

HARM REDUCTION DIGEST 12

Harm reduction, drinking patterns and the NHMRC Drinking Guidelines*

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In June 2000 Australia's National Health and Medical Research Council released a Consultation Draft of new National Drinking Guidelines [1]. There were several new departures from the previous guidelines [2], reflecting not only advances in the scientific evidence base but also the increasing influence of the related concepts of harm reduction and drinking patterns on the alcohol field in Australia. These guidelines were developed largely from a comprehensive literature review commissioned specially for the project [3]. At the time of writing the guidelines are still being revised in the light of the community consultation exercise which included an open seminar at the 1999 APSAD conference and a call this year for written submissions. Some 45 submissions were received and a number of modifications are currently being made. The purpose of this article is not to anticipate the final version but to reflect on the significance of drinking guidelines for harm reduction in Australia and to suggest the kind of research that is needed for the next version in five years time to be improved further.

The national and international significance of the NHMRC drinking guidelines

The first thing to say about Australia's NHMRC guidelines is that the first version in 1987 [4] and its revision published in 1992 [2] have been among the most significant and influential source documents in the field. They have been cited innumerable times, have been the referred to in national media campaigns (e.g. *Alcohol Go Easy*) and a wide variety of early intervention and health promotion materials commonly used by Australian health professionals. The levels of drinking defined as 'hazardous' and 'harmful' were the basis of the two other documents of national significance to the field in the 1990s: the English *et al.* [5] quantification of drug-related morbidity and mortality and the Collins & Lapsley [6] estimates of the economic costs drug misuse. English *et al.* [5] used the NHMRC guideline definitions of drinking risk as the basis for many of their calculations on alcohol-related harm while Collins & Lapsley [6] in turn relied heavily on the English *et al.* estimates for their costing exercise. Numerous other research reports have classified survey data in accordance with

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*** Note from the Editor**

In this Harm Reduction Digest we return to questions of harm reduction for a currently licit drug, in this case alcohol. Tim Stockwell explains why the development of new draft drinking guidelines by Australia's National Health and Medical research Council should be considered an example of a harm reduction strategy. These new guidelines are far more detailed than those they replace and include limits for heavy drinking occasions and pay more attention to how the context of drinking affects risk.

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Table 1. *Examples of national drinking guidelines, 1991–1999*

Source	Country	Date	Advice on drinking level	Drink size (g)
1. National Health and Medical Research Council (1992)	Australia	1992	Weekly: < 29 drinks for men, < 15 for women Daily: < 5 for men, < 3 for women	10 g
2. NIAAA recommended year 2000 alcohol guidelines (Gordis, 1999)	USA	1999	< 2 drinks/day for men under 65; < 1 drink/day for women and men over 65	12 g
3. Medical Research Council of Sweden (MRC, 1997)	Sweden	1997	'intake should be kept below 10–20 g/day'	N/A
4. Centre Alcologico Integrato	Italy	1996	< 40 g/day for men, less for women	N/A
5. National Institute on Alcoholism and Alcohol Abuse (DHHS, 1995)	USA	1995	Not more than 2 drinks/day	12 g
6. UK Department of Health (1995)	UK	1995	21 units/week for men, 14 units/week for women	8 g
7. Alcohol Advisory Council of New Zealand, (AACNZ, 1995)	New Zealand	1995	Weekly: < 22 drinks for men, < 15 drinks for women Daily: < 7 drinks for men, < 5 drinks for women	10 g
8. Canadian Centre on Substance Abuse and the Addiction Research Foundation (Ashley <i>et al.</i> , 1997)	Canada	1994	Daily: < 3 drinks for men and women with one day of abstinence per week	13.6 g

NHMRC categories of drinking, including analyses of national survey data (e.g. [7]). In short, the previous guidelines have been central to practice and research in Australia in recent years.

