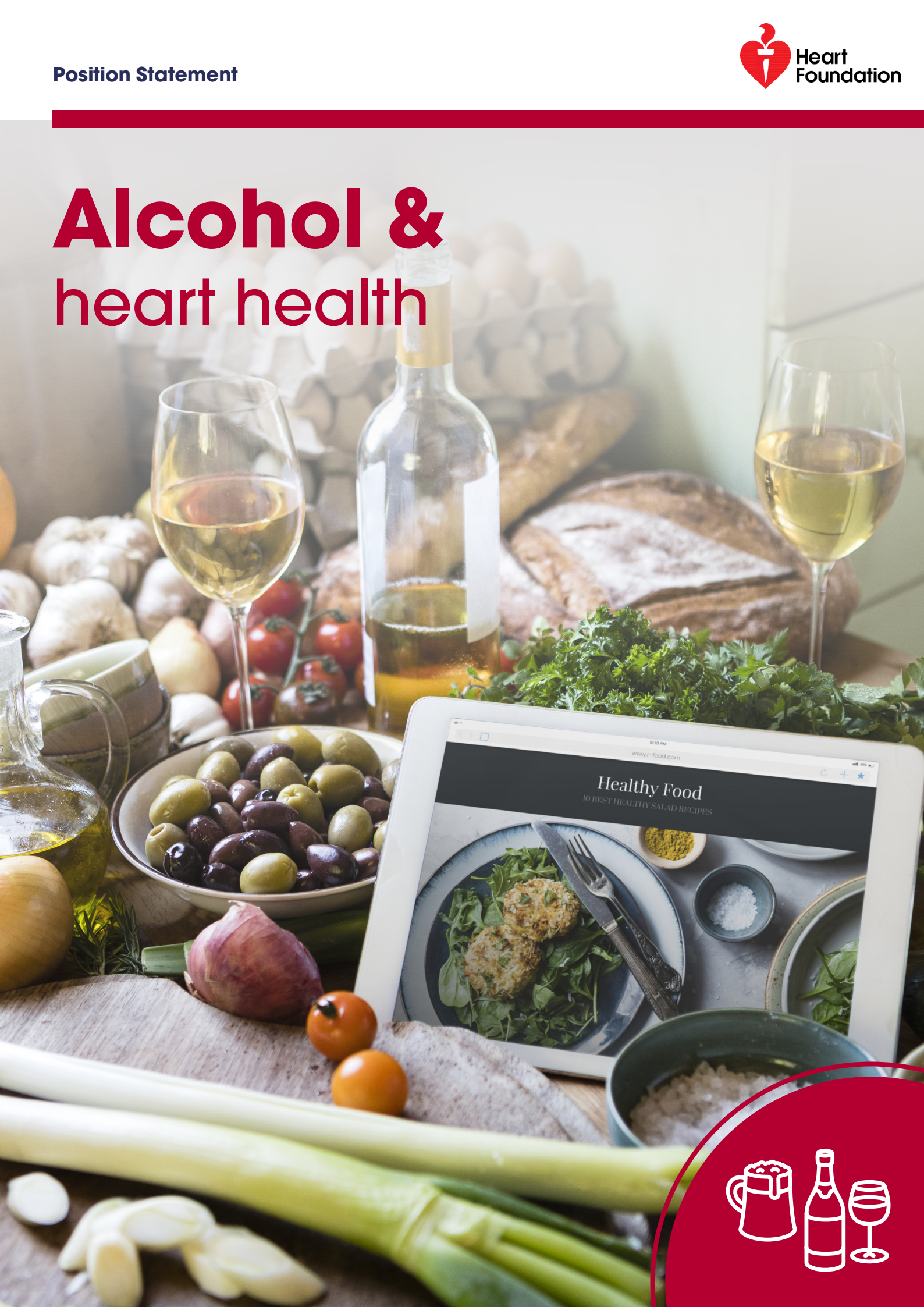
Position Statement

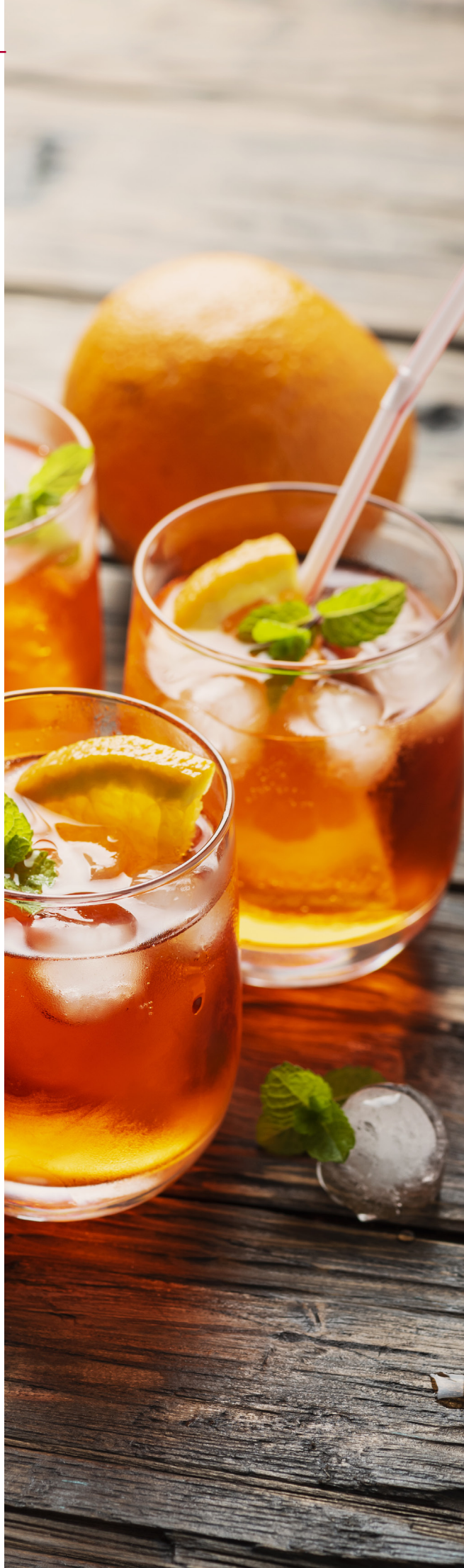
Heart Foundation

# Alcohol & heart health



# Position statement

**This position statement summarises the contemporary evidence on the association between alcohol and cardiovascular health and makes recommendations on alcohol consumption limits for different groups. The Heart Foundation's position on alcohol and heart health is informed by the National Health and Medical Research Council (NHMRC)'s Australian Guidelines to Reduce Health Risks from Drinking Alcohol, published in 2020.[1] To inform specific recommendations for people with cardiovascular disease risk factors, or with or at high risk of cardiovascular disease and related chronic conditions, published research on alcohol and secondary prevention was reviewed. This position statement is complementary to the Heart Foundation's suite of food and nutrition position statements.**



# Recommendations

## 1. Healthy men and women

To reduce the risk of harm from alcohol-related disease or injury for healthy men and women, drink no more than 10 standard drinks per week and no more than 4 standard drinks on any one day.

The less you choose to drink, the lower your risk of alcohol-related harm. For some people not drinking at all is the safest option.

## 2. Children and young people

To reduce the risk of alcohol-related injury and other harms to health, children and young people under 18 years of age should not drink alcohol.

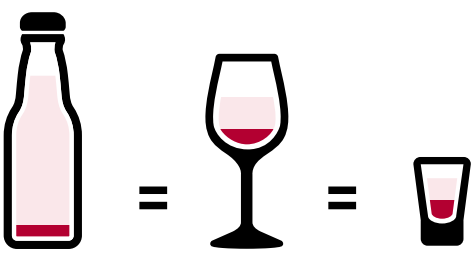
## 3. Pregnancy and breastfeeding

To reduce the risk of harm to their unborn child, women who are pregnant or planning a pregnancy should not drink alcohol.

For women who are breastfeeding, not drinking alcohol is safest for their baby.

