

BEST PRACTICE

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APRIL 2010

Paediatric oral health
Stopping medicines in
older people
Care of stroke survivors

bpac^{nz} launches
Patient Safety Tool

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better medicine

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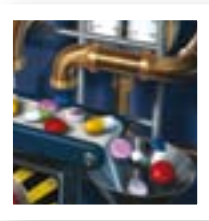
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To read more about how Charlie Horse keeps his teeth so clean and healthy, turn to page 30.

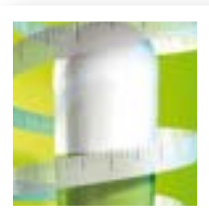
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A practical guide to stopping medicines in older people

The majority of older people who require drug therapy take multiple medicines. Polypharmacy increases the risk of adverse effects and medicine interactions. Individual review of the need for each medicine can simplify treatment regimens and reduce the potential for harm. Practical guidance for stopping medicines includes only stopping or reducing one medicine at a time and tapering the dose to reduce the likelihood of an adverse withdrawal event. Specific guidance for discontinuing common medicines is included.

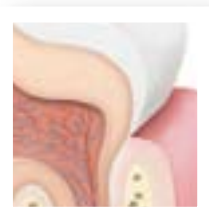
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Medicines for weight loss – do they work?

Improving diet and increasing physical activity are the main strategies for weight loss. Weight loss medicines may be considered for some people who have not attained a healthy weight with lifestyle changes alone, especially if they still have central obesity related risk factors. Weight loss medicines only produce modest reductions in weight and must be used in conjunction with lifestyle changes. Weight loss medicines are not effective long-term.

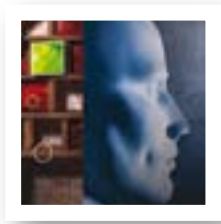
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Common issues in paediatric oral health

How to recognise and manage common oral health issues in younger children including: what to expect inside the mouth, teething pain, gingivitis, oral thrush, angular cheilitis, eruption cysts, gum boils, ulcers, herpes simplex virus, non-nutritive sucking, mouth breathing, tooth grinding, fraenal attachments, “tongue-tie” and tooth trauma.

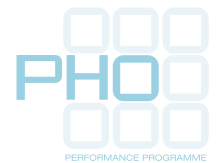
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Care of stroke survivors

The aim of stroke rehabilitation is for the patient to regain the best level of health, activity and participation possible within the limits of any persisting stroke impairment. Many stroke survivors are left with significant changes to physical, emotional, cognitive and social function. Recovery of function varies depending on the part of the body affected. Best outcomes after stroke are associated with prompt specialist multidisciplinary in-patient care in a stroke rehabilitation unit. General practice is ideally placed to undertake comprehensive reviews and coordinate after stroke care in the community.

Supporting the PHO Performance Programme



Essentials

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Bpac^{nz} launches the

Patient Safety Incident Reporting System for primary care



Bpac^{nz} is pleased to announce the launch of the national primary care Patient Safety Incident Reporting System.

Patient safety incidents in the hospital setting have received significant attention recently with the release of the DHBs' Serious and Sentinel Events Reports. Although hospitals have always collected data about patient safety incidents, this was the first time it has been compiled into one report. The aim is to improve safety by encouraging open and transparent reporting of incidents.

While reporting of patient safety incidents in the hospital setting is well established internationally, incident reporting systems for primary care have only recently been introduced. Until now there has been no national patient safety incident reporting system for primary care in New Zealand.

Why have a Patient Safety Incident Reporting System for primary care?

International studies have shown that patient safety incidents are reasonably common in primary care and that most are preventable. Having a system that encourages open reporting, review of incidents and

promotes the sharing of solutions has the potential to prevent recurrence of incidents, making primary care safer for both patients and health care professionals.

What is a patient safety incident?

Previously referred to as medical errors, patient safety incidents can be defined as:¹

- Anything administrative or clinical, that you identify as something to be avoided in the future
- Something that happened in your practice that should not have happened and that you do not want to happen again

Organisations such as the Medical Council and the Health and Disability Commission have processes that hold clinical professionals accountable for the quality of their work and aim to maintain professional standards. Patient safety incident reporting is a separate process from this.

Patient safety incident reporting is a "no blame" approach designed to focus on systems and how they can be improved to minimise the risk to patients. This recognises that individuals are seldom solely responsible for errors and that targeting individuals, but not addressing faulty systems or process, will not prevent future incidents.

1. Adapted from Dovey SM, Meyers DS, Philips RL, et al. A preliminary taxonomy of medical errors in family practice. Qual Saf Health Care 2002;11:233-8.

The bpac^{nz} Patient Safety Incident Reporting System

The bpac^{nz} Patient Safety Incident Reporting System is designed for people working in primary care (e.g. general practitioners, practice nurses, pharmacists, administrators) to report and review patient safety incidents.

The system is:

- Non-punitive and independent of any authority with the power to punish
- Completely anonymous, no identifying information is collected or recorded
- Focused on systems or processes rather than individuals

The primary purpose of the bpac^{nz} Patient Safety Incident Reporting System is to improve safety by identifying the factors that commonly contribute to incidents in primary care, and sharing solutions to prevent these incidents from occurring again.

Reports will be analysed by experts in primary care and clinical systems, and regular feedback based on these analyses will be published on the bpac^{nz} website and in the Best Practice Journal. As well as published analyses,

brief summaries of individual incident reports can be reviewed online. This online review facility includes the ability to comment on reports and view comments and observations made by peers on an incident.

How do I make a report?

Reports can be made using the form included with this BPJ or online by following the link from the bpac^{nz} home page: www.bpac.org.nz

By submitting a report you are making an important contribution to the safety of your patients and colleagues.



For more information go to:

www.bpac.org.nz/safety

When is enough, enough?

Stopping medicines in older people

In New Zealand, it is estimated that 30% of people aged over 75 years are taking five or more medicines and around 10% are taking ten or more. Polypharmacy increases the risk of morbidity, hospitalisations and death and increases the likelihood of impaired mobility and placement in residential care.^{1, 2, 3}

Medicines are often prescribed to a patient by a number of different physicians, following single disease guidelines. A 70-year-old woman with three chronic diseases and two risk factors would result, on average, in being prescribed 19 different doses of 12 different medicines at five different times of the day, with ten possibilities for significant drug interactions either with other medicines or with other diseases.⁴ Using single disease measures, this regimen would rate highly in fulfilling guideline criteria for treatment, however people do not experience co-existing illnesses in isolation of each other. Symptoms are inseparable and simultaneous and wisdom and judgement are required to avoid polypharmacy. The difficulty lies in knowing which medicines to stop and when and how to stop them.

The best way to stop medicines is not to start them

In asking “when should stopping medicines be considered in older people?” the answer is invariably “all the time” but the picture would not be complete without also asking “when should they be started?” Medicines must be used appropriately.

