ROSACEA | MANAGING NEUROPATHIC PAIN | OUT-OF-CLINIC BLOOD PRESSURE TESTING

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Alcohol misuse: how to help patients in primary care

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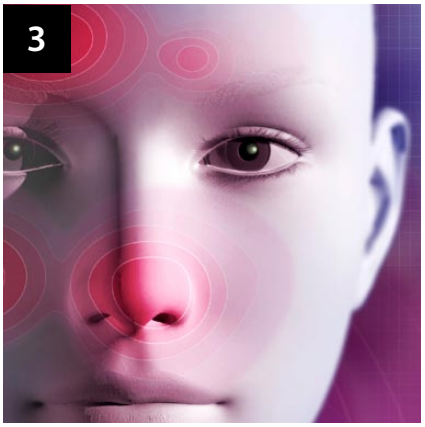

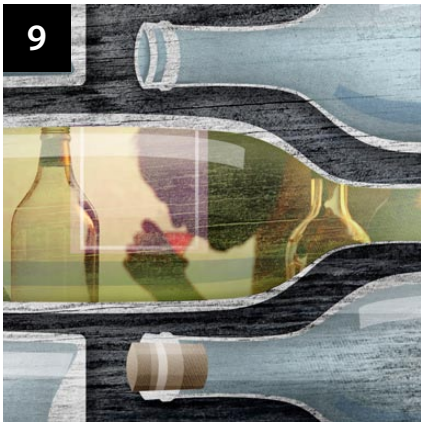

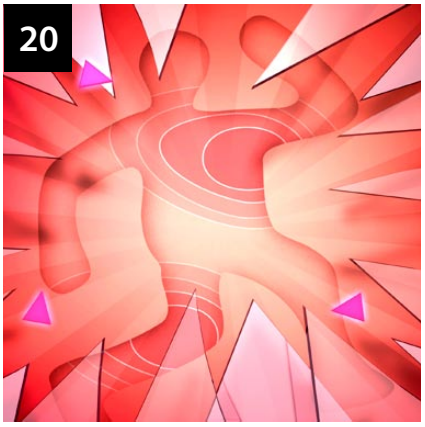

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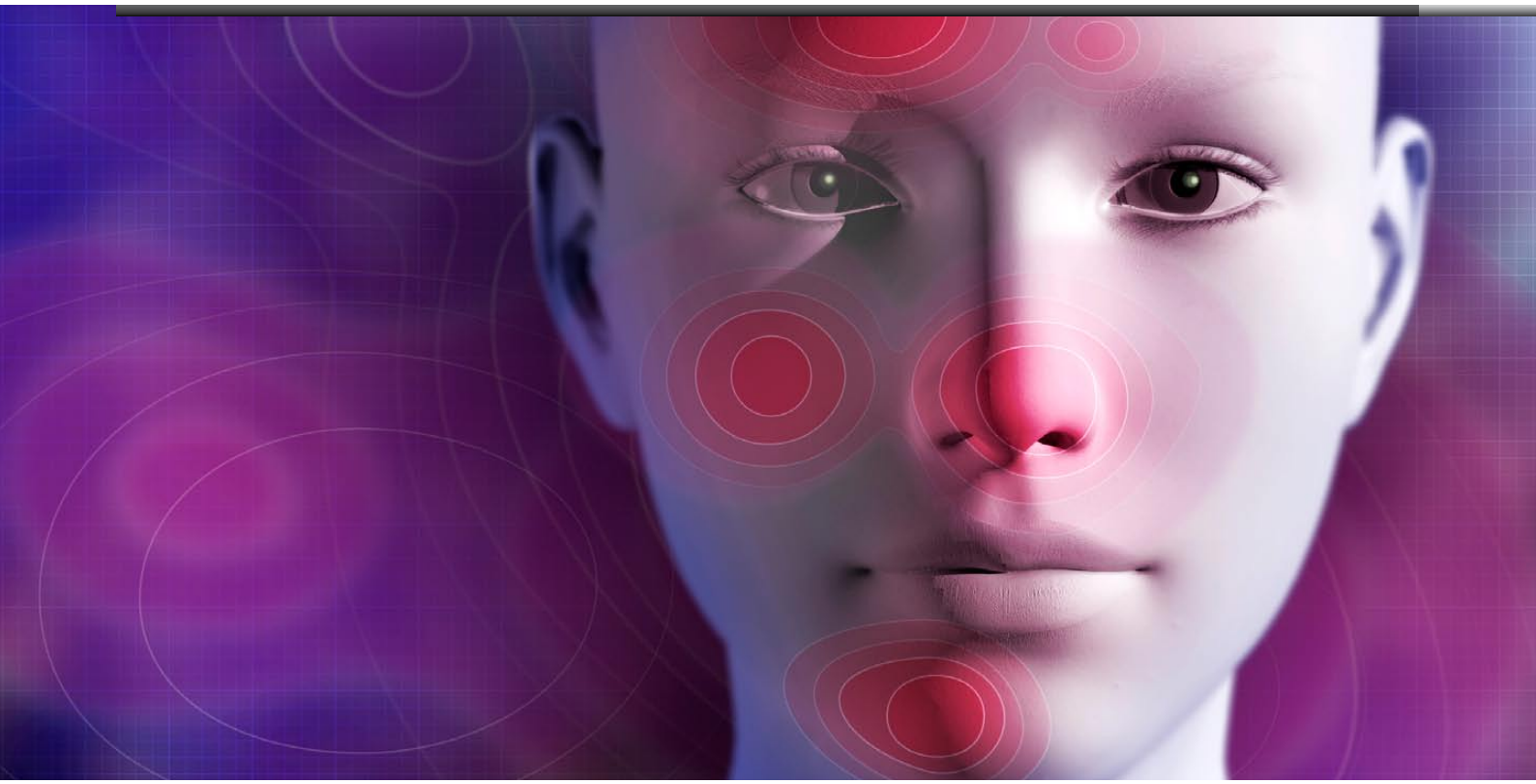

Rosacea: seeing red in primary care

Rosacea is an inflammatory facial skin disease that can cause patients embarrassment and reduce their quality of life. There are several different subtypes of rosacea and multiple treatments may be required to achieve satisfactory symptom relief. Topical treatments are first-line with oral treatments reserved for patients with persistent and severe rosacea. It should be noted that there is a lack of subsidised topical treatments and oral treatments that are subsidised are "off-label".

Rosacea is often encountered but is poorly understood

Rosacea is an inflammatory facial skin disease characterised by flushing, redness, papules, pustules and telangiectasia (permanent dilation of small blood vessels).[1, 2] A person's cheeks, chin, forehead and nose are typically affected while peri-oral and peri-orbital areas are often spared.[2] Rosacea may be transient, recurrent or persistent.[1] In the past the condition was sometimes referred to as acne rosacea, however, rosacea is unrelated to acne vulgaris.[1]

New Zealand data on the prevalence of rosacea is lacking. Worldwide estimates of prevalence vary from less than 1% to 22% depending on the population and the definition used.[2, 3] Rosacea is often encountered in people of Celtic descent with blue eyes and fair skin,[1] leading to the expression "the curse of the Celts". Rosacea may also occur in Māori, Pacific and Asian people. A study in the United States suggests that people with white skin are twice as likely to present to a health provider and be diagnosed with rosacea as people of Pacific Island or Asian ethnicity.[4] Rosacea is most frequently diagnosed in people aged 40 – 59 years and is rare in people aged under 30 years.[3]

There are four subtypes of rosacea (see: "The subtypes of rosacea") which may respond differently to treatment. Patients with rosacea often have more than one subtype and may require multiple treatments.[5]

The pathophysiology of rosacea

Multiple factors are known to contribute to the development of rosacea. A genetic cause has not been found, although genes involved in both the innate and adaptive immune system appear to be involved in overactive immune signalling.[6] High levels of cathelicidins are often present in patients with rosacea.[1] These antimicrobial peptides, which are part of the innate immune system, promote neutrophilic infiltration of the dermis and dilation of blood vessels causing oedema and further inflammation.[1]

The subtypes of rosacea

There are four subtypes of rosacea. These subtypes do not represent progressive stages of the disease and patients may develop multiple subtypes at the same time. Concurrent seborrhoeic dermatitis is often present, which can make diagnosis difficult.

Erythematotelangiectatic rosacea features flushing and persistent facial erythema, with or without telangiectasia (Figure 1). Patients are typically unaffected in periorbital areas but are likely to have a history of flushing and may also have central facial oedema, a sensation of stinging or burning and rough or scaly skin.

Papulopustular rosacea features transient papules or pustules (Figure 2) which may occur in peri-oral, peri-nasal or peri-ocular areas. Papulopustular rosacea and erythematotelangiectatic rosacea may occur together. Telangiectasia can be present, but this is often obscured by erythema and pustules. This subtype may be confused with acne vulgaris, which may occur concurrently, particularly in younger patients.

Phymatous rosacea features thickened skin and irregular surface nodules. Changes to the nose are the most prevalent feature, i.e. rhinophyma (Figure 3), but phymatous rosacea can occur on the person's chin, forehead, cheeks and ears. Phymatous rosacea is often seen in combination with the erythematotelangiectatic and papulopustular rosacea subtypes.

Ocular rosacea (Figure 4) is characterised by inflammation of the eyelid and the eye, which may include the conjunctiva and cornea, and rarely the iris and sclera.[5, 10]

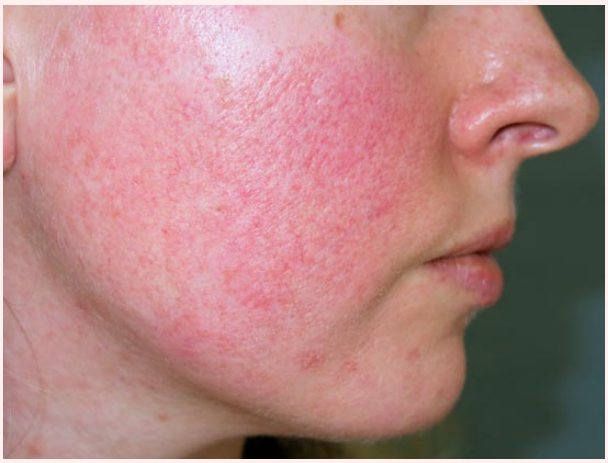

Figure 1: Telangiectasia

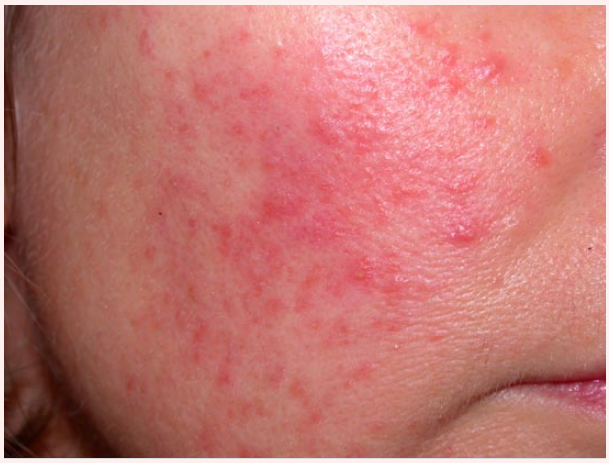

Figure 2: Mild papules and pustules

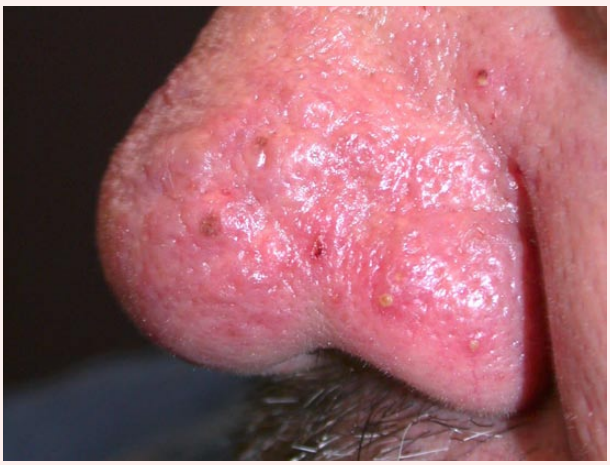

Figure 3: Early rhinophyma and inflammatory papules

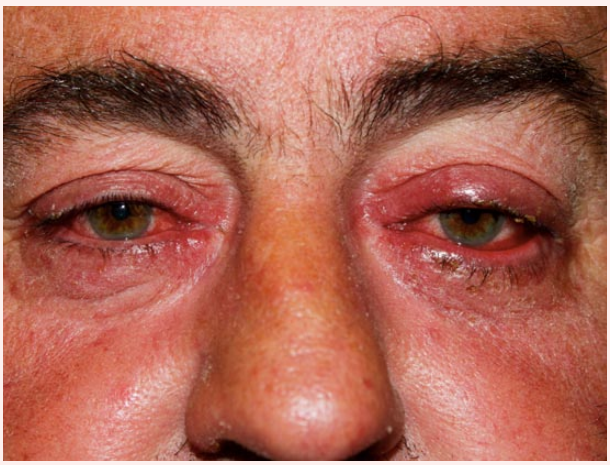

Figure 4: Ocular rosacea

Ultraviolet (UV) radiation worsens the symptoms of rosacea as it has a pro-inflammatory effect on skin. UVA light causes collagen denaturation and activates the inflammatory cascade.[6] UVB light increases the expression of fibroblast and vascular growth factors, which promote skin hypervascularity.[6] High levels of matrix metalloproteinases (MMPs), such as collagenase and elastase, may also contribute to inflammation and the thickened, harder skin of people with rosacea through tissue remodelling.[1] MMPs have also been implicated in the loss of dopaminergic neurons and it has been reported that rosacea is an independent risk factor for Parkinson's disease.[7]

Hypersensitive receptors in the skin may also be stimulated by factors such as heat or capsaicin in foods and exacerbate flushing and burning.[6] Increased water loss across the epithelium and decreased epidermal hydration may contribute to the pathogenesis of rosacea by reducing the skin's barrier function.[6]

The microbiology of rosacea

People with rosacea have increased counts of *Staphylococcus epidermidis* and the hair follicle mite *Demodex folliculorum*. These organisms stimulate skin pathogen receptors, which increase inflammation.[6] *Bacillus oleronius* has also been linked to rosacea, probably due to increased inflammatory cytokine production.[6]

Helicobacter pylori may be associated with the development of rosacea, as there is a high prevalence of the bacterium in the gastrointestinal tract of patients with rosacea.[8] *H. pylori* can increase levels of nitrous oxide in the blood or tissues which may contribute to erythema.[8]

The symptoms of rosacea can cause psychological issues

People with rosacea often have dry, flaky, sensitive skin that may burn or sting when facial creams, e.g. sunscreen or make-up, are applied.[1] They may also experience blepharitis, sore and inflamed eyes, swelling of facial areas and a subgroup of patients develop an enlarged nose (rhinophyma) with prominent pores (sebaceous hyperplasia).[1] Rosacea can result in embarrassment, social anxiety and depression.[9]

A diagnosis of rosacea is based on symptoms and signs

A diagnosis of rosacea can be made clinically in patients with characteristic symptoms and signs and investigations are not usually required.[1] If there is uncertainty a skin biopsy may be performed with long-term inflammation and vascular changes consistent with a diagnosis of rosacea.[1]

The patient's history may reveal triggers that may be avoided as well as identifying the symptoms that the patient finds most bothersome, in order to guide treatment.