## 4. Those with cardiovascular disease/risk factors/ chronic conditions

The evidence is not strong enough to recommend a safe amount of alcohol consumption for cardiovascular health. For some conditions, particularly atrial fibrillation, the risk seems to increase the more a person consumes. For these reasons, the Heart Foundation supports the NHMRC recommended levels as a maximum and recommends some individuals may need to drink less or not at all.

**330 ml**
bottle of beer
4% alcohol

=

**100 ml**
glass of wine
12.5% alcohol

=

**30 ml**
of straight spirits
42% alcohol

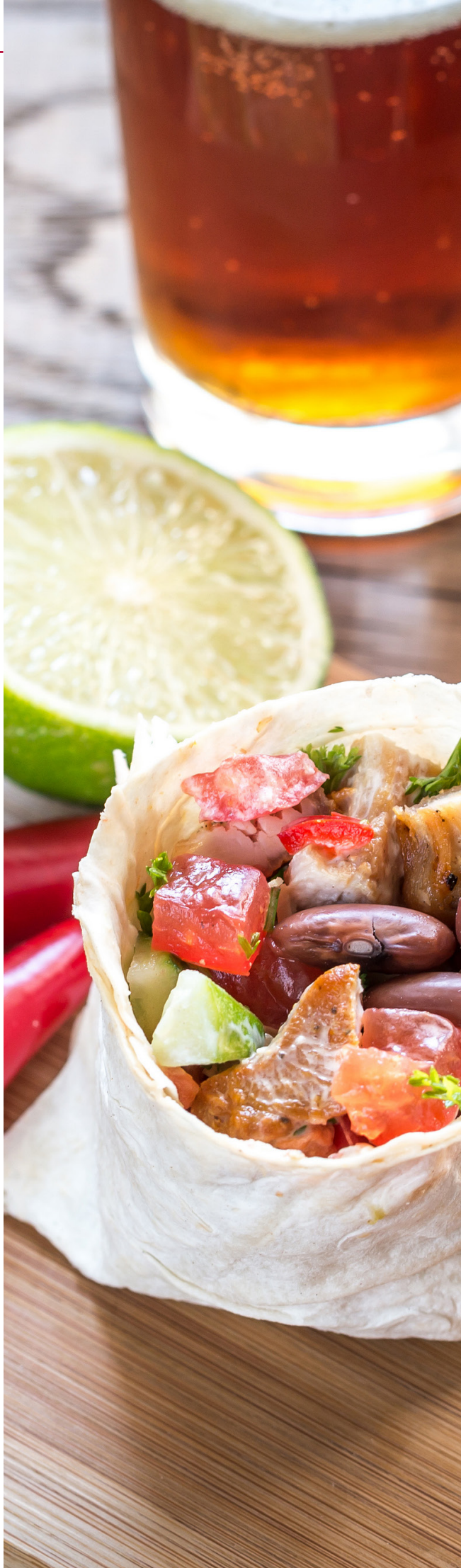
# Summary

The Heart Foundation supports the NHMRC guidance for healthy men and women, children and young people, and pregnant and breastfeeding women. The evidence is unclear and inconsistent to say for certain, or to recommend how much alcohol is of benefit, or does not pose a risk, to cardiovascular health. However, there is consistent evidence of poor health outcomes with high alcohol intake.

The available evidence for the risk of stroke, heart failure, hypertension, type 2 diabetes, coronary heart disease and acute cardiovascular events indicates a U- or J- shaped curve association with alcohol consumption. That is, compared with people who do not drink, there is a reduced risk (or a 'cardioprotective effect') with low levels of consumption, and an increased risk with higher levels of consumption. However, there is growing uncertainty regarding the existence or strength of the cardioprotective effect. If it does exist, it is likely to occur at even lower consumption levels than previously thought. In contrast, evidence for the positive association between alcohol and cancer has strengthened in recent years.

The mechanisms by which alcohol affects cardiovascular disease risk have been extensively researched but are varied and have not been fully elucidated by researchers. These mechanisms include, but are not limited to, an effect on heart rhythm, blood pressure, lipid regulation, insulin resistance, inflammation, endothelial function, platelet aggregation and coagulation.

