% confidence interval (CI)] to develop pre-diabetes and Type 2 diabetes at 8–10 years follow-up, in relation to self-reported alcohol intake at baseline. Adjustment was performed for several risk factors.

Results: Total alcohol consumption and binge drinking increased the risk of pre-diabetes and Type 2 diabetes in men (OR 1.42, 95% CI 1.00–2.03 and OR 1.67, 95% CI 1.11–2.50, respectively), while low consumption decreased diabetes risk in women (OR 0.41, 95% CI 0.22–0.79). Men showed higher risk of pre-diabetes with high beer consumption (OR 1.84, 95% CI 1.13–3.01) and of Type 2 diabetes with high consumption of spirits (OR 2.03, 95% CI 1.27–3.24). Women showed a reduced risk of pre-diabetes with high wine intake (OR 0.66, 95% CI 0.43–0.99) and of Type 2 diabetes with medium intake of both wine and spirits (OR 0.46, 95% CI 0.24–0.88 and OR 0.55, 95% CI 0.31–0.97, respectively), whereas high consumption of spirits increased the pre-diabetes risk (OR 2.41, 95% CI 1.47–3.96).

Conclusion: High alcohol consumption increases the risk of abnormal glucose regulation in men. In women, the associations are more complex: decreased risk with low or medium intake and increased risk with high alcohol intake.

Forum Comments

Stampfer and colleagues¹ reported in 1988 that moderate drinkers in the Nurses' Health Study had a much lower risk for development of diabetes than did abstainers, due partially to a lower risk of obesity among moderate drinkers. Since then, prospective observational studies have been remarkably consistent in showing an inverse association of moderate alcohol intake with the risk of developing type 2 diabetes mellitus (DM).²⁻⁷ Some, but not all such studies, have suggested that higher intake of alcohol may increase such risk.

The present analyses were based on a cohort study of men and women in Sweden whose alcohol intake was assessed only at baseline. Men reporting a total alcohol intake ≥ 22.14 g/day (about two typical “drinks” by US standards) and women reporting ≥ 8.76 g/day (about 2/3 of a typical drink) were classified as having “high” alcohol consumption.

Subjects were assessed 8–10 years after baseline for the presence of pre-diabetes (pre-DM, fasting glucose 6.1–6.9 or 2 hours glucose 7.8–11.0 mmol/l) or type 2 diabetes mellitus (DM, fasting glucose ≥ 7.0 and/or 2 hour glucose ≥ 11.1 mmol/l). The authors report that $< 20\%$ of invited subjects did not participate in the follow-up examination, indicating very good compliance

The cohort was not population based, but had been enriched with persons who had a positive family history of diabetes. The study reported the development of DM and of pre-DM among subjects with normal glucose values at baseline, and also reported on the progression from pre-DM to DM among subjects with impaired values at baseline. Apparently, analyses were based on all subjects, including those within “intervention communities” (those receiving a program to prevent the development of diabetes) and those in “control communities” (that did not receive the community intervention).

Overall, 105 men and 57 women developed DM de novo, and 175 men and 98 women progressed to DM from pre-DM. A total of 240 men and 98 women with previously normal values met diagnostic criteria for pre-DM at the end of the follow-up period.

Specific comments on the present study: The data collection for this study was apparently carried out between 1992 and 1998. One reviewer suggested that a “shift in drinking pattern in this Swedish population over 8–10 years is possible (a change to more wine than spirits and perhaps beer). It would have been helpful to have an estimate of alcohol intake at the end of the study period.”

While the total number of subjects in the study was reasonable, when evaluating subsets by category of alcohol intake and certain outcomes, the numbers in individual cells were often very small, leading to very wide confidence limits. As stated by one Forum reviewer: “The numbers were indeed relatively small

to allow the numerous sub-analyses performed in this study. Possible differences between men and women are of interest, as well as among different alcoholic beverages, but should be based on much higher and consistent figures." Said another: "I am not comfortable with the large number of sub-group analyses with small numbers of participants and wide confidence intervals. Further, it seems strange that women in the 'high wine consumption' quartile are consuming as low as 1.66 grams of alcohol per day, which amounts to just one glass of wine per week, hardly a dose of 'alcohol medicine' that can be expected to have any physiological impact on insulin sensitivity."

The authors apparently looked only at p-values in interpreting their results. They did not mention the very clear "U-shaped" curve seen in their study. In almost every comparison, the highest risks of pre-DM and DM were seen in the "abstainer" category, with lower risks for most categories of alcohol consumers. It should be pointed out, however, that the number of abstaining subjects was small, and apparently this group included life-time abstainers and ex-drinkers. There was a suggestion in some comparisons that the risk was higher among male subjects (at least those consuming beer or spirits) in the highest drinking category.

One reviewer observed: "Men who had the highest alcohol consumption had the highest consumption of beer and spirits, were more likely to smoke, were more obese, and had a lower educational level. These associations were less pronounced in women. The authors write that they adjusted for these confounders, but I don't think it is possible to make a complete adjustment. Smoking is predisposing for diabetes, in addition to obesity and high carbohydrate intake. There are no diet data, a weakness of the study. I assume that those participants who consumed more beer and spirits also had the most unhealthy diet – also an important factor."

Some cohort members exposed to a diabetes prevention program: This cohort was apparently involved in a community-wide diabetes prevention intervention program, and it appears that these analyses include those persons who lived in the three (of five) communities that were involved in the intervention. The authors state that this intervention program "was community-based and focused on the whole adult population in the three intervention

municipalities (i.e. not implemented on an individual level). Activities to prevent Type 2 diabetes, aiming at risk factors such as obesity, low physical activity, dietary habits and tobacco use, were initiated." It is unclear whether or not these community-based interventions had any effect on the subsequent development of pre-DM or DM in these communities. If so, it would be interesting to know if the results of the associations with alcohol were the same in the control communities as in the communities receiving the program. Added one Forum reviewer: "I prefer population-based cohort studies with a good description of the population and the sample taken. The present study is very likely derived from an intervention program, but we are left in the dark how the cohort was created and what interventions were performed."

Increasing the number of subjects with a positive family history of diabetes: Forum member Tedd Goldfinger has pointed out a concern about interpreting the results from a sample of the population that had been "enriched" with subjects having a positive family history of diabetes. When seeking causative factors for a disease, the relative importance of any single factor (e.g., alcohol) depends on other factors in the causative pathway that may be present in the population being studied. We can assume that subjects with a positive family history have a number of factors, including genetic ones, that predispose them to developing diabetes. Among such subjects, any environmental factor could have less of an impact on the disease than would be present in the general population if one uses strength of relative risk as a measure of impact. This phenomenon was described well by Ken Rothman in one of his textbooks on epidemiologic methods.⁸ Rothman gave an example of this by commenting on environmental risk factors for lung cancer. Smoking is by far the most "important" risk factor, followed perhaps by radon exposure. However, in a non-smoking population, radon may then become the predominant causative factor for lung cancer. The strength of a cause will vary from population to population depending on the presence or absence of other causative factors.⁸ This example illustrates that what we mean by "strength of effect" is not a biologically stable characteristic of a causative factor, and the increases and decreases in the relative risk of diabetes shown in this analysis are probably less than they would be in a population-based study.

Overall, data from the present study support most previous research showing a reduction in the risk of DM to be associated with moderate drinking, with possibly some increase with greater alcohol intake. Some observational studies suggest greater effects in women than men, while others suggest greater effects among men. It is likely that both men and women show protection against developing DM from moderate drinking, although the levels of intake for specific positive or negative effects may differ by gender. As in many other studies, the present study suggests larger beneficial effects of wine (and possibly of beer) than of spirits in terms of their effects on risk of diabetes.

