

Alcohol limits in older people

The recommended number of alcoholic drinks per day, occasion and week for people aged 65+ years is based largely on good clinical practice. However, the number of grams of alcohol contained in a standard drink varies by country. Acquisition of the scientific base for developing globally uniform guidelines should be prioritized.

BACKGROUND

The 2011 report of the Royal College of Psychiatrists entitled 'Our Invisible Addicts' was prompted by the increasing prevalence of substance abuse problems among elderly people, a trend highlighted in several recent publications [1–5]. The suggestion that 'safe' limits of alcohol consumption be lowered for older people generated a fervent response. We consider this a timely moment to consider this issue with a view to future research.

There is considerable variability in what constitutes a standard drink in different countries, and few countries have specific limits for older people [6]. The UK 'unit' is equivalent to 8 g alcohol, whereas the US 'standard' drink is equivalent to 14 g of alcohol; in Italy, the standard is 12 g, and in Australia it is 10 g. In the United States, it has been recommended that healthy men over the age of 65 years drink no more than three US standard drinks in a day and no more than seven US standard drinks in a week [7]. In Australia, 'low-risk drinking' for healthy older men and women is defined as no more than two standard drinks on any day [8]. Italy is the only European country with recommended limits for alcohol intake specifically for older people: these limits are similar to those in the United States, recommending no more than one standard drink, or about 12 g of pure alcohol, per day. Other European countries usually adopt recommendations used for adults—about 24 g of pure alcohol or 1.7 US drinks per day [9].

WHAT SHOULD BE DEEMED 'SAFER LIMITS' OR 'LOWER-RISK' DRINKING FOR OLDER PEOPLE?

'Safe' levels of alcohol use among older adults can be influenced negatively by age-related biological changes in metabolism, use of medications and comorbid illnesses (e.g. hypertension or heart disease), so encouraging alcohol use in the older population is not recommended [10]. Accordingly, and in the absence of scientific data, good clinical practice relies on a 'guesstimate' regard-

ing changes in alcohol pharmacokinetics (absorption and metabolism) and pharmacodynamics across the life-span.

For example, with ageing, there is a drop in lean body mass and total body water. Hence, a 'standard drink' gives rise to higher blood alcohol content (BAC) in the elderly. Therefore, based on currently available information, it appears sensible to suggest that the 'safe' limits for both males and females over the age of 65 be no more than one US drink per day and no more than seven US drinks per week [11].

Alcohol bioavailability (absorption) is extremely variable across and within individuals [12,13]. Metabolic rate may change if liver size changes with ageing, but we are not aware of any data on this relationship. For these reasons, it is important to advise drinking slowly (i.e. sip, do not gulp) to lessen the rate of BAC increase. Therefore, drinking one US drink over 2 hours may be appropriate advice for elderly people.

The vexed question arises as to what the threshold for 'harmful drinking' should be. 'Heavy drinking'—currently characterized as consumption of five+/four+ US standard drinks per day for males and females, respectively—may be too much even for younger people, and is certainly so for the elderly population. Data from Gmel *et al.* [14] suggest that 50 g/day (3.6 US drinks/day) is harmful. Chavez *et al.* [15] suggest that changing the operational definition of binge drinking for women from five to four standard drinks per day has been beneficial. Thus, the limit of no more than three standard US drinks a day for the older male [7] may be best adopted as a threshold for 'harmful', rather than 'safe' drinking levels, and may need to be reviewed in light of newer evidence.

Practical advice relating to drinking and driving, those on prescription medication and those with comorbid physical and mental illnesses cannot be over-emphasized. Because BACs lower than 0.05% already cause impairment [16]—and these effects might be exacerbated in the elderly—the best advice for older people might be not to drink and drive at all. As alcohol is a sedative/hypnotic drug, taking into account alcohol–drug interactions—especially with anxiolytics, sedatives/hypnotics and opiates—is very important in the elderly population. In such instances, the best medical advice might be to consume less alcohol or none at all.

Future research

It is our view that it is essential to have standardized measures across the world. Because the alcohol industry

is now global, there should be a common measure for a 'standard' drink. Alcoholic beverages should be labelled with the grams of alcohol present per serving so that misinterpretation is minimized. In a global attempt at standardization, we suggest that the industry identify how many grams of ethanol are in a beverage container (e.g. cans versus bottles of beer differ in alcohol content and size, as do wines and distilled spirits). Procedures to homogenize quantification are critical for health promotion and prevention, clinical assessments, patient understanding and care and, significantly, for standardization of research.