Erythema, pustules and telangiectasia are the primary symptoms

Patients with rosacea often initially develop temporary facial flushing similar to a blush or sunburn in the centre of the face due to vasodilation. This erythema gradually becomes more noticeable and permanent, with the development of swelling. A diagnosis of rosacea requires one or more of the following primary symptoms:[1]

- Transient erythema, i.e. flushing
- Non-transient erythema
- Telangiectasia (Figure 1)
- Papules or pustules (Figure 2)

Secondary features that that can assist in the diagnosis include a burning or stinging sensation, dry skin, oedema, phymatous changes, i.e. thickened skin, nodularities and rhinophyma, and ocular symptoms.[6]

Ocular rosacea is often present

Many people with rosacea will also have signs of ocular rosacea (Figure 4).[5] This may cause watery or bloodshot eyes, blurred vision, light sensitivity, dry eyes, burning, stinging or itchy eyes as well as being prone to recurrent hordeolum (stye).[5] Conjunctivitis, anterior blepharitis including irregularities of the eyelash bases and eyelid margin, and posterior blepharitis effecting ducts and eye secretions, and meibomian cysts (chalazia) may also be present.[5,10] Symptoms of more severe ocular rosacea may include keratitis, iritis, episcleritis and scleritis.[5]

Differential diagnoses to consider

Dermatological conditions with symptoms and signs similar to rosacea include:[1]

- Acne vulgaris
- Rosacea fulminans
- Contact dermatitis
- Steroid rosacea
- Perioral or periorificial dermatitis
- Seborrhoeic dermatitis

The patient's age, history and symptoms are helpful when considering the possibility of other dermatological conditions. New onset acne vulgaris is uncommon in older patients. The presence of open and closed comedones (blackheads and whiteheads) makes a diagnosis of acne vulgaris more likely, as these are not a feature of rosacea.[1] Rosacea fulminans occurs more often in young adult females and may resemble rosacea or severe acne, but it is not associated with flushing. A recent

history of topical steroids or thick emollient use is consistent with steroid rosacea. An irregular distribution and recurrent episodes of blistering with swelling, or red, dry plaques may indicate contact dermatitis. Seborrhoeic dermatitis and perioral/periorificial dermatitis often affect other areas of the patient's skin and are not associated with facial flushing.

The treatment of rosacea

The three components of rosacea treatment are:[11]

1. Patient education and advice
2. Pharmacological treatment
3. Follow-up and referral as required

The goal of management is to improve the quality of life of patients by alleviating problematic symptoms;[9] multiple long-term treatment strategies may be necessary to achieve this. Patient satisfaction is used to assess treatment efficacy as there are no validated assessment tools available.

Patient education and advice

Effective communication can improve the well-being and quality of life of people with rosacea.[11] It is important to set realistic treatment goals.

Patients can be encouraged to keep a diary to identify triggers, which may include:[11]

- Sunlight
- Temperature extremes
- Wind
- Spicy foods
- Hot drinks; due to temperature rather than caffeine[12]
- Alcohol
- Stress
- Medicines, e.g. topical corticosteroids, nicotinic acid and other vasodilators

Reducing triggers and protecting facial skin are important aspects of management, particularly as many of the pharmacological treatments for rosacea are unsubsidised and/or unapproved. Patients can be advised to:[1]

- Regularly use moisturisers, e.g. non-greasy emollients, to reduce moisture loss and improve skin texture, if dry
- Wear a hat and apply sunscreen or sunscreen containing moisturiser when outdoors
- Reduce exposure to spicy foods, alcohol and hot showers
- Place ice between the cheek and gum for the short-term reduction of erythema
- Manage blepharitis from ocular rosacea through:[10]
  - Warm compression and gentle massage of the eyelid margin
  - Cleaning the eyelid with a cotton bud or along the eyelid margin with dilute baby shampoo
  - The avoidance of cosmetics around the eye, particularly eyeliner
  - Using preservative-free ocular lubricants to treat dry eyes

 For further information on blepharitis, see: "Causes, complications and treatment of a red eye", BPJ 54 (Aug, 2013).

The pharmacological treatment of rosacea

Topical treatments are appropriate for mild rosacea and these should, ideally, be trialled first and oral treatments reserved for patients with moderate to severe rosacea.

Topical treatments for rosacea

Head-to-head studies have been unable to determine whether topical metronidazole or topical azelaic acid is more effective for the treatment of rosacea.[5]

Metronidazole cream (0.75%) or gel (0.5%, 0.75%) is the approved but unsubsidised topical treatment option for people in New Zealand with rosacea.[1] The effectiveness of metronidazole is due to its anti-inflammatory properties, rather than antimicrobial effects, and it may be used intermittently, long-term or in combination with oral treatments (see below) for more severe cases.[11]

Apply topical metronidazole widely to affected areas of skin, twice daily, for three to four months.[13] An improvement in symptoms can be expected after three to six weeks of treatment,[5] and remission of symptoms may last for six months.[11]

Adverse effects due to topical metronidazole may include dry and mildly irritated skin, but generally both cream and gel are well tolerated.[5, 14]

Azelaic acid is an alternative topical anti-inflammatory medicine which is unsubsidised and unapproved for the treatment of rosacea. Topical azelaic acid is available over-the-counter as a 20% cream or lotion.[13] Prescribing topical azelaic acid in preference to topical metronidazole may have the benefit of not contributing to antimicrobial resistance.

Azelaic acid is applied once or twice daily, for three to four months, for the treatment of rosacea.[1, 15] As many as 70–80% of patients with rosacea can expect some degree of symptom improvement three to six weeks after starting treatment with azelaic acid.[5, 14]

Adverse effects associated with topical azelaic acid may include mild burning, stinging or irritation.[5, 14]

 **Best Practice point:** Topical corticosteroids are not appropriate for the treatment of rosacea. These medicines

may provide patients with short-term benefits due to their vasoconstrictive and anti-inflammatory properties, but the patient's symptoms are likely to be aggravated over the coming weeks.[1]

Two other medicines used to treat patients with rosacea overseas which are not available in New Zealand are:

- Brimonidine gel (0.33%) to reduce redness short-term in erythematous rosacea
- Ivermectin cream can improve papulopustular rosacea

Oral treatments for rosacea

Oral medicines may be appropriate for patients with rosacea that is resistant to topical treatments or for patients with severe rosacea. Non-steroidal anti-inflammatory drugs (NSAIDs), in appropriate patients, may relieve the discomfort and erythema of rosacea.[1]

Tetracycline antibiotics are known to interfere with the inflammatory process and can reduce the erythema, papules, pustules and eye symptoms caused by rosacea.[1] These have been shown to be effective at doses lower than required for antimicrobial treatment and therefore produce a clinical benefit for patients via a different mechanism, possibly through the inhibition of metalloproteases.[10]

Both oral doxycycline and minocycline (partially subsidised) are effective treatments for patients with rosacea.[1] Low doses of these tetracyclines, e.g. 50 mg daily, are often as beneficial as higher doses, e.g. doxycycline 100–200 mg daily, and are unlikely to contribute to antimicrobial resistance.[16] Repeated courses of tetracyclines may be required.

Recommended initial treatment regimens are:[13]

- Doxycycline 50 mg, once daily, for six to 12 weeks
- Minocycline 50 mg, once daily, for six to 12 weeks

Doxycycline is available in 50 mg tables (partially subsidised) or 100 mg tablets (fully subsidised).[13] Doxycycline tablets should not be broken in half as damaging the film coating of the tablet increases the patient's risk of developing oesophagitis;[17] to achieve a lower dose, with the fully subsidised formulation, some dermatologists advise patients to take a 100 mg tablet on alternate days.

Gastrointestinal adverse effects, heartburn, nausea, vomiting and diarrhoea, are most commonly reported following the use of tetracyclines.[13] Photosensitivity, including photo-oncholysis, may occur in patients taking doxycycline. Advise patients using doxycycline to avoid prolonged exposure to sunlight and artificial sources of UV radiation.[13] Minocycline is less likely to cause gastrointestinal adverse effects and photosensitivity, although there is an increased risk of hepatitis and drug-induced lupus erythematosus.

Tetracycline antibiotics are contraindicated in women who are pregnant or breast-feeding.[13]

Oral erythromycin may be prescribed to patients with rosacea as an alternative to oral tetracyclines, as an unapproved indication. The suggested treatment regimen is:[13]

- Erythromycin 400 mg, twice daily, for six to 12 weeks

Low-dose oral isotretinoin is not a first-line treatment but may be considered as an alternative for some patients if oral antibiotics have been ineffective or are not tolerated.[1] Isotretinoin is not approved in New Zealand for the treatment of rosacea, although there is good evidence to support its use in patients with severe and persistent rosacea and those with papulopustular and phymatous subtypes of rosacea.[5, 13, 18, 19] Special Authority approval for isotretinoin requires female patients be warned about the teratogenic effects of the medicine and that they use at least one effective form of contraception for one month before, during and one month after treatment has ceased. It is recommended that general practitioners discuss the patient with a dermatologist before initiating isotretinoin for the treatment of rosacea. Patients should not use isotretinoin and tetracyclines concurrently due to an increased risk of benign intracranial hypertension.[20]

The recommended treatment regimen is:[5]

- Isotretinoin, 0.1 – 0.3 mg/kg/day for 12 weeks; followed by twice-weekly long-term dosing, if required

Isotretinoin is available in 10 mg and 20 mg capsules.

The adverse effects associated with the use of isotretinoin are numerous, but low doses are generally well tolerated. Many patients experience dry skin, lips and eyes. In rare cases isotretinoin may cause hepatic impairment, elevated serum lipid levels, pancreatitis and psychiatric effects including depression and suicide.[13]

Medicines to reduce flushing

Carvedilol, a non-selective beta-blocker with some alpha-blocking activity may be prescribed to reduce flushing as an unapproved indication.[1] A suggested treatment regimen is:[21]

- Carvedilol, 6.25 mg, twice daily

Carvedilol is contraindicated in patients with asthma, hypotension or bradycardia; for a full list of contraindications see the New Zealand Formulary (NZF).

Clonidine, an alpha$_2$-receptor agonist, may be prescribed to patients with rosacea to reduce flushing as an unapproved

indication.[1] Low doses of clonidine are recommended:[22]

- Clonidine, 25 – 50 micrograms daily

Clonidine is contraindicated in patients with severe bradyarrhythmia; for a fill list of contraindications see the NZF. Clonidine should be withdrawn gradually to prevent rebound hypertension.[13]

Calcineurin inhibitors, including tacrolimus ointment and pimecrolimus cream, may provide some reduction in inflammation for patients with rosacea.[1]

Pharmacological treatment for ocular rosacea

Pharmacological treatment for ocular rosacea may be considered after non-pharmacological treatments have been trialled. Encourage patients to continue to practice good lid hygiene and use ocular lubricants. Oral tetracyclines, e.g. doxycycline, and macrolides, e.g. erythromycin, typically for one to three months, may improve tear film stability and normalise meibomian secretions in patients with ocular rosacea.[10]

General practitioners are recommended to discuss patients with severe ocular rosacea with an ophthalmologist. Topical corticosteroids are sometimes cautiously used for the short-term treatment of severe inflammation or rosacea keratitis, however, the long-term use of this medicine increases the risk of glaucoma and cataracts.[10]

Specialised treatments for rosacea

Patients with persistent telangiectasia may be treated with vascular laser or intense pulsed light treatment;[1] which may reduce erythema and flushing. If these techniques are unavailable, cautery, diathermy (electrosurgery) or sclerotherapy (saline injections) may be beneficial.[1] A dermatologist will be able to advise patients on what services are locally accessible.

Surgery or carbon dioxide laser may be used by dermatologic or plastic surgeons to reshape the nose of patients with rhinophyma.[1]

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References

1. DermNet NZ. Rosacea. 2014. Available from: Available from: http://dermnetnz.org/acne/rosacea.html (Accessed May, 2016).
2. Tan J, Berg M. Rosacea: current state of epidemiology. J Am Acad Dermatol 2013;69:S27-35. doi:10.1016/j.jaad.2013.04.043
3. Spoendlin J, Voegel JJ, Jick SS, et al. A study on the epidemiology of rosacea in the U.K. Br J Dermatol 2012;167:598–605. doi:10.1111/j.1365-2133.2012.11037.x
4. Al-Dabagh A, Davis SA, McMichael AJ, et al. Rosacea in skin of color: not a rare diagnosis. Dermatol Online J 2014;20.
5. van Zuuren EJ, Fedorowicz Z, Carter B, et al. Interventions for rosacea. Cochrane Database Syst Rev 2015;4:CD003262. doi:10.1002/14651858.CD003262.pub5
6. Two AM, Wu W, Gallo RL, et al. Rosacea: part I. Introduction, categorization, histology, pathogenesis, and risk factors. J Am Acad Dermatol 2015;72:749-758-760. doi:10.1016/j.jaad.2014.08.028
7. Egeberg A, Hansen PR, Gislason GH, et al. Exploring the Association Between Rosacea and Parkinson Disease: A Danish Nationwide Cohort Study. JAMA Neurol 2016; [Epub ahead of print]. doi:10.1001/jamaneurol.2016.0022
8. DermNet NZ. H. pylori infection and skin diseases. 2014. Available from: www.dermnetnz.org/bacterial/h-pylori.html (Accessed Apr, 2016)
9. Moustafa F, Lewallen RS, Feldman SR. The psychological impact of rosacea and the influence of current management options. J Am Acad Dermatol 2014;71:973–80. doi:10.1016/j.jaad.2014.05.036
10. DermNet NZ. Ocular rosacea. 2015. Available from: Available from: http://dermnetnz.org/acne/ocular-rosacea.html (Accessed May, 2016).
11. Two AM, Wu W, Gallo RL, et al. Rosacea: part II. Topical and systemic therapies in the treatment of rosacea. J Am Acad Dermatol 2015;72:761-770-772. doi:10.1016/j.jaad.2014.08.027
12. Abram K, Silm H, Maaroos H-I, et al. Risk factors associated with rosacea. J Eur Acad Dermatol Venereol JEADV 2010;24:565–71. doi:10.1111/j.1468-3083.2009.03472.x
13. New Zealand Formulary (NZF). NZF v47. 2015. Available from: www.nzf.org.nz (Accessed May, 2016)
14. van Zuuren EJ, Kramer SF, Carter BR, et al. Effective and evidence-based management strategies for rosacea: summary of a Cochrane systematic review. Br J Dermatol 2011;165:760–81. doi:10.1111/j.1365-2133.2011.10473.x
15. Thiboutot DM, Fleischer AB, Del Rosso JQ, et al. Azelaic acid 15% gel once daily versus twice daily in papulopustular rosacea. J Drugs Dermatol JDD 2008;7:541–6.
16. Di Caprio R, Lembo S, Di Costanzo L, et al. Anti-inflammatory properties of low and high doxycycline doses: an in vitro study. Mediators Inflamm 2015;2015:329418. doi:10.1155/2015/329418
17. New Zealand Formulary (NZF). Doxycycline. 2014. Available from: www.nzf.org.nz/nzf/resource/PILs/doxycycline.final.pdf (Accessed Apr, 2016)
18. Park H, Del Rosso JQ. Use of oral isotretinoin in the management of rosacea. J Clin Aesthetic Dermatol 2011;4:54–61.
19. Gollnick H, Blume-Peytavi U, Szabó EL, et al. Systemic isotretinoin in the treatment of rosacea - doxycycline- and placebo-controlled, randomized clinical study. J Dtsch Dermatol Ges 2010;8:505–15. doi:10.1111/j.1610-0387.2010.07345.x
20. Mylan New Zealand Ltd. New Zealand data sheet. 2015. Available from: www.medsafe.govt.nz/profs/datasheet/i/isotanecap.pdf (Accessed Apr, 2016)
21. Hsu C-C, Lee JY-Y. Carvedilol for the treatment of refractory facial flushing and persistent erythema of rosacea. Arch Dermatol 2011;147:1258–60. doi:10.1001/archdermatol.2011.204
22. Rebora A. The management of rosacea. Am J Clin Dermatol 2002;3:489–96.