Internationally, Australia was one of the first countries to adopt a formal national process for determining guidelines for low-risk drinking, a practice which achieved prominence perhaps first in the United Kingdom with the publication of a report by the Royal College of Psychiatrists [8], which then advocated that men drink no more than 56 'units' of alcohol per week (1 unit = approx. 8 g) and women no more than 35 units. Since that time recommended levels in the United Kingdom plummeted to up to 21 units for the men and 14 for women although, more

recently, drinking up to 4 units on one day for men and 3 units for women was accepted as low risk so as long as the overall weekly limits were adhered to [9]. Table 1 shows that by international standards, Australia's current daily recommended levels are among the highest. Different definitions (or assumptions) about the size of a standard drink in different countries complicate the picture a little but our recommended levels for low-risk drinking are substantially higher than those in North America but similar to Italy and the Netherlands. Notably, in Table 1 New Zealand is the only country to advise higher *maximum* daily levels (up to six drinks for men, four for women) than *average* daily levels (three drinks for men and two for women).

Some evidence of a harm reduction approach in Australian drinking guidelines

There has been much written about the precise meaning of the related terms of harm minimization and harm reduction (e.g. [10–12]). Some common themes and fundamental concepts characterize the ways in which these terms are used and the values they often represent:

1. A practical perspective which accepts that significant drug use will continue in society and that we need therefore to focus on what can be done to reduce harm without requiring necessarily that drug use will stop or even be reduced, e.g. [13].
2. An egalitarian perspective in which the rights of drug users as citizens are recognized and importance is attached to strategies which involve and empower users to minimize the risk of harm from their drug use, whether this be a legal or illegal activity [10].
3. An evidence-based approach which for some commentators is the *sine qua non* of harm reduction, i.e. only those strategies are incorporated for which there exists scientific evidence that, on the balance of probabilities, there will be a net reduction in harm, e.g. [12,14].

Each of these three perspectives is illustrated in both of the earlier versions of the Australian guidelines and, to a greater extent, in the draft form of the latest revision. Perhaps this should not be surprising in one of the few countries in the world to incorporate the term harm minimization within its prime statements of intent on national drug policy [13]. Of course, there are major difficulties with being consistent in language, concepts and values when dealing with both legal and illegal drugs in the same policy statement. None the less, there are many ways in which a harm reduction approach is significant for alcohol as well as illicit drugs as has been documented elsewhere (e.g. [15,16]).

The most direct illustration of a 'practical' harm reduction perspective in the new draft is the presence of advice to reduce harm other than by simply drinking within defined limits. The main example is the encouragement to licensees and party hosts to provide safe drinking environments including the provision of food and safe transport home (e.g. [17]). The important role that family members and friends can play is also highlighted both in relation to caring for someone with an alcohol problem and in introduc-

ing young people to ways of drinking which minimize the risk of harm. As in earlier versions, advice is also provided on pacing drinking, avoiding mixing with prescribed or recreational drugs and ensuring someone sober will drive you home.

The 'egalitarian' element in a harm reduction perspective is illustrated clearly in several ways that distinguishes Australian drinking guidelines from those of some other countries, particularly in the new draft version. One example is that they opt for informing drinkers about uncertainty and complexity rather than over-simplifying the message. The simplicity and ease of recall of the previous single '4&2' message has been replaced with 12 categories of advice most of which each contain two or more messages. The underlying assumptions are that people are able to understand that different messages apply to different people in different circumstances, that they can work out which apply to them and that they prefer to know how strong the underlying evidence is. It is further assumed that mass media campaigns can identify a range of messages to focus on in turn, some suitable for a broad audience and some for more specific subgroups, e.g. women who may become pregnant, people with mental health problems, people with liver disease.

In relation to the evidence basis, it is interesting that reviews of the international literature on alcohol and harm underlying most modern guidelines have identified much the same sets of key studies even though they have arrived at different recommendations. Bondy *et al.* [18] describe a consultation process with different interest groups that helped form the national Canadian drinking guidelines after a scientific review was completed. The conservative approach taken which resulted in recommending only up to two Canadian drinks per day (= 13.6 g each) for men and one for women appeared to have been determined by a desire for caution by medical authorities to avert possible public criticism of more lax levels than of a regard for the empirical evidence. In other words, the body making the recommendations erred on the side of caution and made recommendations well inside what the available evidence suggested was low risk in order to protect the public—rather than let them into their confidence about the nature of the evidence. Another justification given was that the levels were consistent with what appeared to be a level of drinking that conferred maximum benefit to middle-aged and older people against ischaemic heart disease, as opposed to the level at which risk of harm increased

