

# National Cancer Prevention Policy

2007–09



## Preventable risk factors

---

Alcohol

*Alcohol is a known risk factor for cancer. There is no evidence to suggest that alcohol may be protective for any form of cancer.*

## Introduction

Alcoholic beverages have both nutritive and psychoactive properties. The history of alcohol use by humans can be traced back over thousands of years, where it has played an important role in the culture of a diverse range of communities throughout the world. Heavy drinking has been associated with Australian culture since the early days of European settlement (Room 1988).

The National Health and Medical Research Council has established *Alcohol guidelines for Australians* based on a standard drink (i.e. 10 grams of ethanol). In order to avoid alcohol-related harms in the short term, the guidelines recommend no more than six standard drinks for males and no more than four standard drinks for females during any single drinking occasion (NHMRC 2001). For individuals drinking more than this, the risk of injury or death due to short-term harms (e.g. road injury, violent assault, drowning, falls, alcoholic poisoning) increases significantly. Consumption in excess of these levels is categorised as either 'risky' or 'high-risk' depending on the amount drunk.

In relation to long-term harms that can arise from ongoing excessive levels of consumption (e.g. alcoholic liver cirrhosis, a range of cancers, heart disease and stroke, dependence and psychosis) the National Health and Medical Research Council recommends that males drink no more than 28 standard drinks over a week and females no more than 14 standard drinks (NHMRC 2001). Drinkers who consume more than this are at risk of experiencing 'chronic' alcohol-related disease and disability. Since chronic alcohol-related illness tends to develop over a lifetime of drinking, they occur most frequently among people over 45 years of age (NHMRC 2001).

The National Health and Medical Research Council alcohol guidelines reflect the fact that women are more susceptible to adverse effects of alcohol because they typically have a smaller body size and metabolise alcohol differently (NHMRC 2001).

Information on the health burden attributable to alcohol in Australia largely comes from an examination of research into its health effects and estimation of the proportion of diseases (including cancer) attributable to alcohol e.g. (English et al. 1995; Ridolfo & Stevenson 2001; Chikritzhs et al. 2003).

## The link between alcohol and cancer

Alcohol is a known risk factor for cancer. In 1988 the International Agency for Research on Cancer classed alcohol as a Group 1 carcinogen (the highest IARC classification in humans) for cancers of the mouth, pharynx, larynx, oesophagus and liver (IARC 1988).

Nearly 10 years later, the review by the World Cancer Research Fund and the American Institute of Cancer Research in 1997 concluded that there was *convincing evidence*

(the highest level of evidence in this report) that alcohol increases the risk of mouth, pharyngeal, laryngeal and oesophageal cancers (WCRF & AICR 1997). This review also found *convincing evidence* that alcohol increases the risk of primary liver cancer, probably by way of alcoholic cirrhosis. It found *probable evidence* that alcohol increases the risk of colorectal cancer and breast cancer, even at very low levels of consumption. The report states that risk is a function of the amount of alcohol consumed (WCRF & AICR 1997; IARC 1988).

More recently, the evidence for a significant relationship between alcohol and female breast cancer has grown, with a number of reviews concluding that the risk of breast cancer increases with increasing alcohol consumption. An international collaborative meta-analysis including 53 epidemiological studies concluded that the relative risk of breast cancer increased by 7.1% (95%CI 5.5–8.7%) for each additional 10 g of alcohol consumed daily (Hamajima et al. 2002). An Australian meta-analysis concurred with the international review, finding a significant dose–response relationship for the development of breast cancer, even at low levels of consumption, and increasing risk with increasing age (Ridolfo & Stevenson 2001).

The most up to date and compelling review has just been released from IARC in 2007 and has confirmed that alcohol is a risk factor for the same cancers classified in 1988 and also for colorectal and breast cancer (IARC 2007).

The table below summarises the current state of evidence showing an association between alcohol and specific cancer sites. There is convincing evidence that alcohol increases the risk of cancer of the mouth, pharynx, larynx, oesophagus, colon, rectum, breast and liver (WCRF & AICR 1997; IARC 1988; English et al. 1995; Single et al. 1999; Bagnardi et al. 2001; Chapman 2003; Ridolfo & Stevenson 2001; IARC 2007).

The overall evidence suggests that alcohol is not a risk factor for cancers of the prostate, pancreas and bladder (WCRF & AICR 1997; IARC 1988; English et al. 1995; Single et al. 1999; Bagnardi et al. 2001; Chapman 2003; Ridolfo & Stevenson 2001; IARC 2007). For stomach, and lung cancer, the evidence is inconsistent or insufficient to conclude causality. For lung cancer, the studies generally do not adequately control for confounding from smoking.

