



Position statement on Alcohol and Cancer Risk

Alcohol and Cancer Risk

Contents:

- 1 Key messages and recommendations
- 2 Introduction
- 3 Evidence linking alcohol and cancer
 - 3.1 Pattern of alcohol consumption and the risk of cancer
 - 3.2 Potential mechanisms
- 4 Burden of disease attributable to alcohol consumption in New Zealand
 - 4.1 Alcohol and heart disease
 - 4.2 Alcohol and body weight
 - 4.3 Combined effects of alcohol consumption and smoking
- 5 Alcohol consumption in New Zealand
 - 5.1 Gender
 - 5.2 Age
 - 5.3 Ethnicity
 - 5.4 Alcohol and Tobacco use
- 6 Strategies to reduce alcohol consumption and alcohol-related harm
- 7 Cancer Society New Zealand recommendations on alcohol use
- 8 Position statement details
- 9 References
- 10 Appendix 1. Health Promotion Agency low-risk alcohol drinking advice

1 Key messages and recommendations

Key messages

- Alcohol use is a risk factor for cancer. Ethanol in alcoholic beverages is a Group 1 carcinogen. The strength of evidence for a causal relationship between alcohol use and cancer is of the highest level.
- Over 240 cancer deaths in New Zealand in the year 2007 were attributable to alcohol consumption. Breast cancer is the leading cause of alcohol-related death among New Zealand women for both Maori and non-Maori. Even low levels of alcohol consumption, e.g. up to 1 drink per day, increases the risk of breast cancer for females.
- There is no evidence that alcohol is protective against any form of cancer. Any level of consumption increases the risk of cancer. The level of risk increases with the level of consumption.
- The volume of alcohol consumed over one's lifetime is important in determining the risk of developing cancer.
- Early initiation into alcohol use increases the risk of being a heavy drinker and experiencing alcohol disorders later in life. The risk of experiencing harm from alcohol consumption is also greater among younger people.
- There is strong evidence that alcohol use increases the risk of cancers of the mouth, pharynx, larynx, oesophagus, bowel (in men) and breast (in women), and probable evidence that it increases the risk of bowel cancer (in women) and liver cancer. There is some evidence that heavy drinking increases the risk of gastric cancer and pancreatic cancer.
- Smoking and drinking have a synergistic effect on cancer risk. The combined risk from tobacco and alcohol use is significantly greater than the sum of the individual risks, i.e., smoking only plus drinking only.
- Any benefit from alcohol consumption in reducing heart disease is likely to be negligible for most people and outweighed by other known alcohol-related harms.
- Alcohol use can contribute to weight gain. There is convincing evidence that greater body weight causes cancers of the oesophagus, pancreas, bowel, endometrium, kidney and breast (in post-menopausal women).
- Reducing alcohol consumption is an important and under-emphasised strategy that can help to reduce cancer risk.

- Policies restricting the availability and promotion of alcohol are the most effective strategies for reducing the level of alcohol consumption and related harm in communities.
- For individuals who choose to drink alcohol, the Health Promotion Agency (HPA) provides low-risk alcohol drinking advice. HPA also provides advice on when not to drink alcohol

Recommendations

- The Cancer Society of New Zealand recommends that people limit the amount of alcohol they consume or do not drink if they wish to reduce their risk of developing cancer
- The Cancer Society of New Zealand recommends young people who wish to drink alcohol be encouraged to delay the age which they start to 18 or over.
- The Cancer Society of New Zealand recommends that the New Zealand Government and local governments implement policies that meaningfully reduce the availability and promotion of alcohol in New Zealand communities.

2 Introduction

Alcohol is responsible for 4 percent of global mortality each year.¹ This equated to 2.3 million deaths in the year 2008. Over half of these deaths were from non-communicable diseases including cardiovascular disease (22 percent) and cancers (20 percent).² Non-communicable disease is now the leading cause of death worldwide.¹

Alcohol use is widespread in New Zealand. Over half the population aged 16 to 64 years consumes alcohol at least weekly and 15 percent of adults aged 15 years and over drink in a way that is hazardous to their health. This pattern of hazardous drinking is higher among men (22 percent) than among women (9 percent)³.

While hazardous drinking has significant health and social consequences, the authors of a recent literature review⁴ found that the volume of alcohol consumed over one's lifetime, even if consumed in moderation, contributes to their risk of developing cancer. Accordingly, public health researchers have stated that "reducing alcohol consumption is an important and under-emphasised cancer prevention strategy".⁵

In New Zealand in 2007, among those aged less than 80 years, 242 cancer deaths were attributable to alcohol consumption. This equated to 4 percent of all cancer deaths recorded in this age group for that year. Reducing alcohol-related harm is a key objective of New Zealand's National Drug Policy.⁶

Cancer Society New Zealand has developed this position statement to:

- provide a comprehensive overview of the evidence concerning alcohol use and cancer risk
- set out its current recommendations regarding alcohol consumption.

3. Evidence linking alcohol and cancer

Alcoholic beverages have been classified as a Group 1 carcinogen by the World Health Organization's International Agency for Research on Cancer (IARC) since 1988.⁷ This is the highest rating applied to substances that directly cause cancer, indicating that the link between alcohol and cancer in humans is underpinned by strong scientific evidence.

A comprehensive review of the scientific literature examining cancer and its association with food, nutrition and physical activity was jointly published in 2007 by the World Cancer Research Fund (WCRF) and American Institute for Cancer Research (AICR).⁸ The review panel consisted of 21 international experts in the fields of nutrition, cancer research, physical activity, biochemistry, epidemiology, statistics, public health and public policy. They concluded that there was *convincing* scientific evidence that alcohol

consumption increased the risk of cancers of the breast (female), colorectum (in males), oral cavity, pharynx, larynx and oesophagus.