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Forum Summary

Subjects in a cohort in Sweden, some of whom had been exposed to a community intervention program to prevent diabetes, were evaluated 8-10 years after baseline for the presence of diabetes mellitus or impaired glucose metabolism ("pre-diabetes") in relation to a baseline report of alcohol consumption. Approximately 2,000 men and 3,000 women had a normal glucose tolerance test at baseline; of these 105 men and 57 women developed type II diabetes.

Of subjects with pre-diabetes at baseline, 175 men and 98 women progressed to diabetes. The authors report that total alcohol consumption and binge drinking increased the risk of pre-diabetes and diabetes in men, while low consumption decreased diabetes risk in women. However, the authors did not discuss the fact that in essentially all comparisons, the highest risk of diabetes or pre-diabetes was among abstainers.

Forum reviewers had some concerns about the study. For example, the study included some subjects who had been exposed to an intervention trial to prevent diabetes, yet no information is given on potential effects of the intervention. It was not a population-based group. Also, the sample was "enriched" with subjects who had a positive family history of diabetes, which may make it more difficult to judge the effects of environmental factors. Ex-drinkers and never drinkers were included in the abstainer group.

It appears that the authors focused only on the "statistically significant" results rather than commenting on the overall pattern of association (lower risk of developing diabetes for moderate drinkers than for abstainers and heavier drinkers). Further, the number of subjects in many of the sub-groups was very small, making it difficult to define specific cut-points for effects of alcohol on risk.

Nevertheless, reviewers considered that, overall, these analyses support the usual findings from previous research of a "U-shaped curve" for alcohol and diabetes for both men and women. There appears to be a reduction in risk with moderate alcohol intake and possibly an increased risk for heavier drinking.

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Alcohol consumption may help creativity

A University of Illinois study found that a test group where participants had drunk the equivalent of two pints each were faster at making abstract links between words than another group, which remained completely sober.

Psychologists at the University of Illinois set 40 healthy young men a series of brain teasers. They involved being given three words, such as coin, quick and spoon, and coming up with a fourth word that links the three - in this case, silver.

Half the group drank the equivalent of two pints of beer before doing the tests, while the rest carried them out sober. The group that was drinking solved nearly 40% more problems than the sober group and did so an average 3.5 seconds faster as well.

It is thought that alcohol stifles analytical thinking, allowing more creative thought processes to occur.

The report's co-author, Jennifer Wiley, stressed that drinking any further would naturally lead to detrimental effects but added: "The bottom line is that we think being too focused can blind you to novel possibilities and a broader, more flexible state of attention is needed for creative solutions to emerge."

It is thought alcohol hinders analytical thinking and allows 'creative' thoughts that might otherwise be stifled to take root, allowing test subjects to come up with more imaginative solutions.

Source: *Uncorking the muse: Alcohol intoxication facilitates creative problem solving*, Andrew F. Jarosz, Gregory J.H. Colflesh, Jennifer Wiley. ltd.psych.uic.edu/personal/jwiley/drunk.pdf

Resveratrol's ability to boost the body's cell energy is dependent on gene SIRT1

Scientists claim to have discovered that resveratrol, present in high levels in red wine, credited with anti-ageing powers, and the ability to work against cancer, heart disease and obesity, boosts the body's supply of cell energy. However, these effects are only 'switched on' in the presence of the gene called SIRT1.

Lead researcher Professor David Sinclair of Harvard Medical School, Boston found resveratrol boosted the activity of mitochondria, the cell's energy supplier, which is essential for longevity and overall health. Without the mitochondria-boosting gene SIRT1, resveratrol did not work. The latest study showed how resveratrol enhances the energy-generating activity of cells via a longevity gene called SIRT1.

The effect of resveratrol on SIRT1 had been demonstrated in yeast, worms and flies before but never on higher animals. The experiments involved a new strain of laboratory mouse whose SIRT1 gene can be successfully switched off. When adult mice were given low doses of resveratrol with SIRT1 disabled, no effect was seen on the energy producing heart of the cells.

But mice with normal SIRT1 showed dramatic increases in energy after exposure to resveratrol. Sinclair said 'Our paper shows that SIRT1 is front and centre for any dose of resveratrol.'

Source: *SIRT1 Is Required for AMPK Activation and the Beneficial Effects of Resveratrol on Mitochondrial Function*, David A. Sinclair. *Cell Metabolism*, 2012; 15 (5): 675 DOI: 10.1016/j.cmet.2012.04.003

Moderate alcohol consumption both prior to, and following, a myocardial infarction is associated with lower risk of mortality

Pai JK, Mukamal KJ, Rimm EB. Long-term alcohol consumption in relation to all-cause and cardiovascular mortality among survivors of myocardial infarction: the Health Professionals Follow-up Study. *European Heart Journal* 2012; doi:10.1093/eurheartj/ehs047

Authors' Abstract

Aims: The aim of this study was to examine the association between long-term alcohol consumption, alcohol consumption before and after myocardial infarction (MI), and all-cause and cardiovascular mortality among survivors of MI.

Methods and results: The Health Professionals Follow-up Study (HPFS) is a prospective cohort study of 51,529 US male health professionals. From 1986 to 2006, 1,818 men were confirmed with incident non-fatal MI. Among MI survivors, 468 deaths were documented during up to 20 years of follow-up. Long-term average alcohol consumption was calculated beginning from the time period immediately before the first MI and updated every 4 years afterward. Cox proportional hazards were used to estimate the multivariable-adjusted hazard ratios (HR) and 95% confidence intervals (CI). Compared with non-drinkers, the multivariable-adjusted HRs for all-cause mortality were 0.78 (95% CI: 0.62–0.97) for 0.1–9.9 g/day, 0.66 (95% CI: 0.51–0.86) for 10.0–29.9 g/day, and 0.87 (95% CI: 0.61–1.25) for ≥ 30 g/day (P quadratic = 0.006). For cardiovascular mortality, the corresponding HRs were 0.74 (95% CI: 0.54–1.02), 0.58 (95% CI: 0.39–0.84), and 0.98 (95% CI: 0.60–1.60), P quadratic = 0.003. These findings were consistent when restricted to pre- and post-MI alcohol assessments. In subgroup analyses, moderate alcohol consumption was inversely associated with mortality among men with non-anterior infarcts, and among men with mildly diminished left ventricular function.

Conclusion: Long-term moderate alcohol consumption is inversely associated with all-cause and cardiovascular mortality among men who survived a first MI. This U-shaped association may be strongest among individuals with less impaired cardiac function after MI and should be examined further.

Forum Comments

The present paper is based on data from a very well-done prospective follow-up study of male health professionals, initially recruited in 1986. Among the cohort, 1,818 men had a confirmed myocardial infarction (MI) during follow up. The alcohol intake of the subjects had been recorded prior to, and at intervals following, the MI.

There are a number of informative and interesting results described from this study. First, there was

little change in reported alcohol prior to and following the MI: drinkers tended to remain drinkers of similar amounts. Few non-drinkers began to drink after their MI; among heavier drinkers, there was a tendency to decrease the amount somewhat (but very few stopped drinking completely). There were no significant differences in outcome according to type of beverage consumed although, interestingly, lower hazard ratios were seen for consumers of beer and liquor than of wine.

The associations of alcohol consumption with mortality were almost the same for alcohol intake reported prior to the MI as that reported after the MI: for 10-29.9 g/day, the adjusted hazard ratio for mortality was 0.70 for both. While the authors state that the effects of alcohol were stronger for the association with non-anterior MIs, the HRs for all-cause mortality were little different: among the moderately drinking men the HRs were 0.58 for anterior MI and 0.51 for other types of MI when compared with abstainers.