It is much more difficult to stop medicines than it is to start them. It can be complex to review decisions, discontinue or change medicine regimens determined in secondary care, or from guidelines developed for younger populations.

Time and financial constraints mean scheduled, formal medicines review may never be performed. As much thought needs to be given to starting medicines in older people, as to stopping them.

The “golden rules” of appropriate medicine use are:

1. Prescribe the best medicine combination to treat the underlying disorder(s), not necessarily the symptoms of the disorder(s)
2. Choose medicines that are less likely to cause adverse reactions
3. Start medicines that prevent morbidity, but remember that some people will benefit from lifestyle advice alone
4. Do not use chronological age as a guide for assessing potential benefit or risk of a medicine
5. Regularly review the indications for therapy
6. Do not fix things that are not broken
7. Consider the patient’s wishes in treatment decisions

Consider stopping or reducing the dose of every medicine

Review the rationale for continuation of all medicines and consider trials of discontinuation where appropriate.

In one randomised controlled trial of simultaneous discontinuation of multiple medicines in a frail elderly rest home population, only 10% of the medicines stopped had to be re-administered because of the return of the original indication.⁵ More importantly, the annual rate of

both mortality (21% vs. 45%) and referrals to hospitals (12% vs. 30%) significantly decreased compared with the control group, while quality of life was increased.⁵ This approach has been replicated in a population of elderly people living at home, with similar effects.⁶

A systematic review of withdrawal of antihypertensives in elderly people concluded that 20 – 85% remained normotensive, or did not require reinstatement of therapy, for between six months and five years, with no increase in mortality.⁷ Similarly, studies of diuretic withdrawal found no need for reinstatement in over 50% of elderly people.

There are good reasons to reduce the dose of medicines in older people. A patient who has received antihypertensives or nitrates may not need the same regimen years later when physical activity changes and body mass is reduced. Although there is evidence of the effectiveness of treating hypertension in older people who are fit,⁸ in the frailer population over enthusiastic attempts to lower systolic and diastolic blood pressure may increase mortality and morbidity.^{9, 10} Some drugs also have a “legacy” effect, e.g. the benefit of bisphosphonates may last for five years after stopping.

Questions to ask when considering stopping medicines

1. Is the original indication for the medicine still present?
2. What is the time to effect of this medicine and is it clinically significant?
3. What is the life expectancy of the patient?*
4. What is the evidence for overall benefit on quality and quantity of life for this medicine in older people?

*Consider the “healthy survivor effect” when assessing life expectancy i.e. a person who has survived to an advanced age has an increased life expectancy compared to the average person. Life expectancy tables are available from Statistics New Zealand: www.stats.govt.nz/methods_and_services/access-data/tables/cohort-life-tables.aspx

Consider the overall benefit of medicines for prevention in older age

The aim of disease prevention is not just to extend the quantity of life but improve its quality. However there is often a lack of clarity about exactly how, or whether to, use preventive medications to those who are beyond the average lifespan.

Associate Professor Dee Mangin, University of Otago highlights the gaps in the evidence:

“Medicines are often recommended based on studies of younger populations without significant co-morbidity. Applying clinical guidelines developed from these studies to older people as standards for good care is often inappropriate. This is both because of the increased risks and because it cannot be assumed that the benefit exists in a continuum. Absolute risk is a poor guide to the relative benefits of treatment as the absolute risk of dying of any disease is greater in older people simply because the time of death is nearer. Treatment focussed only on preventing single diseases can sometimes have no beneficial effect if it simply trades one source of morbidity and mortality for another. This effect can be seen when looking at all cause mortality and morbidity with statin use in the over 70’s for example, where the reduction in cardiovascular death and disease is balanced by an equal rise in morbidity and mortality due to cancer.” – **Assoc Prof Mangin**

Associate Professor Mangin says that a different model is required for assessing medicines for prevention in old age. It should include duration of life extension, duration of treatment and take into account mortality and morbidity due to all causes, as well as the harms attributable to treatment. Using this model, some preventive interventions that have benefits across a range of conditions, will likely provide similar benefits in older populations (e.g. flu vaccination, exercise, smoking cessation). Some interventions may provide greater

benefit in older populations and some will cause more harm than benefits. In other cases the potential benefit depends on the individual to whom the evidence is applied – there is evidence of a small clinical benefit for treating hypertension to prevent stroke among fit older people, however the risk benefit balance changes as the individual becomes more frail and at greater risk of postural falls and treatment adverse effects.

Professor Ngaire Kerse, University of Auckland asserts that there is evidence of benefit of preventive medicines in older people and is opposed to the concept of denying medicines to older people because they are for prevention.

“Prevention is primary, secondary and tertiary - tertiary prevention is optimal management of chronic conditions. Management of cardiovascular disease (CVD) is a large part of practice for older people and is universally reported as being less than optimal.¹¹ Antihypertensive medicines reduce the risk of subsequent stroke, myocardial infarction and disability from cardiovascular disease (i.e. prevention). Vitamin D reduces the risk of falls in frail older people and is free of adverse effects.”¹² – **Prof Kerse**

Recognising the “brink”

Most people would probably agree that continuing any drug other than palliative is inappropriate in the time immediately before death. However extrapolating back from this is difficult. Callahan talks about the notion of technological brinkmanship: there is a point beyond which treatment has more harms than benefits, but without an effective way to approach this, treatment is continued because the “brink” is not recognisable.¹³

There is little to lose in trials of stopping nonessential medicines – they can always be restarted if the indications for the original treatment return. Good documentation and good communication with patients and families, in a shared decision making model, is essential.

Going too far – under treatment is also a problem

Inadequate treatment of illnesses can pose just as much of a problem as over treatment can.

“Pain, bone health (i.e. the use of vitamin D) and CVD are often under-treated or not managed ideally. Assessing CVD risk (for all its uncertainties) is important as this can guide the need (or not) for medicines. Outcomes from CVD are not just confined to the cardiovascular system with emerging evidence that dementia may be prevented or slowed with appropriate CVD risk management,¹⁴⁻¹⁸ however several large definitive trials are awaited. Absolute risk of new CVD events is the highest for older people. While there are risks associated with each combination of medicines, reduction in morbidity is the key and cardiovascular morbidity is the largest contributor to disability for older people.”^{19, 20}

“People in residential care are particularly vulnerable to under treatment.^{21, 22} Keeping up to date is difficult. Extra calcium should now be given in dietary form, not tablets, and aspirin only for those with established CVD of very high risk (> 20%). The aim is to prevent morbidity and maximise quality of life and appropriate use of medicines is essential. This may mean stopping them, it may mean starting them.” – **Prof Kerse**

However, Associate Professor Mangin cautions against screening for CVD risk in populations beyond the average lifespan as it is not well enough supported by evidence. A recent study in 2009, based in the Netherlands, casts doubt on the use of the Framingham risk factors in older people as the usual risk factors did not predict cardiovascular morbidity in an older population in the same way as it does in younger adults.²³ The NICE guidelines have also recently been changed to reflect the shortcomings of the Framingham approach.