The panel also stated that alcohol *probably* increases the risk of liver and bowel (in females) cancer. Convincing and probable are the two highest categories applied by the WCRF and AICR when describing the empirical basis for causal relationships in cancer.^{ibid.}

The IARC conducted a subsequent review in 2009. This was undertaken by 30 global experts in the fields of cancer research, epidemiology and public health. The group's findings were congruent with those in the WCRF report with the exception that there was *sufficient* evidence to conclude alcohol consumption increases the risk of liver cancer.^{9,10}

A critique of meta-analyses and systematic reviews published between January 2007 and April 2013 by Chelimo and Casswell produced conclusions consistent with those of the WCRF/AICR and IARC reports.⁴ They deemed alcohol to be a significant risk factor for female breast cancer, colorectal cancer, cancers of the oral cavity and pharynx, and cancer of the oesophagus. They also found evidence that heavy alcohol consumption increases the risk of gastric cancer and pancreatic and cancer.

A 2010 survey of residents in the Australian state of Victoria found that only 9 percent of unprompted respondents were aware of the relationship between alcohol and cancer. This increased to 24 percent when participants were asked if they knew of this association.¹² The level of public awareness of the relationship between alcohol and cancer is not known in New Zealand.

3.1 Pattern of alcohol consumption and the risk of cancer

There is no evidence that alcohol consumption of any amount reduces the risk of cancer. Every drinking occasion adds to the life-time risk of cancer. For cancers of the female breast, colorectum, oesophagus, pharynx and oral cavity, research studies show a dose-risk response, i.e., the risk increases as the intake of alcohol per day increases. Gastric, pancreatic⁴ and prostate¹¹ cancers, on the other hand, appear to be related to irregular heavy alcohol consumption.

Alcohol consumption of more than 3 drinks per day has been estimated to increase the risk for breast cancer by 40-50 percent.¹³ There is also a modest increase in breast cancer risk with alcohol consumption of up to 1 drink per day.¹⁴ Key et al.¹⁵ estimated that the relative risk of breast cancer increases by approximately 10 percent with every additional standard drinkⁱ consumed per day.

A meta-analysis of case control and cohort studies concluded that moderate (2-3 drinks per day) and heavy drinking (≥ 4 drinks per day) was associated with a 21 percent and 52 percent increase in colorectal cancer risk respectively.¹⁶ Higher alcohol consumption was

ⁱ One standard drink contains 10g of alcohol. This is equivalent to one glass, can or stubby (330mls) of 4 percent alcohol by volume beer, one small glass (100mls) of 12.5 percent alcohol by volume wine, or a nip (30mls) of 40 percent alcohol by volume spirits.

found to be associated with an increased risk for colon and rectal cancers separately, but not for both sites combined.¹⁷ This study also found a 15 percent increase in risk for colon or rectal cancer with an increase of 100g of alcohol intake per week.

Oral and pharyngeal cancer (OPC) risk increases significantly with the amount of alcohol consumed.^{18,19} The impact of alcohol use on OPC is higher among smokers than never/non-current smokers, suggesting a multiplicative effect of these two behaviours.²⁰

A meta-analysis by Islami et al.²¹ found that compared with not drinking, the risk for laryngeal cancer increased with moderate (2-3 drinks per day) and heavy drinking (≥ 4 drinks per day).

Research continues to identify other cancers that may be associated with alcohol use. Emerging evidence suggests that heavy drinking increases the risk for pancreatic cancer, however, the authors conclude that only a small proportion of pancreatic cancers are attributable to alcohol use.²² Evidence is also emerging that heavy drinking increases gastric cancer risk and a dose-response relationship has been found from 50g of alcohol consumed per day.²³

A recent meta-analysis found a significant but modest increased risk for prostate cancer with light (up to 1 drink per day) and moderate (1 to 3 drinks per day) drinking, but not with heavy drinking (more than 4 drinks per day)²⁴.

3.2 Potential mechanisms

There are a number of biological mechanisms that may explain alcohol's contribution to cancer development.

- The ethanol in alcoholic beverages may cause cancer through the formation of acetaldehyde, the primary metabolite of ethanol, which has been shown to have mutagenic and carcinogenic properties. It bonds with DNA to increase the risk of mutations and impaired cell replication.²⁵
- Alcohol may play an important role in anatomical sites where it comes into direct contact with the tissue by irritating the epithelium or increasing the penetration of carcinogens across the mucosa.²⁶ Alcohol acts as a solvent that helps the body to absorb other carcinogens²⁷
- Alcohol consumption increases serum oestrogen levels.²⁸⁻³⁰ This may contribute to the increased risk of breast cancer in women drinkers as studies have found oestrogens to have a carcinogenic effect on breast tissue.^{28,29}
- Alcohol may increase the risk of liver cancer by causing cirrhosis of the liver, increased oxidative stress, altered methylation and reduced levels of retinoic acid.³¹

4 Burden of disease attributable to alcohol consumption in New Zealand

Alcohol is a major contributor to the overall burden of death, disease and injury in New Zealand.^{32,33} It was the 6th leading risk factor for health loss in New Zealand in 2006 after tobacco use, high body mass index, high blood pressure, high blood glucose and physical inactivity.³³ It is possible that alcohol also contributes to the prevalence of other risk factors for chronic disease e.g., high blood pressure, obesity and excess body weight.³⁴

A 2013 report by Connor et al.³² estimates that alcohol consumption is responsible for 5.4 percent of deaths and 6.5 percent of disability-adjusted life years (DALY's) lost annually among New Zealanders aged less than 80 years. In the year 2007, 30 percent of the 802 premature deaths attributable to alcohol in this age group were due to cancer. This equated to 4 percent of all cancer deaths recorded in 2007 among those aged less than 80 years. Breast cancer was the leading cause of alcohol-related death for both Māori and non-Māori women. Table 1 shows the number and percentage (i.e., alcohol-attributable fractions) of specified cancer deaths annually in New Zealand that are due to alcohol consumption.

Table 1. Number and percentage of specified cancer deaths in New Zealand in the year 2007 attributable to alcohol consumption.

