Chapter 2

Towards a common approach in the use of drinking guidelines to reduce alcohol related harm

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Guidelines on low risk drinking – advice to alcohol consumers on drinking levels and consumption patterns that can be considered at lower risk for health – have been issued over the past decades by health bodies and other organizations in Europe and beyond. [1,2] More recent epidemiological studies strongly suggest that there is no safe level for drinking alcohol and the ideal situation for health is not to drink at all. This is why the WHO does not set limits for lower risk drinking but gives the single advice that "less is better".[d]

Nevertheless, guidelines for moderating alcohol consumption are provided at national level, and the levels of consumption considered to entail low risk differ greatly among countries. There is also a wide disparity in the way in which low-risk drinking is defined. For example, some guidelines set average consumption limits per day, others per week. Some provide recommendations on the maximum intake per drinking occasion (binge drinking) and in some cases the limit is not a fixed number but a range. Most guidelines set different limits for a single occasion for men and women, while in others the limit is the same for both genders. Some guidelines take into consideration also the particular vulnerability of certain age groups (young or older people) or specific situations (such as pregnancy and breastfeeding, drink driving, workplace).

Work in Joint Action RARHA aimed to clarify reasons behind the divergence in national drinking guidelines and to explore whether some degree of consensus could be achieved. As a first step, the Italian Istituto Superiore di Sanità (ISS) conducted a survey addressed to the members of the EU Committee on National Alcohol Policy and Action (CNAPA) with the purpose to validate data on national drinking guidelines previously collected by the World Health Organization, the Organization for Economic Co-operation and Development (OECD) and others. [3]

While in epidemiological studies levels of consumption are usually expressed in grams of pure alcohol, in drinking guidelines communicated to the public, grams are often translated into "standard drinks" (SDs) or "units", presumed to be more practicable for quantifying alcohol consumption. According to the RARHA survey on low risk guidelines conducted by the ISS in 2014, the size of this notional measure varies from 8 to 20 grams of pure alcohol among EU countries, with a mode value of 10 grams and a convergence towards an average of 11 grams (mean and median=11 grams). (Graph 1) The lack of consistency in the SD definition is a further complexity in a set of complex messages on reducing risk from alcohol. As information on low risk levels is increasingly accessible across country and language borders, discrepancies may lead to miscommunication of research findings and health advice. (For further discussion on SDs, see Chapter 3.)

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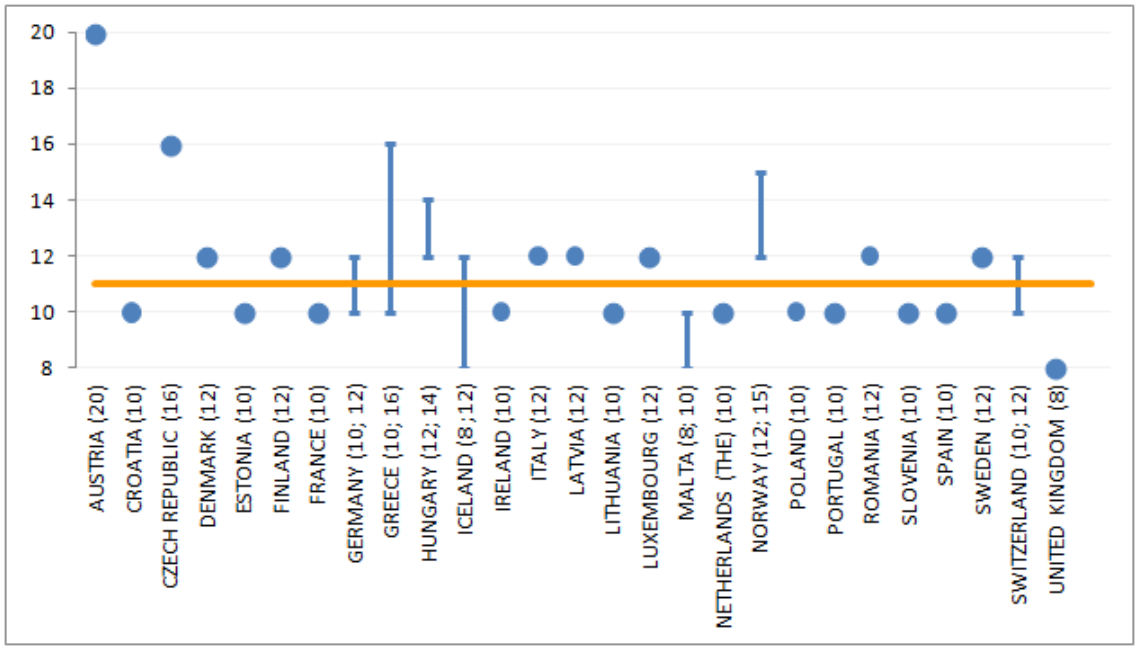
Graph 1. RARHA survey on low risk drinking guidelines in European countries: Standard Drinks in grams of pure alcohol, 2014. [3]



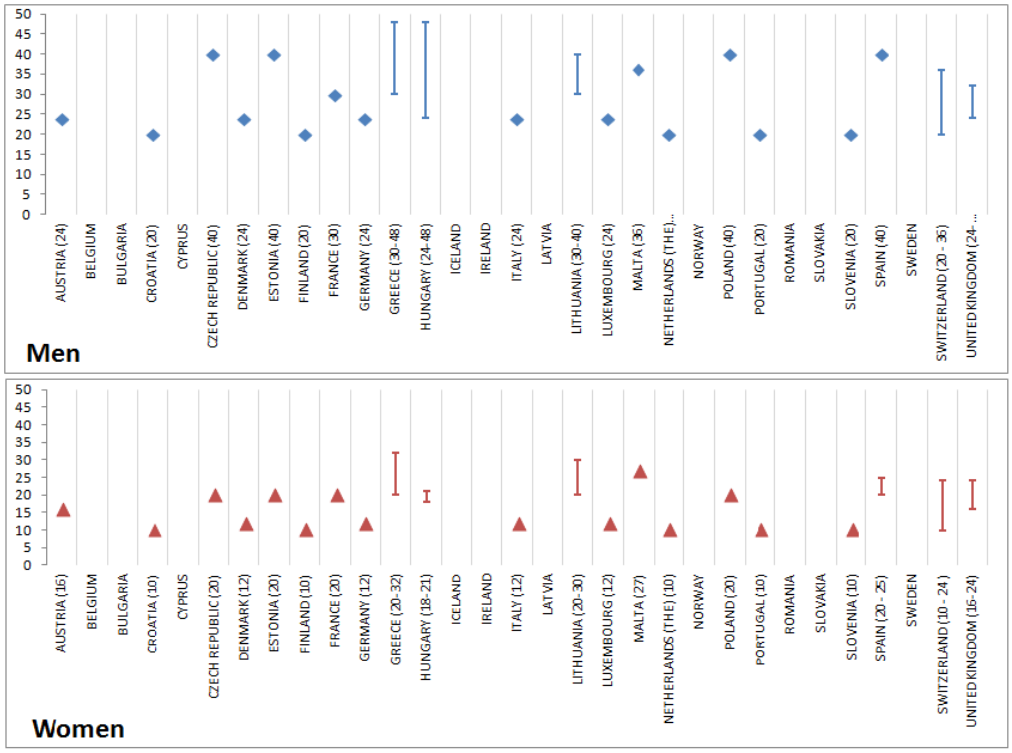
Low risk drinking guidelines have been introduced in countries individually, without coordination. Although national health bodies and expert committees have drawn upon the internationally shared knowledge on the risks and effects of alcohol, they have come to somewhat different conclusions when formulating national guidelines. Our aim in Joint Action RARHA was to shed light on the factors behind the divergence and identify points of convergence. The discussion in this chapter draws on published literature and on work done in RARHA, including a Delphi survey with some 50 European experts in public health and addiction, invited to the panel based on suggestions from CNAPA members and RARHA partners.[4]

