



# Curbing Alcohol Consumption Can Reduce Death and Disease

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Inappropriate alcohol use is a persistent public health problem. Four percent of the global burden of disease can be attributed to alcohol, which is linked to more than 60 different specific diseases.

Alcohol consumption is linked to acute and chronic health and social consequences through three primary routes<sup>1</sup>:

- Toxic effects, such as increased risk for high blood pressure and liver damage, pancreatic damage, and hormonal disturbances;<sup>2</sup>
- Intoxication; and
- Dependence.

Evidence-based and cost-effective interventions are available. Taxes, restrictions on availability, and drinking-and-driving countermeasures are among the most effective policy options.

## Patterns of Alcohol Use

Experts writing in *Disease Control Priorities in Developing Countries, 2<sup>nd</sup> edition*, reviewed the cost-effectiveness of interventions designed to prevent or mitigate high-risk drinking. High-risk drinking is defined in sex-specific terms. For females, it involves drinking 20 grams per day or more of pure alcohol on average. For males, it entails consuming 40 grams per day or more of pure alcohol on average. A typical bottle of table wine contains about 70 grams of pure alcohol.<sup>3</sup>

High-risk alcohol use is greater among males than females. Regionally, the biggest group of consumers is males in Europe and Central Asia, where about one-fifth of the population ages 15 to 59 are high-risk consumers.

Alcohol-specific risks to health are also determined and affected by social determinants, such as poverty. For example, more of the drinking among poorer groups follows high-risk patterns of consumption.

## Burden of Disease Related to Risky Alcohol Use

High-risk alcohol use is related to the following chronic diseases and injuries:

- Cancer (mouth and oropharyngeal, esophageal, liver, colorectal, female breast)
- Neuropsychiatric (alcohol-use disorders, depression, and epilepsy)
- Diabetes
- Cardiovascular (hypertensive diseases, coronary heart disease, and stroke)
- Gastrointestinal (cirrhosis of the liver)
- Conditions arising during the perinatal period (low birth weight)
- Unintentional injury (motor vehicle crashes, drowning, falls, and poisoning)
- Intentional injury (self-inflicted injuries, homicide)

The following table shows the proportion of Disability-Adjusted Life Years (DALYs)<sup>4</sup>, or lost years of healthy life, attributable to risky alcohol use by disease category and region. More than half of the global burden of disease related to alcohol (2.8 percent) is from high-risk drinking.

## DALYs ATTRIBUTABLE TO HIGH-RISK ALCOHOL USE BY DISEASE CATEGORY AND SELECTED REGIONS, 2001 (THOUSANDS OF DALYs)

Disease category	Europe & Central Asia	Latin America & the Caribbean	Sub-Saharan Africa	East Asia & the Pacific	South Asia	High-income countries	World
Total chronic disease	6,510	5,283	2,270	10,296	3,167	4,526	33,634
Total injury	3,149	1,500	1,693	1,532	514	1,092	9,207
High-risk alcohol use	9,659	6,783	4,463	11,828	3,681	5,618	42,841
Total DALYs from all diseases	116,502	104,287	344,754	346,225	408,655	149,161	1,535,871
Proportion of DALYs attributable to high-risk alcohol use	8.3%	6.5%	1.3%	3.4%	0.9%	3.8%	2.8%

Source: Rehm and others, 2004; World Health Organization, 2002.<sup>5</sup>

### Interventions to Reduce Excessive Drinking

Four types of interventions can reduce high-risk alcohol use <sup>6</sup>:

- Policy and legislative interventions, including alcohol sales tax, drunk driving laws, retail restrictions on alcohol sales, and advertising controls;
- Measures to better enforce these interventions, such as random breath testing of drivers;
- Mass media and other awareness campaigns; and
- Brief interventions with individual high-risk drinkers.

### Outcomes of Selected Interventions

Policy and legislative interventions have shown the biggest impact when supported by stepped-up enforcement efforts:

- Enforcement by random breath testing was estimated to reduce road traffic deaths by 18 percent and injuries by 15 percent with wide implementation.
- Drunk-driving laws have been estimated to reduce road traffic deaths by 7 percent if widely implemented across a region.
- Reduced hours of sale in retail outlets showed a more modest reduction of 1.5 to 3 percent in the incidence of high-risk drinking and a 1.5 to 4 percent reduction in road traffic deaths.