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.

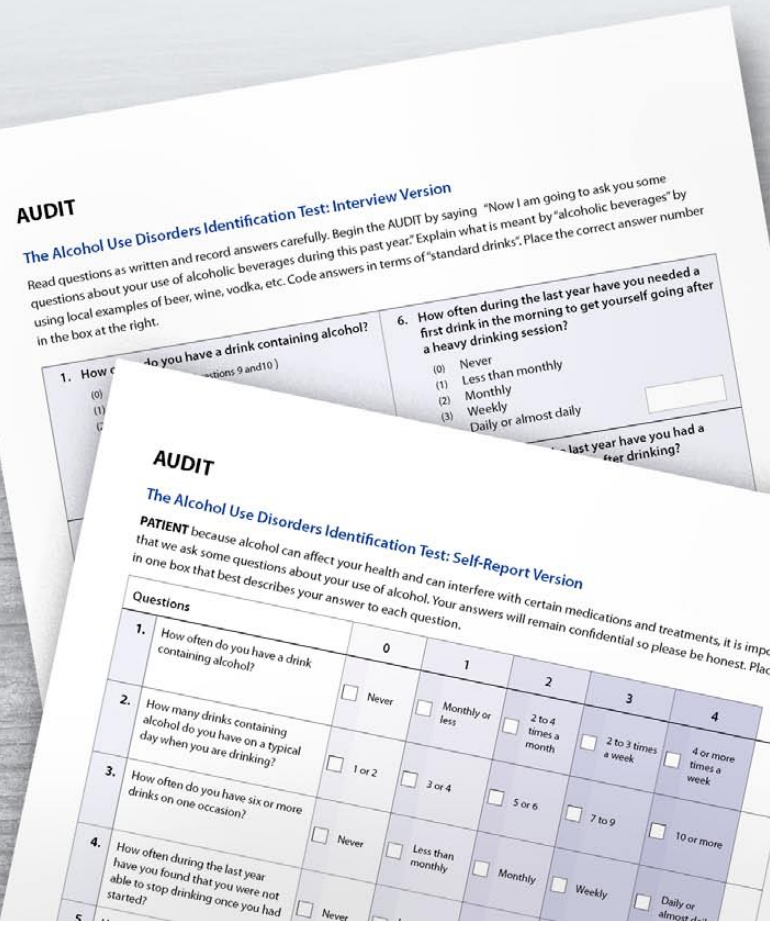
No level of alcohol intake is, however, risk free. Drinking guidelines in the United Kingdom recommend slightly lower levels than those shown above and estimate that people drinking less than this have a 1% lifetime risk of dying from an alcohol-related disease.[13]

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 o... you have a drink containing alcohol?
(0) ...
(1) ...
(2) ... questions 9 and10)

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
Daily or almost daily

... last year have you had a ...fter drinking?

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 imp... that we ask some questions about your use of alcohol. Your answers will remain confidential so please be honest. Plac... 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 ...
4. How often during the last year have you found that you were not able to stop drinking once you had started?	Never				
5.					

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

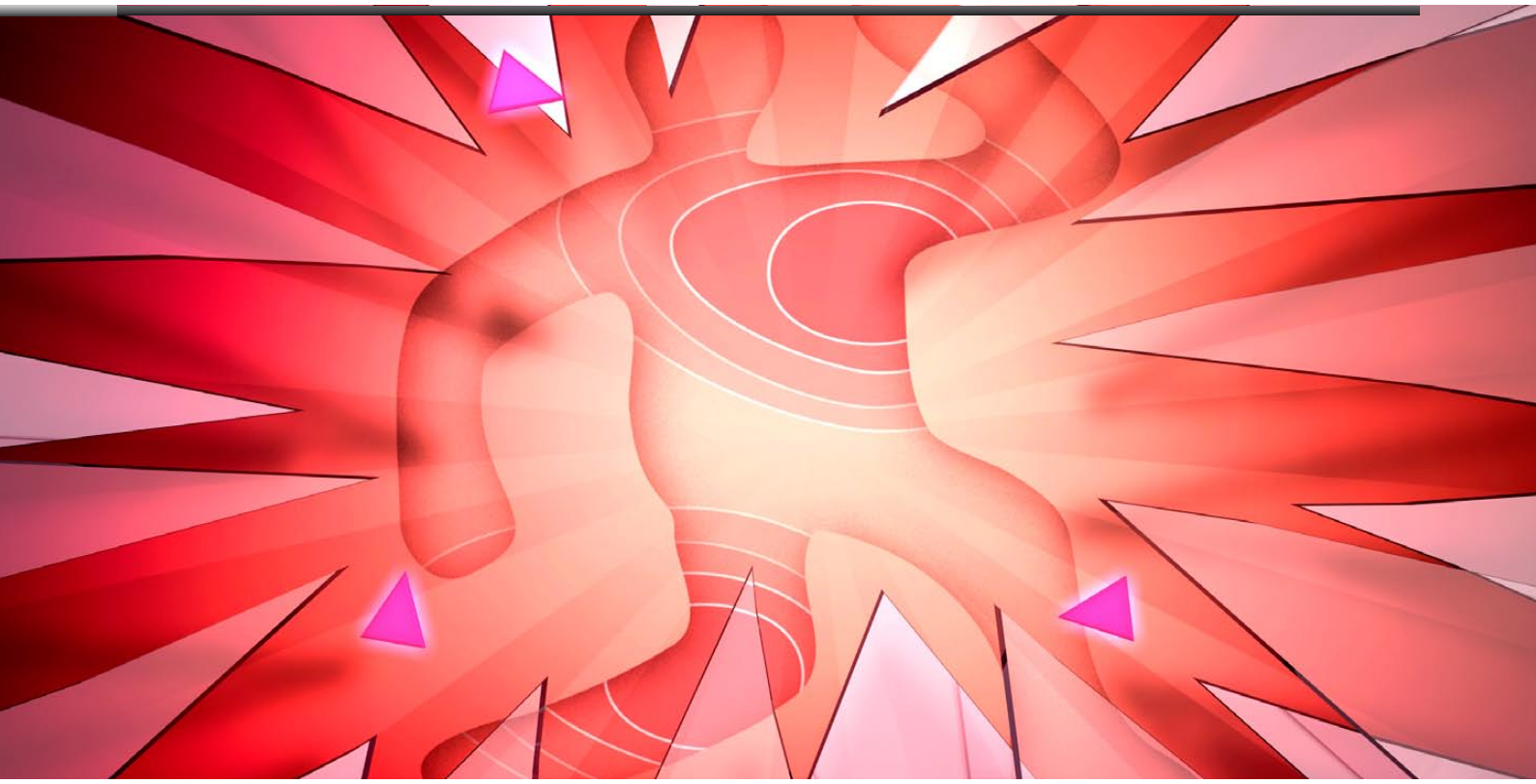
Table continues over page

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



Managing patients with **neuropathic pain**

Neuropathic pain results from a lesion or disease affecting the somatosensory system. There are a range of causes of neuropathic pain including diabetes, surgery, multiple sclerosis, stroke, herpes zoster, cancer and chemotherapy; diagnosis can be challenging. A patient history and clinical examination focusing on sensory, motor or autonomic changes is the starting point of any investigation. The management of neuropathic pain aims to improve the patient's quality of life if symptom resolution is not possible. Tricyclic antidepressants, gabapentin, either alone or in combination, and carbamazepine for trigeminal neuralgia or diabetic polyneuropathy are appropriate options for treating most types of neuropathic pain in primary care. Alternative medicines, e.g. valproate or lamotrigine may be trialled, however, there is limited evidence of effectiveness in patients with neuropathic pain.

KEY PRACTICE POINTS:

- The key to investigating neuropathic pain is a patient history and clinical examination focusing on the presence and distribution of any sensory, motor or autonomic changes
- Where appropriate, investigate the underlying cause of pain, acknowledging that in some cases a definite cause may not be identified
- Treatment should focus on reducing the effect pain has on independence and wellbeing so patients can continue with their daily life
- Appropriate medicines to prescribe in primary care are:
  - Tricyclic antidepressants, e.g. amitriptyline or nortriptyline (unapproved indications)
  - Gabapentin, with Special Authority approval
  - Carbamazepine for patients with trigeminal neuralgia
  - Capsaicin cream (0.075%) for patients with localised cutaneous pain, subsidised with prescription endorsement
- Referral to a pain clinic may be beneficial at any point in treatment if the patient experiences severe pain or if their pain is causing significant disruption to their life; access and referral criteria may vary throughout the country

Neuropathic pain arises from damage to the sensory system

Patients with neuropathic pain often experience burning, shooting, stabbing or electric sensations or pain that has these qualities.[1] The pain may be constant, in response to triggers, or occur intermittently with no obvious cause. Long-term neuropathic pain can cause central sensitisation, resulting in an exaggerated pain in response to mildly painful stimuli (hyperalgesia) or pain in response to innocuous stimuli (allodynia).

 For further information on central sensitisation and nerve fibre hyperexcitability in chronic pain, see: "Understanding chronic pain" BPJ 70 (Sep, 2015).

Neuropathic pain is becoming more common

The number of people in New Zealand with neuropathic pain is unknown; worldwide it is estimated to affect 7% of people. The prevalence of neuropathic pain is predicted to rise due to an ageing population, increased cancer survival and chemotherapy-induced neuropathy, and an increased prevalence of diabetic neuropathy.[2]

Pain may be central or peripheral in origin

Neuropathic pain is referred to as peripheral or central depending on the location of the lesion(s) causing symptoms.[3] Patients may have elements of both, and some conditions, such as multiple sclerosis, can cause central and/or peripheral neuropathic pain (Table 1).[3]

Neuropathic pain is challenging for clinicians and patients

Clinical judgement is especially important when evaluating patients suspected of having neuropathic pain because of the diverse array of potential causes. Investigations will not help all patients as a definite cause may never be identified, while some may require multiple investigations before a diagnosis is reached. Treatments for neuropathic pain are relatively ineffective. Medicines often reduce, but do not eliminate, pain in approximately half of treated patients.[6] Trialling different medicines or combinations of medicines may be necessary.

Treat the patient, not the condition

For some patients neuropathic pain may be temporary, but for others it will become part of their life. Untreated or undertreated neuropathic pain can lead to a reduced quality of life, psychological distress, problems with sleep, lethargy and difficulty completing daily activities. Even with optimal treatment patients are likely to continue to experience some pain. Repeated consultations, uncertainty about their condition and ongoing investigations can contribute to patient anxiety and exacerbate pain. The inconvenience of multiple appointments and ineffectiveness of medicines can increase frustration, e.g.[6, 7]

"There must be some other medication that can fix the pain… I need to get the pain sorted so I can get back to work."

"[My General Practitioner] sent me to a neurologist at the hospital and... all he did was increase my pain medication."

Eventually patients may feel they have become a burden to health professionals, e.g.:[7]

"I just think the General Practitioner gets sick of trying, he doesn't know what to do with me… he's sick of me."

A proactive approach to care can help

Neuropathic pain can place a strain on the doctor-patient relationship. Explain the difficulties early to avoid unrealistic expectations, e.g. that multiple consultations and trials of medicines are normal. Use language which implies management, rather than cure, unless there is an expectation that cure is possible.[6] Encourage patients to return if they are still experiencing pain after a new medicine has been initiated.

Table 1: Conditions associated with central or peripheral neuropathic pain.[3–5]

Causes of central neuropathic pain	Causes of peripheral neuropathic pain
■ Multiple sclerosis ■ Stroke ■ Traumatic brain injury ■ Trigeminal neuralgia ■ Cerebral vascular malformations	■ Cancer and chemotherapy ■ Diabetic polyneuropathy ■ Hereditary neuropathies ■ Multiple sclerosis ■ Post-herpetic neuralgia ■ Radiculopathies ■ Surgery or amputation ■ Trauma

Assessment of patients with suspected neuropathic pain

A history and focused clinical examination to assess for sensory, motor or autonomic abnormalities are central to the investigation of neuropathic pain. Consider other possible causes of pain and whether the timing of the pain coincides with significant events in the patient's history.

Are there positive or negative sensory, autonomic or motor signs in the same area? E.g. the presence of: [8, 9]

- Sensory signs
  - Allodynia
  - Hyperalgesia
  - Dysaesthesia (unpleasant sensation)
  - Hypoaesthesia (decreased sensitivity to stimulation)
  - Loss of proprioception
- Motor signs
  - Weakness
  - Absent reflexes
- Autonomic signs
  - Changes in skin colour due to vasodilation or vasoconstriction
  - Sweating

Patient history

When taking the patient's history a zero to ten scoring system can help to score pain severity.[10] This information can be later used to assess the efficacy of medicines and aid dose titration. Specific features suggestive of neuropathic pain include:[10]

- Autonomic signs, e.g. changes in skin colour or temperature, sweating or heart rate changes
- Motor signs, e.g. areas of weakness, cramps, or spasms
- A family history of conditions associated with neuropathic pain, e.g. diabetes or multiple sclerosis or hereditary polyneuropathies such as Charcot-Marie-Tooth disease

Questionnaires can help determine whether a patient's pain is neuropathic. These are used in conjunction with clinical examination as they fail to identify 10–20% of patients with neuropathic pain.[11] One example of a questionnaire is the Leeds Assessment of Neuropathic Symptoms and Signs (LANSS). This diagnostic tool was designed to distinguish neuropathic from non-neuropathic pain. A LANSS score of 12 or more has a sensitivity ranging from 82–91% and specificity ranging from 80–94% when compared with diagnosis in a pain clinic.[11, 12]

See "The S-LANSS Pain Score" for an example of a validated and self-administered questionnaire (S-LANSS).

