



For more information please email [Helena.Conibear@aim-digest.com](mailto:Helena.Conibear@aim-digest.com) or [Alison.Rees@aim-digest.com](mailto:Alison.Rees@aim-digest.com)

## **Alcohol - boon or bane for the elderly? (part III)**

Over the years, the moderate use of alcohol has been considered beneficial to older individuals, but what constitutes “moderate” depends on age, sex, genetic characteristics, and other factors. The balance of harm (alcoholism, liver disease, accidents, hypertension, hemorrhagic stroke, and some cancers) and benefit (a reduced risk of coronary heart disease, ischemic stroke, diabetes, and dementia) determines the weekly number of drinks associated with the lowest mortality and the highest quality of life in the older.

“Alcohol and the Elderly” from the National Institute on Alcohol Abuse and Alcoholism (1) highlights several factors that affect the balance of harm and benefit in the older. The effects of a decreasing volume of distribution (total body water) in older individuals on the blood alcohol concentration after a standard alcohol dose has been reviewed in Alcohol - boon or bane for the elderly? Part I. The influence of a high incidence of comorbidities and drug use in the older population was reviewed in Alcohol - boon or bane for the elderly? Part II. Part III reviews the problems of late onset alcoholism, alcohol intake as a risk factor for fall injury and fracture in the older, alcohol and breast cancer, and concludes with a discussion of healthy ageing and sensible limits for weekly alcohol intake in older people.

### **Late-onset alcoholism**

“Ferdinand C. Helwig had a relative who occasionally dined with him. Before and after a full dinner, this relative would have a drink which he enjoyed. His conversation sparkled, and he was full of life. When he later went home to bed, he would have a pleasant, relaxed night of sleep. When he did not dine out, he was neither sparkling, nor vivacious; and he customarily slept badly. His difficulty lay in the fact that his daughter, with whom he lived, would not permit him to drink, because she feared that he might be addicted to alcohol. He was then eighty-three years old.” (2).

The National Longitudinal Alcohol Epidemiological Survey reported a prevalence of alcohol abuse or dependence for 1.2% for men and 0.3% for women > 65 years old. (3) Most older alcoholics have had alcoholism for many years. In contrast, the concept of late-onset alcoholism characterize those who develop problem drinking later in life. In a sample of 268 alcoholics about 17% reported that they started harmful drinking after the age of 60. Compared with early-onset alcoholics patients with late-onset problem drinking drank lower amounts of alcohol, underwent fewer detoxifications, suffered from psychiatric comorbidity less often, showed less alcohol-related physical and psychosocial complications, and they had a higher rate of abstinence after 12 months. (4) Contrary to expectation life stressors did not predict drinking problem onset in a prospective study of late-onset problem drinking. Compared with stable non-problem drinkers, late-onset problem drinkers were more likely to report heavier alcohol consumption, greater friend approval of drinking, more reliance of avoidance coping strategies, were more likely to smoke, and were less likely to have acute medical conditions that could potentially be complicated by alcohol consumption. Late-onset problem drinkers reported mild to moderate drinking problems (e.g. confusion, inebriation and family conflict or problems), and spontaneous recovery rates were high. (5) Depression can lead to self-treatment with alcohol. In a sample of depressed patients with comorbid drug dependence, alcohol dependence followed the onset of first life depression by 4.7 years. (6.) Late-onset alcohol consumption may indicate a different underlying disorder. Before getting demented, patients with Alzheimer’s Disease are affected by slight cognitive changes in a pre-clinical phase of 5-8 years. The awareness of this impairment might lead to feelings of help- or hopelessness and self-treatment with alcohol. (7.)

Findings from cross-sectional studies measuring quantity of alcohol use indicate that overall consumption declines with age, abstinence rate increase, and men drink more than women across all age categories. (8.) Cross-sectional studies, however, cannot determine whether decreased alcohol consumption in older populations is due to a cohort effect (i.e. older aged cohorts have consumed less alcohol throughout their lives compared with younger aged cohorts) or age-related phenomena (i.e. alcohol use declines with increasing age). Results from the Normative Ageing Study suggest that ageing is not as important a factor in changes in drinking behaviours as generational or attitudinal changes. (9.) However, after adjustment of data from the first National Health and Nutrition Examination Survey (1971-71) for birth year and per capita alcohol consumption, alcohol intake fell by 11% with every decade of ageing. (10.) In NHANES I heavy drinkers (men, smokers) tended to reduce their drinking faster than did light to moderate drinkers. A pronounced reduction in numbers reporting risky drinking with increasing age was also found in the U.K. based GENESiS Study. (11.) The Behavioral Risk Factor Surveillance System (sample size 212,510 US adults) found by far the lowest rates of binge-drinking episodes/person/year in older adults ( $\geq 55$  years). (12.) A cross-sectional study of alcohol use in 270 healthy older persons showed a decline in percent drinkers with increasing age (slope =  $-2.7\%$  per year); and the decline in the percent of subjects consuming any alcohol over time was confirmed in a longitudinal analysis of the use of alcohol over a seven-year period. (13.) In the Honolulu Heart Program cohort of 1,604 older men aged 70-90 years who were sampled from the most recent follow-up examination, current alcohol intake was compared with that found 25 years earlier when the same men were between ages 45-64 and free of cardiovascular disease: only 4% started to drink alcohol, while 30% were reclassified from drinkers to nondrinkers. (14.)

