Alcohol misuse: how to help patients in primary care

Approximately one in five New Zealanders over the age of 15 years drinks in a way that is hazardous to their health. Counselling and advice from a general practitioner can help people to cut down. Clinicians in primary care should ask patients about their alcohol intake and assess for alcohol misuse. People who are misusing alcohol can access online and telephone support, community help groups or be referred to Community Alcohol and Drug Services. Pharmacological treatment with disulfiram may be initiated in primary care for patients with moderate to severe drinking problems who have been unable to reduce their intake with non-pharmacological approaches.

"I don't have a drinking problem 'cept when I can't get a drink." —Tom Waits

KEY PRACTICE POINTS:

- Alcohol misuse is highly prevalent in New Zealand; be proactive in identifying those who may be consuming too much as patients rarely volunteer their drinking habits
- Brief interventions by a general practitioner, self-help techniques and counselling can help. A substantial proportion of people who drink excessively are open to change even if they deny the true extent of their drinking.
- Disulfiram may be prescribed in primary care, other medicines may be initiated in a specialised service
- Long-term alcohol misuse and binge drinking can affect a number of commonly prescribed and over-the-counter medicines

Alcohol misuse: New Zealand's cup runneth over

New Zealand has a drinking problem; it's part of our culture. Drinking alcohol has been seen as something to help us celebrate success, to wind down at the end of the week, to enhance a meal, accompany a sports match or the passing of a year. There are few events where alcohol has been absent or unwelcome in New Zealand. The 2014–15 New Zealand

Health Survey found 80% of people aged over 15 years had an alcoholic drink in the past year, including 57% of those aged 15–17 years.[1]

A high rate of alcohol consumption is associated with high levels of alcohol misuse. In 2014–15, 18% of the population aged over 15 years reported misusing alcohol,[1] many of whom view their drinking as normal and do not realise, or refuse to acknowledge, that they have a problem. People of lower socioeconomic status, males and those of Māori or Pacific ethnicity are the most likely to misuse alcohol.[1]

The effect of drinking on the health of New Zealanders

Alcohol is a toxin, a carcinogen, and an addictive psychotropic drug.[2, 3] Every year alcohol is estimated to cause between 600 and 1000 premature deaths in New Zealand.[4] For every ten of these deaths, approximately four are due to injuries while under the influence of alcohol, three are due to alcohol-related cancers and three to long-term diseases attributable to alcohol.[5]

The short and long-term harms of alcohol misuse

While under the influence of alcohol a person's risk of acute injury is increased. Over a lifetime, drinking increases the risks of disease and early mortality. Long-term risks associated with alcohol misuse include:[3, 6, 7]

- Hypertension
- Immune suppression
- Insomnia
- Liver diseases
  - Steatosis
  - Alcoholic steatohepatitis
  - Fibrosis
  - Cirrhosis
  - Hepatocellular carcinoma
- Mental health
  - Depression
  - Anxiety
  - Social isolation
- Non-liver cancers
  - Breast (in females)
  - Colorectal (in males)*
  - Oesophagus, larynx and pharynx
  - Oral cavity
- Pancreatitis
- Stroke
- Wernicke's encephalopathy

* Note: Alcohol may cause colorectal cancer in both sexes; evidence is stronger for males

People who drink within recommended guidelines are unlikely to experience many of these harms (see: "Recommended upper limits of drinking").

Drinking any amount of alcohol increases cancer risk, as there is no safe level of consumption. For example:[8]

- The risk of breast cancer is significantly increased by consuming two standard drinks per day and with five standard drinks per day it increases to one and a half times the risk of non-drinkers
- The risk of cancers of the oral cavity, pharynx, larynx and oesophagus is increased to two to three times the risk of non-drinkers by consuming five standard drinks per day

The social cost of drinking

Alcohol misuse also affects family members and the wider community. Increased rates of domestic abuse, problems at work, physical altercations and motor vehicle accidents are all associated with alcohol misuse.[9] Alcohol is consumed before one-third of violent crimes in New Zealand, one in five sexual offences and one-third of suicides and self-inflicted injuries.[9] In a survey of approximately 2,000 New Zealanders, between 4–13% of people who drink reported that their drinking had caused problems with relationships, finances, work or household responsibilities.[10]

Drinking during pregnancy is associated with miscarriage, stillbirth, low birth weight and foetal alcohol spectrum disorders (FASD).[9] It is estimated that between 600 to 3,000 babies in New Zealand are born with FASD per year, and alcohol is recognised as the leading preventable cause of developmental disabilities.[2]

Alcohol misuse in older people

Alcohol misuse in older people increases the risk of medicine-ethanol interactions, and the risk of falls and fractures is also increased.[11]

Routinely encourage reduction

Changing our society's drinking behaviour requires action across the community. Clinicians in primary care can contribute by adopting a similar mindset to assessing alcohol harm as they do for smoking or blood pressure testing, i.e.:

- Regularly enquire about alcohol use
- Emphasise the need to reduce use in patients who misuse alcohol
- Regularly follow up patients who have been identified as having a high alcohol intake
- If appropriate, discuss psychological or pharmacological treatment options

The ABC approach to alcohol misuse

The **ABC** approach to smoking cessation is well known. A similar approach is recommended for identifying and assisting patients who are misusing alcohol: **A**sk, **B**rief intervention and **C**ounselling.[4]

Traditional approaches to alcohol misuse focus on identifying patients who meet diagnostic criteria, e.g. alcoholism, alcohol abuse or dependence, and referring them as appropriate.[14] Patient-focused approaches recognise that alcohol-related harms also occur in people who do not meet the criteria for a formal diagnosis of an alcohol use disorder, and concentrate on the impact drinking has on the patient's life and their ability to control their drinking.[14]

Both diagnostic and patient-oriented approaches are helpful: diagnostic categories assist with referral and coding while treatment focuses on the patient's relationship with alcohol and its effects on their physical, social and psychological health.

For the diagnostic criteria of alcohol use disorders in the Diagnostic and Statistical Manual (DSM)-5, see: **http://pubs.niaaa.nih.gov/publications/dsmfactsheet/dsmfact.pdf**

When to suspect alcohol misuse

An increased suspicion of alcohol misuse may be appropriate in patients with:[7]

- Unintentional injuries
- Abnormal liver function tests or elevated mean cell volume (MCV)
- Dyspepsia
- Depression
- Relationship problems
- Hypertension

Although people who misuse alcohol are more likely to have changes in markers of liver function, e.g. persistently elevated gamma glutamyl transferase (GGT) or a high MCV, there is no readily available biomarker with sufficient sensitivity and specificity to test for alcohol misuse.[15]

Ask: the most important step

Many people who drink excessively would consider changing their behaviour if they were advised by a general practitioner that drinking was negatively affecting their health.[16, 17] The New Zealand Medical Association recommends that general practitioners take every opportunity to assess for harmful alcohol use and to provide brief interventions where appropriate.[2]

Recommended upper limits of drinking

Drinking alcohol is not recommended for children and pregnant women. For other adults, recommended upper limits of intake to reduce the long-term risk from drinking are:[12]

- Females:
  - Two standard drinks* daily

    AND
  - No more than ten standard drinks per week

    AND
  - At least two days with no drinking

- Males:
  - Three standard drinks daily

    AND
  - No more than 15 per standard drinks week

    AND
  - At least two days with no drinking

* One standard drink in New Zealand equals 10 g of pure alcohol. Examples of standard drinks include a 100 mL glass of wine, a 330 mL can of beer or a 30 mL measure of spirits.

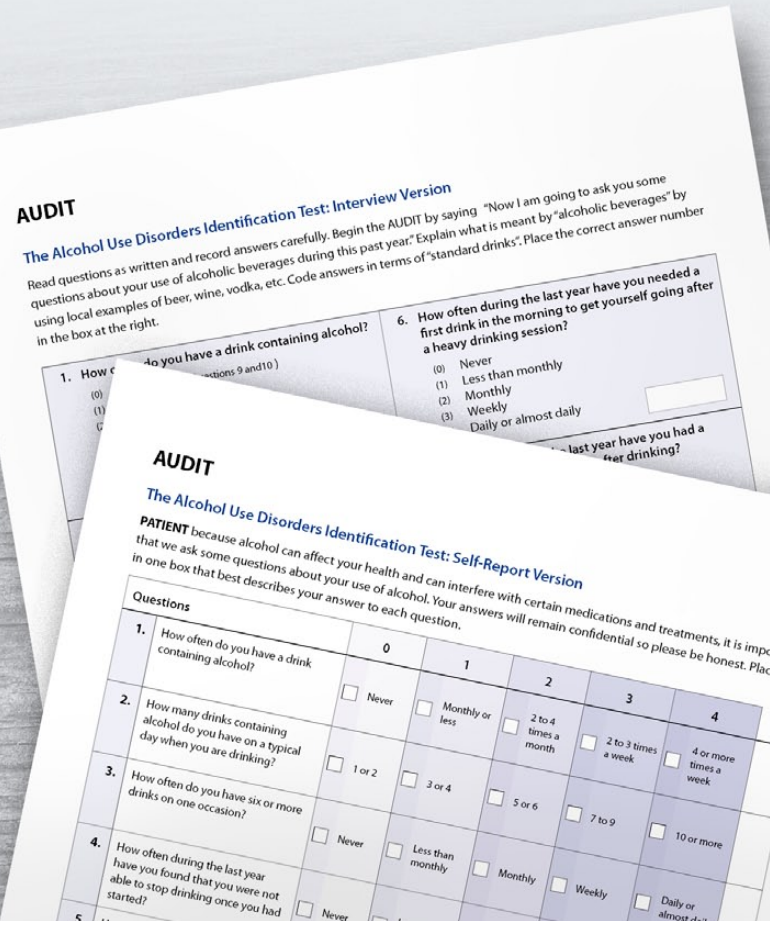
No level of alcohol intake is, however, risk free. Drinking guidelines in the United Kingdom recommend slightly lower levels than those shown above and estimate that people drinking less than this have a 1% lifetime risk of dying from an alcohol-related disease.[13]