Comprehensive alcohol advertising bans, including from television, radio, and billboards, have led to only modest reductions in consumption (less than 5%). Mass media or school-awareness campaigns are generally not effective.

Brief interventions, such as physician advice provided in a primary health care setting, can increase the recovery rate of high-risk drinkers by an estimated 14-18 percent and have led to an estimated 13 to 34 percent reduction in consumption among high-risk drinkers.

### Taxes are the Best Buy for Curbing Alcohol Use

Although there are regional variations, in the three regions with a higher prevalence of high-risk alcohol use—Europe and Central Asia, Latin America and the Caribbean, and Sub-Saharan Africa—the most effective interventions were taxation and brief interventions of physician advice, each averting more than 500 DALYs per million population per year. However, brief physician advice remains costly in most regions (about US\$7 to US\$20 per treated case), leaving taxation as the most cost-effective population-level strategy in high-risk drinking areas.

At the current taxation rate, each DALY averted costs US\$104 (in Sub-Saharan Africa) to US\$225 (in Latin America and the Caribbean), equivalent to 4,435 to 9,633 DALYs averted per US\$1 million spent. With costs and benefits considered, the most efficient strategies for reducing high-risk alcohol use would be tax increases, followed by the introduction or escalation of comprehensive advertising bans on alcohol products, reduced access to retail outlets, and the provision of brief interventions such as physician advice in primary care (see Table).

Where high-risk drinking is less prevalent, such as South Asia, targeted strategies such as brief physician advice and random breath testing have the lowest cost per DALY averted (around US\$500), while taxation policies are the most expensive at more than US\$2,500 per DALY averted. In East Asia and the Pacific, the most cost-effective interventions are brief physician advice, a comprehensive ban on advertising, and reduced access to retail outlets (below US\$250 per DALY averted).

## Additional Benefits of Curbing Alcohol Use

Policies and programs that affect high-risk alcohol use not only save people from the ill effects of their behavior, but potentially affect the broader health and well-being of families and friends of drinkers. This issue is especially relevant for women: Although men make up most of the high-risk

drinkers worldwide, women bear much of the burden of harm from others' drinking, not only through domestic violence, but also through such practices as diversion of family resources from greater needs such as food and shelter.<sup>8</sup>

## Moving Forward

Despite important evidence collected thus far, more research on effective strategies is needed in developing countries. The most urgent focus should be on evaluation of the outcome of various policy and program interventions. Also important are process studies that assess how policymakers decide on policy changes, how they implement them, and what the reactions and outcomes are. Moreover, a stronger epidemiological database is needed in developing countries on levels and patterns of drinking and on the health and social consequences of drinking.

The burden of disease attributable to alcohol in the developing world is very substantial, and the social harm increases the costs. In a comprehensive package, known interventions can reduce the burden by as much as 25 percent, depending on the region of the world. Interventions need to be location-specific, however, to gain the most benefit and save the most lives. They should also be based on the profile of high-risk alcohol use as it varies by country and location.

### COST-EFFECTIVENESS OF INTERVENTIONS TO REDUCE HIGH-RISK ALCOHOL USE BY SELECTED REGION, 2001 (US\$/DALY AVERTED).

Intervention	Europe & Central Asia	Latin America & the Caribbean	Sub-Saharan Africa	East Asia & the Pacific	South Asia
Excise tax on alcoholic beverages	141	225	104	516	2,671
Reduced access to retail outlets	216	340	152	146	827
Comprehensive advertising ban	185	380	134	123	1,123
Random breath testing	1,856	1,542	973	984	531
Brief advice by a primary care physician	270	502	204	224	462
Combination: tax + brief advice	216	350	143	269	845
Combination: tax + advertising ban + random breath testing + brief advice	381	546	229	383	707

Source: Chisholm and others, 2004.