The overall results show that, in comparison with no alcohol consumption, the intake of light (0.1-9.9 g/day) and moderate (10.0-29.9 g/d) amounts of alcohol was associated with lower risk of all-cause mortality and cardiovascular mortality. The significant reductions in all-cause mortality risk (22% lower for 0.1-9.9 g/day and 34% lower for 10.0 – 29.9 g/day, in comparison with non-drinkers) were no longer present for consumers of ≥ 30 g/day; for this highest consumer group, the adjusted hazard ratio was 0.87 with 95% CI of 0.61-1.25.

As stated by the authors: "Our findings are consistent with the recent European Society of Cardiology (ESC) recommended guidelines for long-term management of acute coronary syndromes that moderate alcohol consumption of 10–30 g per day in men should not be discouraged and may be beneficial for long-term prognosis after MI.¹⁻³"

Specific comments by reviewers: Forum members all considered this to be a very well-done study. The repeated assessments of alcohol intake permitted adjustments for changes in alcohol intake over time. Stated one Forum reviewer, "I find this a very balanced view. Of particular interest is the emphasis on the reduction of inflammatory markers (hs-CRP and IL-6), and increased insulin sensitivity. This indicates that moderate alcohol consumption influences conditions

other than coronary disease that are associated with inflammation. This broadens the clinical relevance of wine and alcohol as ‘functional foods’ that may affect other diseases positively as well. It furthermore underlines the importance of environmental influences on lifestyle related diseases.”

Difficulties in judging effects of an exposure after an event: It has been shown in recent publications that an exposure that affects the risk of a disease outcome may not have a similar relation to events following the event. In other words, the same risk factors before someone develops a MI may not be the same for the risk of mortality after someone has suffered a MI. For example, Canto et al found an inverse (rather than a positive) association between the number of coronary heart disease risk factors and hospital mortality following a MI.⁴ Similarly, Yang et al⁵ reported that baseline risk factors were not associated with mortality (although those investigators were unable to adjust for changes in risk factors, such as those that could be due to therapy for dyslipidemia, hypertension, etc., over the years.)

The reasons for this paradox of risk factors for an outcome not being the same before and after an event are not clear. Among the possibilities suggested by Canto et al⁴ are that MI patients who have none of the usual risk factors may have had other factors that may have influenced progression of disease, such as prediabetes, insulin resistance, abdominal, obesity, psychosocial factors, poor nutrition, or physical inactivity; they may also have had predominant genetic factors that were not considered in the pre-MI risk factor assessment. Also, Canto et al found that subjects having an MI without pre-existing risk factors were much older, so that they may have presented after they had much more advanced atherosclerosis or other conditions affecting subsequent mortality risk.

Forum reviewer Yuqing Zhang states that this apparently paradoxical relation has been shown for other conditions, such as osteoarthritis. He states that it is well-established that obesity is a strong risk factor for the occurrence of osteoarthritis; however, obesity may not accelerate progression of arthritis among those who already have the disease (the “obesity paradox”). When reading the current paper, Zhang said he was expecting that alcohol might have been shown to have either no or just mild effects on CHD mortality among individuals who had already

had a MI. To his surprise, alcohol still showed a strong protective effect. This may suggest that the effect of alcohol on coronary disease risk has relatively short-term effects, and to maintain its protective effect people should drink small or moderate amounts of alcohol on a frequent basis.

References from Forum critique:

1. Hamm CW, Bassand JP, Agewall S, et al. ESC Guidelines for the management of acute coronary syndromes in patients presenting without persistent ST-segment elevation: The Task Force for the management of acute coronary syndromes (ACS) in patients presenting without persistent ST-segment elevation of the European Society of Cardiology (ESC). *Eur Heart J* 2011;32:2999–3054.
2. Van de Werf F, Bax J, Betriu A, et al. Management of acute myocardial infarction in patients presenting with persistent ST-segment elevation: the Task Force on the Management of ST-Segment Elevation Acute Myocardial Infarction of the European Society of Cardiology. *Eur Heart J* 2008;29:2909–2945.
3. Bassand JP, Hamm CW, Ardissino D, et al. Guidelines for the diagnosis and treatment of non-ST-segment elevation acute coronary syndromes. *Eur Heart J* 2007;28:1598–1660.
4. Canto JG, Kiefe CI, Rogers WJ, et al, for the NRM1 Investigators. Number of Coronary Heart Disease Risk Factors and Mortality in Patients With First Myocardial Infarction. *JAMA* 2011;306:2120-2127.
5. Yang Q, Cogswell ME, Flanders WD, et al. Trends in Cardiovascular Health Metrics and Associations With All-Cause and CVD Mortality Among US Adults. *JAMA* 2012;307:1273-1283.

Forum Summary

In a very well-done analysis based on the follow up of more than 50,000 subjects from The Health Professionals Follow-up Study (HPFS), 1,818 men were confirmed with incident non-fatal myocardial infarction (MI). Among MI survivors, 468 deaths were documented during up to 20 years of follow up. Repeated reports were obtained on alcohol consumption throughout follow up. Average alcohol consumption was calculated prior to and then following the MI.

The overall results show that, in comparison with no alcohol consumption, the pre-MI and the post-MI intakes of light (0.1-9.9 g/day) and moderate (10.0-29.9 g/d) amounts of alcohol were both associated with lower risk of all-cause mortality and cardiovascular mortality among these men. The significant reductions in all-cause mortality risk (22% lower for 0.1-9.9 g/day and 34% lower for 10.0 – 29.9 g/day, in comparison with non-drinkers) were no longer present for consumers of ≥ 30 g/day; for this

highest consumer group, the adjusted hazard ratio was 0.87 with 95% CI of 0.61-1.25.

There are a number of other informative and interesting results described from this study. First, there was little change in reported alcohol prior to and following the MI: drinkers tended to remain drinkers of similar amounts. Few non-drinkers began to drink after their MI; among heavier drinkers, there was a tendency to decrease the amount somewhat (but very few stopped drinking completely). Further there were no significant differences in outcome according to type of beverage consumed although, interestingly, lower hazard ratios were seen for consumers of beer and liquor than of wine. While the authors state that the effects of alcohol were stronger for the association with non-anterior MIs, the HRs for all-cause mortality were little different: among the moderately drinking men the HRs were 0.58 for anterior MI and 0.51 for other types of MI.

Even though exposures (such as alcohol) for cardiovascular events (such as MI and cardiovascular mortality) may be different after a person has an event than it was before the event, in this study

the reductions in risk were almost the same. For example, both for alcohol intake reported prior to a MI, and that after a non-fatal MI, the risk of mortality was about 30% lower for moderate drinkers than it was for abstainers. This suggests that, in terms of reducing cardiovascular disease, alcohol may have relatively short-term effects. Frequent consumption (of moderate amounts) may result in the best health outcomes.