RARHA survey on low risk drinking guidelines in Europe

The information gathered by the ISS in 2014 indicates that national guidelines or recommendations for lower risk drinking have been issued in two out of three (21/31) of the surveyed countries (EU member states, Iceland, Norway and Switzerland), typically by governmental or public health organizations.[3]

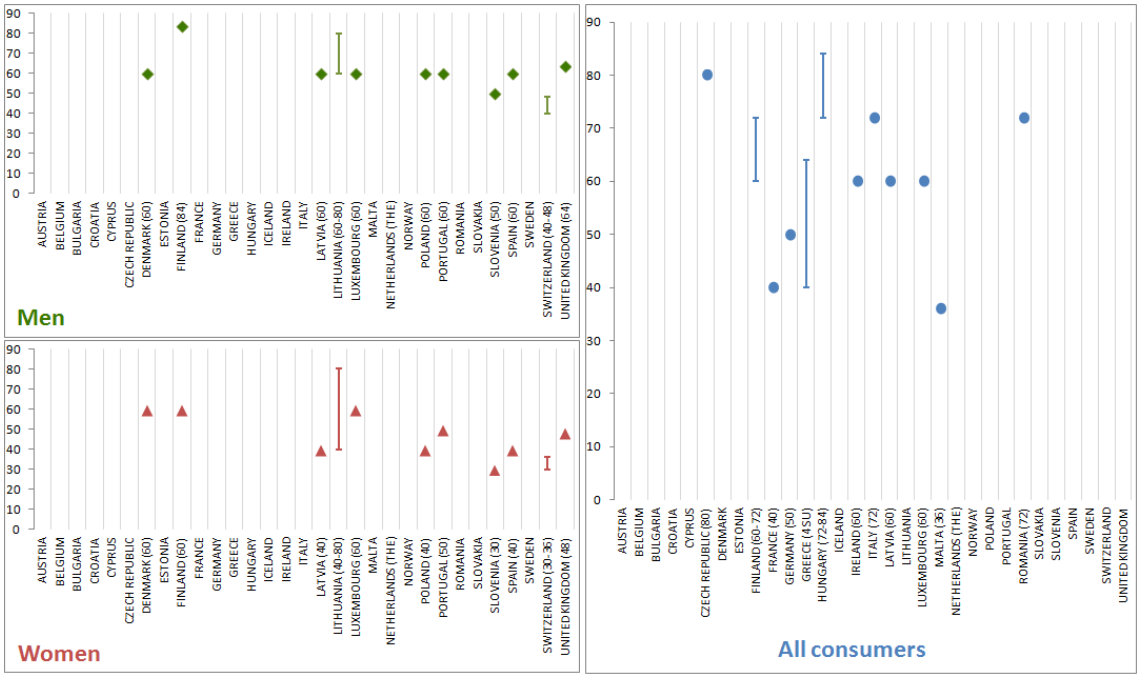
Most of the guidelines are expressed in terms of average grams of pure alcohol per day not to be exceeded, specified separately for women and men. The average consumption per day not to be exceeded varied from 20 to 48 grams of pure alcohol for men, and from 10 to 32 grams for women. (Graph 2)

Graph 2. RARHA survey on low risk drinking guidelines in European countries: Average alcohol intake per day not to be exceeded, in grams of pure alcohol, by gender, 2014. [3]



In the 20 countries where guidelines or recommendations to avoid binge drinking were issued the maximum intake not to be exceeded varied considerably from 30 to 84 grams of pure alcohol. In half of the countries, women where given a lower limit than men, whereas in half the limit was the same for both genders. (Graph 3)

Graph 3. RARHA survey on low risk drinking guidelines in European countries: Maximum intake per drinking occasion (binge drinking), in grams of pure alcohol, 2014. [3]



As regards specific age groups, the RARHA survey showed that guidelines or recommendations to reduce the risk of harm for young people under the age of 18 years were available in 15 out of the 31 surveyed countries. (For further discussion on guidance regarding drinking by young people, see Chapter 4) Guidelines specific for older people were reported only for 7 countries.

Pregnancy and breastfeeding were the most commonly highlighted situations, showing a rapid increase over the last decade in the number of countries addressing them. In 25 of the 31 countries there were guidelines or recommendations advising women to limit alcohol consumption, and in the majority of cases, to abstain completely from alcohol during pregnancy and breastfeeding.

More than half of the surveyed countries (17/31) reported that alcohol was addressed as risk factor in national nutrition guidelines. Alcohol was addressed in guidelines regarding physical activity in only two countries. Almost half of the countries (14/31) had separate drinking guidelines for workplaces, showing an increase over time.

Legal BAC limits for drink-driving, that is, the maximum Blood Alcohol Concentration levels permitted for drivers, are the most commonly used measure to reduce risk of alcohol-related harm in Europe. In line with the Commission's recommendation for uniform BAC limits,[e] the BAC limit reported for all drivers was 0,5 g/l, or lower (mode=0.5 g/l), in all countries surveyed in 2014, except for two EU member states where the limit was 0,8 g/l. Similarly in line with the Commission's recommendation, a lower limit was commonly specified for young or novice drivers (mode=0.2 g/l) as well as for professional or commercial drivers (mode=0.2 g/l).