### **Alcohol intake as a risk factor for fall injury and fracture**

“In an isolated, unsupervised, unobserved environment, one drink in combination with another drug, a slight visual or muscular impairment or other small disability might be just the impetus required to shatter the fragile balance and cause a catastrophe such as a fall resulting in a hip fracture, which leads to a greater loss of movement and perhaps ultimately of the precious freedom to live and function independently – truly a great price to pay.” (15.)

A review of 26 published studies that assessed the effects of alcohol consumption on falls or fall injuries showed that four studies found an increased risk for falls or fall injuries associated with exposures ranging from daily use to an average weekly consumption of  $\geq 21$  drinks when compared with nondrinkers or individuals consuming  $\leq 11$  drink per week. Twenty-one studies found no association between increased alcohol use and falls or fall injuries. In contrast one study found that participants who reported daily use of alcohol had decreased risk for falls compared with nondrinkers. (16.)

Abuse of alcohol is considered to be an important risk factor for fractures and osteoporosis (17.), however, mounting epidemiological evidence indicates an association between the moderate ingestion of alcoholic beverages and higher bone mineral density. (18.) More limited findings provide some evidence for translation of this association into reduced fracture risk; in a large, population-based case-control study in Sweden those women who reported drinking alcohol had a decreased risk of hip fracture (OR 0.80; CI, 0.69-0.93). Each type of alcoholic beverage studied was inversely associated with risk, although strong beer and wine conferred lower risks than other types of alcoholic drinks. (19.) In older American men light to moderate alcohol intake is associated with stronger bones; as alcohol intake increased, so did hip and spine bone mineral density. Men with light intake of alcohol ( $< 14$  drinks per week) had a lower risk of two or more incident falls than abstainers, however, greater alcohol intake was not associated with greater risk for nonspine or hip fractures. (20.)

### **Alcohol use as a risk factor for breast cancer**

Women who survive to the age of 85 will have a 1 in 9 lifetime chance of developing breast cancer. One of the best- documented risk factors for breast cancer is age. If all women less than 65 years of age are compared with

women aged 65 or older, the relative risk of breast cancer associated with increased age is 5.8. (21.) Unlike the case of cigarette smoking and lung cancer, no environmental factors of this kind have yet been identified that have a major effect on the risk of breast cancer. There are, however, several factors that have a modest effect. Numerous studies have reported that consumption of one drink per day or less (approximately 12 g alcohol) does not significantly affect the risk of breast cancer. This was confirmed in a meta-analysis of relevant studies (published between 1966-1999) exploring the relation of alcohol consumption to risk of breast cancer. (22.) In the 42 reports that met the study criteria, the meta-analysis showed a relative risk of 1.1 for individuals having one drink per day, 1.21 for individuals having two drinks per day, and 1.4 for individuals having three drinks per day, when compared to individuals who did not drink alcohol. There are few data about the effect of heavier doses of alcohol, but the indications are that the relative risk does not exceed 2, even at very high doses (seven or eight drinks per day). In comparison women who did not menopause until age 55 or after showed a relative risk of 1.22 compared with those who experienced menopause before the age of 45. (23.) And compared to a woman with a first live birth at an age less than 20, the relative risk of breast cancer for the woman giving birth at or after the age of 30 was 2.23. (24.)

### **Predictors of successful and healthy ageing**

The older population is growing rapidly, and individuals are typically living longer, more active lives. Health status is closely related to the ageing process. The biological process of ageing reflects the interactions between our genetic inheritance and environmental influences. The ageing process includes progressive and irreversible biological changes, resulting in a growing risk of chronic diseases, cognitive impairments, impairment

of functions, and an increased probability of dying. (25.) In the Alameda County Study long-term predictors of healthy ageing and high levels of physical functioning were: higher family income level, absence of hypertension, absence of arthritis, absence of back pain, being a non-smoker, having normal weight, and consuming moderate amounts of alcohol. (26.)

A person's self-rating of health status is an independent predictor of mortality. The positive relationship between good self-ratings of health status and survival remains, even after the inclusion of covariates as chronic conditions, functioning, medication use, physician visits, and hospitalisation, implying that survey respondents' perception of health status are holistic. (27.) The analysis of data from the Manitoba Longitudinal Study showed that older Canadians' self-ratings of health were better predictors of seven-year survival than their medical records or self-reports of medical conditions. (28.) A cross-sectional analysis of the associations between alcohol intake and subjective health in a random sample drawn from the general population aged 25-64 years in Finland concluded that moderate alcohol intake is related to a self-perception of good health. (29.)

Satisfaction with quality of life and happiness are also key indices of successful ageing.