In terms of the association between alcohol and the secondary prevention of cardiovascular disease, there is less evidence. It appears the cardioprotective effect may exist to an extent, in healthy adults. However, the evidence is weak and confounding factors may partially explain previously reported associations among different groups. In contrast, there is evidence for the harmful effects of alcohol consumption in people with atrial fibrillation.[2] The Heart Foundation recommends that people with, or at risk of, cardiovascular disease limit alcohol consumption as per the NHMRC recommendations for the general population, noting for some people (such as those with atrial fibrillation) it will be safest to not drink at all.



# Background

Alcohol is a colourless, volatile, flammable liquid which is produced by the natural fermentation of sugars. It is the intoxicating constituent of wine, beer and spirits. Alcohol is a drug, a depressant and a carcinogen. When consumed it can affect the way a person feels and behaves.[3]

Alcohol consumption in Australia is high compared to other countries. Heavy episodic drinking (HED), or 'binge drinking', defined as 60 or more grams of pure alcohol (six standard drinks) on at least one single occasion at least once per month, is particularly high in Australia compared to other countries [4].

Globally, alcohol consumption is the world's third largest risk factor for disease and disability and in middle income countries it is the greatest risk. Nearly 4% of all deaths worldwide are attributed to alcohol consumption.[4]

In Australia, alcohol is the most widely used drug, with 80% of adults drinking alcohol each year and most Australians over 14 years consuming alcohol.[5] Of the total burden of disease or injury in Australia in 2015, 4.5% was from alcohol use alone.[6] In 2016, about one in six (17.4%) Australians aged 14 and over put themselves or others at risk of harm while under the influence of alcohol in the previous 12 months.[7] However, the proportion of people aged 14 and over who drink daily has declined; from 6.7% in 2013 to 5.4% in 2019.[7]

Results from the National Aboriginal and Torres Strait Islander Health Surveys show that lifetime risky drinking rates by Indigenous Australians has been inconsistent over the last decade, decreasing from 18 to 15% between 2008 and 2014-15 and then increasing again to 18% in 2018-19.[9]

Alcohol consumption and misuse in Australia represents a significant financial burden to society. In 2010, the social cost of alcohol misuse in Australia was estimated to be $14.35 billion dollars, including losses to productivity (42%), traffic accidents (26%) and costs to the justice system (21%).[8] This cost does not include harms and costs to those other than the person and therefore is likely to be a gross underestimate of the true costs to Australian society.

Evidence for the role of alcohol and heart health is equivocal; alcohol affects people differently. There is strong evidence for the benefits of adopting a Mediterranean diet to improve cardiovascular health. However, a Mediterranean diet may include moderate amounts of alcohol in the form of wine. This contrasts with evidence that alcohol increases the risk of cardiovascular disease, in addition to the limitations with evidence for the cardioprotective effect of alcohol. The impact of alcohol on cardiovascular risk factors and diseases varies depending on the factor or disease in question. For example, in some cases, alcohol mitigates risk (for example, by improving high-density lipoprotein cholesterol) and in other cases has a negative impact (for example, in people with atrial fibrillation).

In light of updated evidence on alcohol and cardiovascular disease, The Heart Foundation has set out recommendations that form an updated position on alcohol and heart health.

# Evidence

### Alcohol and primary prevention (NHMRC evidence review)

The relationship between alcohol and heart health has largely been investigated using observational studies and several randomised controlled trials of varying quality. Overall, alcohol consumption has a distinctive and consistent U- shaped or J- shaped curve with many cardiovascular health outcomes and associated diseases. The Heart Foundation's Summary of Evidence for Alcohol and Heart Health provides an overview of this evidence. The key studies which informed the NHMRC recommendations are briefly described here.