Guidelines on low risk drinking evolve with evidence

Low risk drinking guidelines have been introduced by public health bodies in Europe since the 1980s, with the "safe limits" published in the UK in 1984 among the first.[5] National low risk drinking guidelines are updated as new evidence becomes available. Since 2010, guidelines have been revised in roughly half of the countries surveyed. The most recent reviews took place in the Netherlands in 2015 and in the UK in 2016.

The previous guidelines issued in the Netherlands in 2006 advised women not to drink more than one "standard glass" (equal to 10g of pure alcohol) per day and men to limit their consumption to two glasses. The new guideline for both women and men is "don´t drink alcohol, or no more than one glass daily", with the justification that drinking more does not deliver any additional health gains and is undesirable because of increased risk of stroke and certain cancers.[6]

The new drinking guidelines proposed by the UK Chief Medical Officers also depart from the custom to specify a different low risk level of alcohol consumption for women and men. The level of alcohol consumption not to be exceeded was revised downwards and is given in terms of units per week rather than in units per day like in the previous guidelines. While the "sensible drinking" guidelines of 1995 advised men not to drink regularly more than 3-4 units a day and women no more than 2-3 units a day (one unit being equal to 8g of pure alcohol), the new advice is that, to keep health risks from drinking alcohol to a low level, it is safest not to drink more than 14 units a week on a regular basis.[7]

Over the past decades, scientific understanding of the effects of alcohol on health has advanced due to the development of research designs and methods and the accumulation of data for meta-analysis. It is only recently that alcohol consumption has been unequivocally ascertained as a risk factor for some types of cancer.[8] In light of new and more careful research, the potential for cardioprotective effects of alcohol may have been overestimated and it has been suggested that even light drinkers would likely benefit from reducing alcohol consumption.[9,10,11] Recent studies suggest that continued alcohol consumption even at low levels and repeated episodes of intoxication are both drinking patterns causally associated with earlier mortality.[12] (For a brief discussion on findings relating to positive health effects of alcohol, see Annex 3.)

Recent reviews of drinking guidelines have reduced the amounts not to be exceeded in order to reduce risk of harm. Terms such as "safe", "sensible" or "moderate" have been replaced by "low risk."[13] The evolution of drinking guidelines in some partner countries is briefly described in Annex 4. In Italy a total shift in perspective has occurred from recommending wine as a high energy component of diet to warning about the toxic effects of any alcoholic beverages. In the UK, weekly guidelines were

[e] Commission Recommendation of 17 January 2001 to Member States on the maximum permitted blood alcohol content (BAC) for drivers of motorised vehicles, 2001/116/EC (OJ L43, 14.2.2001).

replaced by daily guidelines in 1995 to take into account evidence suggesting health benefit from regular drinking; the recent review moved back to weekly guidelines.

In Denmark, drinking guidelines have been used for a quarter of a century as a health promotion tool. In the first decades, information was disseminated to alcohol consumers and health professionals on levels of consumption where the risk of health harm is high. In 2010 the emphasis was shifted from high to low risk consumption while stressing that there is no level of alcohol consumption totally free of risk. The shift was motivated by research confirming the carcinogenicity of alcohol and, on the other hand, by a desire to prevent high risk communication being interpreted as advice on safe consumption levels. The high risk levels still stand as a reference for health personnel to identify clients who might benefit from brief intervention. (For a discussion on screening and brief intervention, see Chapter 5.)

In Finland, information provided to health professionals and alcohol consumers has similarly been focused on high risk consumption, although the national dietary guidelines have included a recommendation for moderate or reduced alcohol consumption since 1987. In 2015, the Current Care Guideline on alcohol use disorders, which provides a common national basis for clinical practice, integrated the existing definitions of low and high risk consumption levels into a three-level classification that highlights the risk from alcohol as a continuum.

In Switzerland, guidance was provided in 2015 for the first time by the Federal Commission for Alcohol-Related Issues (CFAL), an official expert group on alcohol. Rather than firm guidelines on alcohol consumption levels, points of reference for various population groups and situations are provided, the main message being that the consumption of alcohol involves health risks but the risks vary by person and by circumstances.

Methodological choices in defining low risk from alcohol consumption

The main reason for cross-country differences in national drinking guidelines is that there is no straightforward method for deriving low risk alcohol consumption levels from the scientific evidence; a considerable degree of expert judgment is always required.[14] Starting points are provided by systematic reviews and meta-analyses of epidemiological evidence on the health consequences of drinking different amounts of alcohol and by the quantification of risks across diseases and conditions. Reviewing and summarising the evidence, defining what is considered low risk and formulating guidelines for alcohol consumption involves a range of methodological, technical and practical choices that may have a bearing on the outcome. The national situation, including drinking patterns and public sensitivities, may also play a role. While the processes used to formulate drinking guidelines may have lacked in transparency in the past,[13,15] with recent reviews of national low risk guidelines, the evidence base and justifications have been laid out in more detail.

The most extensive work to date to inform the formulation of low risk drinking guidelines has been in Australia (2009), in Canada (2011) and in the UK (2016). In these countries, extensive evidence of the risks of drinking alcohol was considered and quantitative pooling of risks from various causes at different levels of alcohol consumption was used to help identify criteria for weighing risk of health harm from alcohol. This summarizing of quantitative data does not replace expert judgment but can inform debates about what is considered low risk and provides a transparent approach for justifying experts' choices around corresponding alcohol intake levels.

Alcohol attributable mortality is the most severe health outcome for which data for robust analysis is available. So, in common with meta-analyses of the risks of alcohol at different levels of consumption, this has been the main focus in quantitative analyses carried out during the development of low-risk drinking guidelines.[16]

Findings from the RARHA Delphi survey indicated a desire among experts to also incorporate data on morbidity and to take into account adverse social consequences for the drinker as well as harms to others, including family, workplace and the living environment. It was pointed out that risks of alcohol-attributable mortality and morbidity may differ, that mortality is only a part of the public health burden and that based on mortality rates only, a full assessment of alcohol-related harms is not possible. Further research was called for on the dose-response relationship between alcohol consumption and morbidity and to quantify social harms to the drinker and to others.