	Māori		Non-Māori		TOTAL
	Men <i>n (%)</i>	Women <i>n (%)</i>	Men <i>n (%)</i>	Women <i>n (%)</i>	<i>n (%)</i>
Mouth and oropharynx	4 (45)	0 (34)	27 (45)	6 (28)	37 (40)
Oesophagus	3 (33)	0 (23)	31 (27)	5 (17)	39 (25)
Colon	1 (8)	2 (13)	15 (6)	17 (7)	35 (6)
Rectum	2 (11)	0 (13)	16 (9)	8 (8)	27 (9)
Liver	5 (18)	1 (17)	15 (16)	4 (12)	25 (15)
Larynx	1 (31)	0 (21)	5 (29)	1 (17)	7 (25)
Female breast	-	12 (17)	-	60 (13)	72 (14)
TOTAL	16 (21)	15 (15)	109 (15)	101 (11)	242 (13)

The social cost of alcohol misuse (i.e., hazardous and harmful drinking) in New Zealand was estimated to be NZ\$4.9 billion in 2005/06 (3 percent of Gross Domestic Product).³⁵ Health care costs related to alcohol misuse were estimated to be NZ\$343 million. The financial cost of alcohol use that is attributable to alcohol-related cancer is unknown.

4.1 Alcohol and heart disease

There is strong scientific debate over the purported benefits of light-to-moderate drinking on coronary heart disease (CHD).

Many studies have found a lower incidence of CHD among light-to-moderate drinkers compared with abstainers, e.g.^{36, 37}, even after adjusting for potential confounders (e.g., diet).³⁸ This observed association is supported by plausible biological mechanisms. Light-to-moderate alcohol consumption has been found to promote favourable blood coagulation profiles (thus reducing the potential for blood clots to cause problems)^{39,40} and favourable cholesterol levels, in particular, by increasing high-density lipoproteins (or “good” cholesterol).^{39,41}

The misclassification of former and occasional drinkers as abstainers is a potential explanation for this observed association. Shaper et al.⁴² and Fillmore et al.⁴³ argue that if irregular, or the cessation, of alcohol consumption is due to ill-health or infirmity, then it is these factors increasing the risk of CHD among “abstainers” rather than the absence of alcohol. In other words, regular light-to-moderate drinking may be a sign of good health and a lower risk of CHD rather than a cause of it.

Studies excluding former and irregular drinkers (error-free studies) have found no increased risk of CHD among the abstainer group compared with light-to-moderate drinkers.^{43,44}

In some research studies as well as misclassification errors there are problems of confounding. A 2005 study by Naimi et al.⁴⁵ found that 27 of 30 risk factors associated with CHD were significantly more prevalent among abstainers than in light-to-moderate drinkers. Attempting to control for these is impossible without severely reducing statistical power which diminishes the ability to draw conclusions from a study’s results.⁴⁶ Confounding due to unknown or immeasurable variables may also be contributing to the observed protective effect of alcohol.⁴⁷

Another issue is the reliance of these studies on self-reported drinking data.^{ibid.} A longitudinal survey by Caldwell et al.⁴⁸ found that over 60 percent of respondents at age 45 who said they had ‘never’ consumed alcohol had actually reported drinking alcohol in a previous survey—at least once a week for a quarter of these respondents. Furthermore, many people do not maintain a consistent drinking pattern over their lifetime,⁴⁹ making it difficult for researchers to obtain study samples that accurately represent a particular drinking style (e.g., regular light-to-moderate drinking).

Heavy drinking increases the risk of heart disease and other cardiovascular diseases, even when this drinking pattern is episodic (i.e., binge drinking).^{4,50} The potential benefit of light-to-moderate drinking on CHD, therefore, is not present among heavy drinkers including those who only drink this way occasionally.^{51,52}

While there may be a protective effect of light-to-moderate alcohol consumption on CHD, it is likely to have been overestimated to the point where the benefits are outweighed by the other known harms of alcohol consumption.^{4,53} Some studies have concluded that a

'cardio-protective effect' cannot be 'uniformly assumed at any specific level of consumption',⁵⁴ and others have inferred that the benefits of light-to-moderate drinking (\leq 1 standard drink per day)⁵⁵ only outweigh the harmful effects of alcohol in middle-aged and older people.^{53,56}

The National Heart Foundation of New Zealand states that "alcohol is not a safe or effective treatment" for reducing cardiovascular risk⁵⁰ and the World Health Organisation does not recommend alcohol consumption as a way to reduce cardiovascular disease.⁵⁷ Both promote physical activity, lifestyle changes and a healthy diet as better ways to improve cardiovascular health.

4.2 Alcohol and body weight

There is *convincing* evidence that being overweight increases the risk of cancer of the bowel, kidney, pancreas, oesophagus, endometrium and the breast (in post-menopausal women).⁸ Alcohol can indirectly contribute to the development of these cancers by promoting weight gain. Alcoholic beverages are high in calories⁵⁸ and slow the breakdown of fat and carbohydrates. Individuals who do not expend the extra energy acquired from their alcohol intake are likely to gain weight and further increase their risk of developing cancer.

4.3 Combined effects of alcohol consumption and smoking

The combined use of tobacco and alcohol multiplies the risk of developing cancer of the oral cavity, pharynx, larynx and oesophagus.^{59,60} This combined risk far exceeds that from the use of either one of these substances alone. The relative risk of oral cancer and throat cancer (i.e. cancer of the pharynx and larynx) is estimated to be up to 7 times greater among those who smoke but do not drink, up to 6 times greater among those who drink but do not smoke, and over 35 times greater for those who both smoke and drink compared with those who neither smoke nor consume alcohol.^{59, 60} The synergistic effect of alcohol and smoking has been estimated to cause over 75 percent of cancers of the upper aero digestive tract in developed countries.⁵⁹

5 Alcohol Consumption in New Zealand

Alcohol is the most widely used psychoactive substance in New Zealand. The 2007/08 New Zealand Alcohol and Drug Survey found that 95 percent of New Zealanders aged 16-64 years had consumed alcohol at least once in their lifetime and 85 percent had consumed alcohol during the previous year. This is consistent with the 2011/12 New Zealand Health Survey which found that 80 percent of New Zealanders aged 15 years and over had consumed alcohol in the previous 12 months.⁶¹