Clinical examination

The clinical examination includes assessment of changes in sensory nerve function. For example, soft touch using cotton wool, sharp touch by pinprick, vibration using a tuning fork, cold and warmth sensation (see: "Sensory nerves and the sensations they carry").[10, 11]

Allodynia to light touch, cold and heat makes a diagnosis of neuropathic pain more likely, whereas allodynia to pressure occurs with the same frequency in patients with neuropathic or non-neuropathic pain.[11]

Identify and document the borders of any area of altered sensation and compare results with the contralateral side of the body.[11] The precise distribution of dermatomes can vary between individuals.[13]

A figure showing common boundaries of dermatomes, is available from: **emedicine.medscape.com/article/1878388-overview#a2**

Some patients may not have any identifiable changes in sensory or autonomic function, i.e. only pain with no findings on clinical examination and sensory testing.

Consider if findings are consistent with common causes of neuropathic pain

Lesions localised in a plexus are often asymmetric with involvement of multiple dermatomes, while lesions localised to one nerve root are asymmetric with a dermatomal pattern of sensory symptoms. Longer nerve fibres are typically affected first in diabetic and hereditary polyneuropathy or chemotherapy-induced neuropathy, resulting in symmetrical symptoms and signs in the distal limbs.

Deficiencies in vitamins B12 or E, or rare copper deficiencies, can cause combined motor and sensory symptoms and signs. Consider the timing of symptom onset and whether they are acute or slowly deteriorating; deteriorating function may indicate an ongoing process such as diabetes or hereditary polyneuropathy.[8]

Laboratory tests which can assist diagnosis

In patients where an aetiology is not clear initial tests include:[4]

- Complete blood count
- C-reactive protein
- HbA_{1c} and/or fasting blood glucose
- Vitamin B12
- Folate
- Liver function tests
- Renal function tests
- Thyroid stimulating hormone
- Serum protein electrophoresis

The S-LANSS Pain Score

1.	**In the area where you have pain, do you also have "pins and needles", tingling or prickling sensations?**	
	☐ NO – I don't get these sensations	0
	☐ YES – I get these sensations	5
2.	**Does the painful area change colour (perhaps look mottled or more red) when the pain is particularly bad?**	
	☐ NO – The pain does not affect the colour of my skin	0
	☐ YES – I have noticed that the pain does make my skin look different from normal.	5
3.	**Does your pain make the affected skin abnormally sensitive to touch? Getting unpleasant sensations or pain when lightly stroking the skin might describe this.**	
	☐ NO – The pain does not make my skin abnormally sensitive to touch.	0
	☐ YES – My skin in that area is particularly sensitive to touch.	3
4.	**Does your pain come on suddenly and in bursts for no apparent reason when you are completely still? Words like "electric shocks", jumping and bursting might describe this.**	
	☐ NO – My pain doesn't really feel like this.	0
	☐ YES – I get these sensations often.	2
5.	**In the area where you have pain, does your skin feel unusually hot like a burning pain?**	
	☐ NO – I don't have burning pain	0
	☐ YES – I get burning pain often	1
6.	**Gently rub the painful area with your index finger and then rub a non-painful area (for example, an area of skin further away or on the opposite side from the painful area). How does this rubbing feel in the painful area?**	
	☐ The painful area feels no different from the non-painful area	0
	☐ I feel discomfort, like pins and needles, tingling or burning in the painful area that is different from the non-painful area.	5
7.	**Gently press on the painful area with your finger tip and then gently press in the same way onto a non-painful area (the same non-painful area that you chose in the last question). How does this feel in the painful area?**	
	☐ The painful area does not feel different from the non-painful area.	0
	☐ I feel numbness or tenderness in the painful area that is different from the non-painful area.	3
	Total score:	

Scoring a score of 12 or more suggests pain of predominantly neuropathic origin

Source: Bennett, M *et al* J Pain, Vol 6, No 3 March, 2005 pp 149–158 The S-LANSS Score for Identifying Pain of Predominantly Neuropathic Origin: Validation for Use in Clinical and Postal Research.

Testing to identify the location of nerve damage

Investigations beyond the clinical examination and routine laboratory tests are considered on a case-by-case basis.[10]

Additional testing following consultation with a neurologist or pain specialist may include:[9]

- Nerve conduction studies, electromyography or laser-evoked potentials
- MRI or CT scan for assessment of stroke or radiological evidence of nerve compression
- Genetic testing to identify hereditary polyneuropathies if the patient has a family history
- Nerve biopsy to identify inflammatory diseases, after less invasive investigations have been undertaken[17]
- Skin biopsy can detect small fibre sensory neuropathies, e.g. diabetic polyneuropathy and should be taken from the distal leg, e.g. 10 cm above the external malleolus.[16]

Treating pain and reducing its effect on the patient

Successful treatment of long-term pain includes keeping patients active and engaged in their daily life.
The following points should be considered when developing a treatment plan:[1, 18]

- Sleep deprivation can exacerbate pain: more than 70% of patients with long-term pain are reported to have problems with sleep
- Can the patient carry out daily tasks, e.g. dressing or washing? Patients with trigeminal neuralgia may have difficulty eating and weight gain from reduced activity can lead to further limitations in mobility in some patients.
- Participation in family, work and social life
- Depression or anxiety may develop due to long-term pain or clinical uncertainty

Establish specific goals

Develop goals of care with the patient that are relevant to the patient and achievable, e.g. being able to walk the dog by the next consultation.

Non-pharmacological approaches to reducing pain

Discuss "sleep hygiene" techniques with patients who have disturbed sleep. This emphasises reserving the bed and bedroom for sleeping and sex. Advise patients to avoid watching television or using electronic devices in the bedroom and to leave the room if they are awake for longer than 15 minutes, returning only when tired enough to sleep. Other advice includes avoiding stimulants or diuretics, including alcohol close to bed-time and keeping a regular sleep routine, even during weekends.

Tricyclic antidepressants, taken in the evening, may provide the dual benefit of pain relief and sedation overnight (see: "The pharmacological treatment of neuropathic pain").

For further information on sleep hygiene, see: "Managing insomnia", BPJ 14 (Jun, 2008)

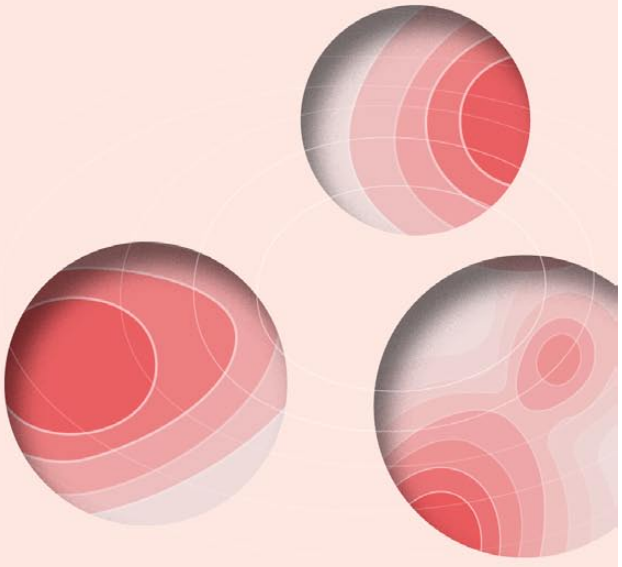
Staying active and engaged is a priority

If patients withdraw from their normal activities, discuss the reasons and consider whether any medicines require alteration. Some patients may benefit from consultation with an occupational therapist, physiotherapist or counsellor. Patients with low activity levels may benefit from supervised exercise or a Green Prescription.

Sensory nerves and the sensations they carry

Sensory nerve fibres which can be affected in patients with neuropathic pain include:[14, 15]

- Unmyelinated (small) C fibres:
  - Conduct pain and temperature sensations
  - Cause unpleasant, indefinite, burning sensations
- Myelinated (larger) A cutaneous fibres:
  - Aβ fibres – conduct touch and pressure sensation, but may also contribute to noxious pain sensations in neuropathic pain
  - Aδ fibres – conduct cold, touch and pain sensations, thought to convey immediate, well-localised pricking pain



Persistent pain is a strong risk factor for falls in older patients; exercise improves strength and balance.[19] Improving mobility to maintain independence and social participation will be a goal of care for many patients.

Planning can help patients fulfil their usual activities

People with long-term pain often tire quickly. Suggest patients devote time to important tasks early in the day or when they have the most energy; this may led to a greater sense of control over their condition.

Support groups help patients connect and learn from others

Advice and information for patients about how to manage and live with long-term pain is available from:

- Self-management courses through a range of Primary Health Organisations, see: **www.healthnavigator.org.nz/healthy-living/self-care/programmes-courses/stanford-self-management-programme/**
- Arthritis New Zealand: **www.arthritis.org.nz/information/treatment-management/living-a-healthy-life/**
- National Health Service (NHS) Choices: **www.nhs.uk/Livewell/Pain/Pages/Painhome.aspx**
- The Pain Toolkit, pain self management tools: **www.paintoolkit.org/tools**
- New Zealand Pain Society: **www.nzps.org.nz**

Consider if support devices are necessary

Some patients may benefit from assistive devices, such as toilet and shower rails. Occupational therapists may be able to organise subsidised installations of these supports for select patients. Patients at risk of falls may benefit from a medical alarm.

Other non-pharmacological approaches have limited evidence of efficacy

Interventions such as acupuncture or transcutaneous electrical nerve stimulation (TENS) may be useful for patients who have ongoing pain despite medication.[20] There have been few clinical trials, however, assessing their efficacy or comparing their effects with pharmacological treatments.

Psychological approaches, such as cognitive-behavioural therapy (CBT), may help patients adapt to living with pain, however, there is little evidence to suggest they reduce neuropathic pain.

The pharmacological treatment of neuropathic pain

The medicines recommended for the initial treatment of neuropathic pain include (see Table 2 for dosing):[1, 21]

- TCAs, such as amitriptyline and nortriptyline – fully subsidised, unapproved indication. Amitriptyline is the TCA with the strongest evidence of effectiveness and is favoured in some international guidelines.[1, 21] However, nortriptyline has less anticholinergic activity than amitriptyline and less adverse effects in elderly patients.[22, 23]
- Gabapentin – fully subsidised with Special Authority approval for patients diagnosed with neuropathic pain. The related medicine pregabalin has a similar efficacy and adverse effect profile as gabapentin, and is available unsubsidised. Be mindful that co-administration of morphine can increase levels of gabapentin and dosing may need to be adjusted.[24]
- Carbamazepine – initial treatment for patients with trigeminal neuralgia or diabetic polyneuropathy; fully subsidised.

These medicines have evidence of efficacy and are first or second-line treatments for neuropathic pain;[21, 25] guidelines do not favour one initial medicine over another.[1, 21] For most neuropathic pain medicine efficacy is not dependent on the underlying cause, therefore, potential adverse effects may dictate the choice of treatment, e.g. patients with central neuropathic pain may be less tolerant of medicines with CNS adverse effects.[21] The patient's need for analgesia may fluctuate and regular follow-up is important. For patients with central-post stroke pain there is evidence that medicines are less effective.[26]

Tricyclic antidepressants, gabapentin, either alone or in combination, and carbamazepine (for trigeminal neuralgia and diabetic neuropathy) are appropriate options for treating most types of neuropathic pain in primary care. Alternative anticonvulsant medicines, e.g. valproate or lamotrigine may be trialled in primary care, however, there is limited evidence of effectiveness in patients with neuropathic pain.

The role of non-steroidal anti-inflammatory drugs (NSAIDs) is unclear. NSAIDs are not included as treatment options in neuropathic pain guidelines.[1, 27] However, there is insufficient evidence to conclude that they are ineffective, and in practice NSAIDs are often used by patients with neuropathic pain.[28] It is possible that NSAIDs have an effect in patients with mild pain or pain with an inflammatory component or they may have a placebo effect in some patients.[28]

Other antidepressants have a limited role in the treatment of neuropathic pain. TCAs are preferred over selective noradrenaline reuptake inhibitors (SNRIs) or selective serotonin reuptake inhibitors (SSRIs) for patients with neuropathic pain. Venlafaxine is the only SNRI available in New Zealand which has evidence of efficacy in the treatment of neuropathic

Table 2: Possible first line medicines for the treatment of neuropathic pain.[1, 21, 29]

Medicine	Fully subsidised formulations	Recommended dosing
Tricyclic antidepressants (amitriptyline, nortriptyline; unapproved indication)	Amitriptyline: ■ 10 mg, 25 mg, 50 mg tablets Nortriptyline: ■ 10 mg, 25 mg tablets	■ Begin with 10 mg, daily, taken at night ■ Increase gradually to up to 75 mg, daily, taken at night ■ Occasionally, higher doses may be required; supervision from a neurologist or pain clinic recommended
Gabapentin	Capsules: ■ 100 mg, 300 mg, 400 mg	■ Begin with 300 mg, taken either once daily or three times daily ■ Increase every two or three days by 300 mg, daily, to at least 1200 mg, daily, divided so that capsules are taken three times during the day ■ Maximum dose 3600 mg, daily ■ Lower doses should be used in patients with renal impairment
Carbamazepine first-line for the treatment of trigeminal neuralgia	Immediate-release tablets: ■ 200 mg and 400 mg ■ Tablets may be halved Extended-release tablets: ■ 200 mg and 400 mg ■ Tablets may be halved, but not crushed Oral liquid: ■ 100 mg/5 mL	■ Begin with 100 mg, once or twice daily ■ Increase every two weeks in 100–200 mg increments; 1200 mg is usually sufficient ■ For immediate-release tablets divide dose so that tablets are taken three or four times during the day ■ For extended-release tablets divide dose so that tablets are taken twice during the day ■ Slightly higher doses of extended release tablets may be required for equivalent effect

* For a full list of adverse effects, contraindications and cautions, see: **www.nzf.org.nz**

† NNT defined as at least moderate pain relief (30–50% reduction in pain); NNH defined as the number of patients needed to treat for one patient to discontinue medicine due to adverse effects