In the epidemiological evidence, which provides the basis for assessing risks from alcohol, the results are typically given as relative risks at different levels of consumption compared to abstainers, often depicted as risk curves. There are at least 60 categories of illnesses and injuries to which alcohol contributes causally, of which half are by definition caused by alcohol, and over 200 further conditions for which alcohol is a component cause.[17] The risk curve for a disease can be J-shaped or U-shaped, showing lower risk for light drinkers compared with abstainers and increased risk at higher levels of consumption. Or the curve can show risk that increases linearly or exponentially with increased alcohol consumption. The same level of alcohol consumption may thus be associated with an increase in the risk of one disease and a decrease in the risk of another. To inform low risk drinking guidelines, the disease-specific risk curves can be examined separately, or risks across diseases can be combined for assessing overall risk. The risk of all-cause mortality – early death from any cause – and the disease-specific risks can incorporate the harmful as well as the beneficial effects of alcohol consumption. Especially for all-cause mortality, a J-shaped curve is often derived, suggesting that a low average level of alcohol consumption is associated with reduced risk of death compared with not drinking at all.

Examination of the relative risk of all-cause mortality has been used to inform guidelines for low risk alcohol consumption, for example in Canada. A risk curve as such rarely suggests a particular cutoff point for low and high risk. In the low risk drinking guidelines formulated in Ontario in 1997, the lowest point of a J-shaped curve was chosen to specify a level of average alcohol consumption that would allow protection against heart disease.[18] For the new national low risk guidelines for Canada, the cutoff was chosen so that the risk of death due to alcohol consumption would be the same as the risk of death for a lifetime abstainer.[19] At the cutoff point, the effects of alcohol that increase risks and those that decrease risks would thus counterbalance each other equally so that the net mortality risk would be the same as for non-drinkers.

The review of drinking guidelines in Australia in 2009 introduced an alternative approach focused on absolute mortality risk. The Australian approach started by considering the various relative risk curves for dying from alcohol attributable conditions at different consumption levels, compared with non-drinkers. However, it went on to examine how these relative risks translated into cumulative risk of alcohol-attributable death over the lifetime, assuming the average level of alcohol consumption stayed the same over the lifecourse.[20] Lifetime risk is the standard approach for assessing the effects on mortality from exposure to external factors, such as additives in food or chemicals in the environment, expressed as a risk factor of, for example, 1 in 100, 1 in 1000 or 1 in 100 000, or as a probability of of 0.01, 0.001 or 0.00001 respectively. In Australia the maximum risk level of 1 death for every 100 people was chosen as the reference point for assessing risk from alcohol consumption. A modelled analysis was used to calculate the lifetime risk of death (up to the age of 70 years) from alcohol-related disease or injury for a range of alcohol consumption levels. The modeling incorporated diseases for which the causal effect of alcohol is the most firmly established, excluding potential health benefits due to the uncertainty of the evidence.[21]

In the Australian population, regular drinking of two standard drinks per day (1 standard drink being equivalent to 10 grams of pure alcohol) was associated with the lifetime risk of death from alcohol-related disease of 0.4 in 100 people exposed to that amount of alcohol. At the level of three drinks per day, the risk was above 1 in 100. With a maximum of two drinks per episode, the lifetime risk of death from injury remained below 1 in 100. The guideline formulated was: "For healthy men and women, drinking no more than two standard drinks on any day reduces the lifetime risk of harm from alcohol-related disease or injury".

The work to inform the review of drinking guidelines in the UK tested both the Canadian and the Australian approach. The Canadian and the Australian approach gave roughly similar results.[22] The proposed new guidelines were formulated so as to balance potential harms and benefits but also so that the low risk level defined is consistent with a 1 in 100 lifetime risk of alcohol-attributable mortality.[7]

While both the Canadian relative risk approach and the Australian absolute lifetime risk approach enable transparency in determining what is considered low risk, the latter has certain advantages. The absolute lifetime risk approach enables alcohol related risks to be set within a broader perspective by comparing them with risks from other sources and to consider thresholds for other risks when choosing a criterion for low risk from alcohol.[13,20]

Additionally, for assessing the combined effect of drinking across various causes of death, the use of absolute lifetime risk as derived from disease-specific relative risks has been recommended over the use of all-cause mortality.[16] Such a disease-specific approach was adopted in the analyses that

informed the UK 2016 review of drinking guidelines. Cohorts in prospective studies of all-cause mortality tend to be chosen for ease of follow-up and may differ from general populations, for example in terms of demographics and health status. While this may be irrelevant when the focus is on causality between exposure and effect for a given disease, it matters when the focus is on the overall risk from a given alcohol consumption level. For example, any cardioprotective effect from alcohol would not be visible in a cohort of young people. Correspondingly, a cardioprotective effect would be more relevant in a country with high life expectancy and increased risk of heart disease. Also, estimates based on all-cause mortality are more easily affected by confounders. As cause-specific estimates are combined only for cases where causality is established, spurious relationships are better avoided. Countries also differ with respect of their drinking cultures, including beverage preferences, drinking patterns or social tolerance of intoxication, which may all have a bearing on alcohol-related harm. A country-based approach which incorporates the underlying cause of death structure and looks at disease-specific risks is therefore called for.

Lifetime risk of alcohol-attributable mortality in selected European countries

In Joint Action RARHA the lifetime-risk of alcohol attributable mortality was calculated for seven EU countries in order to explore the extent to which variation in drinking cultures and mortality structures is reflected in the risk levels. The countries were chosen so that the three prototypical drinking cultures are included as well as EU extremes in alcohol consumption levels, prevalence of alcohol use disorders and life expectancy. The calculations were done by the Canadian Centre for Addiction and Mental Health (CAMH).[23]

The absolute risk of alcohol-attributable death at the age of 15-75 years was calculated combining disease-specific mortality risks at various levels of alcohol consumption, as obtained from meta-analyses. The causes of death causally impacted by alcohol, including potential protective effects, were – with slight modifications – the same as in the Global Burden of Disease Study 2010.[24]

Table 1 shows the key results of the calculations for the selected countries. The results show that lifetime risk of alcohol attributable death would remain below 1 in 100 in all countries at an average lifetime level of consumption of 10 grams of pure alcohol per day. This is despite the differences shown across the countries and for both genders. At the average level of consumption of 30 grams per day, lifetime risk of alcohol attributable death would be equal to or larger than 1 in 100 for men in all countries and for women in all but one.