Alcohol use can be associated with psychological and social well-being, which can be considered important health outcomes in their own right. The psychological benefits associated with alcohol consumption include stress reduction, mood enhancement, and cognitive performance. (30.)

Alcohol intake has been shown to be associated with quality of life in younger populations, with moderate drinkers exhibiting the highest quality-of-life scores and nondrinkers and heavy drinkers scoring poorly on these measures. (31.) Primary care patients who drank in a frequent, low-quantity pattern generally had better overall Health-Related Quality of Life than patients from other consumption groups. (32.) Among the participants of the WHO Copenhagen Healthy City Survey (4113 men and 7926 women aged 18 to 100 years) a light to moderate wine intake was related to good self-perceived health whereas this was not the case for beer and spirits drinkers. (33.) The 1993 Spanish National Health Survey (19,573 persons aged 16 years and over) observed a negative dose-response relation between consumption of alcohol and prevalence of suboptimal health; the higher the consumption of wine and beer, the lower the prevalence of suboptimal health. Light (1-2 drinks/day) and moderate (3-4 drinks/day) was the most frequent drinking pattern. (34.)

Cognitive vitality is crucial to optimal ageing and survival in older persons. Few things are as valuable as the unimpaired ability to reason. The lifetime risk for a 55-year-old man of becoming demented is 16%, and the lifetime risk for a woman of a woman of the same age is as high as 33%. The results of several studies support the idea that moderate alcohol consumption is associated with better cognitive performance. (35.) Of participants in the Whitehall II Study (4,272 men, 1,761 women) who reported drinking alcohol in the past year, those who consumed at least one drink in the past week, compared with those who did not, were significantly less likely to have poor cognitive function. The beneficial effect extended to those drinking more than 240 g of alcohol per week. (36.) In a cohort of older adults with hypertension reduction in systolic blood pressure and moderate alcohol intake could protect against cognitive deterioration in late life. (37.) Alcohol consumption was beneficial to cognitive function in men (n=733) and women (n=1,053) aged 55-88 years from the Framingham Heart Study. Women who drank moderately (2-4 drinks/day) showed superior performance in many cognitive domains relative to abstainers. For men, superior performance was found within the range of 4-8 drinks/day, although fewer significant relations were observed. (38.) In a representative American older cohort over an average of 7 years follow-up period, a pattern of mild-to-moderate drinking, compared to not drinking, was associated with lesser average decline in cognitive domains over the same period. (39.) However, although the observed relation between alcohol and cognition persists after adjusting the analyses for a number of social and health characteristics, we must recognize that older persons who are in good cognitive and physical health may be more likely than less healthy peers to indulge in low-moderate alcohol consumption as part of their social activities. (40.) Social engagement challenges individuals to communicate and participate in exchanges that stimulate cognitive capacities. Avoidance of social isolation may be important in maintaining cognitive vitality and happiness in old age. In a community-based sample of subjects aged 70 years and older, drinking was most commonly associated with social activities and few took alcohol to cope with personal situations. (41.)

Self-efficacy concerns the individual's beliefs in his or her capabilities to successfully execute necessary courses of action to satisfy situational demands, and it is the most salient variable affecting well-being and psychological health. For older adults, whose self-efficacy may be deteriorating along with their functional abilities, physical activity may provide a mastery experience that leads to increased self-efficacy, which in turn leads to improved psychological well-being. Persons who have a high sense of self-efficacy are more likely to maintain cognitive function over time. In a health survey of older adults (n=8578; aged 55-97) the low-risk drinkers (< 9 drinks/week for women, < 12 drinks/week for men, n=2473) scored significantly better than abstainers (n=4848) on all measures of health functioning: General Health, Physical Functioning, Physical Role Functioning, Bodily Pain, Vitality, Mental Health, Emotional Role Functioning, and Social Functioning. However, on all measures but Mental Health, the at-risk drinkers (drinking  $\geq 9$  drinks/week for women and  $\geq 12$  drinks/week for men, n=589) also scored significantly better than the abstainers. (42.)

For older adults, maintaining independence depends on the preservation of functional abilities. Heavy alcohol use may contribute to functional decline in older populations. In older women an intake of > 14 drinks per week was associated with an impaired function (i.e. difficulty with three or more activities of daily living) compared to nondrinkers. (43.) In a prospective study older men who consumed more than 24 g alcohol each day were 20% more likely to sustain a loss of mobility at 4-year follow-up compared to nondrinkers. (44.)

Weight maintenance is important in order to reduce the morbidity and mortality risk of several chronic diseases, however, the excess mortality associated with obesity declines with age. The BMI ranges with lowest risks for 15 year mortality after age 70 were  $27 \pm 29$  kg/m<sup>2</sup> and  $25 \pm 27$  kg/m<sup>2</sup> in non-smoking males and females, respectively. The lowest mortality risks in both sexes are found in the relatively stable weight change group which suggests that a maintenance of body weight is good for survival in the elderly. (45.) In an American cohort study the following health behaviours were significantly associated with losing mobility in late life: current smoking, low physical activity, high body mass index, and not consuming small-to-moderate amounts of alcohol. (46.) Among the 8,236 respondents who participated in the Third National Health and Nutrition Survey, those who reported drinking one or two drinks per day had about half the risk of obesity as compared to nondrinkers. The odds of obesity were significantly greater among binge drinkers and those consuming four or more drinks/day.