Contributions to this critique were provided by the following members of the International Scientific Forum on Alcohol Research:

Yuqing Zhang, MD, DSc, Epidemiology, Boston University School of Medicine, Boston, MA, USA

David Van Velden, MD, Dept. of Pathology, Stellenbosch University, Stellenbosch, South Africa

Harvey Finkel, MD, Hematology/Oncology, Boston University Medical Center, Boston, MA, USA

Gordon Troup, MSc, DSc, School of Physics, Monash University, Victoria, Australia

Arne Svilaas, MD, PhD, general practice and lipidology, Oslo University Hospital, Oslo, Norway

R. Curtis Ellison, MD, Section of Preventive Medicine & Epidemiology, Boston University School of Medicine, Boston, MA, USA

Do peers' parents matter? A new link between positive parenting and adolescent substance use

Although studies have demonstrated that an adolescent's parents and friends both influence adolescent substance use, it is not known whether the parenting experienced by one's friends also affects one's own use. Drawing on conceptions of shared parenting and the tenets of coercion theory, researchers investigated the extent to which three domains of parenting behaviours (parental knowledge, inductive reasoning, and consistent discipline) influenced the alcohol, cigarette, and marijuana use of not only their own adolescent children but also of members of their adolescents' friendship groups.

Analyses of friendship nominations within each of two successive ninth-grade cohorts in 27 Iowa and Pennsylvania schools (N = 7,439 students, 53.6% female) were used to identify 897 friendship groups. Hierarchical logistic regression models were used to examine prospective associations between 9th-grade friendship group-level parenting behaviours and adolescent self-reported alcohol, cigarette, and marijuana use in 10th grade.

Adolescent substance use in 10th grade was significantly related to parenting behaviours of friends' parents, after controlling for adolescents' reports of their own substance use and their own parents' behaviours at the 9th grade level. These associations were particularly strong for parents' knowledge about their children and use of inconsistent discipline strategies. Significant interaction effects indicated that these relationships were strongest when adolescents received positive parenting at home. Some, but not all, of the main effects of friends' parents' parenting became non-significant after friends' substance use in ninth grade was included in the model.

The findings suggest that the parenting style in adolescents' friends' homes plays an important role in determining adolescent substance use. Implications of the joint contribution of parents and peers for prevention and intervention are discussed.

Source: Do Peers' Parents Matter? A New Link Between Positive Parenting and Adolescent Substance Use. Michael J. Cleveland, Mark E. Feinberg, D. Wayne Osgood, James Moody *Journal of Studies on Alcohol and Drugs* Volume 73, 2012 > Issue 3: May 2012

weekly in England in 2005/6, this has fallen to just 10% for boys and girls by 2009/10. In Wales 20% of girls and 23% of boys were drinking weekly at 13 in 2005/6 and this has fallen to 14% for boys and girls.

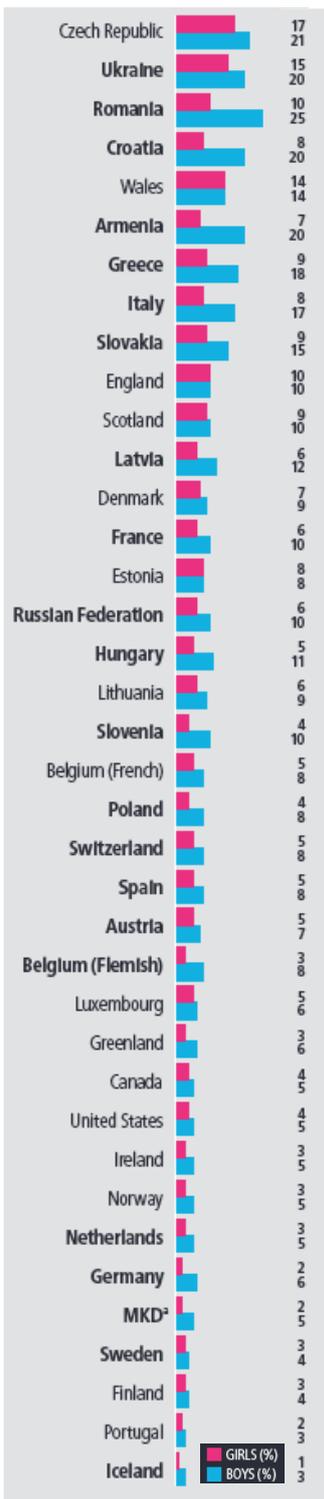
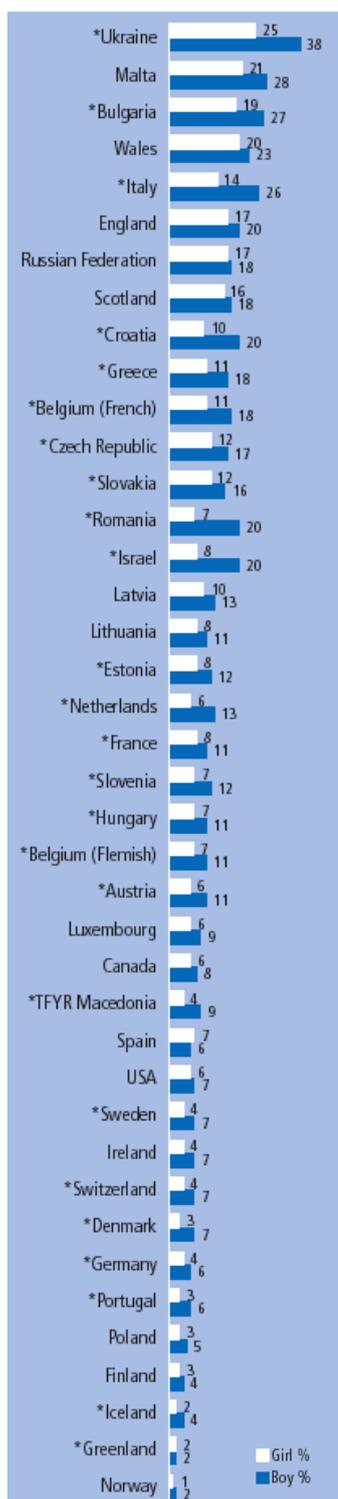
The highest level of drunkenness (at least twice at age 13) were led by Latvia and Lithuania with levels of 25% and 20% for boys. Scotland and Wales had led this table in 2005/6 with levels of 26% and 27% for girls and boys, falling to 18% and 17% in 2010.

Scotland has fallen from second in the league table to 7th, with rates declining from 21/22% to 16/14%, and England falls to 8th in the ranking from 4th place with an improvement from 19/21% (2005/6) to 15% for girls and boys in 2009/10.