Table 2. Relative risks for all-cause mortality for different average daily intakes of alcohol (from English *et al.*, 1995)

Sex	Average daily intake							
	None	0.1–9 g	10–19 g	20–29 g	30–39 g	40–49 g	50–59 g	60 + g
Male RR (95% CI)	1.00	0.88 (0.86–0.90)	0.84 (0.82–0.86)	0.93 (0.91–0.95)	1.01 (0.98–1.04)	1.06 (1.03–1.10)	1.20 (1.15–1.26)	1.37 (1.33–1.40)
Female RR (95% CI)	1.00	0.88 (0.86–0.90)	0.94 (0.93–0.96)	1.13 (1.10–1.16)	1.33 (1.27–1.39)	1.47 (1.39–1.56)	1.47 (1.33–62)	1.58 (1.49–1.69)

significantly above that of an abstainer. The Australian guidelines, however, have opted for a level consistent with reducing harms rather than maximizing benefits, although sufficient information is provided for both purposes.

The scientific review commissioned to underpin the latest Australian revision of the guidelines [3] identified an earlier meta-analysis of high-quality cohort studies evaluating the risk of death from all causes as a function of regular alcohol intake [5] as strong support for the original daily '4&2' guidelines [2]. In addition a companion document to the single review available from NHMRC and written by the Department of Public Health at the University of Western Australia [1] provided a formal update of that meta-analysis utilizing new studies published since 1993 and which confirmed the estimates. Table 2 summarizes the estimated relative risk of all-cause mortality for different levels of drinking for both men and women first estimated by English *et al.* [5]. This has to be the single most important evidence available to any authority wishing to recommend guidelines for low risk drinking. It will be apparent that there is no significant increase in risk up to 39 g per day for men and up to 19 g for women, i.e. as close as can be to '4&2' standard drinks, respectively. It is also apparent that the lowest risk of death from all causes occurs at lower levels of intake—up to 19 g for men and up to 9 g for women. These risk levels are well below that of abstainers due to the protective effects of moderate alcohol consumption, but the draft Australian guidelines take the line that maximizing benefit is a different issue to that of minimizing harm. They give the full picture and allow the individual drinker to make up his her own mind.

Another clear example of sticking to the evidence, as well as admitting inadequacies, relates to advice on

drinking during pregnancy. The Single *et al.* [3] review shows clearly that there is no evidence that light drinking by pregnant women causes harm to the fetus. While other authorities, such as the US Surgeon General, have taken the understandably cautious line recommending total abstinence, the draft Australian guidelines only suggest that pregnant women (and women who may become pregnant) should avoid intoxication and drink well within the general guidelines for women. They note the difficult nature of research in this area and suggest also that some women may wish to abstain out of caution.

The influence of the drinking patterns approach on Australian guidelines

The emergence of a drinking patterns paradigm in international alcohol research was a major development during the 1990s. Three international conferences were held under the auspices of the Kettel Bruun Society for Social and Epidemiological Research on Alcohol to review an array of emerging evidence [19–21]. The alcohol industry-funded International Center for Alcohol Policy in Washington published the book *Drinking Patterns* [22]. In Australia, Roche [23] published a commentary on the 'shifting sands' of alcohol policy and signalled a movement away from a policy of reducing harm by reducing the total population level of consumption to one which focused on high risk drinking patterns and specific types of harm. Most commentators on the significance of drinking patterns do not, however, assert that a total population approach is unsupported by the evidence but rather *both* total volume and pattern of drinking need to be considered in alcohol research and policy (e.g. [19,24]).

The drinking patterns paradigm has major implications for the development of drinking guidelines. At the heart of this view of alcohol problems is the notion that total alcohol consumption, whether of a population or of an individual drinker, is not the only significant factor predicting levels and types of harm. Measures of drinking patterns, principally the frequency of drinking at higher levels (e.g. above 60 g on 1 day) have been shown to add significantly to ability to predict the risk of a wide variety of harms being experienced. While it may seem obvious, such measures are often superior to measures of overall volume of drinking in the prediction of acute problems both at the individual [24] and the population [25] level. Furthermore, even if overall level of consumption is light a pattern of occasional binge drinking reduces protection against heart disease and increases the risk of stroke [3].