(47.) In the Diet, Cancer and Health Study, a cross-sectional population study including 25,325 men and 24,552 women from Denmark, the most frequent drinkers had the lowest odds ratios for being obese; the results indicate that frequent drinking of small amounts of alcohol is the optimal drinking pattern in this relation. (48.)

Physical activity recommendations are for 30 min of moderate-intensity activity each day, which provides substantial benefits across a broad range of health outcomes for sedentary older people. (49.) Older age is a significant predictor associated with increased rate of functional decline, however, in an American cohort study of 2,581 people aged 65 and older exercise and moderate alcohol consumption were associated with decreased rates of functional decline. (50.) In a survey of 9704 women 65 years or older nondrinkers had significantly poorer function on all of the 12 performance measures (muscle strength, agility, coordination, gait and balance) except tandem walk compared with current moderate drinkers. (51.) An inverted J-shaped curve characterized the association between estimates of alcohol consumption and leisure-time physical activity in the 1990 National Health Interview Survey. The likelihood of displaying a physically active lifestyle (odds ratios) increased from abstinence (1.00) to moderate drinking (1.84), then declined at heavier consumption (1.61). Stratified analyses yielded similar results with peaks at light or moderate consumption for persons aged 55 and over. (52.)

Qualitative aspects of diet predict the overall death rate and hence successful ageing. Small cohort studies have shown that Mediterranean type diet increase longevity. The Mediterranean diet is characterised by a high intake of vegetables, legumes, fruits, and cereals (in the past largely unrefined); a moderate to high intake of fish; a low intake

of saturated lipids but high intake of unsaturated lipids, particularly olive oil; a low to moderate intake of dairy products, mostly cheese and yogurt; a low intake of meat; and a modest intake of ethanol (men consuming from 10 g to less than 50 g of ethanol per day and women consuming from 5 g to 25 g), mostly as wine. In a multicentre, prospective cohort study of 74,607 men and women, aged 60 or more from nine European countries adherence to a Mediterranean diet was associated with lower overall mortality.

(53.) In the HALE population adhering to a Mediterranean diet (hazard ratio [HR], 0.77; CI 0.68-0.88), moderate alcohol use (HR, 0.78; CI, 0.67-0.91), physical activity (HR, 0.63; CI, 0.55-0.72), and nonsmoking (HR, 0.65; CI, 0.57-0.75) were associated with a lower risk of all-cause mortality. (54.)

### **Sensible limits of alcohol intake**

In its “Physician’s Guide to Helping Patients With Alcohol Problems” (NIAAA 1995) the National Institute on Alcohol Abuse and Alcoholism offers recommendations for low-risk drinking. For individuals over the age of 65, NIAAA recommends “no more than one drink per day”. A standard drink is one can (12 oz.) of beer; a single shot (1.5 oz.) of hard liquor; a glass (5 oz.) of wine, all of which contain approximately 0.5 ounces of alcohol (14.8 ml = 12 grams of alcohol). In contrast to in the United States, current U.K. recommendations

for older people are the same as for younger adults; men drinking three to four “standard units” of alcohol per day (an average of 1.7–2.25 American size drinks/d) and women drinking two to three standard units (1.1–1.7 American size drinks/d) “will not accrue significant health risk,” although lower limits for older people have been advocated. (Sensible Drinking. The Report of an Inter-Departmental Working Group. London: Department of Health, 1995.) Most other countries make no specific recommendations for older people; exceptions are Italy, where guidelines for older people are approximately 25% lower than for younger adults, and New Zealand and Australia, where guideline levels are the same for all adults, but older people are advised to consider drinking less.

Moderate consumption of alcohol carries risks and benefits. In two linked national cohorts (the U.S. Health and Retirement Study and the English Longitudinal Study of Ageing), alcohol consumption in the disputed intake range of more than one to two drinks per day was not associated with greater risks of disability or mortality than

the current U.S. recommended level of more than none to one drink per day for older people. Because over-restrictive limits risk encouraging nihilistic responses or fruitless clinical effort, a review is needed of the evidence base for the lower hazardous drinking definitions for older adults without specific contraindications. (55.)