Alcohol is consumed at least weekly by half (52 percent) of the population aged 16-64 years.⁶² Over one-fifth of these drinkers (284,000 New Zealanders or 10.7 percent of the population aged 16-64 years) consume a large amount of alcohol on a single drinking occasion (defined as 6 or more standard drinks for men and 4 or more standard drinks for women) each week. A further 11 percent (286,500 New Zealanders) drink a large amount on a single occasion monthly.^{ibid.}

Drinking a large amount of alcohol weekly is indicative of a hazardous drinking pattern.⁶³ Hazardous drinking increases the risk of adverse health and social outcomes for the drinker as well as others.^{ibid.} The 2011/12 New Zealand Health Survey estimated that 530,000 New Zealanders aged 15 years and over (15 percent of the adult population) are hazardous drinkers.⁶¹

5.1 Gender

Frequency of drinking, and the prevalence of hazardous drinking and consuming a large amount of alcohol weekly, is significantly higher among men than women in New Zealand (Table 2). Men are also less likely than women to abstain from alcohol.^{61,62}

Table 2. Prevalence of abstainers, weekly consumers (any amount and large amount) and hazardous drinkers by gender in the 2007/08 New Zealand Alcohol and Drug Use Survey and the 2011/12 New Zealand Health Survey

	2007/08 New Zealand Alcohol and Drug Use Survey				2011/12 New Zealand Health Survey			
	Abstainers (%)	Consumed alcohol at least weekly (%)		Consumed a large amount of alcohol at least weekly (%)		Abstainers (%)	Hazardous Drinkers (%)	
		Drinkers	Total pop.	Drinkers	Total pop.		Drinkers	Total pop.
Men	12	68	60	15	13	15	26	22
Women	17	54	44	10	8	25	12	9
TOTAL	15	61	52	13	11	20	19	15

5.2 Age

Early initiation into alcohol use increases the risk of being a heavy drinker and experiencing alcohol disorders later in life.⁶⁴⁻⁶⁶ The risk of experiencing harm from alcohol consumption is also greater among younger people.⁶⁷

The 2007/08 Alcohol and Drug Use Survey estimated that 30 percent of New Zealanders in the 16 to 64 year old age group first consumed alcohol when they were less than 15 years of age. Over 40 percent were aged 15-17 years. The median age of first consuming alcohol

among the survey respondents was 16 years⁶² Among those who had ever consumed a large amount of alcohol on a single drinking occasion, over one-half (58 percent) first did so before they were 18 years old.^{ibid.} It should be recognised that these estimates are based on recall later in life, and could be subject to error.

A survey of New Zealand secondary school students in 2012 found that 57 percent had consumed alcohol at least once in their lifetime and 45 percent continued to use alcohol. Of the latter drinkers, over two-thirds had consumed alcohol in the last four weeks and 18 percent consumed alcohol on a weekly basis. Just under one-quarter of all students reported an episode of binge drinking (≥ 5 drinks within 4 hours) in the last month.⁶⁸

While younger people in New Zealand are less likely to consume alcohol on a weekly basis than older people, they are more likely to consume a large amount on a single drinking occasion at least weekly and they are at increased risk of hazardous drinking (Table 3). The prevalence of hazardous drinking and consuming a large amount of alcohol weekly peaks, among both men and women, in the 18 to 24 year age group, and then declines with age.^{61,62}

Table 3. Prevalence of abstainers, weekly consumers (any amount and large amount) and hazardous drinkers by age in the 2007/08 New Zealand Alcohol and Drug Use Survey and the 2011/12 New Zealand Health Survey

Age (years)	2007/08 New Zealand Alcohol and Drug Use Survey				2011/12 New Zealand Health Survey			
	Abstainers (%)	Consumed alcohol at least weekly (%)		Consumed a large amount of alcohol at least weekly (%)		Abstainers (%)	Hazardous Drinkers (%)	
		Drinkers	Total pop.	Drinkers	Total pop.		Drinkers	Total pop.
≤17	20	36	28	13	10	41	21	12
18-24	14	53	46	26	23	15	36	30
25-34	15	58	50	15	12	17	30	25
35-44	13	62	54	10	9	16	19	16
45-54	14	67	58	9	7	17	14	12
55-64	18	69	56	7	6	20	11	8
65-74	-	-	-	-	-	25	7	5
75+	-	-	-	-	-	35	2	2
TOTAL	15	61	52	13	11	20	19	15

5.3 Ethnicity

Māori are more likely than non-Māori to consume a large amount of alcohol on a single drinking occasion at least weekly (Table 4).⁶² They are also at increased risk of hazardous drinking despite consuming alcohol less frequently than non-Māori.⁶¹ A study by Bramley et al.⁶⁹ used the 1996/97 New Zealand Health Survey, a national sleep survey and three population-specific surveys to examine the relative differences in the drinking patterns of Māori and non-Māori. They found that, across all the surveys, the prevalence and frequency of drinking were higher among non-Māori, but Māori consumed more per occasion, such that average daily consumption volumes were similar between Māori and non-Māori.

Findings from the 2011/12 New Zealand Health Survey show that, after adjusting for age differences between ethnic groups, Māori women are nearly 2.5 times as likely, and Māori men over 1.5 times more likely, to have a hazardous drinking pattern compared with the total female and male adult population respectively. Those of Asian ethnicity are significantly less likely to have a hazardous drinking pattern in comparison with the total adult population (standardised rate ratio = 0.23).⁶¹

The prevalence of hazardous drinking among the Pacific Island population is similar to that of Māori. Abstention rates are higher than among Māori and Europeans (Table 4), however, 35 percent of Pacific Islanders who do drink have a hazardous drinking pattern, resulting in a prevalence of 20 percent among the total adult Pacific Island population (Table 4).^{ibid.} Adjusting for age, Pacific men are 1.4 times more likely than the total male population to consume a large amount of alcohol on a single drinking occasion at least weekly.⁶²

Table 4. Prevalence of abstainers, weekly consumers (any amount and large amount) and hazardous drinkers by ethnicity in the 2007/08 New Zealand Alcohol and Drug Use Survey and the 2011/12 New Zealand Health Survey