The drinking pattern paradigm is close in several ways to a harm reduction approach while still retaining 'use reduction' as one important strategy to reduce alcohol-related harm. Stating that the way in which drinking occurs in different places, times and contexts is often more important than overall volume of intake in determining risk of harm is close to saying that harm can be reduced without necessarily reducing use—at least overall use. There is a difference, however, and it is an important difference. As shown in Table 2, the scientific evidence shows that in net terms overall volume of drinking *is* a strong predictor of risk of death, i.e. level of use matters greatly, especially in relation to risk of death from the long-term or chronic effects of drinking. Drinking patterns research, however, has shown that the distribution of amount of drinking over time, independent of overall volume, is an important moderating variable for the risk of chronic harm and one of the key variables in relation to risk of acute harm. In relation to the latter category in particular, a broader concept of 'pattern' is also required, i.e. one that also incorporates the physical and social setting in which drinking takes place.

The draft NHMRC Guidelines explicitly incorporate a drinking patterns perspective both in the narrow sense of dealing with variations in amount drunk over time (consumption levels per hour, per day and per week are discussed) but also in the broader sense of acknowledging the importance of drinking context, settings and associated activities. Perhaps the single most significant departure signalled in the consultation draft was the adoption of a separate guideline for drinkers to avoid acute consequences of drinking with

a higher upper level on any one day ('6&4') than the previous standard level of '4&2' standard drinks. As mentioned previously, New Zealand was previously the only country to suggest higher upper levels for one-off drinking occasions as opposed to usual drinking levels. Specific guidelines for at-risk groups who should not drink to these higher levels are also provided, e.g. people about to drive or operate heavy machinery, women who may become pregnant. This new guideline recognizes two important features of the underlying epidemiological evidence:

1. The evidence for the '4&2' level in relation to chronic harm is based on self-reports of average drinking over an extended period of time. Most epidemiological studies only inquire about typical quantity and frequency of consumption and therefore do not detect a pattern of occasional binge drinking very well, e.g. [26]. Clearly, there will be variations both upwards and downwards in average consumption levels and therefore the evidence on chronic harm does not preclude occasional drinking above the average.
2. The Single *et al.* [3] review also recognized new evidence that a steady light drinking pattern is more cardio-protective than is an intermittent drinking pattern with the same average volume. These mainly North American studies have tended to use measures such as frequency of drinking five or more drinks in one day, i.e. somewhere between 60 to 70 g + per day.

To these points can also be added new evidence as to how risk of injury rises dramatically at levels of intake above 60 g per day [27]. In the first Australian case-control study of alcohol and injury Mcleod [27] also found that risk of injury was significantly higher for women at all consumption levels, which further justifies the recommendation of a lower cut-off for women for daily consumption levels.

As Single *et al.* [3] comment:

Overall, mortality and morbidity from traumatic injury is by large the most important health consequence of alcohol (p. 30).

It has been estimated elsewhere on the basis of Canadian and Australian studies that acute alcohol-related harm accounts for almost half of all alcohol-caused deaths and two-thirds of alcohol-caused years of life lost [28]. Clearly, therefore, if national drinking guidelines are to contribute to strategies for reducing alcohol-related mortality and morbidity they must be

tailored towards the patterns of risk behaviour underlying both acute and chronic alcohol-related harm. Once more, the approach taken is not to over-interpret the evidence on the side of caution but to try and tell it like it is.

Reflections on the quality of evidence available for the development of drinking guidelines

Sceptics of the value of national drinking guidelines, and there are many, usually point to the plethora of alcohol studies with different methodologies, different measures of alcohol intake and, unsurprisingly, different results in relation to risk levels. Add to that a range of different conditions and awkward facts such as even one drink per day is known to be a slight risk factor for breast cancer [3] as well of injury [29]. Add also large individual differences in responses to alcohol due to weight, age, metabolic factors and experience of drinking and one may forgiven for feeling its just all too difficult.