One problem in framing guidelines for alcohol use in older people is that standard drinks are defined quite differently in different countries. Three standard drinks in the United Kingdom would correspond to 24 g of pure alcohol, whereas two standard units in Canada contain 27.2 g of pure alcohol. Thus, the use of standard drinks in an international context is highly problematic. Another problem is that the results of most population studies are built on self-reports of alcohol intake. Self-reports of alcohol consumption may be called into question because of the discrepancy between alcoholic beverage sales data and survey reports of alcohol consumption. In general, comparison studies in the alcohol literature have shown that self-reported alcohol consumption accounts for only 40-60% of alcoholic beverages sold as measured by sales and tax data. (56.) Some groups of drinkers, defined either by demographics or drinking level, may bias their reports differently. Underreporting of alcohol intake may be explained by response errors, e.g. difficulties in recall of drinking practices and culturally determined socially desirable answers. To advise the public on "sensible" limits of alcohol intake methods are needed that properly rank individuals according to alcohol intake, and that also assess correctly the absolute level of intake. (57.)

The ALSWH study provides 6-year longitudinal data on alcohol consumption, survival, and health-related quality of life for 12,432 Australian women (aged 70 to 75 at baseline) who mostly maintained stable levels of alcohol consumption during the study period. Women who did not consume alcohol and who drank rarely were more likely to die. If they survived, they had lower health related quality of life after adjustment for smoking, comorbidity, education, BMI, and area of residence. The health over time of women who drank alcohol at low levels of intake did not differ significantly according to how much

alcohol they consumed, providing evidence that applying current alcohol-consumption recommendations of up to 14 units a week for women (the Royal College of Physicians, Psychiatrists and General Practitioners) to women in these older age ranges is appropriate. (59.) In a Danish cohort study the effect of alcohol on mortality did not differ between middle-aged (50-64 years, mean = 56.6 years) and older subjects (>64 years old, mean = 69.9 years). There was a U-shaped risk function in both age groups, and light to moderate drinking men and women (7-27 drinks of 12 g alcohol per week) had the lowest mortality. (60.)

Ian R. White and fellow statisticians from the London School of Hygiene and Tropical Medicine used data from non-Mediterranean cohort studies to estimate the relation between alcohol consumption and risk of death to find the level of alcohol consumption at which risk is least. Evidence based guidelines for sensible drinking (one unit = 9 g of alcohol) can be derived from the level at which risk is lowest if no more than a 5% increase in risk of mortality is considered acceptable. Women would be advised to limit their drinking to 1 unit a day up to age 44, 2 units a day up to age 74, and 3 units a day over age 75. Men would be advised to limit their drinking to 1 unit a day up to age 34, 2 units a day up to age 44, 3 units a day up to age 54, 4 units a day up to age 84, and 5 units a day over age 85. (61.)

## **Patterns of drinking**

Emerging literature is showing that patterns of drinking play an important role in determining health outcomes and death in addition to or irrespective of alcohol volume. The usual assessment methods would not differentiate between a drink every day and seven drinks every Saturday, however, some health outcomes of these two drinking patterns differ dramatically. In a Dutch population survey those drinking 6 glasses per occasion 1-2 days per week were significantly more likely to report >3 health problems than those drinking 1-2 glasses per occasion 6-7 days per week. (62.) A Danish cohort study of 28,448 women and 25,052 men aged 50-65 years found a different effect of drinking patterns in men and women. For men an inverse association was found between drinking frequency and risk of coronary heart disease across the entire range of drinking frequencies. The lowest risk was observed among men who drank daily: 0.59 (CI 0.48-0.71) compared with men who drank alcohol on less than

one day a week. Among women alcohol intake was the primary determinant of the inverse association between drinking alcohol and risk of coronary heart disease; little difference was found between drinking frequency. (63.) Participants of an Italian population-based case-control study who drank mainly without food had an adjusted odds ratio of myocardial infarction of 1.49 (CI 0.96-2.31) compared to those who drank mainly with food. (64.) In Moscow City there is a significant increase in deaths from alcohol poisoning, accidents, and violence and cardiovascular diseases (especially sudden death) on Saturdays, Sundays and Mondays. This pattern is consistent with the known pattern of binge-drinking in Russia. (65.)

Data on risks and benefits associated with drinking patterns from the 1988 National Health Interview Survey revealed striking age-related differences in drinking patterns. Usual quantity and heavy-drinking rates associated with problems decreased with age, whereas drinking frequency increased. (66.) The fact that drinking frequency increases with age among non-problem drinkers, even as quantity and heavy-drinking rates decrease, suggests that it is normative for individuals who continue current regular drinking as they age, and it may reflect greater accessibility to alcohol and its integration into more aspects of their daily lives. To the extent that patterns of alcohol consumption among older respondents approach the light, daily drinking thought to benefit cardiovascular health, these age-related changes in frequency are benign. The Tampere Longitudinal Study of ageing (a prospective cohort study of 365 men and 402 women aged 60-99 years) found the lowest relative risk of mortality for frequent drinkers (RR 0.6, CI 0.4-0.8) compared with abstainers. The mortality risk for wine drinkers was 0.5 (CI 0.3-0.9) for those 60-79 years old (n=278) and 0.7 (CI 0.5-1.2) for those 80-99 years old (n=46). (67.)