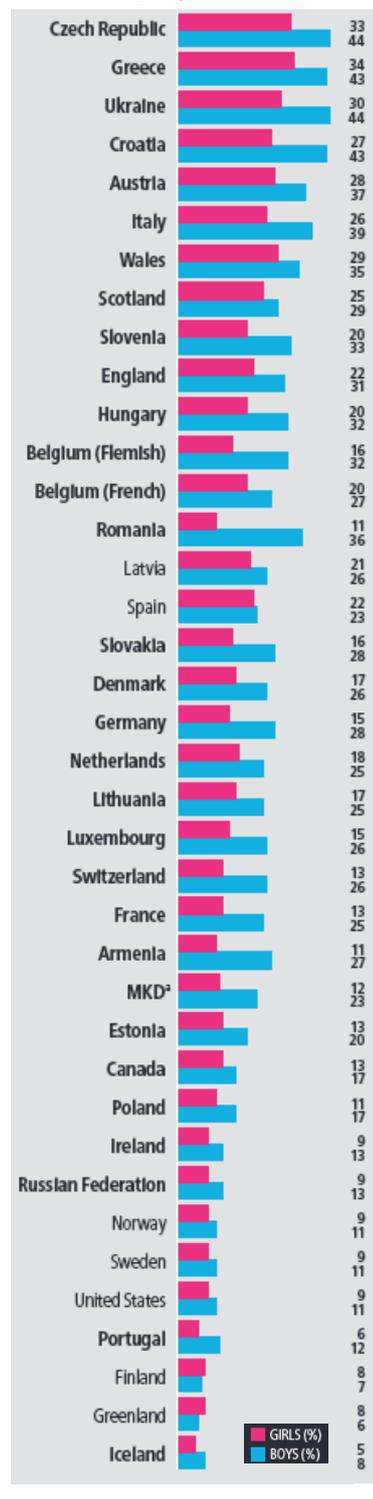
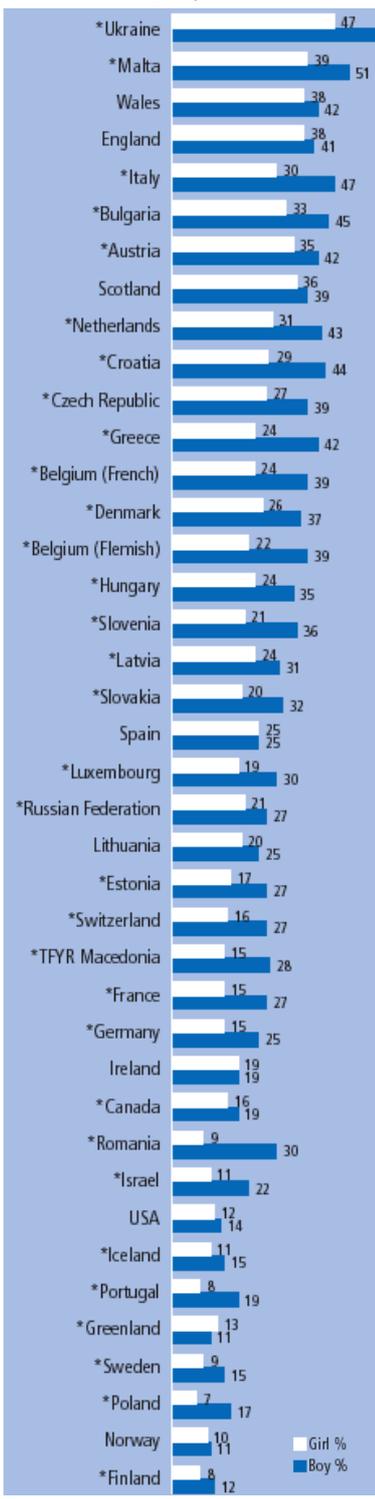
15 year olds

Again, across the UK, levels of weekly drinking among 15 year olds has fallen significantly from 38% of girls and 41% of boys in 2005/6 in England to 22% and 31% in 2009/10.

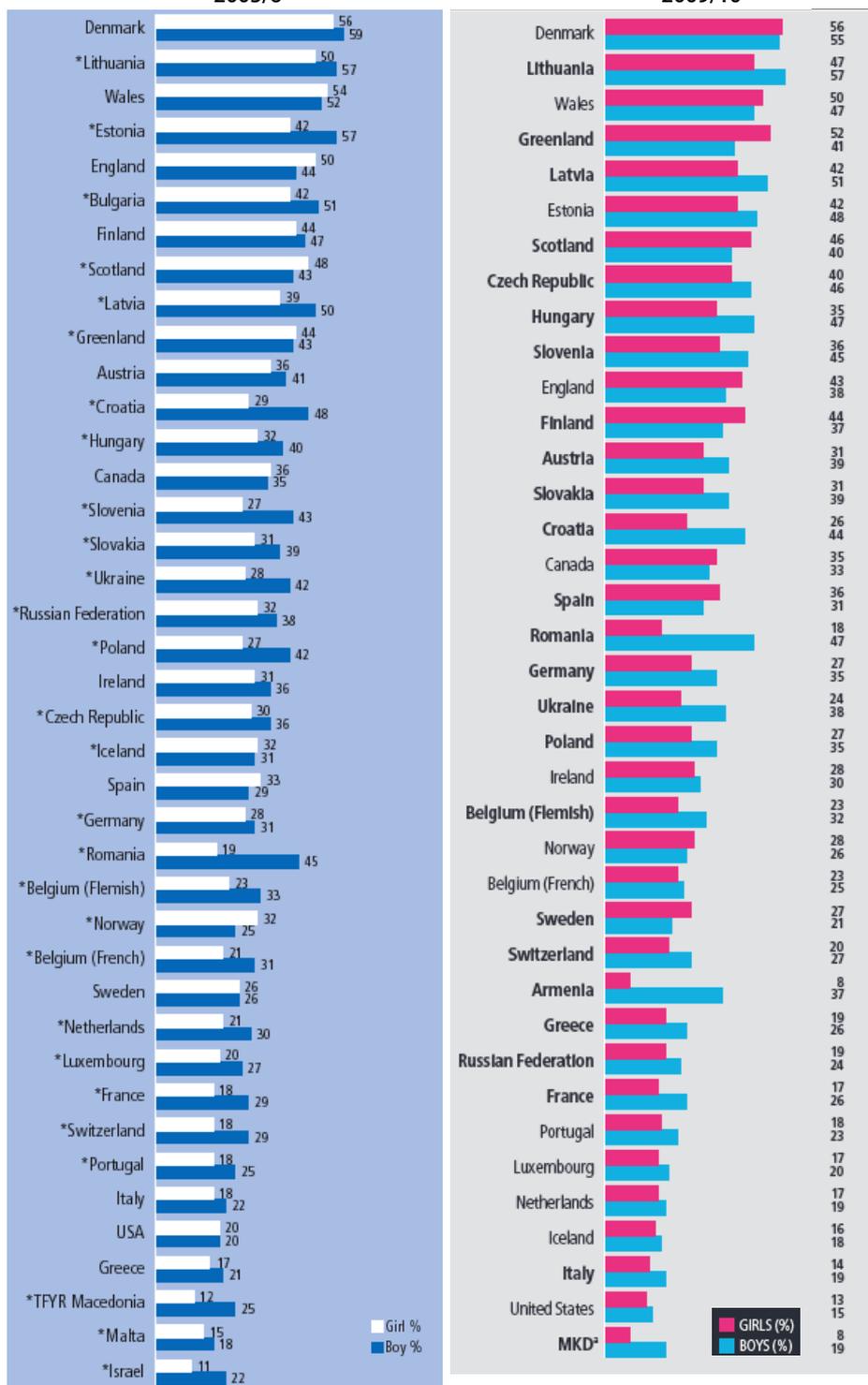
13 year olds who drink alcohol at least once a week
2005/6 2009/10



15 year olds who drink alcohol at least once a week
2005/6 2009/10



15 year olds who have been drunk at least twice
2005/6 2009/10



31%, in Wales it has fallen from 38/42% to 29/35% and in Scotland from 36/39% to 25/29%. Levels of drunkenness (at least twice) have also fallen. Wales 54/52% falling to 50 and 47%, England 50/44% to 43 and 38% and Scotland 48/43% to 46 and 40%. The USA has shown a huge decline from 20% in 2005/6 to 13 and 15%.

Spain is one of the few countries where there has been an increase in being drunk at least twice from 33/29% to 36/31%.

Weekly drinking is not linked to levels of drunkenness in countries such as Italy and Greece - in Greece 34/43% of 15 year olds drink weekly, and 26/39% in Italy, yet their percentage being drunk twice are amongst the lowest at 19/26% for Greece and 14/19% in Italy.. against the leader in the rankings Denmark at 56/55%!

According to the report 'The findings confirm previous HBSC surveys that showed prevalence rates of weekly alcohol use and (early) drunkenness increasing substantially with age (especially between ages 13 and 15) for boys and girls in all countries.