To reduce the risk of injury while under the influence of alcohol, females are recommended to have no more than four standard drinks on any one occasion, and males no more than five standard drinks on any one occasion.[12]

Accessing copies of AUDIT questionnaires

- AUDIT-C questionnaire: **www.bpac.org.nz/BPJ/2010/June/docs/addiction_AUDIT-C.pdf**
- AUDIT self-report questionnaire: **www.bpac.org.nz/BPJ/2010/June/docs/addiction_AUDIT_self-report.pdf**
- AUDIT questionnaire as an interview delivered by a health professional: **www.bpac.org.nz/BPJ/2010/June/docs/addiction_AUDIT_interview.pdf**
- Clinicians who use *bestpractice* can access AUDIT from "Forms" on the front page of *bestpractice* and in the Decision Support depression module; an electronic copy is incorporated into the patient record.
- Online: "Is your drinking okay?" available on the Health Promotion Agency website: **www.alcohol.org.nz/help-advice/is-your-drinking-ok/tool-is-your-drinking-okay**

"The Alcohol Use Disorders Identification Test. Guidelines for use in primary care" published by WHO provides information on interpreting the results of AUDIT: **http://whqlibdoc.who.int/hq/2001/who_msd_msb_01.6a.pdf**


AUDIT

The Alcohol Use Disorders Identification Test: Interview Version

Read questions as written and record answers carefully. Begin the AUDIT by saying "Now I am going to ask you some questions about your use of alcoholic beverages during this past year." Explain what is meant by "alcoholic beverages" by using local examples of beer, wine, vodka, etc. Code answers in terms of "standard drinks". Place the correct answer number in the box at the right.

1. How often do you have a drink containing alcohol?
(0) Never
(1) Monthly or less
(2) 2 to 4 times a month
(3) 2 to 3 times a week
(4) 4 or more times a week

6. How often during the last year have you needed a first drink in the morning to get yourself going after a heavy drinking session?
(0) Never
(1) Less than monthly
(2) Monthly
(3) Weekly
(4) Daily or almost daily

AUDIT

The Alcohol Use Disorders Identification Test: Self-Report Version

PATIENT Because alcohol can affect your health and can interfere with certain medications and treatments, it is important that we ask some questions about your use of alcohol. Your answers will remain confidential so please be honest. Place in one box that best describes your answer to each question.

Questions	0	1	2	3	4
1. How often do you have a drink containing alcohol?	Never	Monthly or less	2 to 4 times a month	2 to 3 times a week	4 or more times a week
2. How many drinks containing alcohol do you have on a typical day when you are drinking?	1 or 2	3 or 4	5 or 6	7 to 9	10 or more
3. How often do you have six or more drinks on one occasion?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily
4. How often during the last year have you found that you were not able to stop drinking once you had started?	Never				

Questionnaires, e.g. the Alcohol Use Disorders Identification Test (AUDIT – see opposite), can identify patients who are drinking excessively. An alternative approach is the use of direct questions, e.g.:[18]

- "How often do you have six or more drinks on one occasion?"
- "Have you ever had a drink first thing in the morning to get rid of a hangover"

Record when patients have been asked about their alcohol use and their reported levels of consumption. Revisit the topic at least annually for patients aged 15–25 years, every three years between the ages of 25 and 35 years and every five years for patients older than 35 years.[4] More frequent enquiries are appropriate for patients identified as misusing alcohol or if there are suspicions that they are concealing their drinking.

Using questionnaires to detect hazardous drinking

The AUDIT contains ten questions and a score of eight or more has a sensitivity of 84% and specificity of 83% for detecting alcohol use disorder.[15]

Clinicians, however, often find questionnaires rigid and in practice modify or adapt them according to patient responses.[19] A pragmatic approach is to begin with a short series of questions, such as the AUDIT-C, which contains the first three questions of the AUDIT relating to:

- How often alcohol is consumed
- How many alcoholic drinks are usually drunk
- How often six or more drinks are consumed in one session

This preliminary approach is recommended by the Health Promotion Agency and the Royal New Zealand College of General Practitioners.[4] Routinely handing patients the AUDIT-C while they are waiting to see a clinician is one way to initiate alcohol reduction interventions across a practice.

Scoring the AUDIT-C and AUDIT questionnaires

Males with scores of four or more and females with scores of three or more on AUDIT-C can be further questioned using the full AUDIT tool.[4] In approximately 2400 people attending pharmacies in New Zealand, 30% of people had AUDIT-C scores of five or more.[20]

The full AUDIT questionnaire is useful to stratify patients:[4*]

- **Low risk:** ≤ 5 points for females, ≤ 6 points for males
- **Medium risk:** 6–12 points for females, 7–14 points for males
- **High risk:** ≥ 13 points for females, ≥ 15 points for males

* Note: These updated cut-offs are lower than published in BPJ 28, (Jun, 2010).