Most guidelines on low-risk drinking suggest at least one day per week with no alcohol consumption. The ARF-CCSA joint policy statement based on an the International Symposium on Moderate Drinking and Health states explicitly: "To minimise any risk of dependence, there should be at least one day per week when no alcohol is consumed." (68.) The only reason given is that "many studies have shown a relationship between daily drinking and high volume consumption." In their paper "Daily drinking and harm" Walsh & Rehm conclude that there is not sufficient empirical evidence to recommend drink-free days. (69.)

## **To your health!**

There is a tremendous heterogeneity within the group considered "elderly", and generalizations can be misleading. The age range of the group spans at least 40 years and includes people in their late sixties, who are still actively employed and in excellent health, as well as people over 100 years of age, who are more likely to be cognitively and physically disabled. Moreover, the aging process is characterized by marked individual variations. Physiologic ageing does not parallel chronologic aging, and it is physiologic ageing – such as the modest 10-15% reduction of total body water as humans age - that underlies age-related differences in the fate and action of alcohol. (70.) In scientific terms the greatest risk is that what official health authorities like the National Institute on Alcohol Abuse and Alcoholism really mean by "elderly" is a well meaning but misguided attempt to envelop the major clinical issue of frailty into a term that applies to all older people. Frailty is an important factor in functional decline, morbidity, and mortality for some older people, and much progress has been made in defining the phenotype, risk factors, manifestations, and outcomes of frailty as a clinical syndrome. However, most older people are not frail, and the proportion of older people who are disabled is dropping. (71.)

A better approach would be to promote clinical skills that selectively identify frail older people in the community, as well as skills and pathways to improve care of and sound advice for this vulnerable group. A related problem is the large number of comorbidities often exhibited by older people. Existing recommendations about alcohol use in frail elderly with special comorbidities has been based on expert opinion rather than data from prospective randomized clinical studies. (72.) Older people often cut down on their alcohol use when they experience a decline in health. On the other hand, people who have depressive symptoms or chronic pain may increase their alcohol use in an attempt to treat these symptoms. (73.) In the absence of pertinent evidence, a common sense case-by-case approach for older people with particular medical conditions and medications should be applied.

With any medical advice there is risk and benefit. Caution should be exercised in framing guidelines for alcohol and they should be kept in the larger context of other favourable lifestyle factors, such as exercise and diet. No evidence has been found to suggest that nondrinkers should take up drinking. The importance of evidence based advice on alcohol use to the older is obvious, and with such advice to hand, each individual must decide whether or not to consume alcohol and, if alcohol is consumed, what level and pattern is appropriate. The relation between levels of drinking and all-cause mortality will vary depending on a person's underlying risk of various causes of death. The groups most likely to benefit from drinking small amounts of alcohol are older people at high absolute risk of coronary heart disease and ischemic stroke and at low absolute risk of injury, cirrhosis and other alcohol-related disease. (74.) This hypothesis was confirmed by the results of a recent meta-analysis of the risk curve between alcohol and all-cause mortality: The older the persons at baseline, the more pronounced the protective effect. (75.)

Most protection of health seems to be conveyed by a pattern of very regular and light drinking, however, health is only one aspect in this decision. Most people do not drink for health reasons, but for psychological and social benefits, since alcohol serves as a mood modifier, a relaxant, and a social lubricant. (76.) No one should be choosing to drink for medical benefits rather than enjoyment and pleasure. In conclusion older people should not be advised to drink for health, but rather to drink – moderately – to their health!

## References

1. Dufour MC, Archer L, Gordis E (from NIAAA). Alcohol and the Elderly. *Clinics in Geriatric Medicine* 1992;8:127-41.
2. Smith WH, Helwig FC. *Liquor, the servant of man*. Boston: Little, Brown and Company, 1939.
3. Grant BF et al. Prevalence of DSM-IV alcohol abuse and dependence: United States, 1992. *Alcohol Health Res World* 1994;18:243-8.
4. Wetterling T et al. Late onset alcoholism. *Eur Psychiatry* 2003;18:112-18.
5. Schutte KK et al. Predicting the development of late-life late-onset drinking problems: a 7-year prospective study. *Alcohol Clin Exp Res* 1998;22:1349-58.
6. Abraham HD et al. Order of onset of substance abuse and depression in a sample of depressed outpatients. *Compr Psychiatry* 1999;40:44-50.
7. Müller-Thomsen T et al. Alcohol consumption in Alzheimer's Disease. *Eur Addict Res* 2003;5:51-52.
8. Molgaard CA et al. Prevalence of alcohol consumption among older persons. *J Commun Health* 1990;15:239-51.
9. Glynn RJ et al. Ageing and generational effects on drinking behaviors in men: Results from the Normative Ageing Study. *Am J Public Health* 1985;75:1413-19.
10. Moore AA et al. Longitudinal patterns and predictors of alcohol consumption in the United States. *Am J Public Health* 2005;95:458-65.
11. Williamson R et al. Risky drinking by both sexes should be tackled. *BMJ* 2002;324:738.
12. Naimi TS et al. Binge drinking among US adults. *JAMA* 2003;289:70-75.
13. Adams WL et al. Alcohol intake in the healthy elderly. Changes with age in a cross-sectional and longitudinal study. *J Am Geriatr Soc* 1990;38:211-16.
14. Benfante R et al. To what extent do cardiovascular risk factors values measured in elderly men represent their midlife values measured 25 years earlier? *Am J Epidemiol* 1994;140:206-16.
15. Dufour MC, Archer L, Gordis E (from NIAAA). Alcohol and the Elderly. *Clinics in Geriatric Medicine* 1992;8:127-41.
16. Reid MC et al. The health related effects of alcohol use in older persons: A systematic review. *Substance Abuse* 2002;23:149-64.
17. Laitinen K et al. Alcohol and bone. *Calcif Tissue Int* 1991; [Suppl] 49:S70-S73.
18. Jugdaohsingh MA et al. Moderate alcohol consumption and increased bone mineral density: potential ethanol and non-ethanol mechanisms. *Proceedings of the Nutrition Society* 2006;65:1-20.
19. Baron JA et al. Cigarette smoking, alcohol consumption, and risk of hip fracture in women. *Arch Intern Med*