Time of onset of pain relief	Adverse effects and cautions*	Approximate number-needed-to-treat (NNT)†	Approximate number-needed-to-harm (NNH)†
■ Dosing of tricyclic antidepressants needs to increase over a course of weeks ■ Some patients may gain adequate pain relief at lower doses used within first two weeks, others may require up to four weeks until adequate dosing and pain relief is achieved	■ Drowsiness ■ Anxiety ■ Agitation ■ Confusion ■ Constipation ■ Dizziness ■ Use with caution in patients with cardiovascular disease (may cause QT prolongation and arrhythmia), diabetes (potential changes in weight and glucose control), epilepsy or urinary retention and patients at risk of angle-closure glaucoma	4	13
■ Effects may be felt within one to two weeks, with maximal relief occurring over four to eight weeks[32, 33]	■ Dizziness ■ Headache ■ Drowsiness ■ Gastrointestinal effects such as nausea, vomiting, diarrhoea, constipation and abdominal pain ■ Lower limb oedema ■ Cough ■ Neurological effects such as anxiety and nervousness, confusion, hostility, and abnormal thoughts	6	26
■ Can provide relief from trigeminal neuralgia within a few days[31]	■ Nausea ■ Vomiting ■ Constipation ■ Dry mouth ■ Drowsiness ■ Fatigue ■ More serious adverse effects include hyper- or hypotension, aggression, hallucinations and hepatic adverse effects ■ Carbamazepine should be used with caution in a range of patients. It is a strong inducer of P450 enzymes, can reduce the efficacy of oral contraceptives, and can cause drug-induced hypersensitivity reactions	2	3

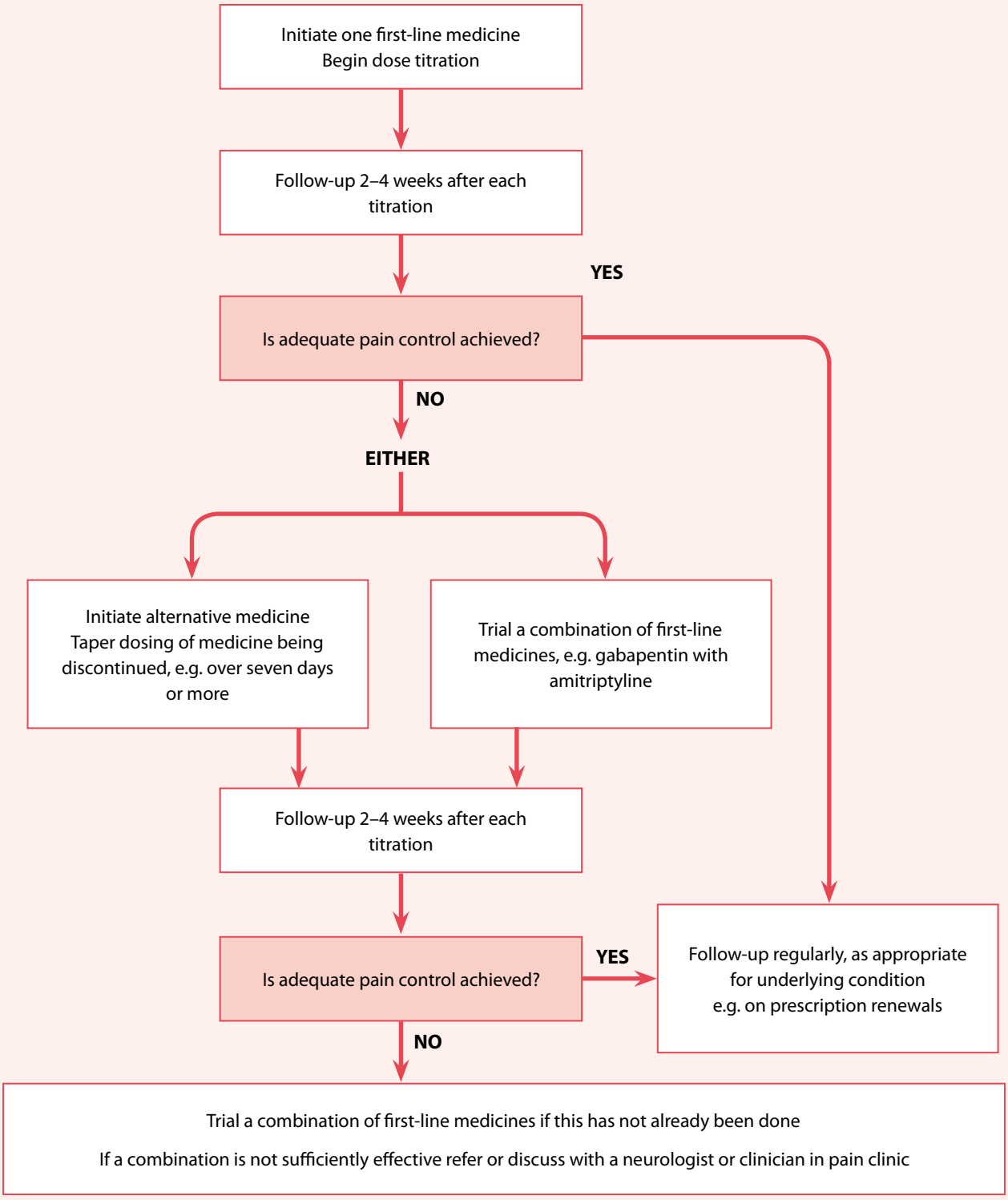


Figure 1. Optimising analgesia for neuropathic pain, except trigeminal neuralgia.[1, 5]

pain.[29] Consultation with a neurologist or clinician in a pain clinic is recommended before using venlafaxine as a treatment for patients who have not responded sufficiently to initial treatment. Duloxetine is recommended as a potential first-line treatment for neuropathic pain by international guidelines,[1] however, this medicine is not available in New Zealand.

There is currently no evidence that SSRIs are effective in the treatment of neuropathic pain. [21]

Opioids are reserved for patients with severe neuropathic pain due to the potential adverse effects, including dependency.[2, 21] Discussion with a clinician experienced in treating pain is recommended before prescribing opioid-based medicines for patients with neuropathic pain that is not controlled by other approaches.

Topical treatment of cutaneous neuropathic pain

Topical capsaicin cream (0.075%) is a treatment option for patients with localised, cutaneous neuropathic pain.[21] It is fully subsidised by prescription endorsement for patients diagnosed with post-herpetic neuralgia or diabetic peripheral neuropathy. Capsaicin cream produces a burning sensation on application; patients should wash hands immediately after application and avoid transferring the product to eyes or mucous membranes.[29]

Lidocaine 2.5% + prilocaine 2.5% patches (unsubsidised) may be a second-line topical analgesic for patients who do not tolerate capsaicin cream.[21]

Initiating and optimising treatment

For most analgesics, dosing should start low and be titrated upwards. Practice points for optimising treatment for neuropathic pain are shown in Figure 1. Treatment success is measured by subjective assessment of the patient's level of pain, sleep disruption and ability to function in daily life.

If sufficient control is not obtained with the first medicine trialled, switch to another of the recommended initial medicines, e.g. from a TCA to gabapentin, or use a combination of medicines. If medicines are switched, gradually reduce the dose of the medicine being withdrawn, e.g. over seven days or more, while the new medicine is initiated in order to provide continuous treatment. If medicines are combined, aim for a combination of medicines that have different analgesic mechanisms.[30] Combination treatment with a TCA and gabapentin provides better outcomes, at lower doses, without additional adverse effects, than either of these medicines alone in higher doses. For example, nortriptyline 50 mg, daily, with gabapentin 2000 mg, daily in divided doses, provided better pain relief in one study than nortriptyline 60 mg, daily or gabapentin 2250 mg, daily.[30]

Treating trigeminal neuralgia

Carbamazepine should be the initial treatment trialled for patients with trigeminal neuralgia.[1] If carbamazepine is ineffective, consider consulting with a neurologist or pain clinic as there is little evidence from clinical trials to guide prescribing of other medicines.[1, 31] Lamotrigine or baclofen (unapproved indications) have been suggested as potential second-line treatment options for patients with trigeminal neuralgia.[31]

Best practice tip: Consider strategies for reducing "piles of pills" for patients with long-term pain, e.g. more frequent dispensings during an analgesic trial. Patients with chronic pain may have comorbidities and be taking a number of medicines; consider whether they are eligible for the Long Term Condition service to simplify their medicine regimen.

For further information, see: "Piles of pills: Prescribing appropriate quantities of medicines", BPJ 69 (Aug, 2015).

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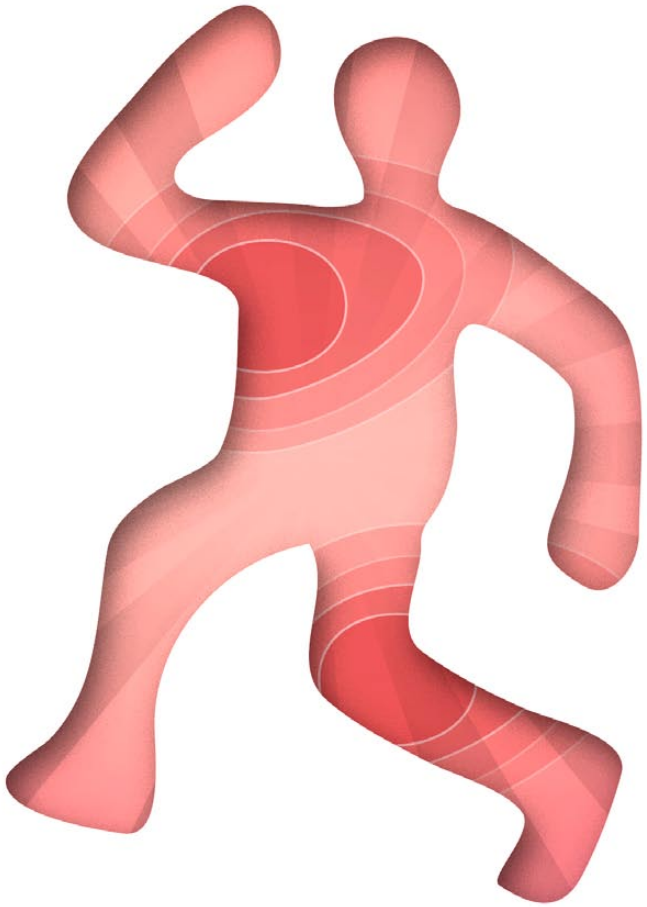

References:

1. National Institute for Health Care Excellence (NICE). Neuropathic pain in adults: pharmacological management in non-specialist settings. Available from: www.nice.org.uk/guidance/cg173 (Accessed May, 2016).
2. Bennett DLH. Informed drug choices for neuropathic pain. Lancet Neurol 2015;14:129–30. doi:10.1016/S1474-4422(14)70329-1
3. Klit H, Finnerup NB, Jensen TS. Central post-stroke pain: clinical characteristics, pathophysiology, and management. Lancet Neurol 2009;8:857–68. doi:10.1016/S1474-4422(09)70176-0
4. England JD, Gronseth GS, Franklin G, et al. Practice Parameter: evaluation of distal symmetric polyneuropathy: role of laboratory and genetic testing (an evidence-based review). Neurology 2009;72:185–92. doi:10.1212/01.wnl.0000336370.51010.a1
5. Department of Veterans' Affairs, University of South Australia. Veterans' medicines advice and therapeutic education services. Topic 35: Managing neuropathic pain. A stepwise approach. Department of Veterans' Affairs 2013. Available from: www.apsoc.org.au/PDF/Publications/Veterans_MATES_35_Neuropathic_Pain_TherBrief_JUN13.pdf (Accessed May, 2016).
6. Bhana N, Thompson L, Alchin J, et al. Patient expectations for chronic pain management. J Prim Health Care 2015;7:130–6.
7. Budge C, Carryer J, Boddy J. Learning from people with chronic pain: messages for primary care practitioners. J Prim Health Care 2012;4:306–12.
8. Overell JR. Peripheral neuropathy: pattern recognition for the pragmatist. Pract Neurol 2011;11:62–70. doi:10.1136/jnnp.2011.241612
9. Treede R-D, Jensen TS, Campbell JN, et al. Neuropathic pain: redefinition and a grading system for clinical and research purposes. Neurology 2008;70:1630–5. doi:10.1212/01.wnl.0000282763.29778.59
10. Haanpää M, Attal N, Backonja M, et al. NeuPSIG guidelines on neuropathic pain assessment. Pain 2011;152:14–27. doi:10.1016/j.pain.2010.07.031
11. Cruccu G, Sommer C, Anand P, et al. EFNS guidelines on neuropathic pain assessment: revised 2009. Eur J Neurol 2010;17:1010–8. doi:10.1111/j.1468-1331.2010.02969.x
12. Jones RCW, Backonja MM. Review of neuropathic pain screening and assessment tools. Curr Pain Headache Rep 2013;17:363. doi:10.1007/s11916-013-0363-6
13. Apok V, Gurusinghe NT, Mitchell JD, et al. Dermatomes and dogma. Pract Neurol 2011;11:100–5. doi:10.1136/jnnp.2011.242222
14. Varga I, Mravec B. Chapter 8 - Nerve fiber types. In: Nerves and nerve injuries. Vol 1: History, embryology, anatomy, imaging and diagnostics. San Diego: Academic Press 2015. 107–13. Available from: www.sciencedirect.com/science/article/pii/B9780124103900000081 (Accessed May, 2016).
15. Milner R, Doherty C. Chapter 1 - Pathophysiology of pain in the peripheral nervous system. In: Nerves and nerve injuries. Vol 2: Pain, treatment, injury, disease and future directions. San Diego: Academic Press 2015. 3–22. Available from: www.sciencedirect.com/science/article/pii/B9780128026533000506 (Accessed May, 2016).
16. Lauria G, Cornblath DR, Johansson O, et al. EFNS guidelines on the use of skin biopsy in the diagnosis of peripheral neuropathy. Eur J Neurol 2005;12:747–58. doi:10.1111/j.1468-1331.2005.01260.x
17. England JD, Gronseth GS, Franklin G, et al. Practice Parameter: evaluation of distal symmetric polyneuropathy: role of autonomic testing, nerve biopsy, and skin biopsy (an evidence-based review). Neurology 2009;72:177–84. doi:10.1212/01.wnl.0000336345.70511.0f
18. Argoff CE. The coexistence of neuropathic pain, sleep, and psychiatric disorders: a novel treatment approach. Clin J Pain 2007;23:15–22. doi:10.1097/01.ajp.0000210945.27052.b3
19. Abdulla A, Adams N, Bone M, et al. Guidance on the management of pain in older people. Age Ageing 2013;42 Suppl 1:i1-57. doi:10.1093/ageing/afs200
20. Cruccu G, Aziz TZ, Garcia-Larrea L, et al. EFNS guidelines on neurostimulation therapy for neuropathic pain. Eur J Neurol 2007;14:952–70. doi:10.1111/j.1468-1331.2007.01916.x
21. Finnerup NB, Attal N, Haroutounian S, et al. Pharmacotherapy for neuropathic pain in adults: a systematic review and meta-analysis. Lancet Neurol 2015;14:162–73. doi:10.1016/S1474-4422(14)70251-0
22. Chew ML, Mulsant BH, Pollock BG, et al. Anticholinergic activity of 107 medications commonly used by older adults. J Am Geriatr Soc 2008;56:1333–41. doi:10.1111/j.1532-5415.2008.01737.x
23. Schwarz S, Frölich L. Depression. In: Drug Therapy for the Elderly. Dordrecht: Springer 2012.
24. Eckhardt K, Ammon S, Hofmann U, et al. Gabapentin enhances the analgesic effect of morphine in healthy volunteers. Anesth Analg 2000;91:185–91. doi:10.1213/00000539-200007000-00035
25. Deng Y, Luo L, Hu Y, et al. Clinical practice guidelines for the management of neuropathic pain: a systematic review. BMC Anesthesiol 2016;16:12. doi:10.1186/s12871-015-0150-5
26. Mulla SM, Wang L, Khokhar R, et al. Management of central poststroke pain: systematic review of randomized controlled trials. Stroke 2015;46:2853–60. doi:10.1161/STROKEAHA.115.010259
27. Attal N, Cruccu G, Baron R, et al. EFNS guidelines on the pharmacological treatment of neuropathic pain: 2010 revision. Eur J Neurol 2010;17:1113-e88. doi:10.1111/j.1468-1331.2010.02999.x
28. Vo T, Rice ASC, Dworkin RH. Non-steroidal anti-inflammatory drugs for neuropathic pain: how do we explain continued widespread use? Pain 2009;143:169–71. doi:10.1016/j.pain.2009.03.013
29. New Zealand Formulary (NZF). NZF v47. 2015. Available from: www.nzf.org.nz (Accessed May, 2016)
30. Gilron I, Jensen TS, Dickenson AH. Combination pharmacotherapy for management of chronic pain: from bench to bedside. Lancet Neurol 2013;12:1084–95. doi:10.1016/S1474-4422(13)70193-5
31. Zakrzewska JM, McMillan R. Trigeminal neuralgia: the diagnosis and management of this excruciating and poorly understood facial pain. Postgrad Med J 2011;87:410–6. doi:10.1136/pgmj.2009.080473
32. Backonja M, Beydoun A, Edwards KR, et al. Gabapentin for the symptomatic treatment of painful neuropathy in patients with diabetes mellitus: a randomized controlled trial. JAMA 1998;280:1831–6. doi:10.1001/jama.280.21.1831
33. Rowbotham M, Harden N, Stacey B, et al. Gabapentin for the treatment of postherpetic neuralgia: a randomized controlled trial. JAMA 1998;280:1837–42. doi:10.1001/jama.280.21.1837