“When we use treatments to relieve symptoms we apply the best science available even if it has gaps and imperfections. Introducing treatments and their risks for prevention to people who are currently well requires a much higher level of evidence.” – **Assoc Prof Mangin**

Associate Professor Mangin also points out that as yet there is no compelling evidence that dementia can be prevented through vascular manipulation by pharmacological or non-pharmacological trials.


“The evidence for dementia prevention with CVD risk management is based on assumptions without randomised controlled trial evidence which balances the harms of treatment with the magnitude of any benefit.”
– Assoc Prof Mangin

Avoiding ageism

Well considered discontinuation of medicines in older people is not ageist. Polypharmacy itself should be conceptually perceived as a “disease” threatening healthy old age, where the burden of drugs may become greater than the burden of the diseases they are used to treat.

On the other hand, age alone is not a good guide to use. Older people in their homes and in residential care, have the right to as much, or perhaps even more, thought and attention to their health issues as any other group.

Sensible application of clinical epidemiological principles, utilising the evidence base, is required. A rational approach to prescribing in older people should recognise that the gap between guideline mandated prescribing, and prescribing for real and complex individuals, might be wisdom and judgement rather than poor care. In contrast to guideline and target driven standards, such an approach will not leave patients wondering “are you doing this for me doctor or am I doing it for you?”

Practice debate When should medicines be stopped in older people? We are interested in your thoughts –  editor@bpac.org.nz

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N.B. Upfront References continue on page 55



A practical guide to

STOPPING MEDICINES

in Older People

Polypharmacy increases the risk of adverse effects and medicine interactions

The majority of older people have more than one medical condition, more than one prescriber and take more than one medicine.¹ Polypharmacy increases the risk of adverse effects and medicine interactions and the physiological changes that accompany ageing alter the handling and response to medicines. These factors make prescribing decisions, about both starting and stopping medicines in older people, difficult. The net result may be that the medicine regimen poses more risks than benefits.

The use of evidence based guidelines tends to increase the number of medicines required to meet specific targets, however this may not always be appropriate in older people because they are often poorly represented in clinical trials.^{2,3} Guidelines are population based and do not take into account individual variation, co-morbidities and patient preference. The clinical status of older people and the approach to decisions about the use of medicines for this population vary widely. There is often no clear consensus.

Individualised assessment that includes a review of the need for each drug can simplify treatment regimens and reduce the potential for harm. **Medicine withdrawal may be the best clinical decision and result in significant clinical benefits including a reduction in falls.** The key reasons for stopping medicines in older people include a decreased risk of adverse effects, a reduction in the potential for medicine interactions and to simplify a prescription regimen.

Key concepts

- The majority of older people who require drug therapy take multiple medicines
- Withdrawing medicines may be the best clinical decision
- Factors to consider when deciding if a medicine can be stopped include the wishes of the patient, clinical indication and benefit, appropriateness, duration of use, adherence and the prescribing cascade
- Only stop or reduce one medicine at a time
- Tapering the dose helps reduce the likelihood of an adverse withdrawal event

How do you decide which medicines can be stopped?

Reviewing the treatment needs of an older patient who is taking multiple medicines can be a complex and time consuming task. It can be difficult to know which medicine, if any, to stop. In some circumstances, the only way to know whether or not to stop a medicine is to actually stop it and see what happens.⁴


One way of considering if any medicines are able to be stopped is to group them into two categories – those that improve day-to-day quality of life and those that prevent future illness (see Box over page). Thinking about medicines in this way may provide a good starting point

for talking with patients about the role and importance of each medicine. It may also allow a discussion about any variance between the goals of the doctor and those of the patient – the question is “what is the clinical and personal significance of this specific drug for this particular patient?”

Medicines can be grouped as:

1. Those that keep the patient well and improve day-to-day quality of life e.g. analgesics, thyroxine or anti-anginals. In some cases, if these medicines are stopped, the patient may become ill or unable to function. However, some drugs may be able to be stepped down, stopped or used on an as required basis (prn) e.g. a protein pump inhibitor (PPI).
2. Those that are used for the prevention of illness in the future e.g. statins, aspirin, warfarin or bisphosphonates. A decision about whether to stop medicines such as these should include consideration of the risks and benefits of treatment for that particular patient, the length of time required for benefit and the life expectancy of the patient.

An estimation of life expectancy may be difficult and needs to take into account not only the person’s age but also how many medical problems they have, how severe they are and how well they function.⁵ Diagnosis of a life-limiting illness may make the decision to stop long term medicines easier, but in reality, approaches range from stopping everything (except palliative medicine) to continuing all medicines until the patient is physically unable to take them.⁶


 **Best practice tip:** Consider medicine regimens to have an expiry or “best before” date. Make sure that medicine reviews are carried out by this date unless there has been a change in the patient’s clinical condition that prompts an earlier review. Use your PMS to make sure that reviews are done at least annually for older people.

Factors to consider when deciding if a medicine can be stopped include:

- The wishes of the patient
- Clinical indication and benefit
- Appropriateness
- Duration of use
- Adherence
- The prescribing cascade

The wishes of the patient

The majority of people who take medicines would prefer not to, or at least to take only those that are really needed. Patients often ask if any of their pills can be stopped. It is easy to say “no” and continue on with the consultation but ideally this query should be viewed as a chance for a medicine review. Suggest a “brown bag review”, where the patient brings in all their medicine, including over-the-counter and complementary/herbal medicines and also those that they are not actually taking but are still in their cupboard. Consider involving the practice nurse and pharmacist for a team approach.

 See BPJ 11 (Feb, 2008) “Principles of prescribing for elderly people” for more information on a “brown bag review”.

Clinical indication

Check that there is still a valid clinical indication and ongoing clinical benefit for each medicine. It may be necessary to review the patient notes to check what the original indication was. Consider if the benefit of the drug has already been achieved or if the clinical condition of the patient has changed.

Examples may include:

- A patient no longer taking a NSAID who now may not need a gastroprotective agent
- A patient with treated congestive heart failure who may be able to have their diuretic reduced or stopped


- A patient who has been successful with lifestyle modifications (such as a healthier diet, weight loss and smoking cessation) who may no longer require an antihypertensive
- A patient diagnosed with a terminal illness and a prognosis that makes the benefit of preventative medicines such as bisphosphonates and statins unlikely to be realised in that patient's lifetime

Appropriateness

Check that the medicine is appropriate for use in an older person (see sidebar "Defining inappropriate medicine use"). Two large studies have shown that approximately 21% of medicines used in older people may be inappropriate.^{7,8} Some medicines are less safe for use in older people and more likely to cause adverse effects or have an increased risk of medicine interactions.