Evidence from 18 prospective cohort studies (n=7756), showed a J- shaped association between chronic alcohol consumption and coronary heart disease, which indicates that low levels of alcohol consumption offer a small decreased risk, however there was an increased risk of coronary heart disease with higher levels of consumption.[10]

Similarly, a review of eight prospective cohorts, (n=6,211) indicated that at low levels of alcohol consumption there was a small decreased risk of heart failure (incidence, hospitalisation and/or mortality) however there was no difference with higher levels of consumption.[11]

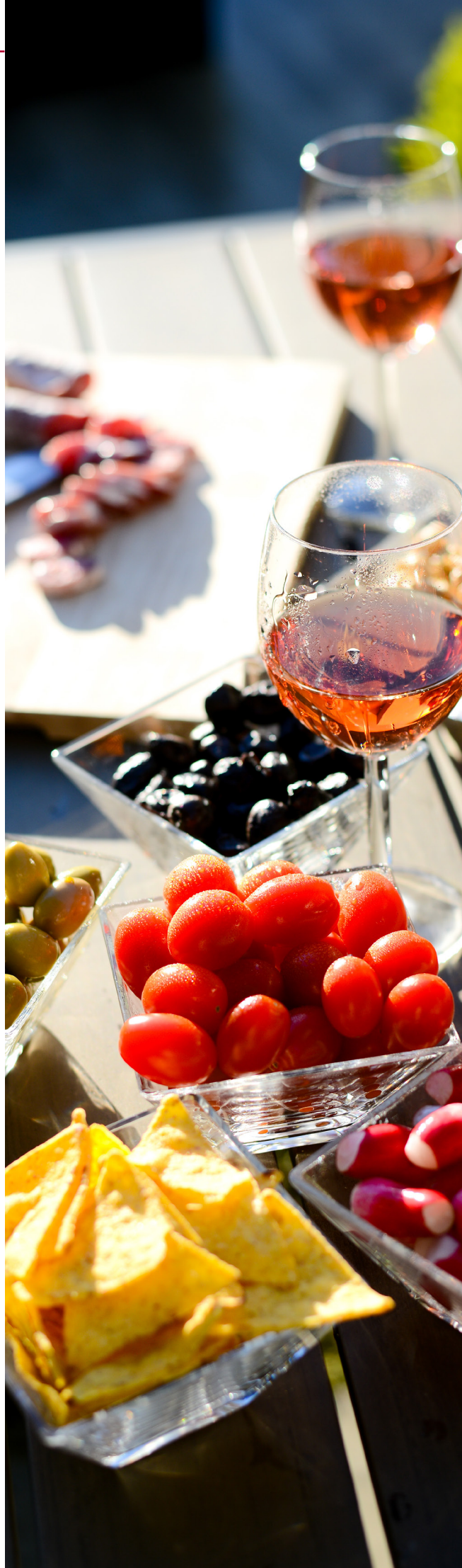
A systematic review and meta-analysis of 16 prospective cohorts (men n=33,904 and women n=193,752) reported a small decreased risk of hypertension with alcohol consumption of < 10 g/day. No difference was reported at 11-20 g/day while an increased risk of hypertension was seen at higher levels, indicating that heavier consumption confers a greater a risk of developing hypertension.[12]

For ischaemic stroke, 25 prospective cohorts (n=19,302) also depicted a J- shaped curve with alcohol consumption. For both intracerebral haemorrhage (n=2,359) and subarachnoid haemorrhage (n=1,164) there was no significant increased risk if consuming less than four drinks a day but an increased risk above this.[13]

A systematic review (n=1,902,605) reported a dose-response decreased risk of type 2 diabetes with alcohol consumption of up to 63g/day, compared to current and lifetime abstainers. Above this level of consumption, the risk increased.[14]

Conversely, in seven prospective cohort studies (n=11,419), a dose-response relationship between chronic alcohol consumption and atrial fibrillation was reported.[15]

Combined, this evidence indicates the presence of the U/J-shaped curve, with small to moderate consumption having a small positive or protective impact, and high intake conferring higher risk of cardiovascular disease.



### Alcohol and secondary prevention (Heart Foundation review)

There is a paucity of evidence regarding alcohol and secondary prevention of cardiovascular disease. Most available evidence is from observational studies, thereby limiting the ability to make strong recommendations. In summary, while the cardioprotective effect may occur, in secondary prevention, the evidence is limited. Overall, there is insufficient evidence to recommend a safe or cardioprotective amount of alcohol for people living with cardiovascular disease.