Table 1. Lifetime risk of alcohol-attributable death for different levels of average daily consumption, grams of pure alcohol, in 2012 for men (M) and women (W). [23]

Average drinking	Estonia		Finland		Germany		Hungary		Ireland		Italy		Poland	
	M	W	M	W	M	W	M	W	M	W	M	W	M	W
10g	0.0027	0.0051	-0.0015	0.0037	-0.0004	0.0024	-0.0061	-0.0022	-0.0014	0.0014	0.0002	0.0022	-0.0068	-0.0062
20g	0.0138	0.0380	0.0030	0.0185	0.0041	0.0148	0.0028	0.0274	0.0025	0.0126	0.0045	0.0131	-0.0004	0.0148
30g	0.0296	0.0842	0.0102	0.0402	0.0110	0.0327	0.0171	0.0695	0.0084	0.0287	0.0104	0.0279	0.0102	0.0466
40g	0.0504	0.1371	0.0197	0.0655	0.0197	0.0543	0.0373	0.1221	0.0169	0.0492	0.0182	0.0467	0.0259	0.0877
50g	0.0792	0.2175	0.0344	0.1054	0.0322	0.0866	0.0635	0.1888	0.0277	0.0762	0.0278	0.0706	0.0458	0.1418
60g	0.1097	0.2868	0.0522	0.1429	0.0477	0.1179	0.0993	0.2594	0.0425	0.1055	0.0404	0.0964	0.0730	0.1990

Green: overall protective effect

Lightest blue: overall lifetime risk smaller than 1 in 1,000

Light blue: overall lifetime risk smaller than 1 in 100, but larger than 1 in 1,000

Dark blue: overall lifetime risk equal to or larger than 1 in 100

In the RARHA Delphi survey, in which results from the calculations done by CAMH were used as prompts, public health and addiction experts supported the use of quantitative risk analysis to inform the definition of low risk from drinking. For the absolute lifetime risk approach, the maximum risk level of 1 in 100 was considered by the experts more likely to gain acceptance among public health decision-makers than the more cautious level of 1 in 1000, although there was considerable support for placing the issue in the hands of an international body.

Guidelines on drinking patterns

In addition to the average volume of alcohol consumption, patterns of drinking have also been addressed in low risk drinking guidelines. In many countries separate advice on the maximum amount of alcohol consumption on any single occasion has been provided, primarily intended to curb the risk of injury. It has been suggested that a limit per occasion is an essential component of low risk drinking guidelines.[13,16] Estimates of the relative risk of harm from single drinking occasions have mainly been based on emergency department studies. Meta-analyses of the relationship of acute alcohol intake – typically measured by the level of blood alcohol content (BAC) – and the risk of injury indicate that the risk increases with the amounts consumed, particularly above 40-60 grams of pure alcohol.[23] Other types of harm associated with high BAC on a single episode or with heavy episodic drinking (HED) include violence and other forms of victimization, social and legal problems, quality of life, and impaired judgment and risk taking, for which risks may be significantly increased already at relatively low frequencies of HED.[25] [f]

In the RARHA Delphi survey, complementing guidelines on average alcohol consumption with advice regarding single drinking occasions was considered important. When giving advice on amounts not to be exceeded on any single occasion, the duration of the occasion was considered an important factor to be taken into account. While prevention of accidents and injuries was highlighted as the primary purpose, reducing the risk of social harms to the drinker and to others was considered relevant too.

In the recent review of drinking guidelines in the UK, rather than giving an amount of alcohol not to be exceeded on any occasion, advice was provided on ways to reduce short term risks, for example by limiting the total amount drunk on any occasion, drinking more slowly or avoiding risky places and activities. The justification for the approach was individual and situational variation in short-term risk.[26] Given that a guideline expressed as a simple number may be easier to follow than more general advice, preferences on this were sought in the public consultation on the proposed new guidelines, however the findings were inconclusive. Additionally, the guideline development group felt there was limited evidence to support recommending a particular single limit and the UK Chief Medical Officers were advised not to include a number for the single occasion guideline . [27]

Advice to have a few alcohol-free days each week is another way in which the pattern of alcohol consumption has been addressed in drinking guidelines. Scientific evidence to support alcohol-free days is limited but daily drinking is considered a risk for alcohol use disorders and for heavier drinkers, alcohol-free days result in a lower risk of mortality.[23] The new drinking guidelines in the UK provide advice on avoiding heavy drinking episodes by spreading the weekly amount of alcohol consumption over several days, and recommend several drink-free days to help cut down on drink.[7]

In the RARHA Delphi survey, further research on the role of heavy drinking patterns in the risk of alcohol related mortality and morbidity was called for, as well as research on other lifestyle variables that might affect the risk of health harm from alcohol.

[f] The World Health Organization uses the prevalence of heavy episodic drinking (HED), defined as drinking at least 60 grams or more of pure alcohol on at least one occasion in the past 30 days, as an indicator for acute consequences of alcohol use in a population. In epidemiological research, the term risky single occasion drinking (RSOD) is used synonymously with HED. In the research context there is no common definition for HED or RSOD.[25]

Variability across population groups

A major challenge in developing low risk drinking guidelines concerns balancing universal advice with individual and situational variability. Low risk drinking guidelines based on averages across populations do not apply equally to all individuals. However, taking into account a range of relevant factors, such as weight, metabolism, existing health conditions or susceptibility to cancer, heart disease, dependence or other health outcomes is impossible in population guidelines.

The common approach to differentiation is to specify alcohol consumption levels separately for women and men, although it has been argued that gender-specific guidelines are no longer fully supported by current evidence.[25] The low risk level has generally been set lower for women than for men because women generally reach a given BAC with a smaller amount of alcohol than men.

The low risk drinking guidelines revised in Australia in 2009 gave up this distinction and advised both men and women to drink no more than two standard drinks per day (no more than 20 grams of pure alcohol).[20] This was based on an analysis which indicated little difference in lifetime risk between men and women at low levels of drinking. At higher levels the lifetime risk of alcohol-related disease increased more quickly with an increasing level of consumption for women. In contrast, the lifetime risk of death from alcohol-related injury increased more quickly for men. The BAC difference between women and men was overwhelmed by men's higher risk of injury mortality per se, linked with higher propensity to risk-taking.[21]

In Europe, the new guidelines in the Netherlands in 2015 [6] and in the UK in 2016 switched over to a single low risk level of alcohol consumption applicable to both women and men. The rationale in the UK was similar to that in Australia: despite evidence of a greater biological susceptibility to alcohol-related harm in women, acute harms in women are much less than in men at the same level of consumption.[25]

> *In the RARHA Delphi survey, the move to a single low-risk guideline for women and men in Australia was presented to the experts as stimulus for considering whether or not gender-based differentiation is needed. A clear majority favoured gender-specific guidelines, with physiological differences and the broad acceptance of the gender difference given as justification. Arguments in support of a single guideline highlighted the basically harmful nature of alcohol, irrespective of gender, differences in behaviour between women and men, and the ease of communicating the guideline to the population.*