Excessive alcohol consumption carries a strong social stigma in many populations and most surveys which ask people about the amount of alcohol they consume may substantially underestimate true levels of consumption (2000). This could result in an underestimation of the actual carcinogenic effect of the habit and therefore alcohol is possibly a stronger risk factor than perceived (Stewart & Kleihaus 2003).

Smoking and alcohol together have a synergistic effect on risk of cancers of the larynx, oropharynx and oesophagus (Jensen et al. 1996; Doll et al. 1999). This means the combined effects of smoking and alcohol greatly exceed the risk from either one of these factors alone. Alcohol and tobacco interact in a multiplicative way on the risk of cancers of the upper aero-digestive tract. For example, compared with the risk for non-smoking non-drinkers, the approximate relative risks for developing mouth and throat cancer are seven times greater for those who use tobacco, six times greater for those who use alcohol, and 38 times greater for those who use both tobacco and alcohol (Blot 1992).

This synergistic effect of alcohol and smoking has been estimated to be attributable for over 75% of cancers of the upper aero-digestive tract in developed countries (Blot 1992). Alcohol has an independent effect on the risk of oral, pharyngeal, laryngeal and oesophageal cancers, but it is its synergistic effect with smoking that is most significant.

There are also indications that alcohol and hepatitis B virus infection may exert a joint effect on cancer of the liver (Brechot, Nalpas & Feitelson 1996; Schiff 1997). Also of concern is the difference noted in liver cancer between Aboriginal Australians and the non-Aboriginal population; in a West Australian study the incidence and rate of deaths from liver cancer were 3.5 and 3.6 times higher for Aboriginal males than for non-Aboriginal males (Thompson & Irvine 2001). This highlights an important area for further investigation and action.

In conclusion, the association between alcohol consumption and an increased risk of some cancers has been confirmed. There is a dose–response relationship in most studies after controlling for potential confounders such as tobacco smoking, and the relations appear to hold for women as well as men. The relationship is not a straight line, but shows upward curvature at higher drinking levels (Edwards et al. 1995).

**Table 1.12 Evidence of a link between alcohol and cancer**

Type of cancer	Association between alcohol and cancer	Level of evidence for causality
Breast	Increases risk	Convincing
Larynx	Increases risk	Convincing
Liver	Increases risk	Convincing
Mouth	Increases risk	Convincing
Oesophagus	Increases risk	Convincing
Pharynx	Increases risk	Convincing
Colon/rectum	Increases risk	Convincing
Lung	Potential risk	Insufficient
Stomach	Potential risk	Insufficient
Bladder	Inconsistent and insufficient evidence of a relationship	n/a
Pancreas	Inconsistent and insufficient evidence of a relationship	n/a
Prostate	Inconsistent and insufficient evidence of a relationship	n/a

Sources: Rehm et al. 2004; IARC 2007

## How the amount of disease caused by alcohol is estimated

The amount of morbidity and mortality which is attributable to drinking alcohol in a population has typically been estimated using what may be referred to as the 'population-attributable fraction method'. Since it is not possible to know about the drinking habits of all individuals who suffer from disease or injury, it is necessary to apply summary measures, based (in part) on collections of research studies, of the risk of developing or dying from a specific condition at various levels of consumption (i.e. relative risk or odds ratio) (Chikritzhs et al. 2002).

There are two methodological frameworks for quantifying morbidity and mortality attributable to alcohol:

- The first method is based on the relative risk of death or disease among low-risk, risky and high-risk drinkers when compared to non-drinkers.
- The second method is based on a comparison between risky, high-risk drinkers and low-risk drinkers and thus, unlike the first method, is not concerned with abstainers.

In order to estimate the population-attributable fraction due to alcohol for any specific condition, in addition to condition-specific relative risk estimates, it is also necessary to have accurate information on the prevalence of alcohol consumption in the community of interest. Both the framework for estimating relative risks and estimates of drinking prevalence can dramatically influence the population-attributable fraction. The range of variability can be demonstrated by comparing population-attributable fraction estimates made by English and colleagues (English et al. 1995) versus those made by Ridolfo and Stevenson (2001) in a more recent publication (see Table 1.13 below).