Patients with low risk

For patients at low risk from drinking encourage their current, or a lower, level of consumption.

Patients with medium to high risk drinking

For all patients with medium to high risk drinking assess the impact drinking has on their life. A useful mnemonic to base the assessment on is the "4Ls":[14]

- Losing it: emotional difficulties, anger, outbursts or depression
- Lover: relationship and family difficulties, e.g. ask "Has a partner or family member suggested you should cut down your drinking?", and if so "What was their reason for suggesting you cut down?"
- Livelihood: employment or educational issues
- Law: any problems with the police or justice system

All patients identified as having medium to high risk drinking behaviour should be offered a brief intervention and counselling in primary care.

For patients identified as medium risk, management in primary care is appropriate supplemented with online resources or telephone support such as the Alcohol and Drug Helpline. Patients with medium risk drinking who fail to improve in primary care may require referral to a service with more intensive treatment.

For patients identified as high risk, consider if referral is required. Patients with severe misuse, e.g. AUDIT scores over 20, may be unable to reduce their drinking and require complete, in some cases life-long, abstinence. High risk patients are likely to require testing for alcohol-related diseases, e.g. liver complications or nutritional deficiencies. For patients with particularly high alcohol intake, e.g. approximately 15 standard drinks per day, assisted withdrawal may be necessary to prevent adverse effects, particularly withdrawal seizures.[15]

Table 1: Questions and common problems encountered when conducting brief interventions for alcohol misuse in primary care.[15, 23, 24]

Question	Factors to consider	Actions
Does the patient consider their drinking is excessive?	Many people who drink in excess are aware their intake is too high; those with the highest levels of intake are most likely to be aware their drinking is excessive	Remind patients of the harms of high alcohol intake and how their drinking compares to low risk intake recommendations
	Some people who drink excessively do not believe they have a problem	For patients who are not interested in discussing or reducing their drinking, record this in their notes and revisit the subject later
Is the patient ambivalent about reducing their drinking?	Ambivalence to change is a normal part of alcohol reduction and is something clinicians can help patients work through. Patients may believe it is simply too difficult to change.	Ask patients what they think is preventing them cutting down, or why they wish to continue drinking. Are there any particular fears they have about cutting down or about what might happen if they continue to drink?
What does the patient want to achieve from reducing drinking?	Abstinence provides many advantages, e.g. money saved, improved relationships, mood and sleep, more usable time in the weekend, weight loss and improved long-term health	Encourage the patient to state the reasons they want to change; this is one of the goals of the intervention
How confident is the patient that they can change?	Very low confidence and multiple failed attempts to reduce alcohol use may indicate severe alcoholism	Consider whether motivational interviewing and encouragement is appropriate, or whether the patient has severe alcoholism and requires additional assistance

Brief interventions and counselling to reduce drinking

Brief interventions in primary care are effective at reducing heavy drinking. A Cochrane analysis of 22 trials in primary care reported a reduction averaging four to five standard drinks per week per person, after one to five sessions delivered by a general practitioner, practice nurse or psychologist.[21, 22]

The aim of brief interventions and counselling is to help people recognise the problems caused by their drinking and help them to resolve any ambivalence to change. Consider the patients motivation to change and individual barriers (Table 1). Discuss what patients want to gain from reducing drinking and where appropriate incorporate motivational interviewing.[15]

For further information on motivational interviewing, see: "Motivational interviewing", BPJ 17 (Oct, 2008).

Set realistic goals

Help the patient set a realistic goal which can be achieved by the next follow-up. This could involve avoiding triggers for drinking or a specific goal set by the patient. Practical advice for patients may include:

- Keeping a drinking diary. Phone apps can monitor alcohol consumption, e.g. **www.drinkaware.co.uk/app**
- Avoid keeping alcohol in the house
- Plan other activities, e.g. social sports, exercising, seeing a movie
- Telling friends or family about the goal to cut down
- Keep several week days alcohol-free
- Have strategies for dealing with the pressure or desire to drink at social occasions, e.g.:
  - A rehearsed way of saying "no"
  - Being the designated driver in a group
  - Alternating between alcoholic and non-alcoholic drinks
  - Buying lower alcohol drinks
  - Buying smaller servings, e.g. a glass of beer rather than a jug
  - Taking sips rather than mouthfuls
  - Avoiding buying "rounds"
  - Eating during the occasion
  - Setting a budget
  - Arriving late and leaving early

Encourage patients to make use of telephone and online resources or make contact with a support group, particularly when abstinence is indicated:

- Alcohol and Drug Helpline, 0800 787 797, **www.alcoholdrughelp.org.nz**. Clinicians can also refer patients to the helpline, see: **alcoholdrughelp.org.nz/referrals**
- Salvation Army Bridge programme, 0800 530 000 see: **www.salvationarmy.org.nz/need-assistance/addictions/alcohol-and-drug-support**
- Alcoholics Anonymous: **www.aa.org.nz**
- Like A Drink? **www.likeadrink.org.nz/howitworks.aspx**
- Living Sober: **www.livingsober.org.nz**
- Hello Sunday Morning: **www.hellosundaymorning.org**

Family members and partners may also benefit from support and can be encouraged to contact organisations such as Al-Anon Family Groups (**www.al-anon.org.nz**), local Māori or Pacific health providers or other local services.