## References

Jürgen Rehm, Dan Chisholm, Robin Room, and Alan D. Lopez. 2006. "Alcohol." In *Disease Control Priorities in*

*Developing Countries*, 2<sup>nd</sup> ed. D. T. Jamison, J. G. Breman, A. R. Measham, G. Alleyne, M. Claeson, D. B. Evans, P. Jha, A. Mills, and P. Musgrove, 887-906. New York: Oxford University Press.

- 1 Babor, T., F. Caetano, S. Casswell, G. Edwards, and others. 2003. *Alcohol: No Ordinary Commodity—A Consumer's Guide to Public Policy*. Oxford, U.K.: Oxford University Press; and Rehm, J., R. Room, K. Graham, M. Monteiro, and others. 2003. "The Relationship of Average Volume of Alcohol Consumption and Patterns of Drinking to Burden of Disease: An Overview." *Addiction* 98 (10): 1209-28.
- 2 Rehm, J., and others. 2003. "The Relationship of Average Volume of Alcohol Consumption and Patterns of Drinking to Burden of Disease: An Overview"; Apte, M. V., J.S. Wilson, and M.A. Korsten. 1997. "Alcohol-Related Pancreatic Damage: Mechanisms and Treatment." *Alcohol Health and Research World* 21 (1): 13-20; and Emanuele, N., and M.A. Emanuele. 1997. "The Endocrine System: Alcohol Alters Critical Hormonal Balance." *Alcohol Health and Research World* 21 (1): 53-64.
- 3 Although high-risk drinking over a long period of time can increase the risk of alcohol-use disorders (AUDs), such as liver cirrhosis, all people with such disorders are not high-risk drinkers. Moreover, since measuring alcohol-use disorders is culturally dependent, and data is not strong across all regions, experts writing in DCP2 chose to focus on high-risk alcohol consumption rather than AUDs.
- 4 A DALY (disability-adjusted life year) is a composite measure that combines the number of years lived with a disability and the number of years lost to premature death.
- 5 Rehm, J., R. Room, M. Monteiro, G. Gmel, and others. 2004. "Alcohol." In *Comparative Quantification of Health Risks: Global and Regional Burden of Disease Due to Selected Major Risk Factors*, ed. M. Ezzati, A.D. Lopez, A. Rodgers, and C.J.L. Murray, 959-1108. Geneva: World Health Organization; and Room, R., D. Jernigan, B. Carlini-Marlatt, O. Gureje, and others. 2002. *Alcohol in Developing Societies: A Public Health Approach*. Helsinki: Finnish Foundation for Alcohol Studies.
- 6 Babor, T., F. Caetano, S. Casswell, G. Edwards, and others. 2003. *Alcohol: No Ordinary Commodity—A Consumer's Guide to Public Policy*. Oxford, U.K.: Oxford University Press; and Ludbrook, A., C. Godfrey, L. Wyness, S. Parrot, and others. 2002. "Effective and Cost-Effective Measures to Reduce Alcohol Misuse in Scotland: A Literature Review." Aberdeen, U.K.: Health Economics Research Unit.
- 7 The high cost of taxes in regions with lower rates of high-risk alcohol use is related both to the distribution of the fixed costs of administering and enforcing alcohol tax legislation across a smaller target population of drinkers and to underlying drinking patterns. More than 85 percent of all alcohol consumption falls into a single preferred drink category, spirits (not wine or beer), which diminishes the scope for reducing the consumption of less preferred but more elastic categories of alcoholic beverages.
- 8 Rehm, J., R. Room, M. Monteiro, G. Gmel, and others. 2004. "Alcohol." In *Comparative Quantification of Health Risks: Global and Regional Burden of Disease Due to Selected Major Risk Factors*, ed. M. Ezzati, A.D. Lopez, A. Rodgers, and C.J.L. Murray, 959-1108. Geneva: World Health Organization; and Room, R., D. Jernigan, B. Carlini-Marlatt, O. Gureje, and others. 2002. *Alcohol in Developing Societies: A Public Health Approach*. Helsinki: Finnish Foundation for Alcohol Studies.