Ridolfo and Stevenson used non-drinkers as the reference group to estimate the contribution of low-risk, risky and high-risk alcohol consumption and applied drinking prevalence estimates from a 1998 national survey (Ridolfo & Stevenson 2001). English and colleagues used low-risk drinkers as the reference group and national consumption estimates from 1989/90: they were thereby confined to estimating morbidity and mortality due to risky and high-risk drinking only (English et al. 1995). As a direct result, population-attributable fractions due to alcohol for cancers—most of which include substantial risk at low levels of drinking when compared to abstinence—were relatively small compared to those estimated by Ridolfo and Stevenson. The rationale given for the English et al. approach was that it was consistent with the public health policy of minimising harm rather than achieving abstinence. Using low-risk drinkers as the reference group also avoids the need to incorporate protective effects of low level drinking on cardiovascular disease in mortality and morbidity estimates (Chikritzhs et al. 2002). It also avoids the difficulty of using as a reference group current abstainers, who may include both lifelong abstainers and 'sick quitters': those who stopped drinking when they developed health problems.

In order to address the uncertainty and variability in relation to alcohol aetiologic fractions and subsequent mortality and morbidity estimates for Australia, a consortium of researchers attempted to establish a consensus position. They recommended that future estimates use abstainers as the reference group and that results be presented and disseminated in such a way that both the losses and savings in mortality and morbidity from each of the drinking levels could be distinguished—as opposed to a single estimate (Chikritzhs et al. 2002). This approach has subsequently been adopted by national costing studies and recent estimates of alcohol-attributable morbidity and mortality in Australia (e.g. Collins & Lapsley 2002; Chikritzhs et al. 2003) and is the most appropriate method for estimating the effect of alcohol-attributable cancers.

**Table 1.13 Cancer site and percentage attributable to alcohol**

Cancer site	English et al. (1995)		Ridolfo & Stevenson (2001)	
	Males %	Females %	Males %	Females %
Breast	–	3	–	12
Larynx	21	13	51	46
Liver	18	12	39	35
Oesophagus	14	6	46	40
Oropharynx	21	8	40	31

## The impact

The harm caused by alcohol, such as the development of cancer and other illnesses and injuries, has been estimated at 4.9% of the total disease burden in Australia (Mathers, Vos & Stevenson 1999). At low to moderate intakes, alcohol consumption appears to reduce the risks of certain conditions, including ischaemic heart disease, stroke and gallstones. Taking into account these benefits, as well as the harms, alcohol is estimated to be associated with 2.2% of the total disease burden in Australia (Mathers, Vos & Stevenson 1999). This demonstrates the importance of distinguishing between the effects of drinking that are *low-risk*, *risky* (where the risk of harm increases beyond any possible benefit) and *high-risk* (where there is substantial risk of serious harm) (NHMRC 2001).

**There is no evidence to suggest that alcohol may be protective for any form of cancer.** Ridolfo and Stevenson estimated that in 1998, 1157 cancer deaths and 3171 hospitalisations were attributable to any level of alcohol consumption (Ridolfo & Stevenson 2001). The number of cancer deaths attributed to alcohol was greater than the combined total of all deaths attributed to any type of illicit drug (Ridolfo & Stevenson 2001). Over the years between 1992 and 2001, cancer was the third most common cause of alcohol-attributable death, with only road crash injury and alcoholic liver cirrhosis accounting for greater numbers of premature deaths (Chikritzhs et al. 2003).

Over half a million hospital episodes (577,269) were estimated to have been caused by risky or high-risk drinking in the years between 1993 and 2001 (Chikritzhs et al. 2003).

Deaths caused by alcohol contribute substantially to potential years of life lost, which is a measure of the gap in years between age of death and the age before which death is considered premature. It has been estimated that about 17 years of life are prematurely lost for every death caused by risky and high-risk drinking in Australia. This is equivalent to over 52,030 years of life lost every year from premature alcohol-attributable death (Chikritzhs et al. 2003).

Undoubtedly, alcohol-attributable cancers represent a substantial proportion of the burden of disease and injury in Australia. The financial cost of disease, injury and crime caused by alcohol in this country has been estimated to be in excess of \$7.6 billion. The exact proportion attributable to cancer is not clear (Collins & Lapsley 2002).

## The challenge

### Adults

Alcohol is a significant cause of drug-related harm and is one of the highest preventable causes of death and hospitalisation in Australia (NEACA 2001). According to the 2004 National Drug Strategy Household Survey, some 9% of respondents aged 14 years or older drank alcohol daily, and 41% drank at least weekly (AIHW 2005). Thirty-three per cent of people drank less often but had drunk in the last 12 months. About 7% were ex-drinkers and about one in 10 people sampled had never had a full serve of alcohol (AIHW 2005).