Examples of medicines that may be inappropriate in older people include:

- Amitriptyline (particularly doses > 50mg), which is likely to cause sedation and also has strong anticholinergic actions - nortriptyline is recommended as a safer alternative if a tricyclic is required.
- Benzodiazepines, which can cause excessive sedation and increase the risk of falls.
- Dextropropoxyphene, which can cause confusion and excessive sedation particularly in older people. Evidence shows that it is no more effective for pain than regular paracetamol use.⁹ Due to this unfavourable risk-benefit balance, dextropropoxyphene is being withdrawn from the New Zealand market on 1 August 2010.

 See BPJ 26 (Mar, 2010) "Dextropropoxyphene containing medicines to be withdrawn".

Consider if there are any other solutions that may be effective e.g. diet modification instead of a statin for reducing cholesterol, or non-pharmacological treatment instead of an antipsychotic for the behavioural and psychological symptoms of dementia.

Defining inappropriate medicine use


Several screening tools have been developed to help identify potentially inappropriate prescribing in older people such as the Beers' criteria and the more recent STOPP/START tools (Screening Tool of Older Person's Prescriptions and Screening Tool to Alert doctors to Right Treatment).¹⁰ Although widely used in research, these tools currently have limited value in primary care because they are not easy to use, time consuming and the Beers' criteria in particular includes medicines that in some situations may be appropriate e.g. dipyridamole, oxybutinin and doxazosin. These tools should not be used as a substitute for careful clinical judgement.¹¹



One way to “stop” medicines is not to start them in the first place

Prescribing for older people can be difficult. When considering any new medicine for an older person, check if it is appropriate by considering the following questions: (Adapted from Holmes, 2006)²

- Is there an indication for the drug?
- Is the medicine effective for the condition?
- Are there clinically significant drug-drug interactions?
- Are there clinically significant drug-disease/condition interactions?
- Is there unnecessary duplication with other medicines?
- Is the likely duration of therapy known and acceptable to both doctor and patient?
- Will the patient take the medicine – what are the likely adverse effects, is the dose correct, are the directions practical?
- Is this medicine the least expensive alternative compared with others of equal usefulness?

 See BPJ 11 (Feb, 2008) “Dilemmas in prescribing for older people”



Duration of use

Check how long the patient has been on the medicine. Some medicines are repeated for years as it can be quicker and simpler to maintain the status quo.

Check if there was a clear understanding at the time of initiation about the expected duration of use, particularly if the medicine was started in a secondary care setting. For example, a patient who was initiated on dipyridamole after a TIA, who has had no further ischaemic events, may be able to stop this medicine after two years.

Check whether there is still an indication for the use of the medicine and if so, that its use is still consistent with recommendations in current guidelines. Consider if there are more up-to-date drugs on the market that may be superior and safer.

Adherence

Check if the patient is taking all of their prescribed medicines. If not, ask them why? Did they understand the aims of treatment and did they experience any adverse effects? If the patient has remained well without the medicine, and is unlikely to suffer harm if it is not taken, consider stopping it e.g. corticosteroid inhalers for COPD.

The prescribing cascade

When a patient presents with new symptoms, consider an adverse medicine reaction as a possible cause. The aim is to avoid the prescribing cascade where additional medicines are initiated to treat adverse effects (both recognised and unrecognised) of other medicines.

Examples include:

- A patient taking 50 mg amitriptyline for pain presents with incontinence and/or constipation. Amitriptyline has anticholinergic actions which can cause urinary retention leading to overflow incontinence. If this is not recognised, oxybutynin may be prescribed, which aggravates the incontinence because it also has anticholinergic

actions. In addition, the patient then becomes constipated and a laxative is prescribed. One medicine has led to the use of three others. Stopping the amitriptyline and finding an alternative medicine for the pain may be the best action

- A patient taking a calcium channel blocker presents with ankle swelling. Avoid prescribing a diuretic as they are not effective in this situation.
- For any patients taking NSAIDs who develop dyspepsia, hypertension or heart failure consider the NSAID as a potential cause.

What are the likely consequences of stopping medicines?

Stopping medicines may result in one or more of the following outcomes:

1. No adverse consequence for the patient
2. Withdrawal events/symptoms that have a pharmacological or physiological basis, including rebound symptoms e.g. rebound hypertension after discontinuing therapy with a beta blocker
3. Signs or symptoms of the pre-existing disease may re-appear e.g. increased blood pressure after stopping an antihypertensive.

How a medicine is stopped is likely to alter the risk of withdrawal symptoms

For some classes of medicine e.g. beta-blockers, corticosteroids and antidepressants, abrupt withdrawal can induce morbidity and even mortality as a result of rebound phenomena and specific withdrawal syndromes.¹²

For many medicines, tapering the dose is likely to be safer and better tolerated by the patient than abrupt discontinuation.

For example, abrupt discontinuation of:

- A beta-blocker may result in rebound tachycardia, an increase in blood pressure and, in some circumstances, cardiac ischaemia.

- An antidepressant may result in withdrawal symptoms that are similar to those of depression, which may make it difficult to determine whether the original depression has returned, or if the symptoms are a result of the abrupt discontinuation.
- A PPI is more likely to result in rebound hyperacidity.



How to stop medicines

Take a stepwise approach to stopping medicines

A four step process can be used when stopping medicines:¹³

1. Recognise the need to stop
2. Reduce or stop one medicine at a time
3. Consider if the medicine can be stopped abruptly or should be tapered
4. Check for benefit or harm after each medicine has been stopped

Recognise the need to stop a medicine

When the patient presents for a renewal of medicine ask if they have any new symptoms (including adverse effects) or any concerns about their medicine. Has the clinical condition of the patient changed? Consider the preferences of the patient.

Are there drugs that can be stopped? If more than one medicine can be stopped, which one should be stopped first? This relies on clinical judgement and consideration of factors such as medicines most likely to cause adverse effects or without clear indications.

Reduce or stop one medicine at a time

Try to reduce or stop only one medicine at one time. If problems develop it is then easier to know what the likely cause may be.

Taper medicines when appropriate

To reduce the likelihood of an adverse withdrawal event, many medicines should be tapered. It can be difficult to determine which can just be stopped and which should be tapered. Therefore if in doubt taper, as it is safer. For many medicines the first step in tapering is to halve the dose. The dose should then be tapered in a stepwise manner to establish if the patient's symptoms, conditions or risks can be managed with a lower dose or whether the medicine can be stopped completely.¹³

Generally there will be plenty of time to taper a medicine. If the medicine is being discontinued because toxicity is a concern, then a more ambitious taper can be undertaken or the medicine stopped abruptly. Once tapering has begun, ask the patient to note any symptoms that may suggest a more gradual withdrawal is required e.g. dyspepsia with reduced dose of PPI.