Arrange a date for follow-up to review progress.

The Royal New Zealand College of General Practitioners offers a training module "Implementing the ABC alcohol approach in primary care"; see: **www.rnzcgp.org.nz/clinical-effectiveness-modules/**

Referral options for further assistance vary

Decisions to refer to addiction services in secondary care or a Community Alcohol and Drug Service (CADS) should be made on a case by case basis. Local referral guidelines and criteria vary; some CADS services can be accessed by self-referral.

A directory of local services around the country is available at: **alcoholdrughelp.org.nz/directory/**

Medicines for the treatment of alcohol use disorder

Medicines to help patients reduce their drinking and/or maintain abstinence will most likely be prescribed in secondary care or CADS and should always be used in conjunction with psychological approaches.

Medicines which can be initiated in primary care

Disulfiram is the only subsidised medicine which can be initiated in primary care. It is indicated as an adjunct to psychological approaches to assist patients maintain abstinence from alcohol. Disulfiram does not appear to significantly lower the rate of relapse, but may reduce both the frequency of drinking and the amount consumed if relapse occurs.[15, 25] It is likely to be most useful for patients who are highly motivated; the greatest evidence of benefit is when dosing is supervised by a family member, friend or health professional.[26, 27]

Disulfiram inhibits the aldehyde dehydrogenase enzyme and causes the accumulation of acetaldehyde after drinking. Patients taking disulfiram will feel unwell five to ten minutes after ingesting alcohol; the most common symptoms are nausea, dizziness, flushing, changes in heart rate and blood pressure and palpitations.[25, 27] Mild reactions last 30 to 60 minutes. Consuming **any** alcohol while taking disulfiram is not recommended and disulfiram should only be considered in patients who are attempting abstinence. Patients may need to seek medical attention if they experience severe disulfiram-alcohol interactions.[27]

In patients managed in primary care, disulfiram may be considered in combination with psychological approaches:[15]

- As a second-line treatment if patients have tried and failed to abstain using psychological interventions alone
- If patients specifically request the use of a medicine to help them reduce their drinking

Contraindications for patients taking disulfiram include severe hepatic or renal impairment, hypertension, coronary artery disease, a high risk of suicide and the concurrent use of metronidazole, which also causes a disulfiram-like reaction when alcohol is consumed.[28]

For a full list of contraindications, see: **www.nzf.org.nz/nzf_2827**

Before initiating disulfiram:[15]

- Consider whether the patient's eligibility for assistance has changed, e.g. if they have tried psychological interventions they may now qualify for treatment in secondary care
- Assess renal and liver function
- Ensure patients understand the mechanism of action of the medicine: it works primarily by making them ill if they drink and may not reduce cravings or the desire to drink.
- Tell patients to avoid alcohol from other sources, e.g. perfumes, mouthwash, food and cough medicines
- Confirm the patient has not consumed alcohol in the last 24 hours before taking the first dose

The recommended treatment regimen for disulfiram is:[28]

- One 200 mg tablet, daily, taken in the morning

If patients report that they are able to continue drinking without a sufficient adverse reaction to alcohol, dosing may be increased up to 500 mg, daily.[15, 28]

The adverse effects of disulfiram, excluding disulfiram-ethanol interactions, include somnolence and drowsiness, headache, fatigue, reduced libido or impotence and a metallic or garlic-like aftertaste; usually occurring during the first weeks of treatment.[27, 28] Patients who experience drowsiness may take their dose in the evening.[29] Advise patients that liver complications can arise suddenly. Patients should seek medical attention if they develop a fever, are unwell or develop jaundice.[15]

Follow-up patients at least every two weeks during the first two months of use, then monthly for the next four months.[15] Patients with alcohol use disorders have a high risk of relapse during the first six to twelve months of treatment; courses of over six months may be necessary.[15] The decision to discontinue pharmacological treatment should be made with the patient taking into account the duration of stable abstinence.[27]

Medicines initiated in secondary care

Naltrexone or acamprosate can assist patients with alcohol use disorder. Consultation with a clinician in addiction services is recommended to determine if these medicines are appropriate for patients who do not wish to take or have previously trialled disulfiram.

Naltrexone

Naltrexone is an opioid receptor antagonist indicated as an adjunctive treatment to reduce drinking and prevent relapse. It is available with Special Authority approval following initial application by a clinician in CADS.