For these reasons, the Heart Foundation supports the NHMRC recommended limits as a maximum and recommends some people may need to drink less or not at all, such as people with atrial fibrillation.

### The Mediterranean Diet and alcohol

The Mediterranean diet is high in minimally processed plant-based foods such as vegetables, legumes, fruits, nuts and wholegrains, olive oil and fish, and low in saturated fat, meats, and dairy products. The Mediterranean diet has shown promise regarding cardiovascular disease risk factors, and health outcomes. This traditional eating pattern forms the basis for many Heart Foundation recommendations on heart healthy eating. Traditionally, the Mediterranean diet also includes alcohol in the form of red wine.[16]

The Mediterranean diet is one of the only dietary patterns that has been extensively studied and consistently includes alcohol, although it is important to note that the evidence is for the total dietary pattern so the effects of alcohol cannot be separated from the health benefits of the overall diet. Alcohol is not a defining feature of healthy eating patterns nor of heart healthy eating. Therefore, the Heart Foundation does not recommend that people drink alcohol for heart health, despite the inclusion of alcohol in the Mediterranean diet.

### Limitations of the research evidence

Studies involving alcohol consumption are problematic. For ethical reasons, they are largely observational in nature, utilise self-report measures of alcohol consumption, which may result in participants under reporting or misreporting their true intake due to social desirability bias.[17] Even when control or comparison groups are included in alcohol research studies, they may not be 'true controls', as individuals may have stopped drinking due to illness, abstain due to previous risky drinking, or may not consume alcohol due to religious or cultural reasons.[18] Observational studies are designed to investigate relationships without manipulation of a behaviour or intervention, unlike randomised controlled trials which are useful to identify causal relationships between an intervention and an outcome.

## Conclusions

The relationship between alcohol and heart health is becoming clearer. Evidence for the cardioprotective effect is less robust than previously thought, while evidence for the association between high alcohol intake and adverse cardiovascular outcomes continues to strengthen.

Despite the historical J- or U-shaped association between alcohol and various cardiovascular endpoints and risk factors, there is growing uncertainty about the strength of the cardioprotective effect at low and moderate levels of consumption.

If the cardioprotective effect does exist, there is not enough evidence to set a recommendation regarding the protective amount, so the Heart Foundation does not recommend that people drink alcohol for heart health.

Alcohol is a Group 1 carcinogen and there is strong evidence that consuming alcohol increases the risk of various cancers including mouth, pharynx, larynx, some oesophageal, breast, colorectal, stomach and liver cancers.[19]

The Heart Foundation supports the NHMRC recommendations to reduce the health risks associated with alcohol consumption. For those people at higher risk of cardiovascular disease, or who have cardiovascular disease, the Heart Foundation recommends the NHMRC guidelines also apply, acknowledging that drinking below these limits, or not drinking at all, is likely the safest option.

# Recommendations

- Alcohol is not a necessary or recommended part of a heart healthy eating pattern.
- If consumed, follow the NHMRC Guidelines;
  - ***Healthy men and women:***

    To reduce the risk of harm from alcohol-related disease or injury for healthy men and women, drink no more than 10 standard drinks per week and no more than 4 standard drinks on any one day.

    The less you choose to drink, the lower your risk of alcohol-related harm. For some people not drinking at all is the safest option.
  - ***Children and young people:***

    To reduce the risk of injury and other harms to health, children and young people under 18 years of age should not drink alcohol.
  - ***Pregnancy and breastfeeding:***

    To reduce the risk of harm to their unborn child, women who are pregnant or planning a pregnancy should not drink alcohol.

    For women who are breastfeeding, not drinking alcohol is safest for their baby.

***Those with cardiovascular disease/risk factors/chronic conditions:***

The evidence is not strong enough to recommend a safe amount of alcohol consumption for cardiovascular health. For some conditions, particularly atrial fibrillation, the risk increases the more a person consumes. For these reasons, the Heart Foundation supports the NHMRC recommended levels as a maximum and recommends some individuals may need to drink less or not at all.