We suggest that greater priority be given to developing the scientific base for drinking guidelines. It is now possible, by use of intravenous alcohol administration, to 'clamp' the BAC at any desired level (e.g. 20 mg%, 35 mg%, 50 mg%, etc.) over long periods of time. Via a process first described in 1998 [17], we can measure alcohol elimination and the effects of a fixed alcohol concentration on brain function [18]. Such measurements can overcome large individual variations in absorption kinetics that have plagued the field for many decades and provide further understanding of the physiological, pharmacokinetic and pharmacodynamic changes that make alcohol more harmful in older people. Interrogation of large international databases offers an additional avenue to identify the relationship between alcohol consumption and harm. It is essential that differentiating the complex issues relating to alcohol consumption in older men and women are not ignored so that the best possible advice for health promotion, wellbeing and effective treatment can be given [11,19].

Declarations of interest

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References

1. Crome I. B., Rao T., Tarbuck A., Dar K., Janikiewicz S., Royal College of Psychiatrists. *Our Invisible Addicts: Council Report 165*. London: Royal College of Psychiatrists; 2011.
2. Blazer D. G., Wu L. T. The epidemiology of alcohol use disorders and subthreshold dependence in a middle-aged and elderly community sample. *Am J Geriatr Psychiatry* 2011; **19**: 685–94.
3. Frances R. J. Geriatric addictions. *Am J Geriatr Psychiatry* 2011; **19**: 681–4.
4. Han B., Gfroerer J. C., Colliver J. D., Penne M. A. Substance use disorder among older adults in the United States 2020. *Addiction* 2009; **104**: 88–96.
5. Wu L. T., Blazer D. G. Illicit and nonmedical drug use among older adults: a review. *J Aging Health* 2011; **23**: 481–504.
6. Latino-Martel P., Arwidson P., Ancellin R., Druesne-Pecollo N., Hercberg S., Le Quellec-Nathan M. *et al.* Alcohol consumption and cancer risk: revisiting guidelines for sensible drinking. *Can Med Assoc J* 2011; **183**: 1861–5.
7. US Department of Health and Human Services, National Institutes of Health, National Institute on Alcohol Abuse and Alcoholism. *Helping Patients Who Drink Too Much: A Clinician's Guide, Updated 2005 edition*. Bethesda, MD: National Institute on Alcohol Abuse and Alcoholism; 2007.
8. National Health and Medical Research Council. *Australian Guidelines to Reduce Health Risks from Drinking Alcohol*. Canberra: Commonwealth of Australia; 2009.
9. Hallgren M., Hogberg P., Andreasson S. *Alcohol Consumption among Elderly European Union Citizens*. Stockholm: The Ministry of Health and Social Affairs; 2009.
10. St John P. D., Snow W. M., Tyas S. L. Alcohol use among older adults. *Rev Clin Gerontol* 2010; **20**: 56–68.
11. US Department of Health and Human Services. *Substance Abuse among Older Adults [Treatment Improvement Protocol (TIP) Series no. 26]*. Washington, DC: US Department of Health and Human Services; 1998.
12. Ramchandani V. A., Plawecki M., Li T. K., O'Connor S. Intravenous ethanol infusions can mimic the time course of breath alcohol concentrations following oral alcohol administration in healthy volunteers. *Alcohol Clin Exp Res* 2009; **33**: 938–44.
13. Parlesak A., Billinger M. H., Bode C., Bode J. C. Gastric alcohol dehydrogenase activity in man: influence of gender, age, alcohol consumption and smoking in a Caucasian population. *Alcohol Alcohol* 2002; **37**: 388–93.
14. Gmel G., Gutjahr E., Rehm J. 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.
15. Chavez P. R., Nelson D. E., Naimi T. S., Brewer R. D. Impact of a new gender-specific definition for binge drinking on prevalence estimates for women. *Am J Prev Med* 2011; **40**: 468–71.
16. Phillips D. P., Brewer K. M. The relationship between serious injury and blood alcohol concentration (BAC) in fatal motor

- vehicle accidents: BAC = 0.01% is associated with significantly more dangerous accidents than BAC = 0.00%. *Addiction* 2011; **106**: 1614–22.
17. O'Connor S., Morzorati S., Christian J., Li T.-K. Clamping breath alcohol concentration reduces experimental variance: application to the study of acute tolerance to alcohol and alcohol elimination rate. *Alcohol Clin Exp Res* 1998; **22**: 202–10.
 18. Ramchandani V. A., Umhau J., Pavon F. J., Ruiz-Velasco V., Margas W., Sun H. *et al.* A genetic determinant of the striatal dopamine response to alcohol in men. *Mol Psychiatry* 2011; **16**: 809–17.
 19. Moy I., Crome P., Crome I. B., Frisher M. Systematic and narrative review of treatment of substance misuse in older people. *Eur J Geriatr Med* 2011; **2**: 212–36.