Boys are more likely to report weekly drinking and drunkenness, but the gender difference at age 13 is significant in fewer than half the countries and regions surveyed. Previous HBSC findings showed that the gender gap declined between 1998 and 2006. Further research using data from the most recent survey will be able to confirm if the gender gap has narrowed further.

Family affluence is not found to have a large effect in most countries and regions. Social position among peers may be more important than family SES in predicting alcohol use. Family influence may decrease as the influence of peers and youth culture increases with age, particularly in relation to behaviours that do not start until adolescence (such as alcohol consumption), suggesting that the determining role of socioeconomic background for this type of behaviour might emerge only later in life.

Risky drinking and drunkenness in adolescence are often embedded in a high-risk lifestyle and may have negative social, physical, psychological and neurological consequences reaching into adult life.

Policy programmes that contribute to reductions in alcohol use include the following.

- Almost all European and North American countries currently have legal age limits on both off- and on-

premises sales of alcohol (13). Legal purchase-age limits typically range from 16 to 21 years, but countries differ in the extent to which they are enforced. National drinking policies are related to lower rates of alcohol use among young people and seem an effective tool at macro level to reduce use.

- *School-based intervention programmes focusing specifically on alcohol use and targeting adolescents and their parents have considerable effects. Generic, psychosocial and developmental, school-based prevention programmes focusing on life skills and a healthy lifestyle in general are also effective and could be considered as policy and practice options.*
- *Family interventions are effective in delaying alcohol initiation and reducing frequency of consumption among adolescents. Family treatments focused on change in maladaptive behaviours, multidimensional family therapy and group-administered cognitive behavioural therapies have received considerable empirical support.*

www.euro.who.int/__data/assets/pdf_file/0003/163857/Social-determinants-of-health-and-well-being-among-young-people.pdf

Night time switch for new Drinkaware site

Drinkaware has launched a mobile version of its website with content customised to switch between day and night. The move marks a response to the 200% increase in traffic from smartphones.

Analysis showed that the majority of the visits to the Drinkaware website came via mobile phones either before or during a night out, as well as the morning after. The new smartphone version of the site has been adapted so that daytime features include facts and advice on hangovers, the effects of alcohol and alcohol poisoning. Those visiting the website at night will find information about alcohol units and calories, the legal driving alcohol limit, how alcohol affects your sleep.



New licensing provisions in force

Some licensing provisions in the Police Reform and Social Responsibility Act 2011 have now come into effect. These include changes to the restrictions on opposing licence applications, responsible authorities and fines for underage sales. The draft Home Office guidance can be viewed here. The measures set out in the PRSA include:

- doubling the fine for persistent underage sales to £20,000
- introducing a late night levy to help cover the cost of policing the late night economy
- increasing the flexibility of early morning alcohol restriction orders
- lowering the evidential threshold on licensing authorities
- removing the vicinity test for licensing representations to allow wider local community involvement
- reforming the system of temporary event notices (TENs)
- suspension of premises licences due to non-payment of annual fees

The late night levy, early morning alcohol restriction orders and locally set fees measures will be brought in at a later date of either October 2012 or April 2013 according to the Home Office.

Sunset clause for minimum pricing in Scotland

The Scottish Government has agreed to a 'sunset clause' for its minimum pricing legislation, under a deal to win Conservative support. As part of the clause, new laws to bring in minimum pricing will be dropped after six years if they fail to work. All the main parties, with the exception of Labour, now support the introduction of the measure.

Speaking at Holyrood's health committee, which was considering the latest changes to the Alcohol Minimum Pricing Bill, Cabinet Secretary for Health and Wellbeing Nicola Sturgeon said: "The sunset clause is a response to concerns from some members that minimum pricing hasn't been tested elsewhere. I think that this is a perfectly reasonable and legitimate position to take."

The bill still faces a final vote in Parliament before being passed, with Ministers still to state what the minimum price should be set at.

Update on French consumption habits

In April, Entreprise et Prévention published its 2012 'Barometer' report on the consumption of alcoholic beverages in France, which integrates for the first time an analysis of consumption away from home.

The report found that only 45% of customers at cafes, bars and restaurants drink alcoholic beverages and these consumers are mostly over 45 years. More generally, the trend toward less regular routine consumption continues, with fewer daily drinkers (14%). In supermarkets, the French are buying less quantity but they are buying better quality "The various panels that make up the Barometer allow us to have a global view of the patterns of French consumption, whether in private or when eating out. For five years, there has been a decrease in consumption opportunities. The French eat less, but more qualitative," said Alexis Capitant, General Manager Entreprise et Prévention. "This trend is extremely positive. It is important to continue to fight against excessive or inappropriate consumption of alcoholic beverages, for example for information on consumer guidelines and consumer education, single lever to prevent the risks of alcohol consumption in the private sphere," he added.

The study shows a change towards more casual consumption. The French are mainly weekly consumers (31%) or monthly (23%). 20% never drink alcohol. Daily consumption is particularly high for men over 60 years and is rare in women and youth.

The purchasing behaviour of households is analysed by the research firm Kantar Worldpanel from a

representative panel of 12,000 French households and their purchase for consumption at home regardless of the place of purchase (large and medium supermarkets, convenience stores, discount stores, producers). It shows a slight decrease in the number of purchasing households (200,000 less homes purchasing alcohol in four years), and mostly lower quantities purchased over the same period. Data show an increase in the average household budget for alcohol which has been expanding since 2008, reaching € 312 in 2011.

The NPD Group CREST panel consists of a representative sample of 12,000 people per month, which respond to a questionnaire on the Internet about their visits and their consumption in food service. In establishments where drinks are consumed traditionally alcoholic (coffee bars, nightclubs and restaurants) less than one customer in two consumes two alcoholic beverages, with a significant decrease since 4 years. Consumers are the most numerous 45 and older, who account for over 50% of consumption and this groups consumption has remained consistent, whereas younger customers now consume less than before. CREST The panel also shows that consumption of alcoholic beverages outside the home is primarily related to meals (82%).

www.preventionalcool.com/images/stories/ep%20-%20presentation%20baromtre%20de%20la%20consommation%20des%20boissons%20alcooles%2012.pdf

EU-wide alcohol marketing rules planned for social media, marketing

AB InBev, Bacardi, Brown-Forman, Carlsberg, Diageo, Heineken, Pernod Ricard and SAB Miller will work with the World Federation of Advertisers (WFA) and national trade associations to establish and implement common standards on social media marketing and age appropriate advertising and scheduling in each of the 27 EU member states.

Although a voluntary agreement, the move follows pressure from the European Commission's flagship alcohol harm reduction initiative, the European Alcohol Health Forum (EAHF) to establish a set of harmonised rules across the European Union following concern that standards were fragmented. The 'Responsible Marketing Pact' is a commitment by industry to the EAHF.

The project is likely to deliver:

Common standards on age verification, the use of Facebook Sponsored Stories for marketing purposes, user generated content.

A common stipulation that adverts may only be placed in media where at least 70% of the audience is reasonably expected to be above 18

Consistent guidelines and enforcement to ensure ads primarily appeal to adults over 18.

It is hoped that rules will be drawn up, incorporated and policed by national self regulatory advertising and trade associations by early 2015. Progress will be independently monitored by Accenture and will be overseen by the European Commission.

TABC launches alcohol look up database for consumers

The Texas Alcoholic Beverage Commission (TABC) has completed an online database that gives consumers access to a list of what alcoholic beverage products are legal for sale in Texas and those products' alcohol content. TABC's Label Approval Database, <https://label.tabc.state.tx.us/>, includes all alcoholic beverages that have had labels approved since 2005. Consumers can search the database by permit number, brand name, trade (manufacturer) name, type of product, approval date, or percent alcohol by volume. Each record includes all of this information and an image of the approved label.