Out-of-clinic blood pressure testing in primary care

Out-of-clinic blood pressure monitoring is increasingly regarded as a routine component of cardiovascular risk management. This is because it is a better predictor of cardiovascular events and mortality than clinic-based measurements. General practices that use this technique can provide patients with more accurate cardiovascular risk assessments and help them to make better decisions about their health. Prescribers are also able to titrate blood pressure treatment regimens more accurately using out-of-clinic measurements than if management was guided solely by clinic-based blood pressure assessments. Only validated devices are recommended for the measurement of blood pressure.

KEY PRACTICE POINTS:

- Out-of-clinic blood pressure measurements more accurately reflect a patient's true blood pressure than do clinic-based measurements and improve the quality of shared management decisions
- Consider out-of-clinic blood pressure testing to "rule-out" the possibility of white-coat hypertension before initiating antihypertensive treatment
- Out-of-clinic blood pressure testing can be used to more accurately guide management once antihypertensive treatment has been initiated
- Consider out-of-clinic blood pressure testing for patients with low cardiovascular risk, e.g. younger patients, where there is a clinical suspicion of masked hypertension

Out-of-clinic blood pressure testing includes 24-hour ambulatory testing, where the patient wears an automated device, as well as home-based measurements performed by the patient. Ambulatory blood pressure monitoring is available as an outpatient test by DHBs, privately by some cardiologists or devices may be purchased by general practices. Home blood pressure testing devices are relatively inexpensive and validated devices can be purchased by patients or practices.

Part 1: Should out-of-clinic blood pressure monitoring be a routine component of cardiovascular risk management?

Elevated blood pressure is perhaps the most common modifiable risk factor for cardiovascular and kidney disease encountered by general practitioners and practice nurses. Patients with increased blood pressure are at higher risk of stroke, myocardial infarction, heart failure, atrial fibrillation, kidney disease and cognitive decline.[1] An elevated systolic blood pressure has been calculated to account for almost two-thirds (62%) of an individual's stroke risk and half (49%) of their risk for coronary heart disease.[2]

A survey of New Zealand adults found that a significant number of people were taking antihypertensive medicines or had a systolic blood pressure that was ≥ 140 mmHg or a diastolic blood pressure ≥ 90 mmHg, i.e. the diagnostic criteria for hypertension.[3] With advancing age these numbers rise to almost 70% of males and 80% of females aged over 70 years.[3] Hypertension is more prevalent in New Zealand adult Māori males (36%) than males of Pacific (29%) or New Zealand European ancestry (28%).[3] In New Zealand adult females, hypertension is also more common among Māori (30%) and less common in those of New Zealand European ancestry (21%).[3]

Out-of-clinic testing increases the accuracy of blood pressure measurements

Once begun, antihypertensive treatment is generally life-long and often involves multiple medicines, thereby increasing the prevalence of polypharmacy and the risk of adverse effects. It is therefore important that treatment decisions for blood pressure are based on the best available information.

Clinic-based measurements often over-estimate blood pressure

Out-of-clinic blood pressure assessments can provide patients and clinicians with increased confidence that pharmacological treatment for elevated blood pressure is appropriate. This is because clinic-based measurements tend to over-estimate a patient's blood pressure (see: "Blood pressures vary depending on when and where measurements are taken").

In a group of 200 patients in the United Kingdom, blood pressure measurements were taken in primary care. The systolic blood pressure measured in the clinic was found to be on average 19 mmHg higher and the diastolic blood pressure 11 mmHg higher than that calculated by ambulatory measurements over a twenty-four hour period.[4]

The benefits of out-of-clinic blood pressure testing include:[5]

- A large number of reproducible measurements are recorded that are not affected by the presence of a health professional or the clinical setting
- The results of out-of-clinic blood pressure testing more accurately reflect the patient's day-to-day blood pressure than clinic measurements[6]
- Out-of-clinic blood pressure testing is more reliable at predicting cardiovascular morbidity and mortality
- Patients are provided with more accurate risk estimates upon which they can decide how to manage their health
- A reduction in the over and under-treatment of elevated blood pressure

Improving cardiovascular risk assessment

The intensity of cardiovascular interventions should be proportional to a patient's cardiovascular risk.[7] Cardiovascular risk assessments that incorporate out-of-clinic blood pressure measurements provide a better starting point for discussions about lifestyle and, where appropriate, pharmacological treatment, than do risk assessments based solely on clinic-based measurements. Out-of-clinic blood pressure testing also allows clinicians to more accurately assess blood pressure in patients who they suspect of being at increased cardiovascular risk, e.g. a young Māori adult with a strong family history of chronic kidney disease.

Calculating cardiovascular risk from out-of-clinic blood pressure measurements

Current cardiovascular risk prediction models are based on clinic-based blood pressure measurements. This can be problematic for clinicians using out-of-clinic blood pressure measurements with cardiovascular risk calculators, as out-of-clinic blood pressures are generally lower than clinic-based measurements and it has been suggested that clinicians adjust for this. There is little evidence to guide this practice, however, an Australian group of experts recommends adding 5 mmHg to systolic and diastolic measurements.[5]

Detecting white-coat hypertension

Out-of-clinic blood pressure testing can reduce inappropriate blood pressure treatment by detecting patients with white-coat hypertension. White-coat hypertension occurs when a patient with otherwise normal blood pressure has elevated blood pressure due to the anxiety associated with measurement in a clinical setting.

White-coat hypertension occurs in 13% of the general population,[5] and is more common in females and in people who do not smoke.[8] As many as one-third of adult patients diagnosed with hypertension, using clinic-based measurements, can be

expected to have normal blood pressure on reassessment with out-of-clinic testing.[5]

Patients with white-coat hypertension are recommended to have annual blood pressure assessments, depending on their cardiovascular risk,[5] and regular HbA_{1c} measurements.[8] These patients are at increased risk of left ventricular hypertrophy and type 2 diabetes,[8] largely due to metabolic abnormalities, e.g. impaired glucose metabolism and elevated body mass index (BMI).[9]

Detecting masked hypertension

Masked hypertension is the reverse of white-coat hypertension and occurs when out-of-clinic blood pressure measurements are ≥ 135/85 mmHg and clinic-based measurements are < 140/90 mmHg.[10] People with masked hypertension often have subclinical cardiovascular disease.[8]

The prevalence of masked hypertension is reported to be between 10 and 17% of the general population, up to 29% of people with untreated diabetes and as many as half of people with treated hypertension or exercise hypertension may have masked hypertension.[5]

Clinical suspicion of masked hypertension should be increased in any patient with normal blood pressure in the clinic but with a family history of early-onset cardiovascular disease, e.g. onset prior to age 60 years, or evidence of target organ damage on investigation consistent with hypertension,[5] e.g.:

- Albuminuria or proteinuria
- Left ventricular hypertrophy
- Peripheral artery disease
- Retinal haemorrhage

Using out-of-clinic monitoring to guide treatment for hypertension

Out-of-clinic monitoring can be used to titrate doses of antihypertensive medicines, once treatment has been initiated, in patients who are confirmed to be adherent to treatment.

Blood pressures vary depending on when and where measurements are taken

Hypertension in adults is generally defined as a clinic-based systolic blood measurement that is ≥ 140 mmHg and/or a diastolic blood pressure measurement ≥ 90 mmHg.[1,6] With advancing age, however, increasing arterial stiffness and decreased peripheral resistance mean that diastolic pressure cut-offs are not recommended when diagnosing hypertension in older patients.[13]

Single measurements of blood pressure are often taken in primary care due to time pressures. However, it is recommended that when clinic blood pressure measurements are used to calculate a patient's cardiovascular risk that the average of two seated measurements be taken,[7] at least two minutes apart, ideally from both arms.

As clinic-based blood pressure measurements are generally higher than out-of-clinic measurements a lower threshold is used to stratify blood pressure with ambulatory or home-based testing (Table 1).[6]

Table 1: Definitions of hypertension by measurement method[1,6]

Measurement method	Systolic (mmHg)		Diastolic (mmHg)
Clinic	≥ 140	and/or	≥ 90
Ambulatory			
▪ Daytime or awake	≥ 135	and/or	≥ 85
▪ Night-time or asleep	≥ 120	and/or	≥ 70
▪ 24-hour	≥ 130	and/or	≥ 80
Home-based	≥ 135	and/or	≥ 85

A pharmacist-led study of 348 patients who were randomised to receive home-monitoring of blood pressure or usual care reported that significantly more patients (54%) who received home-monitoring achieved treatment goals compared to patients receiving usual care (35%).[11] Furthermore, the patients who undertook home monitoring of blood pressure achieved, on average, 12 mmHg larger reductions in systolic blood pressure and 6 mmHg larger reductions in diastolic pressure, compared with patients receiving usual care.[11] Patients who participated in home-monitoring received more intensive treatment for hypertension.[11] Patient satisfaction with treatment, on average, was higher among those who participated in home-monitoring compared with patients who received usual care.[11]

Investigating treatment resistant hypertension

Resistant hypertension can have a variety of causes such as excessive alcohol consumption, high sodium intake, underlying endocrine disorders, or pseudohypertension, i.e. elevated blood pressure readings caused by arterial incompressibility due to atherosclerosis. Out-of-clinic blood pressure testing can confirm the presence of sustained elevations in blood pressure in patients who are confirmed to be adherent to treatment, thus signifying the need for further investigation.

Pseudohypertension should be considered in older patients who appear to have treatment resistant hypertension but develop symptoms consistent with hypotension with increasing doses of antihypertensive medicine. Osler's manoeuvre has been proposed to detect pseudohypertension. If the patient's radial artery is firm on palpation, despite the blood pressure cuff being above systolic pressure, this is a positive Osler's manoeuvre which is suggestive of pseudohypertension. However, the ability of Osler's manoeuvre to detect pseudohypertension in clinical practice is poor.[12]

For information on the management of elevated blood pressure see: "Hypertension in adults: The silent killer", BPJ 54 (Aug, 2013).

Part 2: How to perform out-of-clinic blood pressure testing

Patient education is essential before using out-of-clinic of blood pressure testing. The procedure should be explained to patients, training with the device provided and written instructions given for the patient to take away.

The auscultatory method of determining blood pressure is preferred in patients with unstable atrial fibrillation as variations in ventricular filling time, stroke volume and contractility may result in blood pressure variability.[14] Some automated blood pressure monitoring devices, however, are able to detect the presence of atrial fibrillation and these appear to have a high level of accuracy.[14]

Deciding whether to use ambulatory or home monitoring of blood pressure testing

Ambulatory blood pressure testing is considered to be the gold standard for confirming elevated blood pressure,[1] and detecting white-coat or masked hypertension.[5] Studies also report that left ventricular hypertrophy and carotid arterial wall thickness and other markers of organ damage correlate more closely with elevated ambulatory blood pressure than clinic-based measurements.[6] Ambulatory blood pressure testing is subject to variability, however, like other techniques for blood pressure testing.

Home-based testing of blood pressure is recommended when ambulatory blood pressure testing is not available.[5] Home-based testing also has several advantages, compared to ambulatory blood pressure testing (Table 2).

Table 2: Comparison between 24-hour ambulatory and home-based blood pressure testing[5, 15]

24-hour ambulatory blood-pressure is able to detect	The advantages of home-based blood pressure testing
■ Surges in morning blood pressure ■ Short-term variations in blood pressure	■ Better tolerated by patients ■ Home-monitoring devices cost less than ambulatory devices ■ Increasing patient engagement resulting in improved motivation and adherence to treatment

How to perform ambulatory blood pressure testing

Ambulatory blood pressure devices are normally worn for 24 hours on a belt or in a pouch with a tube connecting to a sphygmomanometer on the patient's dominant upper arm.[6] Blood pressure measurements are taken at regular intervals, often every fifteen minutes during the day and every 30 minutes overnight.[6] Patients are asked to wear the device during a normal day, but to refrain from strenuous exercise, and, when the cuff is inflated to stop moving and talking and to keep their arm still with the cuff at the level of the heart (see below).[6] The height of the cuff is especially important if it necessary to use a device with a wrist cuff. The patient should note any events that might affect their blood pressure as well as meals, medicines, rising and going to bed and any symptoms they might experience, e.g. dizziness.[6]

How to perform home-based blood pressure testing

Home blood pressure testing involves patients measuring their own blood pressure in their home, with the direction of a health professional. Advise patients to take measurements at approximately the same time in the morning and evening, over the course of a week.