In 2004, about 21% of all those surveyed reportedly drank at risky or high-risk levels for short-term harm, compared to about 10% who were at risk of long-term harm. One in 10 Australians surveyed reported drinking at levels considered risky or high risk for both short- and long-term harm in the previous 12 months. Males (24%) were more likely to have consumed alcohol in a risky or high-risk fashion for short-term harm than females (17%) (AIHW 2005).

Substantial amounts of alcohol are consumed at levels above the National Health and Medical Research Council guidelines for short-term harm. In 2001, some 62% of all alcohol consumed by Australians aged 14 years and older was drunk during a single drinking session which exceeded low-risk levels for episodic drinking (e.g. binge drinking). For younger age groups (both males and females) this proportion was substantially higher and ranged between 78% and 85%. About 44% of all alcohol reported to have been drunk in 2001 was consumed by people who were at risk or high risk of the long-term effects of drinking (e.g. various cancers) (Chikritzhs et al. 2003).

### Teenagers

Experience with alcohol is common among secondary school students, with use increasing with age (White & Hayman 2006). By the age of 15 around 90% of students had tried alcohol, and by age 17, 70% of students had drunk alcohol in the month prior to the Australian School Students Alcohol and Drug (ASSAD) survey. The proportion of students drinking in the week prior to the survey increased with age, from around 16% of those aged 13 to about half of those aged 17 years. At age 13, about 2% of students reported having drunk beyond low-risk levels for short-term harms; by age 17 the proportion of students drinking at risky and high-risk levels for short-term harms increased to about 21% (White & Hayman 2006). Analyses of national survey data has also shown that the proportion of females aged between 14 and 17 years who drank at risky/high-risk levels for long-term harms increased from 1% in 1998 to 9% in 2001. Among males of the same age, there was a small decline from 4.3% to 2.7% over the same years (Chikritzhs, Pascal & Jones 2004).

### Aboriginal and Torres Strait Islander peoples

Aboriginal and Torres Strait Islander Australians are more likely to abstain from alcohol than the general population, nevertheless, alcohol-related problems are of particular concern for these peoples. The most reliable national survey of Aboriginal and Torres Strait Islander drinking levels to date (Chikritzhs & Brady 2006) has estimated that about 51% of Indigenous Australians drink at risky or high-risk levels compared to about 11% among the non-Indigenous population (AIHW 1995). Deaths from alcohol-attributable conditions are about two and a half times greater for Aboriginal and Torres Strait Islander peoples when compared to the general population (Chikritzhs & Brady 2006) and males tend to have higher levels of consumption than females (AIHW 1995). The consumption of cheap cask

wine is of particular concern for Aboriginal peoples living in rural and remote regions (Gray et al. 2000).

### Trends

In general, from 1998 to 2001, the estimated proportion of the population consuming alcohol at risky/high-risk levels for chronic harm remained relatively stable among males and females of all ages, with an increase among girls aged 14 to 17 years and a small decline among young males being the main exceptions (Chikritzhs et al. 2003).

Adult per capita pure alcohol (i.e. ethanol) consumption in Australia has remained relatively stable over the past decade and has most recently been estimated at about 9.0 litres, placing Australians in 22nd place in world rankings (WARC 2004). Beer consumption contributes to the bulk of all alcohol consumed in Australia, although there has been a substantial shift from regular to mid/low-strength beers since a tax saving for lower strength beers was introduced by the Australian Government. The market share of wine has increased dramatically since the 1960s but has remained relatively stable in recent years (World Drink Trends 2003).

## Effective interventions

Public health policies on reducing alcohol consumption have a strong evidence base, which derives from research and interventions not necessarily directly related to cancer control.

Work in various countries has demonstrated public health measures of proven effectiveness in the following areas:

- retail price influences on alcohol consumption and taxation of alcohol as a prevention strategy
- access to alcohol and the effects of availability on consumption and alcohol-related problems
- restricting advertising and marketing of alcohol
- public safety and drinking within particular contexts such as driving or attendance at sporting venues
- community supported intervention programs which focus on enforcing laws in relation to legal minimum purchase age and drinking to intoxication
- giving information about alcohol through mass media campaigns and labelling
- individually directed interventions (e.g. brief intervention by general practitioners and treatment of alcohol dependence by pharmacotherapies or psychosocial interventions).

Successful community-based interventions are typically those which are supported by the community itself, that are evidence-based and provided with adequate access to relevant expertise, infrastructure and human resources. A multi-component approach with a focus on reducing alcohol availability and increasing effective enforcement are fundamental to the success of community-based interventions (Loxley et al. 2004).