ETSC policy paper on drink driving

The ETSC have published a policy paper 'Drink driving: Towards Zero Tolerance'.

The paper provides an overview of the drink driving situation in the European Union and measures taken at the EU level to curb drink driving deaths. ETSC makes recommendations to Member States and the European Union including the adoption of a zero tolerance for drink driving.

Chapter 4 looks at countries' progress in reducing road deaths attributed to drink driving between 2001 and 2010. Road deaths attributed to alcohol have been cut by 53% between 2001 and 2010 in these countries, while other road deaths decreased by 47%. Ireland achieved impressive reductions in cutting alcohol related deaths from 124 in 2003 to 48 in 2007. Slovakia cut drink driving deaths from 50 in 2001 to an average of 15 per year in 2008-2010. Latvia, Bulgaria, Hungary, Sweden, Slovenia, Lithuania, Germany, Belgium, Greece and Austria also reduced drink-driving deaths faster than other road deaths.

The report presents case studies of four European countries: the Czech Republic, Ireland, Norway and Sweden. Successes and shortcomings of drink driving policies are discussed with national experts from these four countries. The implementation of alcohol interlocks in Norway, the adoption of a lower BAC limit in Ireland or the effect of zero tolerance for drink driving in the Czech Republic and the impact of Vision Zero to support the fight against drink driving in Sweden are among the good practices implemented in those countries.

www.etsc.eu/documents/Drink_Driving_Towards_Zero_Tolerance.pdf

It is hoped that the database, which was funded by the federal Office of Juvenile Justice and Delinquency Prevention, can play an important role in the prevention of underage drinking, and in adult consumers' efforts to drink responsibly. A parent or teacher's ability to view a product's label and see the alcohol content can help them play a more educated role in monitoring a young person's activities. Having access to a product's alcohol content is also beneficial if an adult consumer knows how to use it to determine responsible consumption measures.

TABC recently launched a new Alcohol by Volume Campaign that explains how much alcohol is actually in one container since these concentrations can vary widely by beverage.

Programme for new driver ceremonies in Virginia

In recognition of National Youth Traffic Safety Month, The Century Council launched I Know Everything, a new programme developed in partnership with the Virginia Supreme Court as a resource for judges to use during mandatory new drivers licensing ceremonies. Currently, Virginia is the only State in the US that requires parents and their teens to attend a new driver licensing ceremony conducted by a judge. This presents a unique opportunity to stress the importance of safe driving behaviours. I Know Everything consists of a video with a voiceover suggesting that teens 'know everything' for example:

I know not to text and drive
I know not to drink alcohol and drive,
it's dangerous, illegal, and just plain stupid
I know my parents can take away my keys
anytime

Additionally, the I Know Everything programme has a website (www.iknoweverything.com) with downloadable information for students and parents as well as a facilitator's guide for judges. Programme kits have been distributed to over 120 Virginia judges who conduct driver licensing ceremonies. Judges will also have parent and teen tips on keeping the roads safe to distribute at the ceremonies.



California Traffic Safety Report Card - Alcohol

Alcohol-impaired driving fatalities in California dropped by 14.4% from 924 in 2009 to 791 in 2010. The 2010 figure is the lowest DUI death total ever recorded.

California's alcohol-impaired driving fatality rate dropped from 0.31 in 2008 to 0.28 in 2009. The national average of 0.36.

As a percent of total fatalities, alcohol-impaired fatalities decreased from 30% in 2009 to 29% in 2010. This number has remained virtually unchanged in the past five years. (The national average is 31%).

In 2010, the 21-24 age group had the highest percentage of drivers in fatal crashes with BAC levels of 0.08 or higher – 30% (down from 33% in 2009).

DUI arrests have dropped in 2010 to 195,879 as compared to 208,531 in 2009. California's statewide DUI conviction rate for 2008 is 79%.

www.ots.ca.gov/OTS_and_Traffic_Safety/Report_Card.asp

US re-examines alcohol ads in social media era

As part of its review on alcohol advertising, the Federal Trade Commission in the US has asked 14 major alcoholic beverage producers to release information about their Internet and digital marketing efforts. The parent companies for wineries including Kendall-Jackson, Robert Mondavi and Beaulieu Vineyard, as well as the Anheuser-Busch and Bacardi, are all being asked to contribute.

An analysis of the data will guide FTC recommendations on how the alcohol industry should regulate itself both on- and offline.

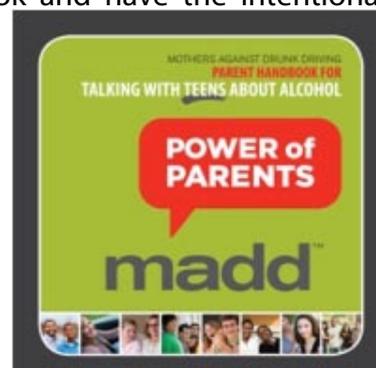
The last study of this kind, completed in 2008, compiled alcohol marketing data for 2005. That year, 42% of the surveyed companies' \$3.3 billion in marketing expenditures went for traditional media such as television, radio, print and outdoor billboards. Only 1.9% covered Internet efforts, but in 2005, Twitter was still to be launched, YouTube had just debuted, and Facebook was just a year old. Since then, some companies have greatly increased their social media advertising.

Teen alcohol use — Parents have more influence than they think

In the US, over half of all high school age drinkers get their alcohol from an adult, according to SAMHSA's National Survey on Drug Use and Health and half of those adults providing alcohol are parents or other family members.

Mothers against drink driving (MADD) are trying to encourage parents to become part of the solution for underage drinking. According to MADD, most parents want to do the right thing, but don't know how. Part of that can be knowledge – one out of every five teenagers binge drinks, but only one out of every 100 parents think their teen binge drinks.

Mothers Against Drunk Driving (MADD) has teamed up with Dr. Robert Turrisi of Pennsylvania State University to create the Power of Parents handbook. Based on Dr. Turrisi's research, this handbook gives proven tips on how to talk with teens about alcohol in a productive, positive way. It is estimated that parents who read the handbook and have the intentional conversation with their teens about alcohol can reduce underage drinking behaviours by as much as 30%. The handbook is available to download at www.madd.org/powerofparents.



UK Drinkaware survey

A recent Ipsos Mori poll for charity Drinkaware in the UK has found that middle-class children are more likely to have consumed alcohol by the age of 12 than other social groups.

The research was based on 500 parents from the social groups ABC1 and their children, aged between 10 and 17. 35% of those born in professional households had consumed a full glass of alcohol before reaching their teenage years, compared to NHS findings of 19.9% of 12-year-olds across all economic groups.

It is thought that although some children may be surreptitiously drinking at home, a large number of parents are allowing their children to drink in the hope that this will give them a more mature and responsible attitude to alcohol.

www.drinkaware.co.uk/

Parents are the leading influence in a kid's decision to not drink alcohol, according to a US survey

In recognition of Alcohol Awareness Month in the US, The Century Council released new survey results in April which reveal that parents continue to be the leading influence on their kid's decisions to not drink alcohol. Additionally, the survey demonstrates when it comes to talking about underage drinking, kids are actually listening to their parents when they discuss underage drinking.

The survey indicates significant improvement in the effectiveness of conversations between caregivers and kids on the topic of underage drinking since first examined in 2003. A decade ago, research showed a disconnect between kids and parents on the topic of underage drinking. In 2003, only 26% of youth reported their parents or grandparents had spoken to them four or more times in the past year about the dangers of drinking alcohol, while 49% of parents reported to have spoken with their children.