The optimal conditions for home blood pressure measurements are a quiet room, following five minutes of seated rest, with the patient's feet flat on the floor, legs uncrossed, upper arm bare, back and arm supported in a relaxed position with the cuff at heart level.[5] Advise patients to take measurements after voiding and before any medicines, food or vigorous exercise.[5] Caffeine and tobacco smoke can increase blood pressure and measurements are best at least 30 minutes before or after these stimulants.[5] Two consecutive measurements for systolic and diastolic pressure should be recorded, one minute apart. Patients should note anything that may affect blood readings, e.g. a poor night's sleep.

If orthostatic hypotension is suspected request that patients perform a baseline recording and then two blood pressure measurements 1 minute and 3 minutes after standing.[5]

Blood pressure measurements should not be taken when patients are:[5]

- Stressed
- Uncomfortable
- In pain
- Affected by extremes of temperature, e.g. in a poorly heated home during winter

Which devices can be used to take out-of-clinic measurements?

Only validated devices (see below) should be used to measure out-of-clinic blood pressure. Devices for home monitoring will ideally have:[5]

- Automatic inflation
- Memory storage to eliminate recording errors
- An appropriate cuff size for the patient; a cuff that is too small will overestimate blood pressure and a cuff that is too large will underestimate blood pressure

Devices which measure blood pressure at the brachial artery are considered to be more reliable than those which record at the patient's wrist or finger.[5] It may be necessary to use a validated wrist device if the patient has a large arm circumference.[5]

Mobile phone apps are available that claim to be able to measure blood pressure without the use of a blood pressure cuff. These apps are not validated and are not recommended for the diagnosis or management of hypertension.[16]

Home-monitoring blood pressure devices validated for use by the British Hypertension Society can be purchased from: **www.omronhealthcare.co.nz**. Different cuff sizes are available and devices will typically alert users if measurements are usable or need to be repeated. The devices provide an average for the last three readings taken within a ten minute period. 24-hour ambulatory devices also validated by the British Hypertension Society can be purchased from: **online.ebos.co.nz**

The possible adverse effects of out-of-clinic blood pressure testing

Home blood pressure testing may cause adverse responses in some patients. For example, patients with elevated blood pressure may become anxious due to continually high readings which may adversely affect subsequent readings. Other patients may become obsessed with their blood pressure and take an excessive number of recordings. There is also the possibility that some patients may adjust their treatment regimen in response to readings without consulting with a health professional.[8] The high cuff pressure may cause discomfort for patients with either undiagnosed severe hypertension or severe hypertension that is resistant to treatment.

Conclusion

There is increasing recognition internationally that out-of-clinic blood pressure monitoring has an important role to play in guiding the management of elevated blood pressure.[1,6] Health professionals who adopt this technique are likely to reduce over-treatment and promote shared decision making with patients. As life expectancy increases and there is more focus on individualised care, it is only a matter of time before out-of-clinic blood pressure monitoring becomes a routine part of primary care.

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References

1. National Institute for Health and Clinical Excellence (NICE). Hypertension: clinical management of primary hypertension in adults. 2011. Available from: www.nice.org.uk/guidance/cg127 (Accessed Dec, 2015)
2. Mackay J, Mensah G. Risk factors. In: The atlas of heart disease and stroke. World Health Organisation 2004. 24–5. Available from: www.who.int/cardiovascular_diseases/en/cvd_atlas_03_risk_factors.pdf?ua=1 (Accessed Apr, 2016)
3. McLean RM, Williams S, Mann JI, et al. Blood pressure and hypertension in New Zealand: results from the 2008/09 Adult Nutrition Survey. N Z Med J 2013;126:66–79.
4. Little P, Barnett J, Barnsley L, et al. Comparison of agreement between different measures of blood pressure in primary care and daytime ambulatory blood pressure. BMJ 2002;325:254.
5. Sharman JE, Howes FS, Head GA, et al. Home blood pressure monitoring: Australian Expert Consensus Statement. J Hypertens 2015;33:1721–8. doi:10.1097/HJH.0000000000000673
6. Mancia G, Fagard R, Narkiewicz K, et al. 2013 ESH/ESC Guidelines for the management of arterial hypertension. J Hypertens 2013;:1281–357. doi:10.3109/08037051.2013.812549
7. Cardiovascular disease risk assessment: updated 2013 - New Zealand Primary Care Handbook 2012. 2013. Available from: www.health.govt.nz/system/files/documents/publications/cardiovascular-disease-risk-assessment-updated-2013-dec13.pdf (Accessed Dec, 2015).
8. McGrath BP. Diagnostic tests: Home monitoring of blood pressure. Aust Prescr 2015;38:16–9. doi:10.18773/austprescr.2015.005
9. Mancia G, Bombelli M, Facchetti R, et al. Increased long-term risk of new-onset diabetes mellitus in white-coat and masked hypertension. J Hypertens 2009;27:1672–8. doi:10.1097/HJH.0b013e32832be5f9
10. Trudel X, Milot A, Brisson C. Persistence and progression of masked hypertension: a 5-year prospective study. Int J Hypertens 2013;2013:836387. doi:10.1155/2013/836387
11. Magid DJ, Olson KL, Billups SJ, et al. A Pharmacist-Led, American Heart Association Heart360 Web-Enabled Home Blood Pressure Monitoring Program. Circ Cardiovasc Qual Outcomes 2013;6:157–63. doi:10.1161/CIRCOUTCOMES.112.968172
12. Belmin J, Visintin JM, Salvatore R, et al. Osler's maneuver: absence of usefulness for the detection of pseudohypertension in an elderly population. Am J Med 1995;98:42–9. doi:10.1016/S0002-9343(99)80079-5
13. Protogerou AD, Safar ME, Iaria P, et al. Diastolic Blood Pressure and Mortality in the Elderly With Cardiovascular Disease. Hypertension 2007;50:172–80. doi:10.1161/HYPERTENSIONAHA.107.089797
14. Kollias A, Stergiou GS. Automated measurement of office, home and ambulatory blood pressure in atrial fibrillation. Clin Exp Pharmacol Physiol 2014;41:9–15. doi:10.1111/1440-1681.12103
15. Shimbo D, Abdalla M, Falzon L, et al. Role of Ambulatory and Home Blood Pressure Monitoring in Clinical Practice: A Narrative Review. Ann Intern Med 2015;163:691–700. doi:10.7326/M15-1270
16. Kumar N, Khunger M, Gupta A, et al. A content analysis of smartphone-based applications for hypertension management. J Am Soc Hypertens JASH 2015;9:130–6. doi:10.1016/j.jash.2014.12.001

Use the New Zealand Formulary to access patient information leaflets

Patient information leaflets (PILs) are now available from the New Zealand Formulary (NZF). These provide patients with answers to questions such as:

What does the medicine do?

How should the medicine be taken?

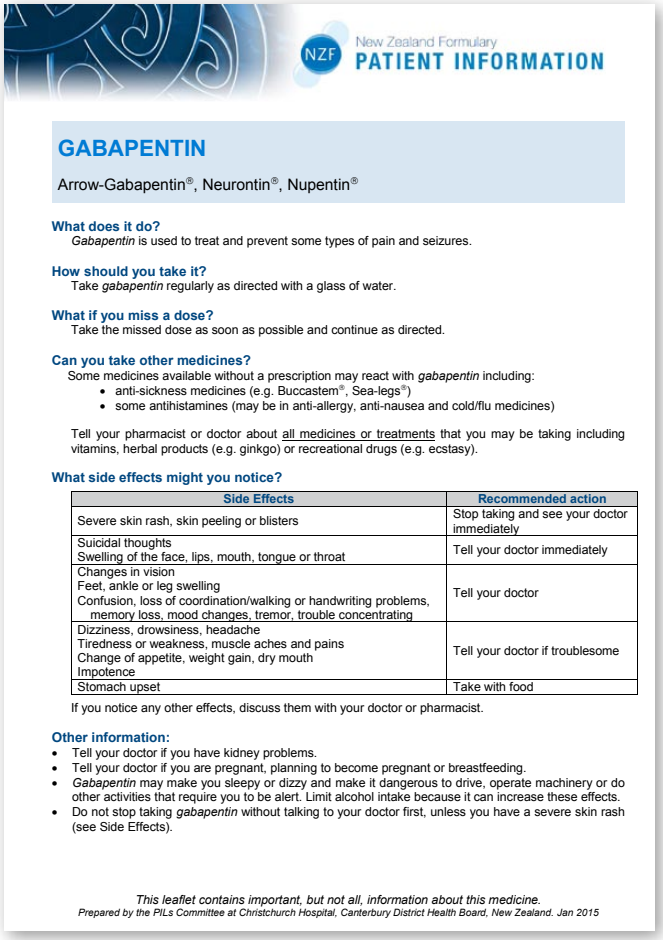
What should be done if a dose is missed?

What are the relevant interactions and adverse effects?

Over the last few months approximately 80 PILs have been made available from the NZF. PILs are suitable for printing or viewing online with your patients.

The adverse effect section provides "Recommended action" advice for patients, depending on the type and severity of any adverse effect a patient may notice.
In addition, there is a section entitled "Other information" which covers any issues that the patient needs to be aware of when taking a medicine. This may include:

- Advising the prescriber if they have heart, liver or renal problems or if they may be pregnant or breastfeeding
- Whether to avoid alcohol or any particular foods when taking a medicine
- Whether their ability to operate a vehicle or machinery may be affected
- If any tests may be required prior to starting a medicine
- Whether the medicine can be safely stopped
- Whether the medicine may be addictive with ongoing use



New Zealand Formulary
PATIENT INFORMATION

GABAPENTIN

Arrow-Gabapentin®, Neurontin®, Nupentin®

What does it do?
Gabapentin is used to treat and prevent some types of pain and seizures.

How should you take it?
Take *gabapentin* regularly as directed with a glass of water.

What if you miss a dose?
Take the missed dose as soon as possible and continue as directed.

Can you take other medicines?
Some medicines available without a prescription may react with *gabapentin* including:
- anti-sickness medicines (e.g. Buccastem®, Sea-legs®)
- some antihistamines (may be in anti-allergy, anti-nausea and cold/flu medicines)

Tell your pharmacist or doctor about all medicines or treatments that you may be taking including vitamins, herbal products (e.g. ginkgo) or recreational drugs (e.g. ecstasy).

What side effects might you notice?

Side Effects	Recommended action
Severe skin rash, skin peeling or blisters	Stop taking and see your doctor immediately
Suicidal thoughts Swelling of the face, lips, mouth, tongue or throat	Tell your doctor immediately
Changes in vision Feet, ankle or leg swelling Confusion, loss of coordination/walking or handwriting problems, memory loss, mood changes, tremor, trouble concentrating	Tell your doctor
Dizziness, drowsiness, headache Tiredness or weakness, muscle aches and pains Change of appetite, weight gain, dry mouth Impotence	Tell your doctor if troublesome
Stomach upset	Take with food

If you notice any other effects, discuss them with your doctor or pharmacist.

Other information:
- Tell your doctor if you have kidney problems.
- Tell your doctor if you are pregnant, planning to become pregnant or breastfeeding.
- *Gabapentin* may make you sleepy or dizzy and make it dangerous to drive, operate machinery or do other activities that require you to be alert. Limit alcohol intake because it can increase these effects.
- Do not stop taking *gabapentin* without talking to your doctor first, unless you have a severe skin rash (see Side Effects).

This leaflet contains important, but not all, information about this medicine.
Prepared by the PILs Committee at Christchurch Hospital, Canterbury District Health Board, New Zealand. Jan 2015

If a PIL is available for a medicine, a link will be located at the bottom of the NZF drug monograph in the Patient Advice section. There is also an index of PILs which is accessible from the NZF homepage and is available from:
www.nzf.org.nz/nzf_70421

A number of PILs with specific advice for children have been available in the New Zealand Formulary for Children (NZFC) since the end of 2015, which are available from:
www.nzfchildren.org.nz/nzf_70291

The PILs project is a collaboration between the Department of Clinical Pharmacology, University of Otago, and the Department of Pharmacology, Canterbury District Health Board (CDHB). PILs are written and reviewed by the PILs Committee which comprises a clinical pharmacology consultant and registrar, a drug information pharmacist, three clinical pharmacists and a lay member. The NZF editorial team also review and contribute to each PIL that is included in the NZF.

Hazards to Health:
e-notification to your Medical Officer of Health

Hazardous substances disease and injury notifications

An electronic notification system has been designed for general practices to report cases of disease and injury related to exposure to hazardous substances, including lead absorption. It was developed by *bestpractice* Decision Support (BPAC Inc) and the Centre for Public Health Research, Massey University and is funded by the Ministry of Health.

The notification system was introduced progressively throughout New Zealand in 2013. There were 244 notifications in 2013 and 229 in 2014. Of these, 180 and 130 were for lead absorption in 2013 and 2014 respectively.

What is defined as a hazardous substance injury or disease?

A hazardous substance is anything that can explode, catch fire, oxidise, corrode or be toxic to humans, as defined in the Hazardous Substances and New Organisms Act 1996. The Act requires medical practitioners to notify cases of injury or disease caused by exposure to a hazardous substance to the Medical Officer of Health.

There are a multitude of possibilities of exposure to hazardous substances, such as: ingestion of cleaning products or cosmetics by children, overdose with agrichemicals, illness caused by exposure to solvents or chlorine, contact dermatitis due to chemicals, a fireworks burn or eye injury and "huffing' (inhaling) of butane.

How should a case be notified?

Look for the "Hazardous Substances and Lead notifications" module on the *bestpractice* Decision Support dashboard (see Figure 1 for an example). Submitting the form will send it to your local Medical Officer of Health via a secure system.

If your practice does not currently have access to this electronic form, contact your local Public Health Unit to notify them of a case.

Lead notifications

Cases of lead exposure including occupational and non-occupational, in which a patient has a blood lead level of ≥0.48 µmol/L, are required to be notified. The electronic form can be used for these notifications.

Poisoning from chemical contamination of the environment

Cases of poisoning arising from chemical contamination of the environment (e.g. from carbon monoxide, agrichemical spraydrift) are also required to be notified under the Health Act 1956, and this can be done via the electronic form.

Why notify?

The Medical Officer of Health and Public Health Unit staff will assess the information about the exposure and determine if further follow-up with the patient is required.

Primary care notifications allow identification of substances which are causing harm, and can lead to controls being put in place to prevent disease or injury. For example, exposure to lead from deteriorating lead-based paint can be reduced through a range of remedial actions. Some controls may be regulatory; for example, the sale of highly alkaline dishwashing powders was prohibited in 2007 following increased reports of oesophageal and upper airway injuries in children who ingested this powder.