	2007/08 New Zealand Alcohol and Drug Use Survey					2011/12 New Zealand Health Survey		
	Abstainers (%)	Consumed alcohol at least weekly (%)		Consumed a large amount of alcohol at least weekly (%)		Abstainers (%)	Hazardous Drinkers (%)	
		Drinkers	Total pop.	Drinkers	Total pop.		Drinkers	Total pop.
Māori	15	50	42	24	20	21	37	29
Pacific	39	50	31	19	12	42	35	20
Asian	45	34	19	1	1	43	8	5
European/ Other	10	64	58	12	11	16	18	15
TOTAL	15	61	52	13	11	20	19	15



5.4 Alcohol and tobacco use

The 2007/08 New Zealand Alcohol and Drug Survey found that 30 percent of past-year drinkers aged 16 to 64 years (678,000 New Zealand residents) had used tobacco at least once in the previous year while drinking alcohol.⁶² Results indicate that, among those who drink alcohol, women are just as likely as men to use alcohol and tobacco at the same time. The highest prevalence of using tobacco while drinking is in the 18 to 24 years age group. Māori and Pacific Island drinkers are 1.5 times more likely to use tobacco while consuming alcohol compared with drinkers in the total population aged 16 to 64 years.⁶²

6 Strategies to reduce alcohol consumption and alcohol-related harm

Previous reviews of the scientific literature have consistently found that policies restricting the availability and promotion of alcohol are the most effective strategies for reducing the level of alcohol consumption and related harm in communities.⁷⁰⁻⁷² This was recently confirmed by an international group of experts in the field of alcohol-harm reduction.³⁸ Table 5 is derived from their comprehensive review - *Alcohol: No Ordinary Commodity (2nd ed.)* - and outlines the effectiveness of various approaches to reducing alcohol-related harm as supported by research evidence. Strategies considered to be best practice included higher alcohol taxes, a minimum legal purchase or drinking age of 21 years, restrictions on the hours during which alcohol can be sold, restrictions on alcohol outlet density and brief interventionsⁱⁱ for at-risk drinkers.³⁸

Table 5. Evidence for the effectiveness of strategies to reduce alcohol harm.

Strategy	Effectiveness ^a	Comments
Higher excise taxes	+++	Reduce alcohol consumption and harm in population.
Minimum legal purchase age of 21 years	+++	Effective with minimal enforcement.
Brief interventions with at-risk drinkers	+++	Can be resource intensive.
Restrictions on hours of sale	++	Need to meaningfully limit alcohol availability.
Restrictions on outlet density	++	Reduce alcohol consumption and harm.
Controls on advertising and sponsorship	++	Strong evidence of effectiveness on youth drinking.
Treatment strategies	+ / ++	Limited impact on population drinking. High cost.
Server training/initiatives	+ / ++	Effectiveness dependent on enforcement.
Education programmes	0	No evidence of long-term impact. Resource intensive.

^a As rated by Babor et al.³⁸. +++ = high, ++ = moderate, + = limited, 0 = not effective.

ⁱⁱ Brief interventions are designed to motivate high-risk drinkers to moderate their alcohol consumption. They are generally undertaken with heavy (but non-dependent) drinkers who are not actively seeking treatment for problem drinking.



7 The Cancer Society of New Zealand recommendations on alcohol use

The Cancer Society of New Zealand recommends people limit the amount of alcohol they consume or do not drink if they wish to reduce their risk of developing cancer.

For individuals who choose to drink alcohol, the Health Promotion Agency (HPA) provides low-risk alcohol drinking advice. HPA also provides advice on when not to drink alcohol.⁷³ HPA's advice for adults is outlined in Appendix 1.

The Cancer Society of New Zealand is a strong advocate for evidence-based action to bring about positive change in drinking patterns, increase understanding of alcohol-related harms and reduce the burden of morbidity and mortality caused by alcohol use.

To reduce the burden of morbidity and mortality caused by alcohol use, the Cancer Society of New Zealand recommends the New Zealand Government and local governments throughout the country implement policies that meaningfully reduce the availability and promotion of alcohol in New Zealand communities.

8 Position statement development

The original statement was developed from the Cancer Council New South Wales document and adapted by the Physical Activity and Nutrition Operational Group (PANOG) of the Cancer Society of New Zealand. It was approved for publication in 2009 and reviewed by the Physical Activity, Alcohol and Nutrition Operational Group (PAANOG formerly PANOG) with leadership from Amanda Dodd, Canterbury/West Coast Division and the Social and Behavioural Research Unit, Department of Preventive and Social Medicine, University of Otago in 2013/14.

The statement was approved for publication by the Board of the Cancer Society of New Zealand on 6 June 2014.

The Cancer Society of New Zealand wishes to acknowledge Kathy Chapman, Cancer Council New South Wales, who supported the development of the original Position Statement in 2009, and Dr. Brett Maclennan from the University of Otago, who assisted members of the PAANOG to review and update the position statement in 2014.

We would also like to acknowledge the Auckland Division of the Cancer Society for their work with Professor Sally Caswell, Dr. Carol Chelimo and SHORE & Whariki Research Centre, School of Public Health, Massey University. Their review of Meta-Analyses (Effect of Alcohol Consumption on Cancer Risk) 2013 informed this review.

Acknowledgement must also go to Professor Jennie Connor, Head of Department of Preventive and Social Medicine, Dunedin School of Medicine, University of Otago for sharing her expertise and for her ongoing feedback on the content of this statement when in draft form.