There can be several defences against so negative a view. First, the comprehensive and systematic literature review of English *et al.* (now updated [5]) has identified a significant number of large, well designed studies that *do* permit calculation of the relative risk for all-cause mortality for men and women at different levels of alcohol intake—see Table 2. Secondly, even allowing for the fact that there will be measurement error of many types in all studies which rely on subjective recall of past alcohol consumption, one has to balance the costs and benefits of giving best available advice versus no advice at all. The big picture is that light drinking almost certainly protects against heart disease while heavier drinking is associated with over 3000 deaths and over 70 000 hospital episodes each year [30]. Quantifying the levels and patterns of alcohol intake that make the difference has never been more important and it is the responsibility of the health and research community to attempt to distil and communicate the evidence to the public. In attempting that quantification we have to note the existence of individual variation and allow for the most significant factors such as age and gender whenever possible. The consultation draft of the new guidelines does identify population subgroups particularly susceptible to alcohol's effects such as the young, the elderly and those on certain medications. Also, different guidelines are provided for men and women.

Having said the above, it is still important to note that by and large epidemiological studies are not

designed with the formulation of national drinking guidelines in mind. Some common shortcomings in the available evidence and how they might be overcome are discussed in turn below. Most of these shortcomings are recognized in the guidelines document.

The selection of arbitrary cut-offs in drinking questionnaires

It is common practice when analysing questionnaire responses on questions regarding how much people drink to lump respondents into broad categories described by terms such as light, medium and heavy drinking [31]. The archetypal general epidemiological study covering a variety of risk factors includes just two questions about drinking: how often do you drink alcohol? When you drink, how many drinks do you usually have? Responses to these questions are then multiplied together to generate a range of scores from zero for abstainers to several thousand drinks per year. The cut-offs chosen may be in order to maximize the ability to make contrasts and so include roughly equal numbers of respondents in each category, rather than be related to any clinically relevant factors. In studies of women's drinking during pregnancy it is quite usual for even large studies to divide drinking level in abstinence, less than one drink per day and more than one drink per day in order to be able to make statistical comparisons. If it is then found that only the highest intake category is significantly associated with harm does not mean that drinking two drinks per day is not safe. Only recently have studies in this area systematically investigated whether there exist thresholds at which risk increases significantly [3]. Similarly, in studies of acute alcohol-related harm which examine how much is drunk per occasion some cut-off is required to obtain a measure of occasional heavy drinking. As previously, the North American standard question tends to be frequency of '5+' drinking occasions, i.e. drinking five or more drinks [31] and in Australia drinking more than six standard drinks for men and four for women, e.g. [24]. Simply because, such questionnaire items strongly predict harm does not mean that this is necessarily the 'best' cut-off. Few studies have systematically varied the cut-offs used to best predict acute harm. One exception was the Australian case-control study by McLeod *et al.* [27] in which two sets of four-way cut-offs were employed. Much larger studies of this issue are required, however, in which the cut-offs used are systematically

varied to arrive at those which provide the most accurate cut-off points for different alcohol-related risk factors.

To some extent this problem is partly avoided with the language used to describe different levels of risk in the consultation draft, namely low, medium and high risk. Clearly, it becomes a subjective exercise to decide as to what for most people constitutes low and acceptable risk. However, the intent of the guidelines is to do more than provide contrasting levels of risk, it is also to define a level at which the risk of all-cause mortality rises significantly.

The absence of questions on drinking patterns

Given that occasional heavy or binge drinking contributes to the risk of chronic alcohol-related illness, it follows that this effect should be controlled for when assessing the risk for such illnesses developing at different *average* daily levels of intake. Ideally, the English *et al.* [5] pooled meta-analysis would be repeated on a separate set of studies, all of which able to measure and control for the independent effect of occasional heavy drinking (defined by the most efficient cut-off) to arrive at estimates of the relative risk of all-cause mortality associated with drinking one, two, three, four or five, etc. drinks per day for men and women.

Conversely, it is also important to include such questions on drinking patterns in studies of the long-term risk of alcohol-caused morbidity and mortality in order to determine cut-offs for occasional heavy drinking as a risk factor in its own right and independent of the effect of volume of drinking over time. Arguably, it is not possible to define threshold levels for specific or general risks of alcohol-related harm unless studies are available which measure both pattern and volume of alcohol intake.