Naltrexone has been shown to reduce the risk of patients relapsing with numbers-needed-to-treat (NNT) of 20 to prevent one patient engaging in any drinking, and 12 to prevent one patient relapsing into heavy drinking.[25] It is effective in patients who may have particular difficulty maintaining abstinence, such as those with a family history of alcohol use disorders or patients who experience intense cravings for alcohol during withdrawal.[27]

Naltrexone is contraindicated in people who are using opioid analgesics or who are anticipated to require them, e.g. a planned surgery, and should be used with caution in patients with liver disease. Common adverse effects include gastrointestinal upset, headaches, dizziness and drowsiness.[27]

Acamprosate

Acamprosate can help patients maintain abstinence. Head-to-head trials suggest naltrexone and acamprosate have similar efficacy at reducing drinking relapses.[25] It is not subsidised or approved for use in New Zealand and can only be supplied as a Section 29 medicine.[28]

For further information on prescribing Section 29 medicines, see: **www.bpac.org.nz/BPJ/2013/March/unapproved-medicines.aspx**

Familiarity can lead to complacency

Due to widespread availability and use it is easy for clinicians to view drinking alcohol with less caution than it deserves. Discussing a patient's drinking habits can be a delicate subject, but general practitioners are in a unique position to increase awareness of the risks of drinking, and to help patients work through barriers to reduce their consumption. As patients are unlikely to volunteer information about their alcohol intake during a consultation, asking about drinking needs to become routine practice in primary care.

Acknowledgement: Thank you to **Professor Doug Sellman**, Director of the National Addiction Centre, Christchurch School of Medicine and Health Sciences, University of Otago for expert review of this article.

Alcohol-medicine interactions

Long-term alcohol use or binge drinking can affect prescription and over-the-counter medicines, as well as exacerbating some medical conditions (see Table 2). In general, when alcohol is combined with a medicine, the effects of alcohol are enhanced and there is a variable effect on the medicine, i.e. its action may be increased, diminished or remain unchanged. Explain the risks of alcohol-medicine interactions to patients identified as misusing alcohol. The choice of medicines or doses may have to be revised in patients who continue to misuse alcohol; a local pharmacist may be able to offer advice.

Interactions can involve a range of mechanisms and result in a wide range of effects, including:

- **Central nervous system (CNS) effects** such as sedation, reduced coordination and low mood will be exacerbated when medicines with similar side effects are taken, e.g. opioid analgesics, tricyclic antidepressants (especially in the first few days of use) and benzodiazepines. Alcohol can also mask other causes of CNS depression, such as hypoglycaemia, leading to undesirable delays in diagnosis and treatment. The seizure threshold is raised by alcohol and declines on cessation of drinking; seizures are more likely 6 to 48 hours following the consumption of alcohol.[30]
- **Changes in cytochrome P450 function:** P450 enzymes are suppressed with binge drinking but increased with long-term alcohol consumption. These changes can alter the efficacy of warfarin, propranolol and phenytoin, and increase levels of toxic metabolites, e.g. from paracetamol.
- **Blood pressure variation:** Acute alcohol use can lower blood pressure. Long-term moderate to heavy drinking raises blood pressure and reduces the efficacy of antihypertensive drugs. Patients commencing antihypertensive treatment who misuse alcohol are more vulnerable to first-dose hypotension.

Table 2: Commonly used medicines which interact with alcohol, adapted from the National Institute on Alcohol Abuse and Alcoholism (NIAAA).[31]

Medicine type	Medicine	Possible reactions with alcohol
Analgesia	Paracetamol	Severe liver damage and death have been reported in heavy persistent drinkers; evidence suggests use is relatively safe in most drinkers who are not malnourished. Dose reduction may be required in patients with alcoholic liver disease[32]
	NSAIDs	Gastrointestinal upset, increased risk of bleeding and ulceration; liver damage; tachycardia
	Opioids	Drowsiness, dizziness; increased risk of overdose; respiratory depression; impaired motor control; unusual behaviour; memory problems
Antianginals	Isosorbide di- or mononitrate Glyceryl trinitrate	Tachycardia, sudden decreases in blood pressure, dizziness, fainting
Anticoagulant	Warfarin	Increased risk of bleeding, patients should limit intake to one to two drinks on any occasion;[33] heavier drinking may cause bleeding or conversely a hypercoagulable state with an increased risk of blood clots, strokes, or myocardial infarction
Antidepressants	Tricyclics SSRIs SNRIs Mirtazapine	Drowsiness, dizziness; increased risk of overdose; increased feelings of depression or hopelessness (all medicines listed); impaired motor control (mirtazapine)
	Monoamine oxidase inhibitors	Serious cardiac effects; hypertensive crisis
Antiemetics	Promethazine Cyclizine Chlorpromazine Prochlorperazine Metoclopramide Ondansetron	Increased sedation and drowsiness; increased absorption or effect of alcohol (metoclopramide, ondansetron)
Antiepileptics	Phenytoin Gabapentin Carbamazepine Topiramate Sodium valproate Levetiracetam Phenobarbital	Drowsiness, dizziness; increased risk of seizures; liver damage (sodium valproate); unusual behaviour and changes in mental health, e.g. suicidal ideation (topiramate)
Antihypertensives	ACE-inhibitors Angiotensin receptor blockers Alpha-blockers Beta-blockers Calcium-channel blockers Clonidine	Dizziness, fainting, drowsiness; arrhythmias