The National Alcohol Strategy 2006 to 2009 is a plan for action, designed to reflect the National Drug Strategic Framework and developed through collaboration between governments, non-government organisations, industry partners and the broader Australian community. The goal of the National Alcohol Strategy is to prevent and minimise alcohol-related harm to individuals, families and communities in the context of developing safer

and healthy drinking cultures in Australia. The National Alcohol Strategy has focused on four priority areas: intoxication, public safety and amenity, health impacts, and cultural place and availability (National Alcohol Strategy 2006).

## The policy context

It is interesting to note that at the current time, Australia has two sets of alcohol recommendations produced by the National Health and Medical Research Council.

The National Health and Medical Research Council considers the effects of alcohol on cancer in the *Australian alcohol guidelines: health risks and benefits* developed in 2001 (NHMRC 2001). In these guidelines the National Health and Medical Research Council notes, 'There is clear evidence to show that alcohol is associated with an increased risk of cancer overall and that it is a cause of cancer of the mouth, throat and oesophagus. In addition, the evidence suggests that it may also play a role in other specific cancers. In particular, further research is needed to clarify the possible role of alcohol in relation to breast cancer and bowel cancer' (p. 74). The National Health and Medical Research Council emphasises that, 'Unlike cardiovascular disease, there is no evidence that alcohol has any protective effect against cancer, at any level' (p. 74). Also, in relation to heart disease, 'The benefits of alcohol in preventing heart disease can be achieved with as little as half a standard drink per day ... Similar benefits can also be gained from strategies such as regular exercise, giving up smoking and a healthy diet' (pp. 68 & 69).

Moreover, recent research suggests that the protective effect of alcohol on cardiovascular disease may have been exaggerated and many studies which have demonstrated an apparent increase in cardiovascular disease among non-drinkers have applied faulty methods and are subject to substantial measurement error (Fillmore et al. 2006).

Thus, National Health and Medical Research Council Guideline 12 is also relevant:

- **People who choose not to drink alcohol should not be urged to drink to gain any potential health benefit and should be supported in their decision not to drink.**
- Guideline 1(a) states: To minimise risks and gain benefits in the longer term:
- Men should drink an average of no more than four standard drinks a day, and no more than 28 standard drinks per week
- Women should drink an average of no more than two standard drinks a day, and no more than 14 standard drinks per week.

An Australian standard drink contains 10 g of alcohol (e.g. 425 ml light beer, 285 ml regular beer, 100 ml wine, 60 ml fortified wine, or 30 ml spirits or liqueurs).

The National Health and Medical Research Council *Dietary guidelines for Australian adults* released in 2003 have set a lower recommended level of alcohol consumption based on the energy density of alcohol contributing to weight problems (NHMRC 2003). The dietary guidelines advise adults:

### **Limit your alcohol intake if you choose to drink.**

**Because of alcohol's effect on both short- and long-term health, and because of the additional kilojoules it provides in the diets of a society with increasing rates of obesity, adults—if they drink at all—should limit their average daily intake of alcohol to no more than two standard drinks a day for men and one standard drink a day for women.**

The Cancer Council supports these lower recommendations for alcohol (as specified in the National Health and Medical Research Council *Dietary guidelines for Australian adults*) as drinking at these levels is both more appropriate for preventing obesity and decreasing the risk of all-cause mortality and cancer. The Cancer Council recommends that, to reduce the risk of cancer, alcohol consumption should be limited or avoided. For people who do drink alcohol, The Cancer Council recommends the following:

- For men—an average of no more than two standard drinks a day.
- For women—an average of no more than one standard drink a day.

One of the primary aims of the National Alcohol Strategy is to improve health outcomes among all individuals and communities affected by alcohol. To achieve this objective in relation to cancer, The Cancer Council Australia and member cancer councils support the priority areas and actions outlined in the National Alcohol Strategy to reduce alcohol-related harms and health consequences.

### The role of general practice

The role of general practice in chronic disease prevention is potentially important, given that 86% of the population have at least one visit to their general practitioner (GP) every year (RACGP 2005).

However, a review of primary care interventions in relation to alcohol gives mixed results. While there seemed to be evidence that GP intervention was effective (NHMRC 1996), this has become less clear in recent years. There still appears to be strong recognition of the potential for the GP to act as an intervention point (RACGP 2005; Loxley, Toumbourou & Stockwell 2005) and research is now tending to focusing on how to engage and train general practice to be more effective in providing alcohol advice (Funk et al. 2005; McCambridge et al. 2004). Certainly as a single point of intervention, evidence for efficacy is weakest. However as part of a multi-layered approach that includes policy, community and family interventions there is more potential for success in reducing at-risk levels of alcohol consumption (Holmwood 2002; Loxley, Toumbourou & Stockwell 2005).