9. References

- 1 World Health Organisation. Global status report on noncommunicable diseases 2010. Geneva: World Health Organisation 2011.
- 2 Rehm J, Mathers C, Popova S, Thavorncharoensap M, Teerawattananon Y, Patra J. Alcohol and Global Health 1: Global burden of disease and injury and economic cost attributable to alcohol use and alcohol-use disorders. *The Lancet*. 2009; 373:2223-33.
- 3 Ministry of Health. 2013. New Zealand Health Survey: Annual update of key findings 2012/13. Wellington: Ministry of Health.
- 4 Chelimo C, Casswell S. Effect of alcohol consumption on cancer risk: A review of meta-analyses (2007-2013). Auckland: SHORE & Whariki Research Centre, School of Public Health, Massey University commissioned by the Cancer Society Auckland Division 2013.
- 5 Alcohol-Attributable Cancer Deaths and Years of Potential Life Lost in the United States: David E. Nelson, MD, MPH, Dwayne W. Jarman, DVM, MPH, Jürgen Rehm, PhD, Thomas K. Greenfield, PhD, Grégoire Rey, PhD, William C. Kerr, PhD, Paige Miller, PhD, MPH, Kevin D. Shield, MHS, Yu Ye, MA, and Timothy S. Naimi, MD, MPH. (*American Journal of Public Health*. 2013;103: 641-648. doi:10.2105/AJPH.2012.301199).
- 6 Ministerial Committee on Drug Policy. National Drug Policy 2007-2012. Ministry of Health, Wellington. New Zealand 2007.
- 7 International Agency for Research on Cancer. IARC monographs on the evaluation of carcinogenic risks to humans. Volume 44. Alcohol drinking. Lyon, France: International Agency for Research on Cancer 1988.
- 8 World Cancer Research Fund / American Institute for Cancer Research. Food, Nutrition, Physical Activity, and the Prevention of Cancer: a Global Perspective. Washington DC: American Institute for Cancer Research 2007.
- 9 Secretan B, Straif K, Baan R, Grosse Y, El Ghissassi F, Bouvard V, et al. A review of human carcinogens—Part E: tobacco, areca nut, alcohol, coal smoke, and salted fish. *The Lancet Oncology*. 2009; 10:1033-4.
- 10 International Agency for Research on Cancer. IARC Monographs on the Evaluation of Carcinogenic Risks to Humans. Volume 100E. A review of human carcinogens: Personal habits and indoor combustions. Lyon, France: International Agency for Research on Cancer 2012.
- 11 Fillmore K, Chikritzhs T, Stockwell T, Bostrom A, Pascal R. Alcohol use and prostate cancer: A meta-analysis. *Molecular Nutrition & Food Research*. 2009; 53:240-55.
- 12 Alcohol Policy Coalition. Alcohol Policy Coalition Position Statement: Cancer cardiovascular disease and alcohol consumption. 2011; Available from: <http://alcoholpolicycoalition.org.au/wpcontent/uploads/2009/11/APC-NCD-Position-Paper-September-2011-v1.0.pdf>.
- 13 Seitz, H. K, Pelucchi, C, Bagnardi, V, et al. 2012. Epidemiology and pathophysiology of alcohol and breast cancer: Update 2012. *Alcohol and Alcoholism*, 47, 204-212
- 14 Bagnardi, V, Rota, M, Botteri, E, et al. 2013. Light alcohol drinking and cancer: A meta-analysis. *Annals of Oncology*, 24, 301-308.
- 15 Key J, Hodgson S, Omar RZ, Jensen TK, Thompson SG, Boobis AR, et al. Meta-Analysis of Studies of Alcohol and Breast Cancer with Consideration of the Methodological Issues. *Cancer Causes & Control*. 2006; 17:759-70.
- 16 Fedirko, V, Tramacere, I, Bagnardi, V., et al. 2011. Alcohol drinking and colorectal cancer risk: An overall and dose-Response meta-analysis of published studies. *Annals of Oncology*, 22, 1958-1972.

- 17 Moskal, A, Norat, T, Ferrari, P, et al. 2007. Alcohol intake and colorectal cancer risk: a dose response meta-analysis of published cohort studies. *International Journal of Cancer*, 120, 664-671.
- 18 Turati, F, Garavello, W, Tramacere, I, et al. 2013. A meta-analysis of alcohol drinking and oral and pharyngeal cancers: Results from subgroup analyses. *Alcohol and Alcoholism*, 48, 107-118.
- 19 Tramacere, I, Negri, E, Bagnardi, V, et al. 2010a. A meta-analysis of alcohol drinking and oral and pharyngeal cancers. Part 1: overall results and dose-risk relation. [Review]. *Oral Oncology*, 46, 497-503.
- 20 Turati, F, Garavello, W, Tramacere, I, et al. 2013. A meta-analysis of alcohol drinking and oral and pharyngeal cancers: Results from subgroup analyses. *Alcohol and Alcoholism*, 48, 107-118.
- 21 Islami, F, Tramacere, I, Rota, M., et al. 2010. Alcohol drinking and laryngeal cancer: Overall and dose-risk relation - A systematic review and meta-analysis. *Oral Oncology*, 46, 802-810.
- 22 Tramacere, I, Scotti, L, Jenab, M, et al. 2010b. Alcohol drinking and pancreatic cancer risk: a meta-analysis of the dose-risk relation. *International Journal of Cancer*, 126, 1474-1486.
- 23 Tramacere, I, Negri, E, Pelucchi, C, et al. 2012a. A meta-analysis on alcohol drinking and gastric cancer risk. *Annals of Oncology*, 23, 28-36.
- 24 Bellocco, R, Pasquali, E, Rota, M et al. 2012 Alcohol drinking and risk of renal cell carcinoma: results of a meta-analysis. *Annals of Oncology*, 23, 2235-2244.
- 25 Poschl G, Seitz HK. Alcohol and cancer. *Alcohol & Alcoholism*; 39(3): 155-165. 2004.
- 26 Bagnardi, V, Rota, M, Botteri, E., et al. 2013. Light alcohol drinking and cancer: A meta-analysis. *Annals of Oncology*, 24, 301-308.
- 27 Brooks PJ. Alcohol as a human carcinogen. In Zakhari S, Vailiou V, Max Guo Q (eds) *Alcohol and cancer*: New York: Springer, 2011:1-5.
- 28 Seitz HK, Pelucchi C, Bagnardi V, Vecchia CL. Epidemiology and Pathophysiology of Alcohol and Breast Cancer: Update 2012. *Alcohol and Alcoholism*. 2012; 47:204-12.
- 29 Fernandez SV. Estrogen, Alcohol Consumption, and Breast Cancer. *Alcoholism: Clinical and Experimental Research*. 2011; 35:389-91.
- 30 Coutelle C, Höhn B, Benesova M, Oneta C, Quattrochi P, Roth H-J, et al. Risk factors in alcohol associated breast cancer: alcohol dehydrogenase polymorphism and estrogens. *International Journal of Oncology*. 2004; 25:1127-59.
- 31 Seitz HK, Stickel F. Molecular mechanisms of alcohol-mediated carcinogenesis *Nat Rev Cancer* 2007 Aug; 7(8):599-612 [Abstract available at <http://www.ncbi.nlm.nih.gov/pubmed/17646865>
- 32 Connor J, Kydd R, Shield K, Rehm J. Alcohol-Attributable Burden of Disease and Injury in New Zealand: 2004 and 2007. Wellington: Health Promotion Agency 2013.
- 33 Ministry of Health. Health Loss in New Zealand: A report from the New Zealand Burden of Diseases, Injuries and Risk Factors Study, 2006-2016. Wellington: Ministry of Health 2013.
- 34 Australian Chronic Disease Prevention Alliance. Alcohol Supply: Position statement. 2011; Available from: <http://www.cancer.org.au/content/pdf/ACDPA/110930-Final-ACDPA-PS-Alcohol-supply.pdf>.
- 35 Slack A, Nana G, Webster M, Stokes F, Wu J. Costs of Harmful Alcohol and Other Drug Use: Report to the Ministry of Health and ACC. Business and Economic Research Limited, Wellington, New Zealand 2009.
- 36 Corrao G, Rubbiati L, Bagnardi V, Zambon A, Poikolainen K. Alcohol and coronary heart disease: a meta-analysis. *Addiction*. 2000; 95:1505-23.
- 37 English DR, Holman, C. D. J, Milne, E, Winter, M. G, Hulse, G. K, Codde, J. P, Bower, C. I, Corti, B., de Klerk, N, Knuima, M. W, Kurinzuk, J. J, Lewin, G. F. &

