ASSESSING COST-EFFECTIVE INTERVENTIONS TO REDUCE THE BURDEN OF HARM ASSOCIATED WITH ALCOHOL MISUSE: ACE ALCOHOL

Christopher Doran
National Drug and Alcohol Research Centre, University of New South Wales
Theo Vos, Linda Cobiac, Wayne Hall, Isaac Asamoah, Angela Wallace Shamesh Naidoo, Joshua Byrnes, Greg Fowler, Kathryn Arnett
School of Population Health, University of Queensland

SUMMARY

Introduction: Alcohol is an important risk factor for disease and injury. A number of strategies are available for both treating and preventing alcohol-related harm. The purpose of the presentation will be to discuss the results of the recently completed cost-effectiveness analysis of interventions to reduce the burden of harm associated with alcohol misuse in Australia (ACE-Alcohol). Methods: Cost-effectiveness analysis is based on one-off intervention in the first year, with all costs and health outcomes evaluated over the lifetime of the target group in the Australian population in the baseline year of 2003. The health outcomes are evaluated in disability-adjusted life years (DALYs), using a multi-state, multiple cohort life-table approach to determine changes in mortality and morbidity of alcohol-related diseases and injuries. Cost offsets are evaluated from the number of incident or prevalent cases of disease or injury averted. Results: The results suggest that there is large variability in the health gains that can be achieved with different methods of intervention. With the exception of increasing the minimum legal drinking age to age 21, which benefits only those aged between 18 and 20 years, the interventions that target hazardous and harmful drinkers (brief intervention ± telemarketing and support) or alcohol dependents (residential treatment ± naltrexone) avert fewer DALYs than the population-wide interventions. When combined as a package, the alcohol interventions could avert 26,000 DALYs at a total intervention cost of $210 million. The costs of intervention would be partly offset by an estimated reduction of $130 million in the costs of treating alcohol-related diseases and injuries. Conclusions: Intervention to encourage more responsible consumption of alcohol is recommended. Due to potential reductions in the costs of treating alcohol-related diseases and injuries, there is substantial potential for health gain at a relatively low cost, from a health sector perspective.

Keywords: alcohol misuse, cost-effective, ACE, intervention.
1. Introduction

The National Drug Strategy household survey from 1993 to 2004 shows that four in five Australians drank alcohol in the past year and one in ten did so daily. Although the evidence suggests that most Australians consume alcohol with an average pattern of drinking at low risk levels, substantial numbers of both low risk drinkers and higher risk drinkers also drink above the limits for acute harm. Although the relationship between alcohol consumption and health is complex, the evidence is irrefutable, the misuse of alcohol represents one of the leading causes of preventable death, illness and injury in Australia. Alcohol is the single most important risk factor for both fatal and non-fatal injuries and in 2004-05, the total tangible cost attributed to alcohol consumption (which includes lost productivity, health care costs, road accident-related costs and crime-related costs) was estimated at $10.83 billion. A number of strategies are available to governments to minimise the harm associated with alcohol misuse. Considerable research has been conducted into understanding whether various interventions for problem drinkers work. While evidence on effectiveness is important, policy makers require additional information on the efficiency of interventions, i.e., an assessment of both costs and consequences. As an aid to priority setting, several studies have examined efficiency using cost-effectiveness analysis.

The purpose of this study is to provide a comprehensive analysis of the cost-effectiveness of interventions to reduce the burden of harm associated with alcohol misuse in Australia. The project has been labelled ACE-Alcohol as it aims to Assess the Cost-Effectiveness (ACE) of interventions to reduce Alcohol related harm. The research contextualises results from a recent World Health Organisation study to the Australian setting using, where possible, Australian data on costs, effectiveness of interventions and health outcomes.

2. Methodology

ACE-Alcohol builds on a broader body of priority setting research that explicitly focuses on cost-effectiveness analysis. The ACE-Alcohol model is built in Microsoft Office Excel 2003 and uses the add-in tool. Risk for uncertainty analysis. Intervention cost-effectiveness was evaluated over the lifetime of the Australian population eligible for each intervention in a baseline year of 2003. The modelling strategy adopts two approaches according to whether diseases or injuries related to alcohol misuse are evaluated.