Age is another important factor in risk of alcohol-related harm. Children and young people are in many ways susceptible to harm from alcohol throughout the developmental stage, not least because the ability for complex thinking and decision making takes time to evolve. Specific advice on low risk alcohol consumption by young people is scarce but the notion that the best way to minimize risk is to avoid alcohol is implicit in legal minimum age requirements. Among older people alcohol consumption may increase the risk of chronic disease and injury. Age-specific guidelines have been called for that take into account increased sensitivity to alcohol due to physiological and metabolic changes.[28] On the other hand, balancing potentially reduced risk of coronary heart disease with increased risk of other chronic diseases, injury and adverse interactions of alcohol with medications contributes to such complexity that it has been argued that advice for older people would be better provided individually in clinical settings.[29] As the epidemiological evidence on alcohol consumption and harms among older people so far is sparse and inconsistent, guidelines for older people tend to take the form of general recommendations for caution rather than exact advice on alcohol intake levels.

> *In the RARHA Delphi survey, the predominant view was that providing low-risk drinking guidelines for under-18s would be counterproductive and the main message should be to avoid alcohol. Guidelines on alcohol consumption by older people were called for, in particular regarding risks concerning medications, co-morbidities and injuries.*

While there is evidence that people of lower socioeconomic status show a greater susceptibility to the harmful effects of alcohol, the precise interaction between patterns of alcohol use, socioeconomic status, and health outcomes remains uncertain due to limited research.[30]

In the RARHA Delphi survey, views regarding the usefulness of taking into account socioeconomic factors when formulating low risk drinking guidelines were divided, with a slight majority reluctant to do so. Socioeconomic factors were not considered unimportant, but socioeconomically differentiated guidelines were deemed discriminatory, stigmatizing and counterproductive. Selective prevention measures were considered a more appropriate approach. Awareness of differential vulnerability to alcohol in socioeconomic groups was, however, considered important.

Variability across situations

National drinking guidelines differ regarding their focus on risks in particular situations. Population guidelines on low risk drinking – like nutrition guidelines – are meant to apply to healthy adults, a limitation sometimes considered self-evident and not even mentioned. Besides the age-related conditions, pregnancy and, by extension trying to conceive and breastfeeding, is the specific high-risk situation that has been most often singled out in drinking guidelines. Whether the focus is on risk of developmental harm (FASD) due to heavy drinking or on the risk of low birth weight and miscarriage at lower levels of drinking, the advice given is usually to abstain from alcohol. The main reason for a precautionary approach is that the available research does not allow to specify a level of alcohol exposure that would involve no risk to the unborn child.[14, 25]

Driving under the influence of alcohol is another high risk situation addressed, if not in drinking guidelines, in the legal provisions concerning the blood alcohol levels permitted for drivers in general or for various categories of drivers. The practice in some countries of defining the seriousness of the offence by the driver's blood alcohol level reflects a certain tolerance of risk whereas lower blood alcohol limits or zero tolerance applied for young drivers or commercial drivers represent a more cautious approach.[9]

In the RARHA Delphi survey, concern was raised by the experts about a range of at-risk groups or high-risk situations where general low risk drinking guidelines do not apply. Besides age-based groups, the most important at risk groups highlighted included people with risk of adverse interaction of alcohol with medications and people at increased risk due to a family history of alcohol dependence, mental health problems, or other addictions. As regards specific high-risk situations where the safest option is not to drink at all, the most important were during pregnancy, when driving, at work and when engaged in tasks that require concentration.

Public health relevance of low risk drinking guidelines

Any effects of low risk drinking guidelines towards reducing harm from alcohol depend on how widely the guidelines are known and how they are understood: are they taken as advice to drink for health benefits, as a socially accepted level of moderate consumption, as relatively safe levels or as relatively risky levels of drinking. A related factor concerns consumers' ability to translate low risk consumption levels, often given as units, SDs or grams of pure alcohol, into actual drinks consumed in varying strengths and servings. (For further discussion, see Chapter 3.) While some research is available on awareness and comprehension of low risk drinking guidelines in different countries, there are few studies on their impact on risk perceptions, attitudes or drinking behaviour, and they suggest limited potential for effect.[14, 31] The possibility of counterproductive effects has been raised – for example, if low risk drinking guidelines encourage abstainers to start drinking or moderate drinkers to increase consumption. An overall assessment is that, in the wider frame of alcohol policy, the dissemination of drinking guidelines alone – or indeed any type of information and education activities – cannot be expected to deliver large or sustained benefits if carried out in isolation, but they can bring added value as part of a broader policy mix.[32]

Potential explanations for a poor reach of drinking guidelines include a lack of perceived relevance to real-life drinking practices and motivations for drinking. It has been suggested, based on research on

[9] European Transport Safety Council: Blood Alcohol Content (BAC) Drink Driving Limits across Europe http://etsc.eu/blood-alcohol-content-bac-drink-driving-limits-across-europe/

the interpretation of low risk drinking guidelines in the UK, that advice on consumption levels should be accompanied by messages that show the impact drinking can have in the short or long term, for example, on family and work life.[33] In the UK, a certain lack of credibility and practicability of previous drinking guidelines has been associated with a tendency among lay people and the media to confuse recommendations concerning average regular consumption with upper limits for drinking on a single occasion.[34] The new low risk drinking guidelines in the UK have done away with the earlier limits for daily consumption and returned to specifying a low risk level of weekly alcohol consumption, accompanied by qualitative advice on how to reduce risk of harm on single drinking occasions.[7] The justification was that a guideline for weekly consumption would be an easier benchmark for the largest part of the population who do not drink daily but primarily on weekends and special occasions.

It has been argued that limits for average volume of alcohol consumption, geared towards reducing long-term risk of chronic disease, and limits for drinking on a single occasion, geared towards reducing risk of injury and acute disease, are both essential components of low risk drinking guidelines.[16] The survey of current guidelines in RARHA partner countries, found that both a guideline for average consumption and a guideline for single occasions was given in only a minority of cases.[3] The choice between emphasizing daily, weekly or per occasion advice seems best informed by the predominant drinking patterns among the target populations.