The Royal Australian College of General Practitioners has produced three significant publications relating to the role of general practice and alcohol. The first, *Guidelines for preventive activities in general practice* (the 'red book') (RACGP 2005), focuses on the role of the GP within the consultation, recommending that all patients should be asked about the quantity and frequency of alcohol intake and number of alcohol-free days each week from 14 years of age and those with at-risk patterns of alcohol consumption should be offered brief advice to reduce their intake. Frequency of assessment varies depending on level of risk identified. All patients should be asked about frequency and intake every three years; those with an increased risk (such as people with high blood pressure, liver disease, pregnancy, etc.) should be asked and given brief advice every 12 months. Patients who report exceeding the recommended frequency and intake should be followed up monthly with a brief counselling intervention tailored to reduce alcohol consumption. Drug therapy is recommended for those patients who are physically or psychologically dependant or those with psychological, physical or social consequences of excessive alcohol consumption, and these patients should be followed up at each visit.

Their more specific publication: *SNAP: A population health guide to behavioural risk factors in general practice* (RACGP 2004) provides more extensive information and recommendations regarding alcohol (among other common lifestyle risk factors), focusing on a patient education and behaviour modification approach based upon the 5As (ask, assess, advise, assist, arrange). Lastly, their publication *Putting prevention into practice: guidelines for the implementation of prevention in the general practice setting* (the 'green

book') (RACGP 2006) assists in developing systems in general practice to support prevention activities at the practice and consultation levels.

In further support of the GP's role in promoting a healthy lifestyle and reducing harmful levels of alcohol, the Commonwealth Department of Health and Ageing, in the 2003/04 budget, funded the Lifestyle Prescriptions program (commonly known as Lifescripts). Lifescripts is being implemented through local divisions of general practice, promoting risk factor management in general practice and primary health care services. Lifestyle prescriptions are tools for GPs to use when providing lifestyle advice to patients. Advice may be about quitting smoking, increasing physical activity, eating a healthier diet, maintaining healthy weight, reducing alcohol consumption, or a combination of these.

### Existing recommendations

There are a number of initiatives and evidence-based materials that point the way in policy directions on alcohol control in Australia. Some of the documents and programs that The Cancer Council supports and aims to complement are highlighted below.

- The *Dietary guidelines for Australian adults*, released in 2003 (see discussion above) (NHMRC 2003).
- The *National Alcohol Strategy 2006–2009: towards safer drinking cultures* (National Alcohol Strategy 2006)
- The *Australian alcohol guidelines: health risks and benefits* (NHMRC 2001). The Cancer Council has developed a lower set of recommendations for safe drinking levels than what is recommended in these guidelines and supports a revision of these guidelines to better reflect the growing knowledge of the relationship between alcohol and cancer.

## Aims

The Cancer Council's aims are to:

- increase awareness of the link between alcohol consumption and cancer risk among health authorities, health professionals and the community
- encourage efforts to reduce alcohol consumption.

What needs to be achieved	How The Cancer Council Australia and its members (the state and territory cancer councils) will do this
Increased awareness of the link between alcohol and cancer among the general public and key health professionals	Monitor and clarify best evidence on the relationship between alcohol and cancer causation Ensure alcohol information in key messages is promoted to the public and relevant health professionals in publications, presentations, programs, media statements and where opportunities arise
Effective coordinated policy development and implementation	Develop and maintain evidence-based policy positions about the relationship between alcohol and cancer Ensure effective and coordinated policy development and implementation Identify, analyse and advocate for evidence-based policy initiatives to reduce alcohol consumption
Promote healthy policies in relation to alcohol consumption	Act as a role model in the safe consumption of alcohol

An increased capacity to monitor epidemiological trends	Support and conduct high quality epidemiological research further clarifying the relationship between alcohol and cancer
An increased capacity to monitor behavioural trends	Support and conduct high-quality behavioural research to determine if increased knowledge about the link between alcohol and cancer will affect behaviour, and what sorts of messages should be communicated in any social marketing campaigns about responsible use of alcohol  Conduct research to identify barriers and enabling factors for implementation of these recommendations in general practice and other health settings

## References

### Alcohol

Australian Institute of Health and Welfare (AIHW) 2005. 2004 *National Drug Strategy Household Survey: detailed findings*. AIHW cat. no. PHE 66; Drug Statistics Series no. 16. Canberra: AIHW.