For further information about reporting exposures to hazardous substances, contact your local Public Health Unit, or for more information about the e-notification tool, contact:

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cphr | hsss Hazardous Substances Surveillance System

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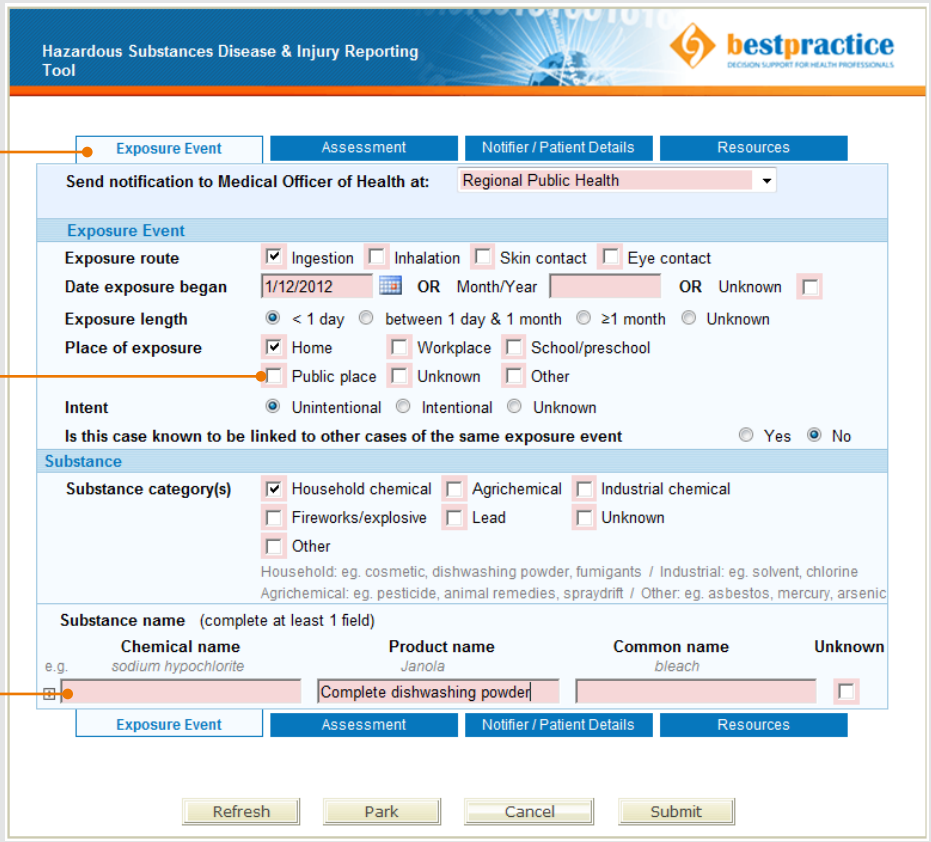
Figure 1: Example of the Exposure Event tab of the notification form – ingestion of dishwashing powder.

1 **The notification form has four tabs:** The notification form has four tabs: Enter details in **Exposure event** and **Assessment**. **Notifier/patient details** are pre-populated from the PMs. Useful information is available in **Resources**

2 Tick boxes summarising the patient history

3 Enter the name of the substance (at least one field is required)



How do we define valvular heart disease when considering warfarin or dabigatran in patients with atrial fibrillation?

Dear Editor,

I have a query from the summary article "An update on antithrombotic medications: What does primary care need to know?", BPJ 73 (Feb, 2016) that I would very much appreciate some further information on.

The article makes this comment:

> *"**Dabigatran should NOT be prescribed to patients with valvular heart disease:** patients with mechanical heart valves who take dabigatran are at an increased risk of bleeding or experiencing a thromboembolic event compared to what their risk would have been if they had been prescribed warfarin."*

I understand that dabigatran is only indicated for non-valvular AF [atrial fibrillation] and is contraindicated in the presence of mechanical heart valves. What is the definition of "valvular AF" in this context? This comment seems to imply that it is the presence of a mechanical heart valve that defines the patient as having valvular heart disease. However this is clearly not the case.

Can dabigatran be used in patients with AF who have tissue prosthetic valves? Can it be used in patients with defective valves which have had a valvuloplasty but not a replacement? Can it be used in patients who have leaky or stenotic valves but have not had operative management – and if yes, at what degree of severity does it become contraindicated?

I have heard a cardiologist at a CME event say that it is contraindicated in patients whose AF is due to valvular heart disease, however it was never explained how one could be sure that the AF was due to the valve dysfunction rather than some other cause.

Further clarification about this issue would be very much appreciated.

Dr Andrew Reid, General Practitioner
Tuakau

The bpac^{nz} editorial team asked cardiologist Stewart Mann to respond:

This is a very relevant question and one that probably does not yet have a definitive answer. The RE-LY trial that compared the efficacy of warfarin and dabigatran had the exclusion criterion "moderate or severe mitral stenosis". This study also excluded patients with a potentially reversible cause of AF which might include some valve disease amenable to surgery. Other valve disease could be included. An analysis of patients with valve disease included in the trial has been conducted and published in abstract form.[1] In the RE-LY trial, around 20% of patients had valve disease, most with mitral regurgitation but some with aortic regurgitation, aortic stenosis or mild mitral stenosis. There is no mention of patients with tissue valve prostheses or of those who might have had a valvuloplasty. The group with valve disease had poorer outcomes than those without valve disease but there was no significant difference between those on warfarin or those taking dabigatran.

I would be personally wary of using dabigatran in patients with rheumatic mitral stenosis of any severity (including those who have undergone mitral valvuloplasty) but in the absence of this, dabigatran would appear to have no particular disadvantages compared with warfarin in patients with valve disease.

Of course the outcomes for those with mechanical prosthetic valves have been clearly worse with non-vitamin K antagonists such as dabigatran and so much so that I cannot even see a further trial being done in this group who are therefore left with no option other than warfarin.

Associate Professor Stewart Mann
Department of Medicine
University of Otago, Wellington

References

1. Ezekowitz MD, Parise H, Nagarakanti R, et al. Comparison of dabigatran versus warfarin in patients with atrial fibrillation and valvular heart disease: The RE-LY trial. J Am Coll Cardiol 2014;63:A325. doi:10.1016/S0735-1097(14)60325-9

Medical cannabis: an oxymoron or is there evidence of benefit?

Dear Editor,

I think most of us have a fair idea of the value of "medical tobacco" and even a reasonable idea about "medical alcohol". I am aware that "medical cannabis" is great for reducing motivation, increasing motor vehicle accidents, sedating or obtunding, and truly does help nausea while occasionally giving intractable vomiting, plus enhancing psychotic conversion rates.

Looking around, I note that Web MD suggests usage in that classic "triad" of leprosy, piles, dandruff and obesity. Not sure what it does for intelligence, but the term "dope" probably gives some insight. I note "medical cannabis" has not found much mention for mental health. Please advise. With thanks and keep up the superb work.

Dr Roger Deacon, General Practitioner
Invercargill

Response from bpac^{nz} editorial team:

The concept of "medical cannabis" has been heavily publicised recently, both in the United States, Australia and in New Zealand. This country has one of the highest rates of cannabis use in the world,[1] and approximately 5% of people aged over 15 years report using cannabis for medical purposes.[2] Patients considering using cannabis illegally for a medical purpose should, instead, be offered approved medicines that have evidence of safety and efficacy.

Robust clinical trials using cannabis to treat medical conditions are lacking. Δ^9-tetrahydrocannabinol (THC) has traditionally been regarded as the psychoactive ingredient of cannabis. However, cannabis contains approximately 70 other different compounds, any one of which may be pharmacologically active.[3] Furthermore, the levels of THC can vary widely between strains of cannabis. These variables make it difficult to interpret research assessing the efficacy of cannabis for medical purposes and creates problems when considering how a non-standardised product should be dosed.[3, 4]

Observational studies show long-term cannabis use is associated with adverse social and financial consequences,[5] and cannabis use increases rates of psychosis.[6] As with recreational cannabis use, medical cannabis use could also lead to other serious adverse effects, such as motor vehicle accidents.[7] It is therefore reasonable to ask whether cannabis has any place in medical practice given the availability of other medicines which have been tested in clinical trials and met regulatory standards.

Unlike cannabis plants, manufactured medicines can be produced to a highly consistent standard, allowing specific, evidence-based doses to be prescribed.[3, 8, 9] There is one cannabinoid approved for use in New Zealand, Sativex, a combined cannabidiol/THC oromucosal spray, for the treatment of severe spasticity associated with multiple sclerosis. A Cochrane review and a major meta-analysis, both published in 2015, found moderate quality evidence that cannabinoids (as opposed to cannabis) may be useful for the treatment of chronic pain, including neuropathic pain, and spasticity associated with multiple sclerosis.[10, 11] There is also moderate quality evidence that cannabinoids may be effective antiemetics for adjunctive use in chemotherapy or to assist weight-gain in patients with HIV.[10, 11] There is low quality evidence in support of other uses such as reducing anxiety or improving sleep.[10, 11] Adverse effects commonly associated with cannabinoid use include dizziness, dry mouth, nausea and vomiting, fatigue, sedation, dysphoria and hallucinations.[11]

Medical use should not be used to promote legalisation

Cannabis is now being used in the United States for the treatment of medical conditions as diverse as epilepsy, post traumatic stress disorder, Crohn's disease, sickle cell disease, psoriasis, and amyotrophic lateral sclerosis, with neither clear evidence of effectiveness, nor the same robust evaluation required of other medicines.[3] As a result the medical use of cannabis has become muddled with the issue of legalisation of cannabis. An editorial published in JAMA, in 2015, commented:[3]

> *[if the] "initiative to legalize medical marijuana is merely a veiled step toward allowing access to recreational marijuana, then the medical community should be left out of the process, and instead marijuana should be decriminalized. Conversely, if the goal is to make marijuana available for medical purposes, then it is unclear why the approval process should be different from that used for other medications."*

Both Australia and the United States relaxed legislation over the availability of cannabis for medicinal purposes in 2015. The New Zealand government has indicated wider access to cannabis for medical purposes may be granted once appropriate clinical trials have been conducted and the trial products approved, although there is no indication when this might be.

References

1. Degenhardt L, Chiu W-T, Sampson N, et al. Toward a global view of alcohol, tobacco, cannabis, and cocaine use: findings from the WHO World Mental Health Surveys. PLoS Med 2008;5:e141. doi:10.1371/journal.pmed.0050141
2. Pledger M, Martin G, Cumming J. New Zealand Health Survey 2012/13: characteristics of medicinal cannabis users. New Zealand Medical Journal;129:29–40.
3. D'Souza DC, Ranganathan M. Medical Marijuana: Is the Cart Before the Horse? JAMA 2015;313:2431–2. doi:10.1001/jama.2015.6407
4. Vandrey R, Raber JC, Raber ME, et al. Cannabinoid Dose and Label Accuracy in Edible Medical Cannabis Products. JAMA 2015;313:2491–3. doi:10.1001/jama.2015.6613
5. Fergusson DM, Boden JM. Cannabis use and later life outcomes. Addiction 2008;103:969-976-978. doi:10.1111/j.1360-0443.2008.02221.x
6. Fergusson DM, Horwood LJ, Ridder EM. Tests of causal linkages between cannabis use and psychotic symptoms. Addiction 2005;100:354–66. doi:10.1111/j.1360-0443.2005.01001.x
7. Poulsen H, Moar R, Troncoso C. The incidence of alcohol and other drugs in drivers killed in New Zealand road crashes 2004-2009. Forensic Sci Int 2012;223:364–70. doi:10.1016/j.forsciint.2012.10.026
8. Aamir T. New Zealand doctors should be allowed to prescribe cannabis for pain: No. J Prim Health Care 2015;7:160–1.
9. Hardy PA. New Zealand doctors should be allowed to prescribe cannabis for pain: Yes. J Prim Health Care 2015;7:158–9.
10. Smith LA, Azariah F, Lavender VTC, et al. Cannabinoids for nausea and vomiting in adults with cancer receiving chemotherapy. Cochrane Database Syst Rev 2015;11:CD009464. doi:10.1002/14651858.CD009464.pub2
11. Whiting PF, Wolff RF, Deshpande S, et al. Cannabinoids for Medical Use: A Systematic Review and Meta-analysis. JAMA 2015;313:2456–73. doi:10.1001/jama.2015.6358

Oxycodone prescribing in the community: What can primary care do?

Dear Editor,

Re: Oxycodone update, prescribing report (Mar, 2016)

The pattern of opioid use in hospital, particularly in orthopaedic services, has not changed during 2015. The predominant discharge analgesia is oxycodone, or occasionally tramadol. Until hospital prescribing changes, we in primary care are unable to alter the statistics at all. Now that the eGFR [estimated glomerular filtration rate] is increasingly used as a predictor of problems, there is a reluctance to use morphine at all, especially in the elderly post fracture NOF [neck of femur fracture] etc.

Dr Brian Ross, General Practitioner
Pukekohe

Response from bpac^{nz} editorial team:

Most prescribing of oxycodone is initiated in hospitals and general practitioners have limited opportunity to influence secondary care prescribing. However, oxycodone use in the community does need to be minimised; the current opioid epidemic in the United States is a cautionary tale. In the United States pharmaceutical opioids now kill more people than firearms or traffic accidents,[1] and more than the combined death rates from heroin and cocaine overdoses.[2]

General practitioners can take action by evaluating the ongoing need for strong analgesia in patients discharged from hospital, and discontinuing oxycodone when it is no longer required. If patients are discharged from hospital with a strong opioid, the prescription should be for a short time period and the patient should have a treatment plan for tapering their analgesic use. Clinicians in primary care do not need to provide repeat prescriptions for strong opiods for all patients discharged from hospital. The decision to prescribe oxycodone, or another strong opioid, should balance the predicted net benefits from treatment against the risks of adverse effects, misuse and addiction.

Renal impairment is a factor to consider when prescribing opioids. The effects of any opioid, including oxycodone, may be increased and prolonged for patients with renal impairment. For patients with mild renal impairment, dose reduction is advised. In patients with severe renal impairment (eGFR < 10 mL/min/1.73 m^2), both morphine and oxycodone should be avoided due to accumulation of active metabolites, which can lead to opioid toxicity; fentanyl is regarded as the safest strong opioid for patients with renal impairment.

References

1. Rudd R, Aleshire N, Zibbell J, et al. Increases in drug and opioid overdose deaths - United States, 2000 - 2014. 2016.www.cdc.gov/mmwr/preview/mmwrhtml/mm6450a3.htm (Accessed May, 2015)
2. National Institute on Drug Abuse. Overdose death rates. 2015.www.drugabuse.gov/related-topics/trends-statistics/overdose-death-rates (Accessed May, 2015)

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