A technical advisory panel comprised of alcohol experts assisted in the identification of interventions modelled in ACE-Alcohol. The interventions evaluated include: volumetric taxation; advertising controls; mass media campaigns; brief intervention by primary care practitioners; provision of residential treatment to individuals with alcohol dependence; licensing controls; increasing the minimum legal
drinking age to 21 years; and, random breath testing (RBT).

In the cost-effectiveness analysis, all intervention costs, cost offsets and DALYs were adjusted to the baseline year of 2003 and discounted at a rate of 3% per annum. An incremental cost-effectiveness ratio (ICER) was evaluated for each intervention and compared with a cost-effectiveness threshold of $50,000 per DALY averted. Two comparators were used in ACE-Alcohol: current practice and the partial null. Current practice was considered to comprise predominantly on RBT given its widespread use throughout Australia. Using the partial null, interventions were also assessed using marginal analysis. This enables increasing amounts of investment in the chosen intervention to be compared with the additional benefits conferred. Such an analysis lends itself to identifying an optimal expansion pathway, i.e., the ordering of interventions in the most efficient package.

3. Results and Discussion

The findings of ACE-Alcohol suggest the health gains that can be achieved, measured by DALYs, range from 150 (95% uncertainty interval (UI): 79 – 260) for increasing the minimum legal drinking age to 11,000 (95%UI: 6,000 – 16,000) for taxation. With the exception of increasing the minimum legal drinking age to age 21, which benefits only those aged between 18 and 20 years, the interventions that target hazardous and harmful drinkers (brief intervention with/without support) or alcohol dependents (residential treatment with / without naltrexone) avert fewer DALYs than the population-wide interventions. There is also substantial variability in the intervention costs. These range from $0.58 million (95%UI: $0.47 million – $0.69 million) for taxation increases to $71 million (95%UI: $57 million – $85 million) for random breath testing.

Two interventions stand out as being most effective and cost-effective: changes to the way taxes are imposed and advertising bans. Both of these interventions are dominant (i.e., less expensive and more effective than current practice) and have a high probability of being cost-effective. Increasing the minimum legal drinking age to 21 years is also dominant, although the potential health gains are small given the target range is persons aged 18 – 20 years. All other interventions have a high or very high probability of being under the $50,000 per DALY cost-effectiveness threshold. The exception is residential treatment for alcohol dependence (with or without naltrexone) which is not cost-effective.

In terms of the most cost-effective package of interventions, the expansion path includes (in order of incremental cost-effectiveness): volumetric taxation, advertising bans, increase in minimum legal drinking age to 21 years, brief intervention, licensing controls, drink driving mass media campaign, random breath testing and then residential treatment + naltrexone. When combined as a package, the alcohol interventions could
avert 26,000 DALYs (95%UI: 19,000 – 34,000 DALYs) at a total intervention cost of $210 million (95%UI: $190 million – $230 million). The costs of intervention would be partly offset by an estimated reduction of $130 million (95%UI: $64 million – $220 million) in the costs of treating alcohol-related diseases and injuries.

The key findings from ACE-Alcohol suggest that all the prevention interventions modelled are more cost-effective in reducing alcohol-related harm than those that treat alcohol dependence. When taken as a package of interventions, all interventions modelled with the exception of residential treatment would result in a cost-effective investment portfolio. Compared to current practice, the optimal package could lead to a substantial improvement in population health at a cost of under $50,000 per DALY. Changes to volumetric taxation and banning of alcohol advertising should be a high priority for investment due to the high probability of cost-savings. Increasing the minimum legal drinking age to 21 years, brief interventions in general practice, increased licensing controls, drink driving campaigns and random breath testing are also likely to be cost-effective when judged against a $50,000 per DALY threshold. Only residential treatment for alcohol dependence (with or without naltrexone) is not cost-effective by this standard.

The results suggest that although random breath testing is cost-effective and is already being implemented in Australia, the same amount of $71 million that is currently spent on random breath testing would, if invested in more cost-effective interventions, achieve over ten times the amount of health gain.

4. Conclusion

In spite of the shortcomings of ACE-Alcohol, the results provide policy makers with clear evidence on the cost-effectiveness of interventions to curb alcohol misuse. By re-allocating existing resources committed to reducing alcohol-related harm, policy makers could achieve over ten times the health gain for the same level of investment. Given the scarcity of resources and the ever-increasing fiscal restraint imposed by governments, it is hoped that these results may be adopted by policy makers in order to reduce the current burden of harm that alcohol imposes on our society.

REFERENCES