If intolerable symptoms occur following a decrease in the dose or after the medicine has been stopped, then it may be necessary to restart the previously prescribed dose and then try tapering again, but at a more gradual rate.

Check for benefit or harm after each medicine has been stopped

Ask the patient if any changes have occurred after a medicine has been stopped. Beneficial effects should be noted to reinforce that the decision to reduce or stop the medicine was correct. There is also evidence that the beneficial effects of some medicines may persist even after the medicine is stopped e.g. treatment with a bisphosphonate for five years, gives an ongoing reduction in risk of fracture for a further five years.¹⁴

If symptoms of the initial condition return and are troublesome, despite gradual tapering, then it may be that the medicine cannot be stopped completely. The patient may however be able to be managed on a reduced dose e.g. 10 mg PPI rather than 20 mg.

Specific guidance on stopping medicines

Antidepressants

Antidepressants should be tapered rather than stopped abruptly, to reduce the risk of developing a discontinuation syndrome and to allow time to assess the possible re-emergence of depressive symptoms (Table 1). Antidepressant discontinuation syndrome (see over page) is more likely with a longer duration of treatment and a shorter half-life of the treatment drug.¹⁵

A general guide to tapering medicine:

Halve the dose. At the next scheduled visit review progress, then either:

- Maintain (at half dose)
- Continue to taper (e.g. quarter dose)
- Stop

Notes:

- View the discontinuation process as a trial
- Stop one medicine at a time so that any withdrawal event(s) can be easily attributed to the medicine that is being stopped
- Time taken to taper may vary from days to weeks to months

Table 1: A guide to discontinuing antidepressants

General tapering guide	Withdrawal effects
<p>An antidepressant should not be stopped abruptly if it has been taken for six weeks or more</p> <p>The dose should be reduced gradually over at least four weeks, or longer if withdrawal symptoms emerge¹⁷</p>	<p>Wide range of symptoms including anxiety, gastrointestinal disturbance, headache, insomnia, irritability, malaise, myalgia, recurrence of depression</p>
Specific classes	Withdrawal effects
<p>SSRIs and venlafaxine</p> <p>Taper slowly over several weeks or months e.g. reduce by 25% every four to six weeks for drugs with a shorter half-life¹⁶</p> <p>Fluoxetine at low doses may not need to be tapered, as it has a long half-life.¹⁵</p>	<p>Mild self limiting symptoms (above) may occur within a few days. There may be a delay before symptoms present for patients on higher doses of fluoxetine because of the longer half-life.</p> <p>Discontinuation syndrome appears to occur more frequently with paroxetine and venlafaxine. This may partly be due to the shorter half-life of these drugs.</p>
<p>TCAs</p> <p>Tricyclic and related antidepressants (e.g. mianserin) should be withdrawn slowly¹⁸</p> <p>e.g. reduce by 25% every four weeks</p>	<p>In addition to antidepressant discontinuation syndrome, rapid withdrawal may produce symptoms associated with cholinergic rebound (e.g. agitation, headache, sweating, gastrointestinal symptoms), parkinsonism and problems with balance.¹⁵ This is more likely with the more potently anticholinergic TCAs such as amitriptyline.</p>
<p>MAOIs</p> <p>Withdraw slowly</p>	<p>Neuropsychiatric symptoms may be more prominent and include severe anxiety, agitation, altered sleep, hallucinations, delirium and paranoid psychosis¹⁶</p>

Antidepressants should normally be withdrawn over at least a four week period. Patients may experience withdrawal symptoms but usually these are mild and self-limiting. If these symptoms are not tolerated, it may be necessary to resume the previous dose and then reduce the antidepressant more slowly.¹⁶


Benzodiazepines

Regular and prolonged use of hypnotics should be avoided because of the risk of tolerance to effects, dependence and an increased risk of adverse events.^{19,20}

Patients who have taken benzodiazepines on a long term basis should be withdrawn gradually over a number of months (e.g. six months). The longer a patient has been taking a benzodiazepine, the more likely they are to develop dependence and tolerance.

There are a wide range of withdrawal symptoms (Table 2) and some may be similar to those for which the benzodiazepine was originally prescribed. Some patients may experience withdrawal symptoms such as rebound insomnia and anxiety after only two to four weeks of treatment. Withdrawal symptoms can continue for weeks or months after stopping a benzodiazepine.¹⁸ An awareness of this may help prevent additional medicines being prescribed for these symptoms.

Abrupt withdrawal may result in confusion, toxic psychosis, seizures or a condition termed benzodiazepine withdrawal syndrome which is similar to delirium tremens.¹⁸ Typical symptoms of this include insomnia, loss of appetite, weight loss, sweating, perspiration, tinnitus and disturbances of perception. Benzodiazepine withdrawal syndrome can occur within one day of stopping a short-acting benzodiazepine or up to three weeks after stopping a long-acting benzodiazepine.¹⁸

Successful discontinuation may result in improvements in cognitive and psychomotor function, particularly in older people. Patients may be more alert and have increased working memory, reaction times and balance.¹² Alternative strategies for insomnia (e.g. sleep compression,  See BPJ 14) may be required as improvements may not occur for some months after the benzodiazepine has been stopped.²¹

Antihypertensives

Beta-blockers are the cardiovascular medicine most often associated with adverse withdrawal events. Abrupt withdrawal may cause rebound hypertension, tachycardia, arrhythmia or angina. These events may be physiological withdrawal reactions or an exacerbation of the underlying condition.¹³ Gradual dose reduction is required (Table 3).

Antidepressant Discontinuation Syndrome^{16,22}

Antidepressant discontinuation syndrome can occur with rapid discontinuation of any antidepressant. Symptoms are variable.

Typical symptoms include – Flu-like symptoms, Insomnia, Nausea, Imbalance, Sensory disturbances and Hyperarousal (anxiety/agitation) (FINISH).

Symptoms are likely to appear within one week of rapid dose reduction or abrupt discontinuation of an antidepressant. Symptoms are often mild and short lived and resolve without treatment in about ten days. For patients with more severe symptoms the pre-reduction dose may need to be restarted which usually results in resolution of symptoms within 24 hours. Subsequent tapering then needs to be at a slower rate.