- 2001;161:983-88.)
20. Cawthon PM et al. Alcohol intake and its relationship with bone mineral density, falls, and fracture risk in older men. *J Am Geriatr Soc* 2006;54:1649-57.
  21. Singletary ES. Rating the Risk Factors for Breast Cancer. *Ann Surg* 2003;237: 474-482.
  22. Ellison RC et al. Exploring the relation of alcohol consumption to risk of breast cancer. *Am J Epidemiol* 2001;154:740-747.
  23. Brinton LA et al. Menstrual factors and risk of breast cancer. *Cancer Invest* 1988;6:145-154.
  24. Brinton LA et al. Reproductive factors in the aetiology of breast cancer. *Br J Cancer* 1983;47:757-762.
  25. Haveman-Nies A et al. Dietary quality, lifestyle factors and healthy ageing in Europe: the SENECA study. *Age and Ageing* 2003;32:427-34.
  26. Guralnik JM et al. Predictors of healthy ageing: prospective evidence from the Alameda County Study. *Am J Public Health* 1989;79:703-08.
  27. Idler EL et al. Self-rated health and mortality: a review of twenty-seven community studies. *J Health Soc Behav* 1997;38:21-37.
  28. Mossey JM et al. Self-related health: a predictor of mortality among the elderly. *Am J Publ Health* 1982;72:800-08.
  29. Poikolainen K et al. Alcohol intake and subjective health. *Am J Epidemiol* 1996;144:346-50 .
  30. Brodsky A et al. Psychosocial benefits of moderate alcohol consumption. Alcohol's role in a broader conception of health and well-being. In: Peele S, ed. *Alcohol and Pleasure: A Health Perspective*. Philadelphia: Brunner/Mazel, 1999.
  31. Van Dijk A et al. The relationship between health-related quality of life and two measures of alcohol consumption. *J Stud Alcohol* 2004;65:241-249.
  32. Volk RJ et al. Alcohol Use Disorders, Consumption Patterns, and Health-Related Quality of Life of Primary Care Patients. *Alc Clin Exp Res* 1997;21:899-905.
  33. Grønbaek M et al. Beer, wine, spirits and subjective health. *J Epidemiol Community Health* 1999;53:721-24.
  34. Guallar-Castillón P et al. Consumption of alcoholic beverages and subjective health in Spain. *J Epidemiol Community Health* 2001;55:648-52.
  35. Cassidy K et al. Association between lifestyle factors and mental health measures among community-dwelling older persons. *Aust NZ J Psych* 2004;38:940-47.
  36. Britton A et al. Alcohol consumption and cognitive function in the Whitehall II Study. *Am J Epidemiol* 2004;160:240-47.
  37. Cervilla JA et al. Long-term predictors of cognitive outcome in a cohort of older people with hypertension. *Br J Psychiatry* 2000;177:66-71.
  38. Elias PK et al. Alcohol consumption and cognitive performance in the Framingham Heart Study. *Am J Epidemiol* 1999;150:580-89.
  39. Ganguli M et al. Alcohol consumption and cognitive function in late life. *Neurology* 2005;65:1210-17.
  40. Evans DA et al. Alcohol consumption and cognition. *N Engl J Med* 2005;352:289-90.
  41. Busby WJ et al. Alcohol use in a community-based sample of subjects aged 70 years and older. *J Am Geriatr Soc* 1988;36:301-05.
  42. Blow FC et al. The relationship between alcohol problems and health functioning of older adults in primary care settings. *J Am Geriatr Soc* 2000;48:769-74.
  43. Ensrud KE et al. Correlates of impaired function in older women. *J Am Geriatr Soc* 1994;42:481-89.
  44. LaCroix AZ et al. Maintaining mobility in late life: II. Smoking, alcohol consumption, physical activity and body mass index. *Am J Epidemiol* 1993;137:858-69.
  45. Dey DK et al. Body mass index, weight change and mortality in the elderly. A 15 y longitudinal population study of 70 y olds. *Eur J Clin Nutr* 2001;55:482-92.
  46. LaCroix AZ et al. Maintaining mobility in late life. *Am J Epidemiol* 1993;137:858-69.
  47. Arif AA et al. Patterns of alcohol drinking and its association with obesity: data from the Third National Health and Nutrition Survey, 1988-1994. *BMC Public Health* 2005;5:126-31.
  48. Tolstrup JS et al. The relation between drinking pattern and body mass index and waist and hip circumference. *Int J Obesity* 2005;29:490-97.
  49. Blair SN et al. The evolution of physical activity recommendations: how much is enough? *Am J Clin Nutr* 2004;79(suppl):913S-20S.