Difficulties in determining the size of drinks respondents report

Several studies from a number of countries have found discrepancies between the amounts of alcohol people pour in naturalistic drinking settings and in the amounts assumed to be reported in 'standard drinks' in alcohol consumption surveys, e.g. [31–33]. A recent US study found that an important population subgroup, black women, typically poured drinks up to six times the size of the supposed standard [34]. The author suggests that this basic methodological issue

may confound the frequent finding from US national surveys that black Americans drink less than whites. The WHO guidelines for national monitoring of alcohol consumption and harm suggest various ways to reduce the measurement error this issue generates [31]. These include regularly ascertaining typical strengths of major beverage varieties available as these often change over time as well as developing empirically based typical drink sizes among populations of interest. Publication of such standards would enable them to be applied in epidemiological studies in order to arrive at more accurate measures of individual intake.

Failure to assess long-term drinking patterns and account for variability in drinking level and pattern

Epidemiological studies of alcohol-caused mortality typically attempt to predict health events in several years time based upon one sample of recently recalled alcohol intake. Recently, American and European studies have been initiated which have used repeated measurement of drinking during long-term follow-up as well as the use of retrospective lifetime consumption measures [35]. In time such studies should be able to take account of variation in drinking levels and patterns throughout the life-course and hence make more reliable assessments of degree of risk of morbidity and mortality.

In closing

It is important to stress that this discussion represents my personal views alone and is not intended to represent any official views of either the Drinking Guidelines Working Party or the NHMRC. It is clear that there are both scientific and subjective ethical issues at stake in the formulation of national drinking guidelines. It has been argued here that the related concepts of drinking patterns and harm reduction were influential in the formulation of the consultation draft of the new guidelines reflecting developments in the alcohol field during the 1990s, from both an ethical and a scientific perspective.

There will be a wide range of issues to discuss and challenges to overcome in the dissemination of what will be more complex and detailed guidelines. At some point in this process, when it has been agreed that media information campaigns backed up by leaflets and pamphlets for different target groups are required,

there will inevitably be discussion about the labelling of alcohol containers. One consequence of the US experience with alcohol warning labels has been the demonstration that they are a very effective means of communicating with an otherwise hard group to reach—heavy drinkers. The evaluation of the labelling policy found that while there was little evidence for a major change in drinking behaviour resulting, the people who were most likely to recall seeing the warnings were the heaviest drinkers, obviously because they were more frequently exposed to them [36]. In Australia, the current requirement to label all alcohol containers with their content in terms of number of 10-g standard drinks was introduced in December 1995, well after the 1992 revisions. The media statement from then Federal Health Minister Carmen Lawrence explained that one purpose of the labelling was to assist drinkers follow national drinking guidelines for health and road safety. After this announcement there was public comment in the media from the Australian Medical Association and also APSAD to the effect that the requirements were weak since only quite small labels (max. 3 mm) were required and that these could be easily hidden or at least hard to find. Understanding how much one is drinking is clearly fundamental to being able to follow any guidelines, so improving the visibility of these labels should be considered as part of the dissemination process.

Another alcohol labelling issue to consider is whether there should be some attempt to communicate elements of the guidelines in a series of consumer messages which could be placed on alcohol containers. A recent decision by the Australian and New Zealand Food Authority to reject a proposal for a warning stating that alcohol was a dangerous drug [37] included, among many justifications, the statement that unlike tobacco the health effects of alcohol were too complex to communicate in the space available on a label. This is an interesting decision, given that cigarette packs sold in Australia now all contain short essays on the risks of smoking that cover about half of one of their sides. Just think of the complexities that could be conveyed if a similar proportion of the space on a wine cask was dedicated to health messages!

In closing I offer up the hope that the next time the National Health and Medical Research Council review the national drinking guidelines greater precision will have been achieved in the communication of alcohol quantities by both researchers and health promoters. In this way guidelines which distinguish

clearly between drinking that is safe or even beneficial from that which is hazardous can be formulated and communicated with greater confidence and clarity. As to whether our national drinking guidelines will actually contribute directly to harm reduction, I suggest that question be settled on the basis of whether even a minority of drinkers report applying them to their own or someone else's drinking. It is also important to determine if there is a significant demand for the information contained in national drinking guidelines. As with labelling, the issue of the consumer's right to know about the harmful effects of alcohol is just as important as the impact that knowledge has on their behaviour.

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