Dissemination of low risk drinking guidelines is one approach to providing information necessary for consumers to make choices about their drinking. Rational choices require that consumers are fully informed about the characteristics and quality of what they consume, about the benefits offered and about the costs and risks they will be exposed to as a consequence of consumption.[35] There is a strong argument that it is the consumer's right to know the epidemiological evidence on the risks of different levels of alcohol consumption and the implications of this for their personal behaviour.[34]

Drinking guidelines may also have public health relevance at the level of collective perceptions and norms. Low risk drinking guidelines and the public discourses generated by the process of formulating or reviewing them contribute to the public debate on attitudes and norms regarding alcohol consumption[14]. – "By their very existence as public advice, such guidelines acknowledge that there is something special about alcohol, that it is not an ordinary commodity."[13]

RARHA Delphi panel's views on the purposes of low risk drinking guidelines

In the RARHA Delphi survey, there was fairly broad consensus that providing the general population with guidelines on low risk drinking is justified, and that the main rationale for low risk drinking guidelines is that consumers have the right to be informed about risks related to alcohol consumption. Rather than as a powerful influence on drinking patterns, low risk drinking guidelines were seen as just one tool in the portfolio of measures to curb alcohol related harm.

Skepticism and uncertainty was related to the complexity of the issue which presents a challenge for communication through mass media. It was considered important to accompany advice on low risk drinking levels with messages to prevent counterproductive interpretations. The most important points to highlight were that low risk drinking does not mean 'no risk' and that occasional heavy drinking and daily drinking both involve risk of harm, without giving the impression that one is favoured over the other. While there was broad agreement that guidelines are needed separately regarding the average level of alcohol consumption over a longer period of time and regarding single drinking occasions, it was considered important to make clear that a maximum for a single occasion does not mean that drinking up to that level is safe.

When communicating drinking guidelines, the risk of particular harms could be highlighted as motives for staying on the "safe side". Based on the experts' views, increased risk of cancer and risk of adverse effects on the family would be the most important, followed by risk of high blood pressure, addiction, depression, adverse effects on the brain and overweight.

The experts differed somewhat regarding the intended public for drinking guidelines, with some considering drinkers who are already at high risk as the primary target group and others seeing information on alcohol related risks being targeted to all alcohol consumers or to the population at large. The results of further exploration of experts' views of the purposes of "low risk", "high risk" and "single occasion" guidelines suggest that encouraging high risk drinkers to reduce the amounts they are

consuming, drawing all alcohol consumers' attention to the risks that may be involved in their drinking habits and influencing attitudes and drinking habits in the population are not mutually exclusive purposes or results of drinking guidelines: the three types of drinking guidelines can at the same time serve several purposes to different degrees. Assisting health professionals to identify at-risk drinkers is obviously a specific function of high risk guidelines, and the specific intent of guidelines for a single occasion is to reduce risks of harm from drunkenness to the drinker or to others. (Table 2)

Table 2. Schematic summary of expert views of the most relevant purposes of "low risk", "high risk" and "single occasion" drinking guidelines as identified in the RARHA Delphi survey.[4] The relative relevance is indicated by the number of √ signs.[h]

Purposes \ Focus of guidelines	Low risk from consumption over time	Risk from heavy drinking on a single occasion	High risk from consumption over time
To influence attitudes and thereby drinking habits in the whole population.	√	√	√
To inform alcohol consumers and others about alcohol related risks.	√√√	NA	NA
To draw all alcohol consumers' attention to the risks that may be involved in their drinking habits.	√√	√√	√√√
To provide advice to consumers who want to keep their alcohol consumption at a level where the risks remain small.	√	NA	NA
To help reduce the risk of accidents and injuries due to intoxication.	NA	√√√	NA
To help reduce the risk of social harms to the drinker due to drunkenness.	NA	√	NA
To help reduce the risk of social harms to others due to someone's drunkenness.	NA	√	NA
To encourage "at risk" drinkers reduce the amounts of alcohol they are consuming.	NA	NA	√√√
To help health professionals identify "at risk" drinkers and provide them advice on how to reduce alcohol consumption.	NA	NA	√√

The predominant view regarding potential health-protective effects from a low level of alcohol consumption was that low risk drinking guidelines should not include messages about beneficial effects of alcohol, except to correct misconceptions. A widely shared sentiment among the experts was that the core message in low risk drinking guidelines is about risk of harm. When requested to indicate what other aspects besides epidemiology should be taken into account when seeking to agree on a common definition of low risk drinking, the experts considered medical/public health stakeholders' views and current national low risk drinking guidelines as the most relevant. The views of alcohol consumers, politicians or other stakeholders came out as far less relevant.

Towards a common concept of low risk drinking

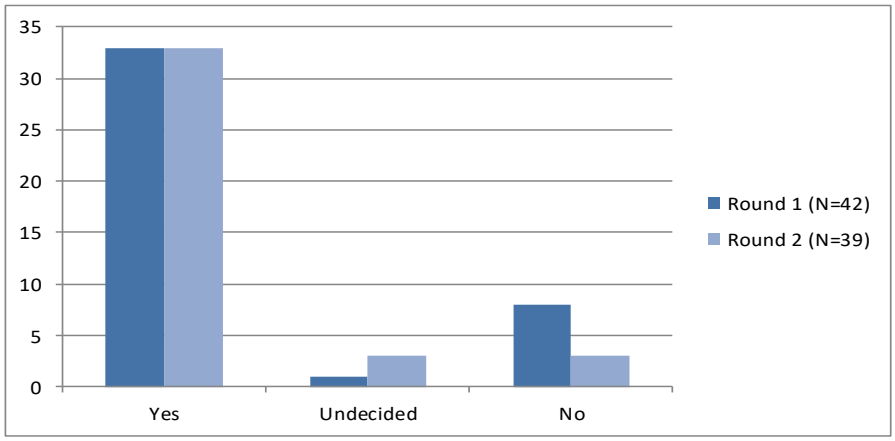
Drinking guidelines are in place in many countries and there is an interest among the general public to be provided with such advice.[36] The RARHA Delphi survey indicated wide support among public health and addiction experts for the dissemination of low risk drinking guidelines to the general population. The main justification is that consumers have the right to be informed about risks related to their alcohol consumption in order to reduce and avoid risks. As the issue is about the protection of the

[h] In the second round of the Delphi survey, experts were requested to rank in order of relevance sets of possible purposes of "low risk", "high risk" and "single occasion" drinking guidelines, developed based on verbal comments received in the first round. "NA" in some cells means that a particular purpose was not offered for ranking; this does not exclude the possibility of some degree of relevance.

individual and public health, the responsibility to provide reliable evidence-based information about alcohol related risks and ways to reduce risks rests with governments and their public health bodies.