50. Wang L et al. Predictors of functional change: a longitudinal study of nondemented people aged 65 and older. *J Am Geriatr Soc* 2002;50:1025-34.
51. Nelson HD et al. Smoking, alcohol, and neuromuscular and physical function of older women. *JAMA* 1994;272:1825-31.
52. Smothers B et al. Alcohol consumption and health-promoting behaviour in a U.S. household sample: leisure-time physical activity. *J Stud Alcohol* 2001;62:467-76.
53. Trichopoulou A et al. Modified Mediterranean diet and survival: EPIC-elderly prospective cohort study. *BMJ*, doi:10.1136/bmj.38415.644155.8F (published 8 April 2005).
54. Knoop K et al. Mediterranean Diet, Lifestyle Factors, and 10-Year Mortality in Elderly European Men and Women. The HALE Project. *JAMA* 2004;292:1433-39.
55. Sensible Drinking. The Report of an Inter-Departmental Working Group. London: Department of Health, 1995.
56. (Lang I et al. What Level of Alcohol Consumption Is Hazardous for Older People? Functioning and Mortality in U.S. and English National Cohorts. *J Am Geriatr Soc* 2007;55:40-57.
57. Midanik L. The validity of self-reported alcohol consumption and alcohol problems: a literature review. *Br J Addict* 1982;77:357-82.
58. Feunekes GIJ et al. Alcohol intake assessment: The sober facts. *Am J Epidemiol* 1999;150:105-12.
59. Byles J et al. A Drink to Healthy Ageing: The Association Between Older Women's Use of Alcohol and Their Health-Related Quality of Life. *J Am Geriatr Soc* 2006;54:1341-47.
60. Grønbaek M et al. Alcohol and mortality: is there a U-shaped relation in elderly people? *Age and Ageing* 1998;27:739-44.
61. White IR et al. Alcohol consumption and mortality: modelling risks for men and women at different ages. *BMJ* 2002; 325: 191 ; doi:10.1136/bmj.325.7357.191.
62. San José B et al. Drinking patterns and health outcomes: occasional versus regular drinking. *Addiction* 2000;95:865-72.
63. Tolstrup J et al. Prospective study of alcohol drinking patterns and coronary heart disease in women and men. *BMJ* 2006;332:1244-47.
64. Trevisan M et al. Drinking pattern and risk of non-fatal myocardial infarction: a population-based case-control study. *Addiction* 2003;99:313-22.
65. Chenet L et al. Alcohol and cardiovascular mortality in Moscow; new evidence of a causal association. *J Epidemiol Community Health* 1998;52:772-74.
66. Russell M et al. Alcohol consumption and problems: the relevance of drinking patterns. *Alcohol Clin Exp Res* 2004;28:921-30.
67. Tolvanen E et al. Old people, alcohol use and mortality. A ten-year prospective study. *Ageing Clin Exp Res* 2005;17:426-33.
68. Ashley MJ et al. Moderate drinking and health: report of an international symposium. *Can Med Assoc J* 1994;151:809-28.
69. Walsh G et al. Daily drinking and harm. *Contemp Drug Problems* 1996;23:465-78.
70. Steiner JF. Pharmacotherapy problems in the elderly. *J Am Pharmaceut Ass* 1996;36:431-37.
71. Falconer M et al. Out with "the old," elderly, and aged. *BMJ* 2007;334:316.
72. Moore AA et al. Alcohol use, comorbidity, and mortality. *J Am Geriatr Soc* 2006;54:757-62.
73. Adams WL. Alcohol problems in health care settings: Prevalence, causal factors, and intervention. In: Gomberg ESL, Hegedus AM, Zucker RA, eds. *Alcohol problems and ageing. Research Monograph No. 33.* Bethesda: National Institute on Alcohol Abuse and Alcoholism, 1998.
74. Jackson R et al. Alcohol consumption guidelines: relative vs absolute risks and benefits. *BMJ* 1995;346:716.)
75. Gmel G et al. How stable is the risk curve between alcohol and all-cause mortality and what factors influence the shape? A precision-weighted hierarchical meta-analysis. *Eur J Epidemiol* 2003;18:631-42.
76. Mäkelä K. The uses of alcohol and their cultural regulation. *Acta Sociologica* 1983;26:21-31.