Table 2: A guide to discontinuing benzodiazepines

Tapering guide	Withdrawal effects
<p>Slowly taper the dose in steps of approximately one-eighth of the daily dose every two weeks¹⁸</p> <p>If withdrawal symptoms occur, maintain at the current dose until symptoms settle and then continue to taper, usually at a slower rate</p>	<p>Wide range of symptoms including anxiety, mood changes, insomnia, palpitations, tremor, headache, gastrointestinal disturbance, muscle stiffness and spasms</p> <p>Benzodiazepine withdrawal syndrome</p>
Alternative withdrawal method ¹⁸	Dose equivalence ^{15,18,20}
<ol style="list-style-type: none"> 1. Transfer patient to an equivalent daily dose of diazepam, preferably taken at night 2. Reduce the dose of diazepam every two to three weeks by 2 or 2.5 mg. If withdrawal symptoms occur, maintain this dose until there is improvement. 3. Continue to reduce the dose, if necessary by smaller amounts. It is better to reduce too slowly rather than too quickly. 4. Stop diazepam completely. The withdrawal period may vary from about four weeks to more than one year. 	<p>Approximate equivalent doses for diazepam 5 mg:</p> <ul style="list-style-type: none"> ≡ lorazepam 0.5–1 mg ≡ nitrazepam 2.5–5 mg ≡ oxazepam 15 mg ≡ temazepam 10 mg ≡ triazolam 0.25 mg ≡ zopiclone 7.5 mg

Table 3: A guide to discontinuing antihypertensives¹⁸

General tapering guide	Withdrawal effects
<p>Most antihypertensives should be tapered. Taper dose at approximately monthly intervals, over three to six months.</p>	<p>Wide range depending on the specific medicine and the condition being treated. May include ankle oedema, weight gain, headache, tachycardia, increased blood pressure, worsening heart failure or angina, myocardial infarction.</p>
Specific classes	Withdrawal effects
<p>Beta-Blockers Gradual dose reduction necessary</p>	<p>Sudden withdrawal may cause or exacerbate angina</p>
<p>Calcium channel blockers Consider gradual reduction</p>	<p>Sudden withdrawal may exacerbate angina</p>
<p>Thiazides It may not be practical to cut tablets so either stop or consider alternate day dosing initially then twice weekly dosing</p>	<p>Possible exacerbation of the underlying condition</p>
<p>Angiotensin-converting enzyme inhibitors Consider gradual reduction</p>	<p>Possible exacerbation of the underlying condition</p>

Table 4: A guide to discontinuing warfarin

Tapering guide	Withdrawal effects
Stop abruptly or Taper over several weeks	A rebound hypercoagulable state with a risk of thrombosis, has been reported in some patients but this can occur even if the dose is tapered and may reflect the initial pro-thrombotic state for which treatment was started ²⁴

Table 5: A guide to discontinuing NSAIDs

Tapering guide	Withdrawal effects
Consider prn use or regular use at a lower dose Can be stopped abruptly or Halve the dose for two to four weeks then stop Review the need for gastric protection therapy i.e. PPI or H ₂ RA	Recurrence of pain, arthritis or gout symptoms

Statins

The decision to stop a statin is based on an assessment of individual benefits and risks. For example, stopping may be justified in a person at relatively low risk of a cardiovascular event, who is also poorly compliant or experiencing troublesome adverse effects. In most cases statins can be stopped without the need for tapering.

Statins should not be stopped in patients admitted with (or with a history of) cardiovascular events including acute coronary syndrome, myocardial infarction and stroke.

Warfarin

In older people taking warfarin, low initial and maintenance dosages are recommended (e.g. dose adjusted to maintain the INR at the lower end of the range of 2–3).²³ The optimum duration of warfarin therapy is determined by the condition being treated and its severity.²³

Some clinicians tail off long-term treatment over several weeks but the need for this is unclear. It is possible to stop abruptly rather than taper (Table 4).²⁴

NSAIDS

Consider stopping NSAID therapy when the risks associated with treatment outweigh the benefit. Risks associated with NSAIDs usually relate to declining renal function in the older age group and adverse gastrointestinal effects. NSAIDs may also reduce the effectiveness of antihypertensive therapy. Some patients may tolerate abrupt discontinuation but tapering the dose allows for other analgesics to be introduced or increased (Table 5).

Acid suppressants

Many people remain on acid suppressants despite there being no ongoing clinical indication e.g. NSAID stopped or *H. pylori* successfully treated. It is often possible to maintain symptom control on a lower dose or on an as needed basis rather than on long term high dose maintenance therapy.

Tapering the dose of an acid suppressant (both PPIs and H₂RAs) is recommended because of the risk of rebound

Table 6: A guide to discontinuing acid suppressants

General tapering guide	Withdrawal effects
<p>Halve the dose for four to eight weeks then stop (or step down to a less potent agent)</p> <p>Consider providing an antacid for dyspepsia symptoms</p>	<p>Recurrence of oesophagitis and indigestion symptoms</p>
Specific medicines	Withdrawal effects
<p>Proton pump inhibitors (PPI)</p> <p>Consider alternate day dosing. Capsules cannot be halved.</p> <p>Consider stepping down to an H₂RA if a more gradual taper is required</p>	<p>Stopping PPIs suddenly can cause rebound hypersecretion of acid</p>
<p>Histamine receptor antagonists (H₂RA)</p> <p>Taper gradually</p>	<p>Rebound dyspepsia has also been described after stopping H₂RA therapy abruptly</p>

Table 7: A guide to discontinuing oral corticosteroids

Tapering guide	Comments
<p>For patients who have been on corticosteroid treatment for three weeks or longer reduce the dose, e.g. at a rate of 2.5–5 mg every one to three days. Once the dose has reached 5–10 mg daily, reduce the dose more slowly, e.g. by 1 mg each week.</p> <p>Reduce more slowly initially if it is likely that the disease will relapse e.g. 2.5–5 mg every one to three weeks</p> <p>Patients on longer term treatment may require withdrawal at a more gradual rate over many months (such as a reduction of 1 mg every three to four weeks)</p>	<p>Withdrawal effects include: anorexia, hypotension, nausea, weakness, fever, myalgia, arthralgia, weight loss</p> <p>Increase dose if disease relapses then taper more gradually</p> <p>Increase dose during periods of stress e.g. infection, trauma or surgery</p> <p>A degree of inhibition of the HPA axis may persist for six to twelve months (or longer) after prolonged high dose treatment is withdrawn; steroid therapy may need be re-instituted during periods of stress</p>

Table 8: A guide to discontinuing antiparkinsonian medicines

Tapering guide	Withdrawal effects
<p>Antiparkinsonian medicines should not be stopped abruptly as there is a small risk of neuroleptic malignant syndrome¹⁸</p> <p>Reduce the dose gradually over about four weeks</p> <p>Sinemet CR tablets are scored and may be administered as half tablets</p>	<p>Hypotension, psychosis, pulmonary embolism, rigidity, tremor</p> <p>A symptom complex (resembling the neuroleptic malignant syndrome) may occur. Symptoms include muscular rigidity, elevated body temperature, mental changes, diaphoresis, tachycardia, and tachypnea. There may be an increase in serum creatine kinase concentration.²³</p>

hypersecretion of gastric acid (Table 6).²⁵ If rebound hyperacidity is mistaken for a return of the underlying condition then acid suppressants may be restarted unnecessarily. Following discontinuance of omeprazole therapy, gastric acid secretion returns to baseline over a three to five day period.²³

Bisphosphonates

The beneficial effects (e.g. prevention of bone loss, improved bone mineral density [BMD], and reduced risk of both vertebral and non-vertebral fractures) are seen within one year of starting treatment. Beneficial effects on BMD persist after stopping the drug.²⁶ The half-life of bisphosphonates appears to be very long (probably up to several years) because of skeletal storage.²⁷ This may explain continued effectiveness after discontinuation.