- Ryan, G. A. . The Quantification of Drug Caused Morbidity and Mortality in Australia, 1995 edition. In: Commonwealth Department of Human Services and Health Canberra Australia, editor. 1995.
- 38 Babor TF, Caetano R, Casswell S, Edwards G, Giesbrecht N, Graham K, et al. Alcohol: No Ordinary Commodity - Research and Public Policy. 2nd ed: Oxford University Press Inc.; 2010.
- 39 Rimm EB, Williams P, Fosher K, Criqui M, Stampfer MJ. Moderate alcohol intake and lower risk of coronary heart disease: meta-analysis of effects on lipids and haemostatic factors. *British Medical Journal*. 1999 1999/12/11/:1523.
- 40 Zakhari S. Alcohol and the cardiovascular system. *Alcohol Health & Research World*. 1997; 21:21.
- 41 Baraona E, Lieber CS. Alcohol and Lipids. In: Galanter M, editor. *Recent Developments in Alcoholism, Vol 14: the Consequences of Alcoholism*. New York: Plenum Press; 1998. p. 97-134.
- 42 Shaper AG, Wannamethee G, Walker M. Alcohol and mortality in British men: Explaining the U-shaped curve. *The Lancet*. 1988; 332:1267-73.
- 43 Fillmore KM, Kerr WC, Stockwell T, Chikritzhs T, Bostrom A. Moderate alcohol use and reduced mortality risk: Systematic error in prospective studies. *Addiction Research & Theory*. 2006; 14:101 - 32.
- 44 Stockwell T, Chikritzhs T, Bostrom A, Fillmore K, Kerr W, Rehm J, et al. Alcohol-caused mortality in Australia and Canada: scenario analyses using different assumptions about cardiac benefit . *Journal of Studies on Alcohol and Drugs*. 2007:345-52.
- 45 Naimi TS, Brown DW, Brewer RD, Giles WH, Mensah G, Serdula MK, et al. Cardiovascular risk factors and confounders among nondrinking and moderate-drinking U.S. adults. *American Journal of Preventive Medicine*. 2005; 28:369-73.
- 46 Kirkwood BR. *Essentials of Medical Statistics*. Oxford, UK: Blackwell Scientific Publications; 1988.
- 47 Chikritzhs T, Fillmore K, Stockwell T. A healthy dose of scepticism: four good reasons to think again about protective effects of alcohol on coronary heart disease. *Drug & Alcohol Review*. 2009; 28:441-4.
- 48 Caldwell TM, Rodgers B, Power C, Clark C, Stansfeld SA. Drinking histories of self-identified lifetime abstainers and occasional drinkers: findings from the 1958 British birth cohort study. *Alcohol and Alcoholism*. 2006; 41:650-4.
- 49 Kerr WC, Fillmore KM, Bostrom A. Stability of alcohol consumption over time: evidence from three longitudinal surveys from the United States . *Journal of Studies on Alcohol*. 2002 2002/05//:325+.
- 50 National Heart Foundation of New Zealand. *Alcohol and Heart Health*. 2013; Available from: http://www.heartfoundation.org.nz/uploads/Alcohol%20position%20statement_2012.pdf.
- 51 Bagnardi V, Zatonski W, Scotti L, La Vecchia C, Corrao G. Does drinking pattern modify the effect of alcohol on the risk of coronary heart disease? Evidence from a meta-analysis. *Journal of Epidemiology and Community Health*. 2008; 62:615-9.
- 52 Roerecke M, Rehm J. Irregular Heavy Drinking Occasions and Risk of Ischemic Heart Disease: A Systematic Review and Meta-Analysis. *American Journal of Epidemiology*. 2010; 171:633-44.
- 53 Jackson R, Broad J, Connor J, Wells S. Alcohol and ischaemic heart disease: probably no free lunch. *The Lancet*. 2005; 366:1911-2.
- 54 Roerecke M, Rehm J. The cardioprotective association of average alcohol consumption and ischaemic heart disease; a systematic review and meta-analysis. *Addiction* 2012;107 (7):1246-60.