Australian Institute of Health and Welfare (AIHW) 1995. *National Drug Strategy Household Survey: urban Aboriginal and Torres Strait Islander Supplement 1994*. Canberra: AIHW.

Bagnardi V, Blangiardo M, La Vecchia VC & Corrao G 2001. A meta-analysis of alcohol drinking and cancer risk. *Br J Cancer* 85(11): 1700–5.

Blot WJ 1992. Alcohol and cancer. *Cancer Res* 52(7 Suppl): S2119-23.

Brechot C, Nalpas B & Feitelson MA 1996. Interactions between alcohol and hepatitis viruses in the liver. *Clin Lab Med* 16: 273–87.

Chapman K 2003. Alcohol and cancer. Unpublished document prepared on behalf of The Cancer Council NSW.

Chikritzhs T & Brady M 2006. Fact or fiction? A critique of the National Aboriginal and Torres Strait Islander Social Survey 2002. *Drug Alcohol Rev* 25(3): 277–87.

Chikritzhs T, Catalano P, Stockwell T, Donath S, Ngo H, Young D & Matthews S 2003. *Australian alcohol indicators, 1990–2001: patterns of alcohol use and related harms for Australian states and territories*. Perth: National Drug Research Institute.

Chikritzhs T, Pascal R & Jones P 2004. Under-age drinking and related harms in Australia. *National Alcohol Indicators Bulletin* no. 7. Perth, National Drug Research Institute, Curtin University of Technology.

Chikritzhs T, Stockwell T, Jonas H, Stevenson C, Cooper-Stanbury M, Donath S, Single E & Catalano P 2002. Towards a standardised methodology for estimating alcohol-caused death, injury and illness in Australia. *Aust N Z J Public Health* 26(5): 443–50.

Collins D & Lapsley H 2002. *Counting the cost: estimates of the social costs of drug abuse in Australia in 1998–9*. National Drug Strategy Monograph Series no. 49. Canberra: Commonwealth Department of Health and Aged Care.

Doll R, Forman D, La Vecchia C & Wouterson R 1999. Alcoholic beverages and cancers of the digestive tract and larynx. In *Health issues related to alcohol consumption*, ed. I Macdonald. London: Blackwell Science.

Edwards G, Anderson P, Babor T, Casswell S, Ferrence R, Giesbrecht N, Godfrey C, Holder H, Lemmens P, Makela K, Modanik L, Norstrom T, Osterberg E, Romelsko A, Room R, Simpura J & Skog O 1995. *The quantification of drug-caused morbidity and mortality in Australia*. New York: Oxford University Press.

English DR, Holman CDJ, Milne E, Hulse GK, Codde JP, Bower CI, Corti B, de Klerk N, Knuiiman MW, Kurinczuk JJ, Lewin GF & Ryan GA 1995. *The quantification of drug-caused morbidity and mortality in Australia 1995 edition*. Canberra: Commonwealth Department of Human Services and Health.

Fillmore K, Stockwell T, Kerr W, Chikritzhs T & Bostrom A 2006. Moderate alcohol use and reduced mortality risk: systematic error in prospective studies. *Addiction Res Theory* 14(2): 101–32.

Funk M, Wutzke S, Kaner E, Anderson P, Pas L, McCormack R, Gual A, Barfod S, Saunders J, World Health Organisation Brief Study Group 2005. A multicountry controlled trial of strategies to promote dissemination and implementation of brief alcohol intervention in primary health care: findings of a World Health Organization collaborative study. *J Stud Alcohol* 66(3): 379–88.

Gray D, Siggers S, Sputore B & Bourbon D 2000. What works? A review of evaluated alcohol misuse interventions among Aboriginal Australians. *Addiction* 95(1): 11–22.

Hamajima N, Hirose K, Tajima K, et al. 2002. Alcohol, tobacco and breast cancer—collaborative reanalysis of individual data from 53 epidemiological studies, including 58,515 women with breast cancer and 95,067 women without the disease. *Br J Cancer* 87(11): 1234–45.

Holmwood C 2002. Alcohol-related problems in Australia: is there a role for general practice? *MJA* 177: 102–3.

International Agency for Research on Cancer (IARC) 2007. *Carcinogenicity of alcoholic beverages*, vol. 96 of IARC monographs. Lyon: IARC.

International Agency for Research on Cancer (IARC) 1988. *Alcohol drinking*. Lyon: IARC.

Jensen CM, Paine SL, McMichael AJ & Ewertz M 1996. Alcohol. In *Cancer epidemiology and prevention*. Second edition, eds D Schotterfeld & T Carroll. New York: Oxford University Press.