# Acknowledgements

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- Professor Garry Jennings, Chief Medical Officer, Heart Foundation
- Professor Sarah McNaughton, Institute for Physical Activity and Nutrition, Deakin University.

# References


1. National Health and Medical Research Council , "Guidelines to Reduce health risks of drinking alcohol," Australian Federal Government, Canberra, 2020.
2. A. Voskoboinik and G. Marcus , "The Impact of Alcohol Intake on Atrial Fibrillation," Current Cardiology Reports, vol. 22, no. 10, pp. 1-8, 2020.
3. M. R. Piano, "Alcohol's Effects on the Cardiovascular System," Alcohol Research , vol. 38, no. 2, pp. 219-41, 2017.
4. World Health Organization , "Global Satus Report on Alcohol and Health," WHO Library Cataloguing , Switzerland, 2011.
5. Australian Institute of Health and Welfare, "Australian Institute of Health and Welfare : National Drug Strategy Household Survey 2016:," 2017.
6. Australian Institute of Health and Welfare , "Australian Burden of Disease Study 2015," 2015.
7. Australian Institue of Health and Welfare, "Alcohol, tobacco & other drugs in Australia," Canberra, 2020.
8. M. Manning , C. Smith and P. Mazerolle , "The societal costs of alcohol misuse in Australia," Trends and Issues in Crime and Criminal Justice, Vols. 1-6, 2013.
9. Australian Bureau of Statistics, "National Aboriginal and Torres Strait Islander Health Survey, 2018-19. ABS cat. no. 4715.0," Canberra, 2019.
10. Y. Yang , D. C. Liu and Q. Wang , "Alcohol consumption and risk of coronary artery disease: A dose-response meta-analysis of prospective studies.," Nutrition, vol. 32, no. 6, pp. 637-644, 2016.
11. S. Larsson, N. Orsini and A. Wolk, "Alcohol Consumption and Risk of Heart Failure: A Dose-Response Meta-Analysis of Prospective Studies," European Journal of Heart Failure , vol. 4, pp. 367-73, 2015.
12. A. Briasoulis , V. Agarwal and F. Messerli , "Alcohol consumption and the risk of hypertension in men and women: a systematic review and meta-analysis.," Journal of Clinical Hypertension, vol. 14, no. 11, pp. 792-798, 2012.
13. S. Larsson , A. Wallin , A. Wolk and et al, "Differing association of alcohol consumption with different stroke types: a systematic review and meta-analysis," BMC Medicine, vol. 14, no. 178, 2016.
14. C. Knott , S. Bell and A. Britton , "Alcohol Consumption and the Risk of Type 2 Diabetes: A Systematic Review and Dose-Response Meta-analysis of More Than 1.9 Million Individuals From 38 Observational Studies.," Diabetes Care, vol. 38, no. 9, pp. 1804-1812, 2015.
15. S. Larsson, N. Drca and A. Wolk, "Alcohol consumption and risk of atrial fibrillation: a prospective study and dose-response meta-analysis.," American College of Cardiology, vol. 64, no. 3, pp. 281-89, 2014.
16. V. Rosato, N. Temple, C. La Vecchia , G. Castellan , A. Tavani and V. Guercio, "Mediterranean diet and cardiovascular disease: a systematic review and meta-analysis of observational studies," European Journal of Nutrition, vol. 58, no. 1, pp. pp.173-191., 2019.
17. S. Boniface and N. Shelton, "How is alcohol consumption affected if we account for under-reporting? A hypothetical scenario," European Journal of Public Health, vol. 6, no. 1076-1081, p. 23, 2013.
18. J. Emberson and D. Bennett , "Effect of alcohol on risk of coronary heart disease and stroke: causality, bias, or a bit of both?," Vascular health and risk management., vol. 3, no. 239, p. 2, 2006.
19. World Cancer Research Fund/American Institute for Cancer Research, "Alcoholic drinks and the risk of cancer," 2018.

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*The Heart Foundation acknowledges the Traditional Owners and custodians of Country throughout Australia and their continuing connection to land, waters and community. We pay our respect to them and their cultures, and Elders past, present and future.*

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