Table continues over page

Continued from previous page

Medicine type	Medicine	Possible reactions with alcohol
Antimicrobials	Co-trimoxazole Trimethoprim Erythromycin Nitrofurantoin Isoniazid Metronidazole Ornidazole	Tachycardia, sudden changes in blood pressure; gastrointestinal symptoms, headache, or flushing or redness of the face (ornidazole, metronidazole; co-trimoxazole; trimethoprim); liver damage (isoniazid); reduced absorption of erythromycin
Antipsychotics	Aripiprazole Clozapine Olanzapine Quetiapine Risperidone Paliperidone Ziprasidone	Drowsiness, postural hypotension; increased risk of extrapyramidal effects
Anxiolytics and hypnotics	Benzodiazepines Zopiclone Buspirone	Drowsiness, dizziness; increased risk for overdose; respiratory depression; impaired motor control; unusual behaviour; memory problems
CNS stimulants	Methylphenidate Dexamphetamine	Dizziness, drowsiness, impaired concentration (methylphenidate); possible increased risk for heart problems (dexamphetamine)
Diabetes medicines	Glipizide Metformin Insulin	Hypoglycaemia, flushing reaction (nausea, vomiting, headache, tachycardia, sudden changes in blood pressure); weakness; lactic acidosis (metformin); reduced awareness of symptoms of hypoglycaemia (all diabetes medicines)
H_2-receptor antagonists	Ranitidine	Tachycardia; increased blood alcohol levels after drinking causing greater intoxication
Mood stabilisers	Sodium valproate Lithium	Drowsiness, dizziness; tremors; increased risk for side effects, such as restlessness, impaired motor control; loss of appetite; gastrointestinal upset; irregular bowel movement; joint or muscle pain; depression; liver damage (sodium valproate)
Nicotine dependence	Bupropion Varenicline	Increased alcohol intoxication
Prostatic hypertrophy	Doxazosin Tamsulosin Terazosin Prazosin	Dizziness, light headedness, fainting
Disease-modifying anti-rheumatic medicines	Methotrexate Leflunomide	Increased risk of liver toxicity, e.g. cirrhosis and fibrosis
Sedating antihistamines	Alimemazine Chlorphenamine Dexchlorpheniramine Promethazine	Increased sedation and drowsiness

References:

1. Ministry of Health (MoH). New Zealand Health Survey 2014-15. Adult data tables: Health status, health behaviours and risk factors. 2015. Available from: www.health.govt.nz/publication/annual-update-key-results-2014-15-new-zealand-health-survey (Accessed May, 2016).
2. New Zealand Medical Association (NZMA). Reducing alcohol related harm. NZMA 2015. Available from: www.nzma.org.nz/advocacy/advocacy-issues/reducing-alcohol-related-harm (Accessed May, 2016).
3. World Cancer Research Fund International. Continuous Update Project (CUP) matrix. 2015. Available from: www.wcrf.org/int/research-we-fund/continuous-update-project-findings-reports/continuous-update-project-cup-matrix (Accessed May, 2016).
4. Health Promotion Agency, Royal New Zealand College of General Practitioners. Implementing the ABC alcohol approach in primary care. 2012. Available from: www.rnzcgp.org.nz/assets/documents/News--Events/CGP4044-Clinical-Effectiveness-Modules-Template-v2-LR.pdf (Accessed May, 2016).
5. Connor J, Kydd R, Shield K, et al. The burden of disease and injury attributable to alcohol in New Zealanders under 80 years of age: marked disparities by ethnicity and sex. N Z Med J 2015;128:15–28.
6. National Institute for Health Care Excellence (NICE). Alcohol-use disorders: diagnosis and management of physical complications. 2010. Available from: www.nice.org.uk/guidance/cg100 (Accessed May, 2016).
7. National Institute on Alcohol Abuse and Alcoholism. Helping patients who drink too much: a clinician's guide. 2005. Available from: http://pubs.niaaa.nih.gov/publications/Practitioner/CliniciansGuide2005/clinicians_guide.htm (Accessed May, 2016).
8. Baan R, Straif K, Grosse Y, et al. Carcinogenicity of alcoholic beverages. Lancet Oncol 2007;8:292–3. doi:10.1016/S1470-2045(07)70099-2
9. New Zealand Law Commission (NZLC). Alcohol in our lives: curbing the harm. Wellington: NZLC 2009. Available from: www.lawcom.govt.nz/sites/default/files/projectAvailableFormats/NZLC%20IP15.pdf (Accessed May, 2016).
10. Meiklejohn J, Connor J, Kypri K. One in three New Zealand drinkers reports being harmed by their own drinking in the past year. N Z Med J 2012;125:28–36.
11. Health Quality & Safety Commission. Polypharmacy in older people. 2015. Available from: http://hqsc.sites.silverstripe.com/our-programmes/health-quality-evaluation/projects/atlas-of-healthcare-variation/polypharmacy-in-older-people/ (Accessed May, 2016).
12. Health Promotion Agency. Low-risk alcohol drinking advice. Available from: http://alcohol.org.nz/help-advice/advice-on-alcohol/low-risk-alcohol-drinking-advice (Accessed May, 2016).
13. Department of Health (UK). UK Chief Medical Officers' alcohol guidelines review. 2016. Available from: www.gov.uk/government/uploads/system/uploads/attachment_data/file/489795/summary.pdf (Accessed May, 2016).
14. McMenamin J. Alcohol: screening, assessment and management in general practice. N Z Fam Physician 2007;34:90–3.
15. National Institute for Health Care Excellence (NICE). Alcohol-use disorders: diagnosis, assessment and management of harmful drinking and alcohol dependence. 2011. Available from: www.nice.org.uk/guidance/cg115 (Accessed May, 2016).
16. Borok J, Galier P, Dinolfo M, et al. Why do older unhealthy drinkers decide to make changes or not in their alcohol consumption? Data from the Healthy Living as You Age study. J Am Geriatr Soc 2013;61:1296–302. doi:10.1111/jgs.12394
17. Lieberman DZ, Cioletti A, Massey SH, et al. Treatment preferences among problem drinkers in primary care. Int J Psychiatry Med 2014;47:231–40. doi:10.2190/PM.47.3.d
18. Mitchell AJ, Bird V, Rizzo M, et al. Accuracy of one or two simple questions to identify alcohol-use disorder in primary care: a meta-analysis. Br J Gen Pract 2014;64:e408-418. doi:10.3399/bjgp14X680497
19. Mules T, Taylor J, Price R, et al. Addressing patient alcohol use: a view from general practice. J Prim Health Care 2012;4:217–22.
20. Sheridan J, Stewart J, Smart R, et al. Risky drinking among community pharmacy customers in New Zealand and their attitudes towards pharmacist screening and brief interventions. Drug Alcohol Rev 2012;31:56–63. doi:10.1111/j.1465-3362.2011.00293.x
21. O'Donnell A, Anderson P, Newbury-Birch D, et al. The impact of brief alcohol interventions in primary healthcare: a systematic review of reviews. Alcohol Alcohol 2014;49:66–78. doi:10.1093/alcalc/agt170
22. Kaner EFS, Beyer F, Dickinson HO, et al. Effectiveness of brief alcohol interventions in primary care populations. Cochrane Database Syst Rev 2007;:CD004148. doi:10.1002/14651858.CD004148.pub3
23. Williams EC, Kivlahan DR, Saitz R, et al. Readiness to change in primary care patients who screened positive for alcohol misuse. Ann Fam Med 2006;4:213–20. doi:10.1370/afm.542
24. Sim MG, Wain T, Khong E. Influencing behaviour change in general practice - Part 1 - brief intervention and motivational interviewing. Aust Fam Physician 2009;38:885–8.
25. Jonas DE, Amick HR, Feltner C, et al. Pharmacotherapy for adults with alcohol use disorders in outpatient settings: a systematic review and meta-analysis. JAMA 2014;311:1889–900. doi:10.1001/jama.2014.3628
26. Connor JP, Haber PS, Hall WD. Alcohol use disorders. Lancet 2016;387:988–98. doi:10.1016/S0140-6736(15)00122-1
27. National Institute on Alcohol Abuse and Alcoholism (NIAAA). Medication for the treatment of alcohol use disorder: a brief guide. Rockville (MD): Department of Health and Human Services 2015. Available from: http://store.samhsa.gov/shin/content//SMA15-4907/SMA15-4907.pdf (Accessed May, 2016).
28. New Zealand Formulary (NZF). NZF v47. 2015. Available from: www.nzf.org.nz (Accessed May, 2016)
29. Actavis New Zealand Ltd. Antabuse (disulfiram) data sheet. 2015. Available from: www.medsafe.govt.nz/profs/datasheet/a/Antabusetab.pdf (Accessed May, 2016).
30. Hillbom M, Pieninkeroinen I, Leone M. Seizures in alcohol-dependent patients: epidemiology, pathophysiology and management. CNS Drugs 2003;17:1013–30.
31. National Institute on Alcohol Abuse and Alcoholism. Harmful interactions. Mixing alcohol with medicines. 2014. Available from: http://pubs.niaaa.nih.gov/publications/Medicine/Harmful_Interactions.pdf (Accessed May, 2016).
32. Hayward KL, Powell EE, Irvine KM, et al. Can paracetamol (acetaminophen) be administered to patients with liver impairment? Br J Clin Pharmacol 2016;81:210–22. doi:10.1111/bcp.12802
33. Fiumara K, Goldhaber SZ. Cardiology patient pages. A patient's guide to taking coumadin/warfarin. Circulation 2009;119:e220-222. doi:10.1161/CIRCULATIONAHA.108.803957