According to the new research, parents are talking to their kids about underage drinking and they are listening. Nearly half of parents surveyed (46%), reported talking with their 10-18 year-old son or

daughter four or more times in the past year about the dangers of underage drinking, and a nearly equal number (42%) of youth ages 10-18 reported speaking as frequently with their parents, grandparents, or another adult caregiver on the issue.

Underage drinking often becomes a discussion topic when there is an incident that triggers the conversation. The survey found that the top three conversation starters for were: (1) a tragedy reported in the news (54% parents, 47% kids; (2) something seen on TV or a movie (49% parents, 41% kids) or; (3) someone else getting caught with alcohol or drinking (37% parents, 36% kids).

"Concrete real world examples of problem drinking behaviour are excellent places for parents to start a conversation with their kid about drinking. But with or without the perfect lead in, honest discussion of the negative consequences of underage drinking and the benefits of a healthy life style need to happen often and early," said Anthony E. Wolf, Ph.D. clinical psychologist

www.centurycouncil.org

Survey indicates that Australians drinking less

Apparent consumption of alcohol decreased by 1.1% in 2010-11 to 182.0 million litres, according to figures released by the Australian Bureau of Statistics (ABS).

In 2010-11 there were 182.0 million litres of pure alcohol available for consumption, compared with 184.0 million litres in 2009-10. This was the first decrease recorded since 2001-02, and was due to decreases in the volume of pure alcohol from beer

(down 3.4%) and wine (down 0.6%).

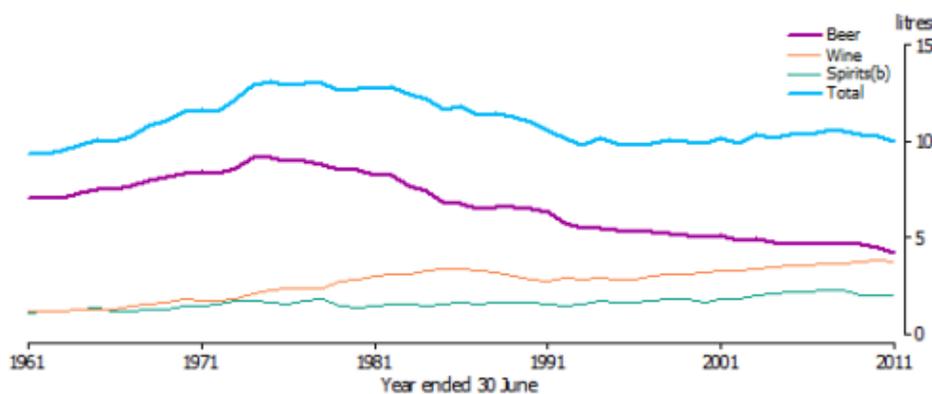
Over the past year, apparent consumption of spirits increased 4.8%, while Ready to Drink (RTDs) beverages have remained stable.

The changes in consumption patterns meant that beer accounted for 42% of all pure alcohol available for consumption in 2010-11 (down from 43% in 2009-10), wine 37% (unchanged), and spirits and RTDs 20% (up from 19% in 2009-10).

Overall, there were 10.0 litres of pure alcohol available for consumption per person aged 15 years and over in 2010-11, down 2.6% from 2009-10. This equates to around 2.2 standard drinks per person per day in 2010-11.

www.abs.gov.au/ausstats/abs@.nsf/Lookup/4307.0.55.001main+features12010-11

GRAPH 3: APPARENT CONSUMPTION OF PURE ALCOHOL, Per capita(a)



(a) Litres per person 15 years and older.
(b) Includes Ready to Drink (pre-mixed) beverages from 2003 onwards.

Pub beer sales suffer under big Beer Tax hikes in UK – BBPA Beer Barometer

Britain's pubs have seen a six per cent fall in beer sales in the first quarter of 2012, following large rises in the tax on beer, according to the latest quarterly 'Beer Barometer' from the British Beer & Pub Association (BBPA). In contrast, off trade sales were up by nearly five per cent.

However, beer sales are now falling at a slower rate than in the previous four years. Overall beer sales fell by 1.4 per cent in the quarter compared to last year. In the year to March 2012, overall beer sales were down 2.9 per cent, following the 7 per cent rise in beer duty last March. The recent Budget tax hike was made under the controversial 'duty escalator' policy, despite widespread calls to rein in the rises.

European Travel Retail Council publish Alcohol Code of Conduct

The European Travel Retail Council (ETRC) has published an Alcohol Code of Conduct signaling their commitment to responsible retailing. The Code aims to safeguard and demonstrate the responsible and ethical behaviour of all relevant business operators in duty free and travel retail. In practical terms, it seeks to ensure that retailers and producers do not encourage excessive consumption or misuse of alcohol in the duty free and travel retail channel and establishes a set of working principles that reflect the unique circumstances of this distinct, highly regulated environment.

The decision to launch an Alcohol Code of Conduct is part of a broader ongoing engagement with the EU institutions. The ETRC joined the European Alcohol and Health Forum in October 2011 to be recognised as a proactive and constructive contributor to the European alcohol policy debate. The ETRC cooperated closely on the initiative with the Asia Pacific Travel Retail Association (APTRA), which simultaneously launched its own Alcohol Code of Conduct. The two Codes were developed to respect the differences between the Asia-Pacific and the European markets in terms of regulatory requirements and cultural heritage regarding the consumption of alcohol.

New data show beer sales in convenience stores in the US grew by more than \$200 million in 2011

The Beer Institute released new data showing beer sales in convenience stores rose by 1.3% in 2011 totaling more than \$16.7 billion in sales. Convenience stores were responsible for nearly 17% of total beer sales in 2011, comprising the largest share of off-premise sales last year.

The rise in convenience store beer sales is concurrent with continuing growth in the convenience store industry. The US convenience store count increased to a record 148,126 stores as of December 31, 2011, a 1.2% increase from the previous year.

Overall, the Beer Institute data indicate that beer sales rose more than 2% in 2011, surpassing \$98 billion in total retail sales, highlighting beer's continued strength within the alcohol beverage sector. According to market research company Nielsen, the increase in sales revenue can be attributed to the high-end beer business. The sale of imports, crafts and above-premium beers sold off-premise was up nearly 3%.

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18th October 2012

The Royal Society of Medicine,
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and

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AIM – Alcohol in Moderation was founded in 1991 as an independent not for profit organisation whose role is to communicate “The Responsible Drinking Message” and to summarise and log relevant research, legislation, policy and campaigns regarding alcohol, health, social and policy issues.

AIM Mission Statement

- To work internationally to disseminate accurate social, scientific and medical research concerning responsible and moderate drinking
- To strive to ensure that alcohol is consumed responsibly and in moderation
- To encourage informed and balanced debate on alcohol, health and social issues
- To communicate and publicise relevant medical and scientific research in a clear and concise format, contributed to by AIM's Council of 20 Professors and Specialists
- To publish information via www.alcoholinmoderation.com on moderate drinking and health, social and policy issues – comprehensively indexed and fully searchable without charge
- To educate consumers on responsible drinking and related health issues via www.drinkingandyou.com and publications, based on national government guidelines enabling consumers to make informed choices regarding drinking
- To inform and educate those working in the beverage alcohol industry regarding the responsible production, marketing, sale and promotion of alcohol
- To distribute AIM Digest Online without charge to policy makers, legislators and researchers involved in alcohol issues
- To direct enquiries towards full, peer reviewed or referenced sources of information and statistics where possible
- To work with organisations, charities, companies and associations to create programmes, materials and policies built around the responsible consumption of alcohol

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