- 55 Ronksley PE, Brien SE, Turner BJ, Mukamal KJ, Ghali WA. Association of alcohol consumption with selected cardiovascular disease outcomes: a systematic review and meta-analysis. *BMJ*. 2011; 342.
- 56 Fillmore KM, Stockwell T, Chikritzhs T, Bostrom A, Kerr W. Moderate alcohol use and reduced mortality risk: systematic error in prospective studies and new hypotheses. *Ann Epidemiol*. 2007; 17:S16-23.
- 57 World Health Organization. Prevention of cardiovascular disease: Guidelines for assessment and management of cardiovascular risk. Geneva: World Health Organization 2007.
- 58 Food and Agriculture Organisation of the United Nations. Food energy - methods of analysis and conversion factors. FAO food and nutrition paper 77. Rome: Food and Agriculture Organisation of the United Nations. 2003.
- 59 Blot WJ, McLaughlin JK, Winn DM, Austin DF, Greenberg RS, Preston-Martin S, et al. Smoking and Drinking in Relation to Oral and Pharyngeal Cancer. *Cancer Research*. 1988; 48:3282-7.
- 60 US Department of Health and Human Services. The health consequences of smoking: a report of the Surgeon General. Washington, D.C.: Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health. 2004.
- 61 Ministry of Health. Hazardous Drinking in 2011/12: Findings from the New Zealand Health Survey. Wellington: Ministry of Health. 2013.
- 62 Ministry of Health. Alcohol Use in New Zealand: Key results of the 2007/08 New Zealand Alcohol and Drug Use Survey. Wellington: Ministry of Health. 2009.
- 63 Babor TF, Higgins-Biddle JC, Saunders JB, Monteiro MG. *AUDIT: The Alcohol Use Disorders Identification Test - guidelines for use in primary care* Department of Mental Health and Substance Dependence, World Health Organization Geneva. 2001.
- 64 Odgers CL, Caspi A, Nagin DS, Piquero AR, Slutske WS, Milne BJ, et al. Is It Important to Prevent Early Exposure to Drugs and Alcohol Among Adolescents? *Psychological Science (Wiley-Blackwell)*. 2008; 19:1037-44.
- 65 Pitkänen T, Lyyra A-L, Pulkkinen L. Age of onset of drinking and the use of alcohol in adulthood: a follow-up study from age 8-42 for females and males. *Addiction*. 2005; 100:652-61.
- 66 Jernigan DH. Global Status Report: Alcohol and young people. Geneva: World Health Organisation 2001.
- 67 National Health and Medical Research Council. Australian Guidelines to Reduce Health Risks from Drinking Alcohol. Canberra: National Health and Medical Research Council. 2009.
- 68 Clark, T. C., Fleming, T., Bullen, P., Denny, S., Crengle, S., Dyson, B., Fortune, S., Lucassen, M., Peiris-John, R., Robinson, E., Rossen, F., Sheridan, J., Teevale, T., Utter, J. (2013). Youth'12 Overview: The health and wellbeing of New Zealand secondary school students in 2012. Auckland, New Zealand: The University of Auckland
- 69 Bramley D, Broad J, Harris R, Reid P, Jackson R. Differences in patterns of alcohol consumption between Maori and non-Maori in Aotearoa (New Zealand). *N Z Med J*. 2003; 116:U645.
- 70 Bruun K, Edwards G, Lumio M, Makela K, Pan L, Popham RE, et al. Alcohol Control Policies in Public Health Perspective. Helsinki: Finnish Foundation for Alcohol Studies; 1975.
- 71 Edwards G, Anderson, P., Babor, T. F., Casswell, S., Ferrence, R., Giesbrecht, N., Godfrey, C., Holder, H. D., Lemmens, P., Makela, K., Midanik, L. T., Norstrom, T.,

- Osterberg, E., Romelsjo, A., Room, R., Simpura, J. & Skog, O. - J. Alcohol policy and the public good: a good public debate. *Addiction*. 1996; 91:477-81.
- 72 Babor TF, Caetano R, Casswell S, Edwards G, Giesbrecht N, Graham K, et al. *Alcohol: No Ordinary Commodity - Research and Public Policy*. New York, USA: Oxford University Press Inc.; 2003.
- 73 <http://www.alcohol.org.nz/alcohol-you/your-drinking-okay/low-risk-alcohol-drinking-advice>
site last accessed February 4th 2014.

10. Appendix 1 - Health Promotion Agency's low-risk alcohol drinking advice

The Health Promotion Agency's (HPA) alcohol drinking advice is designed to help people make an informed choice and help keep their risk of alcohol-related injuries, diseases and death low. HPA state that low-risk is not no-risk and that a range of factors can affect risks from drinking alcohol. HPA advice for adults is:

Reduce your long-term health risks by drinking no more than:

- 2 standard drinks a day for women and no more than 10 standard drinks a week AND at least two alcohol-free days every week
- 3 standard drinks a day for men and no more than 15 standard drinks a week AND at least two alcohol-free days every week.

Reduce your risk of injury on a single occasion of drinking by drinking no more than:

- 4 standard drinks for women on any single occasion
- 5 standard drinks for men on any single occasion.

HPA also advises not to drink alcohol if you:

- are pregnant or planning to get pregnant
- are on medication that interacts with alcohol
- have a condition made worse by drinking alcohol
- feel unwell, depressed, tired or cold as alcohol could make things worse
- are about to operate machinery or a vehicle or do anything that is risky or requires skill.

For more information about HPA's low risk alcohol drinking advice visit:

<http://www.alcohol.org.nz/alcohol-you/your-drinking-okay/low-risk-alcohol-drinking-advice>

The Cancer Society of New Zealand recommends that people limit the amount of alcohol they consume or do not drink if they wish to reduce their risk of developing cancer.

Standard drinks

In New Zealand, one standard drink contains 10g of alcohol. This amount is specified in legislation along with the requirement that an alcoholic beverage container be labelled with how many standard drinks and the percentage of alcohol it contains. One standard drink equates approximately to a 100ml glass of wine at 12.5% alcohol or a 330ml can of beer at 4% alcohol.

For more information about standard drinks visit:

<http://www.alcohol.org.nz/alcohol-you/whats-standard-drink>