Loxley W, Toumbourou J & Stockwell T 2005. A new integrated vision to how to prevent harmful drug use. *MJA* 182(2): 54–5.

Loxley W, Toumbourou J, Stockwell T, Haines B, Scott K, Godfrey C, Waters E, Patton G, Fordham RJ, Gray D, Marshall J, Ryder D, Siggers S, Williams J, Sanci L (eds) 2004. *The prevention of substance use, risk and harm in Australia: a review of the evidence*. Canberra: National Drug Research Institute and Centre for Adolescent Health.

Mathers C, Vos T & Stevenson C 1999. *The burden of disease and injury in Australia*. Australian Institute of Health and Welfare.

McCambridge J, Platts S, Whooley D & Strang J 2004. Encouraging GP alcohol intervention: Pilot study of change-orientated reflective listening. *Alcohol & Alcoholism* 39(2): 146–9.

National Alcohol Strategy 2006. *The National Alcohol Strategy 2006–2009: towards safer drinking cultures*. Canberra: Commonwealth Department of Health and Ageing.

National Expert Advisory Committee on Alcohol (NEACA) 2001. *National alcohol strategy: a plan for action 2001 to 2003–04*. Canberra: Commonwealth of Australia.

National Health and Medical Research Council (NHMRC) 2003. *Dietary guidelines for Australian adults*. Canberra: NHMRC.

— — — 2001. *Australian alcohol guidelines: health risks and benefits*. Canberra: NHMRC.

— — — 1996. *Guidelines for preventive interventions in primary health care: cardiovascular disease and cancer*. Canberra: NHMRC.

Rehm J, Room R, Monteiro M, Gmel G, Graham K, Rehn N, Sempos C T, Frick U, Jernigan D 2004. Alcohol use. In *Comparative quantification of health risks. Global and regional burden of disease attributable to selected major risk factors*. Volume 1, eds M Ezzati, AD Lopez, A Rodgers, CJL Murray. Geneva: World Health Organization.

Ridolfo B & Stevenson C 2001. *The quantification of drug-caused morbidity and mortality in Australia 1998*. AIHW cat. no. PHE 29. Canberra: Australian Institute of Health and Welfare.

- Room R 1988. The dialectic of drinking in Australian life: from the rum corps to the wine column. *Aust Drug Alcohol Rev* 7(4): 413–37.
- Royal Australian College of General Practitioners (RACGP) 2006. *Putting prevention into practice: guidelines for the implementation of prevention in the general practice setting*. Second edition. South Melbourne: RACGP.
- — — 2005. *Guidelines for preventive activities in general practice* M Harris, L Bailey, C Bridges-Webb, J Furler, B Joyner, J Litt, J Smith & Y Zurynski (eds.). Sixth edition. South Melbourne: RACGP.
- — — 2004. *SNAP: A population health guide to behavioural risk factors in general practice*. South Melbourne, Victoria: RACGP.
- Schiff ER 1997. Hepatitis C and alcohol. *Hepatology* 26(3) (1 Suppl): S39–42.
- Single E, Ashley MJ, Bondy S, Rankin J & Rehm J 1999. *Evidence regarding the level of alcohol consumption considered to be low-risk for men and women*. Canberra: Commonwealth Department of Health and Aged Care.
- Stewart B & Kleihaus P (eds) 2003. *World cancer report*. Lyon: International Agency for Research in Cancer.
- Stockwell T & Chikritzhs T (eds) 2000. *International guide for monitoring alcohol consumption and alcohol-related problems*. Geneva: WHO.
- Thompson N & Irvine JA 2001. *Review of cancer among Aboriginal people in Western Australia 2000*. Perth: Cancer Foundation of Western Australia.
- White V & Hayman J 2006. *Australian secondary school students' use of alcohol in 2005*. Report prepared for Drug Strategy Branch, Australian Government Department of Health and Ageing. Monograph series no. 58. Canberra: Australian Government Department of Health and Ageing.
- White V, Hayman J, Tempany M & Szabo E 2004. *Victorian secondary school students use of licit and illicit substances in 2002: results from the 2002 Australian Secondary School Students' Alcohol and Drug Survey*. Melbourne: Victorian Government Department of Human Services.
- World Advertising Research Centre (WARC) 2004. *World drink trends*. London: WARC.
- World Cancer Research Fund (WCRF) & American Institute for Cancer Research (AICR) 1997. Summary: *Food nutrition and the prevention of cancer: a global perspective*. Washington, DC: AICR.
- World Drink Trends 2003. *International beverage alcohol consumption and production trends*. Henley-on-Thames: NTC Publications.