Alendronate can be stopped abruptly without the need for tapering.

Oral Corticosteroids

Administration of oral corticosteroids for more than three weeks, or shorter courses at high doses ($\geq 40\text{mg}$ prednisone), can lead to suppression of the hypothalamic-pituitary-adrenal (HPA) axis.

Tapering may not be required for some patients who have received low to moderate doses (e.g. $< 40\text{mg}$ prednisone)

of corticosteroids for less than three weeks, however this will depend on the patient and the disease being treated.

Withdrawal should not be abrupt for the majority of patients who have been taking systemic corticosteroids for more than three weeks. These patients should generally have their corticosteroid slowly tapered to allow the HPA axis to recover (over weeks or months).^{23,26} The rate of dose reduction will vary depending on the original dose and duration of treatment, the disease and the response of the patient.²⁶ If the disease flares up during withdrawal, the dose may need to be increased and the subsequent withdrawal to be more gradual. An increase in dose may also be required during periods of stress e.g. infection, trauma or surgery. There are several methods for tapering oral corticosteroids (Table 7).

Antiparkinson agents

The majority of patients respond initially to levodopa and its use improves the quality of life. After two years or more, benefit is reduced as the disease progresses and late complications emerge.²⁶ The long term use of levodopa is limited by motor complications and drug induced dyskinesias.

If antiparkinsonian drug therapy is reduced abruptly, or discontinued, a symptom complex resembling neuroleptic malignant syndrome can occur (Table 8).²³

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Medicines for weight loss – do they work?

Key concepts

- Improving diet and increasing physical activity are the main strategies for weight loss
- Weight loss medicines may be considered for some people who have not attained a healthy weight with lifestyle changes alone, especially if they still have central obesity related risk factors
- Treatment with a weight loss medicine is only an adjunct to lifestyle change which must be maintained during and after treatment
- Medicines only produce modest reductions in weight but this may be sufficient for health benefits such as reduced cardiovascular risk
- People are likely to regain weight when medicines are stopped and there is no strong evidence that medicines are effective long-term

Improving diet and increasing physical activity are the main strategies for weight loss

Healthcare professionals want patients to lose weight to improve their metabolic problems and reduce cardiovascular (CVD) risk. Patients often want to lose weight so they can be more socially and physically comfortable. Both reasons are valid, and the decision on how to achieve the weight loss should be worked out between healthcare provider and patient.

Lifestyle changes, primarily based on improvements to diet and increased physical activity, are the mainstay of weight loss. Dietary changes may involve either a reduction in total energy intake (e.g. decreasing consumption of energy rich foods) or modifying the types of food in the diet (e.g. reducing the fat or refined carbohydrate content of the diet or increasing the protein content).¹ These changes, along with increasing fruit and vegetable intake are far more likely to reduce the risk of type 2 diabetes and CVD than weight loss alone.²

Increased physical activity involves undertaking moderate intensity exercise, such as brisk walking, for 30 minutes, five or more days a week.

Target weight loss is individual however, a reduction of 5 – 10 % of original body weight is realistic. Patients should usually aim to achieve a modest weekly weight loss (e.g. 0.5 – 1 kg) although weekly weighing is often unreliable and may be distressing.^{3, 4, 5} A waist measurement reduction of 5 – 10% can be a more accurate predictor of health gains as intra-abdominal fat is often lost early, especially with exercise. With increased physical activity, some people gain weight through increased muscle mass, yet they still lose the important fat around the waist and reduce their waist measurement.

There are two main types of obesity

Obesity may be categorised as two different types:

- **Peripheral obesity** characterised by “below the waist” hip and thigh fat which is often difficult to lose and is more common in women. Weight loss medicines have limited usefulness for this type of obesity.
- **Central obesity** associated with hypertension, dyslipidaemia, type 2 diabetes, CVD, sleep apnoea, osteoarthritis, fatty liver disease and some cancers.³ Weight loss medicines including metformin may be useful for some people in conjunction with overall lifestyle changes.

Body mass index and waist circumference

Body mass index (BMI) is a common way of assessing obesity in populations. It is calculated as body weight (in kg) divided by height (in metres) squared. Body composition between people with the same BMI can be variable. BMI is not always reliable in very old and very young people, those with a greater muscle mass or for ethnic groups with a smaller stature (e.g. South East Asians).^{3, 6}

Abdominal circumference is a practical measure of abdominal fat and metabolic risk. Intra-abdominal fat, or visceral fat, is associated with an increased risk of conditions such as type 2 diabetes and CVD.³ Risk is increased with a waist circumference greater than 88 cm in women and 102 cm in men.

Weight loss medicines may be considered for those who have not achieved a healthy weight with lifestyle changes alone

Pharmacological treatment of weight loss may be appropriate as an adjunct to lifestyle interventions for some people. A weight-loss medicine may be added to a regimen of dietary modification and increased exercise for people who have not reached a healthy weight, still have central obesity related CVD risk factors or have reached a plateau with diet and exercise alone.

Generally the criteria for considering medicines for weight loss are a BMI above 30 or a BMI above 27 in the presence of coexisting conditions such as diabetes, dyslipidaemia, hypertension or sleep apnoea.³ For people with a BMI above 40 or above 35 with risk factors, surgical intervention may be a more appropriate option than weight loss medicines.

Orlistat

Orlistat (Xenical) is a lipase inhibitor that reduces dietary fat absorption by about 30%. Dietary fat is prevented from being broken down and digested and faecal fat is increased.^{3,7} It is important to note that any diet involving a reduction in total energy is associated with weight loss, not just a low fat diet.

In one meta-analysis, patients in the orlistat group lost on average 2.9 kg more weight than those in the placebo group, and 12% more patients taking orlistat achieved greater than 10% weight loss compared to placebo.⁸ In both the orlistat group and the placebo group patients were encouraged to eat a low fat diet and to exercise. This translates into a number needed to treat (NNT) of eight which means that eight patients would need to be treated with orlistat for one patient to lose at least 10% of their body weight.⁸

In the same meta-analysis and in one local study,⁹ significant reductions were seen in some secondary end points such as total cholesterol, LDL cholesterol, blood pressure and fasting plasma glucose.