Drawing on scientific literature and broadly shared views among the experts consulted and participating in Joint Action RARHA, this final subchapter presents conclusions and good practice principles for the use of low risk drinking guidelines as a public health measure. One of the aims in RARHA was to explore whether some degree of consensus could be achieved to help reduce the variation in national guidelines. There is, indeed, substantial consensus on many points, including that it would be desirable for European public health bodies to agree on a common concept of low risk drinking.(Graph 3) Arguments presented by experts in the Delphi panel in favour of a common concept included that a co-ordinated effort by European countries to promote low risk drinking guidelines would improve the chance of being accepted by the population.

Graph 3. Replies given in the RARHA Delphi survey, rounds 1 & 2, to the question: Would you consider it desirable for European public health bodies to agree on a common concept of "low risk" drinking?[4]



Although there is some inclination among experts to rely on an international body to set the standard, primarily the World Health Organization (WHO), it seems low risk drinking guidelines will continue to evolve without such top-down coordination. The WHO does not set particular limits for alcohol consumption "because the evidence shows that the ideal solution for health is not to drink at all".[i] For example, the European Code Against Cancer, developed through cooperation between WHO's International Agency for Research on Cancer and the European Commission, advises to limit alcohol intake and states that, for cancer prevention, not drinking alcohol is better.[j] Such European cooperation to formulate a set of evidence-based core messages applicable across diverse populations could be considered also for providing concrete advice for reducing the risk of other kinds of harm from alcohol. The work done in Joint Action RARHA could provide starting points towards a "European code on alcohol" to amplify the overall message to alcohol consumers and society at large, and to support individual countries in their public health action.

Adopting a single common low risk guideline across European countries does not seem an option. While low risk guidelines have a fairly long history in some countries (see examples in Annex 4), in others public health bodies have chosen not to disseminate such advice. More relevant and effective risk communication will be achieved by formulating drinking guidelines to take into account particular national challenges in alcohol related harms as well as pre-existing perceptions of risk and harm among the population. Nevertheless, moving towards a more aligned approach is possible by applying good practice principles such as those identified in RARHA.

The work done in RARHA suggests that a common concept of low risk drinking could be found by adopting the cumulative lifetime risk of death from alcohol-related disease or injury as a common metric for assessing the risks from alcohol. Calculation of the lifetime risks of alcohol attributable

[i] http://www.euro.who.int/en/health-topics/disease-prevention/nutrition/a-healthy-lifestyle

[j] http://cancer-code-europe.iarc.fr/index.php/en/

mortality at different levels of consumption in selected European countries demonstrates that the methodology is available and the results can inform discussion about the level of public health protection associated with drinking guidelines.[23] Lifetime risk of mortality is a common standard for assessing risk from external factors, such as toxins in food or environment. Expressing risk as the number of deaths per persons exposed illustrates its magnitude and enables different types of risks to be put into perspective alongside one another. The lifetime risk approach enables the low risk drinking guidelines to be developed in light of a clear criterion of low risk and to take into account the current level of cause-specific mortality in the working-age population.

The risk level of 1 in 100 alcohol attributable deaths could be considered a maximum for "low" risk. In some European countries, the current guidelines for low risk drinking are consistent with or slightly below that level, while in others the risk level associated with current guidelines is above 1 in 100. Alternatively, a more cautious maximum could be adopted, as suggested in recent discussion.[37, 38] Adopting a stricter criterion for low risk, such as no more than 1 death per 1000, would contribute towards a healthier population, but would require a downward revision to the current low risk drinking guidelines in most European countries. Whether the public health targets set in different countries would converge towards a common minimum level of protection of public health or not, adopting a common metric would contribute to a more transparent process for specifying guidelines for low risk alcohol consumption.

A main purpose of drinking guidelines is to draw all alcohol consumers' attention to the risks that may be involved in their drinking habits. Awareness of risk is necessary to avoid ill-advised choices but it does not equal action, and drinking guidelines alone cannot be expected to change behaviours in the population. Measures to support and enhance the potential of drinking guidelines could include the following, discussed in detail in the next chapters:

- Applying and enforcing effectively an age limit of minimum 18 years for the sale and serving of any alcoholic beverages.
- Supporting in particular primary health services to identify at-risk drinkers and provide brief advice to reduce high-risk drinking.
- Requiring that the amount of pure alcohol contained in a bottle, can or other package is given in grams on the label.
- Requiring that alcoholic beverages and alcohol advertisements carry clear and factual information on health and safety risks associated with alcohol consumption.

Good practice principles for low risk drinking guidelines

Principles

- Drinking guidelines are not normative but informative.
- The core message in drinking guidelines is about risk, not safety.
- Drinking guidelines should convey evidence-based information on risks at different levels of alcohol consumption, contribute to correcting misconceptions about the likelihood of positive or negative health effects of alcohol, and help alcohol consumers to keep the risk of adverse outcomes low.

Components

- Low risk drinking guidelines should highlight that daily drinking and occasional heavy drinking are both potentially harmful drinking patterns. Advice should be provided both regarding the average level of alcohol consumption over a longer period of time and regarding the maximum amount drunk on any single occasion. It should be made clear that a limit for a single occasion does not mean that drinking up to that level is safe.
- The possibility of advising equally low consumption levels for men and women, while highlighting gender-specific factors in verbal communication, should be considered.
- Guidance for healthy adults should be accompanied by guidance for various age groups, in particular for older people.

- Low risk drinking guidelines should be accompanied by advice concerning alcohol consumption in high-risk situations and at-risk groups.
- Although mainly based on epidemiological evidence of the health risks of alcohol, low risk drinking guidelines should also communicate that keeping average alcohol consumption at a low level and avoiding drunkenness reduces the risk of social harms to the drinker and to others.

Key messages for reducing risk in particular situations

- Not drinking at all should be promoted as the safest option in pregnancy, childhood and adolescence, and when driving, at work or engaged in tasks that require concentration.
- To reduce risks from alcohol consumption by older people advice should be given in relation to adverse interactions with medications, co-morbidities and injuries.
- High-risk situations include taking a medication that may interact with alcohol, and at-risk groups include people with other addictions, mental health problems or family history of alcohol dependence.
- To address the public's information needs and to motivate risk reduction, particular harms should be highlighted, such as increased risk of cancer, high blood pressure, addiction, depression, adverse effects on the brain, overweight as well as adverse effects on the family.
- The risk estimates underpinning low risk drinking guidelines are based on averages across populations whereas at an individual level there is considerable variation in vulnerability to alcohol due to biological and social factors. Any individual considering whether to drink or how much to drink will therefore also need to take into account their own characteristics and particular situation.

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