Gastrointestinal adverse effects, relating to orlistat's mechanism of action, are common and experienced by about one in four people.⁴ These include fatty/oily stools, faecal urgency, oily spotting and flatus with discharge. These adverse effects are typically short-lived as patients learn to avoid high fat diets to minimise these effects. Some patients may find it difficult to manage the three times per day regimen and adverse effect profile.


Patients taking orlistat may require supplementation with fat soluble vitamins (vitamins A, D, E, K and beta Carotene) because a long term decrease in fat absorption may result in a decrease in their levels.⁶

Orlistat is not subsidised. It may be obtained on prescription or as an over-the-counter medicine from pharmacies. The approximate cost to the patient for one month's supply is \$164.

Sibutramine

Sibutramine (Reductil) suppresses appetite and increases energy expenditure by inhibiting serotonin and noradrenaline reuptake.^{3,10}

Sibutramine has recently been withdrawn from European markets. The Sibutramine Cardiovascular OUTcomes (SCOUT) trial showed a 16% rise in the risk of serious, non-fatal cardiovascular events, such as stroke or myocardial infarction in people using sibutramine. In New Zealand, Medsafe has stated that it is now reviewing the balance of risks and benefits of using Sibutramine.^{11,12}

 For further information see BPJ 26 (Mar, 2010) "Sibutramine withdrawn from European markets".

People taking sibutramine lose on average 4 kg more weight over one year, and an additional 18 to 25% achieve greater than 10% weight loss at one year, compared with placebo (diet and exercise alone, NNT = 6).^{8,13} Sibutramine is associated with significant reductions in triglyceride concentrations and increased concentrations of HDL cholesterol.⁴

Sibutramine is contraindicated in patients with inadequately controlled hypertension, coronary artery disease, congestive heart failure, tachycardia, peripheral arterial occlusive disease, arrhythmia or stroke. Adverse effects reported by patients include insomnia, nausea, dry mouth, constipation and anxiety. Other potentially more serious adverse effects include an increase in heart rate and blood pressure.⁴

For the first three months, blood pressure and pulse rate should be measured fortnightly. Treatment should be discontinued in patients who, at two consecutive visits, have an increase in resting heart rate of greater than 10 bpm or systolic/diastolic blood pressure of greater than 10 mm Hg.¹⁴

Sibutramine is available on prescription only and is not subsidised. The approximate cost to the patient for one month's supply is \$70.

Phentermine

Phentermine (Duromine) is an adrenergic stimulant, derived from amphetamine, that stimulates the release of noradrenaline and reduces food intake.¹⁰

There is limited data on the long term effectiveness of phentermine, although it has been in widespread use for 40 years. The New Zealand guideline for weight management did not find any evidence to assess the one year effect of phentermine and it was not considered an option for long term management of weight loss.³

Compared to amphetamine, phentermine has a much lesser effect on dopamine release. In people who do not abuse drugs, it is not stimulating or habituating, as evidenced by its continued availability. Phentermine is a controlled drug in New Zealand and is contra-indicated in people with a history of drug or alcohol abuse.¹⁵

Weight loss medicines – use and interactions

Medicine	Directions for use	Interactions
Orlistat	120 mg three times a day with each main meal. The dose can be omitted if a meal is missed, or if the meal contains little or no fat.	Orlistat may alter the anticoagulant effect of warfarin; INR should be monitored. Orlistat may also inhibit the absorption of cyclosporin and fat soluble vitamins.
Sibutramine	10 mg once daily, increased to 15 mg once daily if weight loss is less than 2 kg after four weeks.	Sibutramine acts on the serotonergic system therefore serotonergic medicines such as MAOIs and SSRIs should be avoided.
Phentermine	15 mg to 30 mg daily (usually 15 mg).	Phentermine can cause hypertension therefore it is best to avoid use of other medicines that increase blood pressure concomitantly.

There are few reports of serious adverse effects with phentermine. Common adverse effects include headache, insomnia, irritability, nervousness and palpitations.⁶ Phentermine is frequently used as a weight loss medicine in the USA¹⁶ and researchers are studying combinations of phentermine with taranabant,¹⁷ topiramate¹⁸ and bupropion for enhanced weight loss.

As there is limited data on the long-term effectiveness of phentermine, it is difficult to compare effectiveness (i.e. NNT) with orlistat or sibutramine.

Phentermine is available on prescription only and is not subsidised. The approximate cost to the patient for one months supply is \$65 to \$84 (depending on dose).

Fluoxetine

Fluoxetine is sometimes considered for use as a weight loss medicine, however there is mixed evidence of its effectiveness for this indication. Some studies have shown weight loss with fluoxetine,¹⁹ while some show no effect.²⁰

Fluoxetine is the anti-depressant of choice for people with obesity as it is not associated with weight gain, unlike many other antidepressants, including those in the SSRI class.

Metformin

Metformin has been shown to result in minor weight loss (1 to 2 kg) compared with placebo.^{5, 7} This degree of weight loss is too low for metformin to be considered a weight loss medicine, however it may be a useful choice for overweight people at high risk of diabetes.⁷

Metformin is an insulin sensitiser that can be used in people who have central obesity, and particularly those with “obesity-related metabolic syndrome” or who are “pre-diabetic”. Although nausea can occur, most people can adjust dose and timing (with meals) for comfort.

Review use of a medicine after 12 weeks if there has been a failure to achieve 5% weight reduction

Treatment should be reviewed regularly to assess effectiveness, adverse effects and adherence. These reviews should also be used as an opportunity to reinforce lifestyle advice. Medicine therapy should only be continued beyond 12 weeks if the patient has lost at least 5% of their initial body weight since starting. However, people with metabolic syndrome and type 2 diabetes may lose weight more slowly so less strict weight loss goals may be appropriate in these groups.^{3, 4}

Maintenance of weight loss is difficult

Long term maintenance of weight reduction is difficult as physiological mechanisms modify energy balance to re-establish original body weight.¹⁰ Patients are likely to regain weight after weight loss medicines are stopped.⁴ It is important that lifestyle changes to diet and exercise are continued to maintain weight loss.³ Successful strategies include a low energy/high fruit and vegetable diet, frequent monitoring of body weight and food intake and high levels of physical activity.¹⁰

Limited evidence for long term use of weight loss medicines

There is no strong evidence that long term use of weight loss medicines (i.e. over several years) leads to further weight loss beyond that lost in the first year, however people receiving follow-up achieve better results.⁴ Studies have shown that when patients use weight loss medicines to maintain initial weight loss they still gain weight but regain less weight than those on placebo.³

Metabolic Syndrome

Although there has been a recent move away from using the term “metabolic syndrome” in guidelines, the concept is still supported and the definition has been recently up-dated.²¹ Most people with metabolic syndrome have central obesity.

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Common issues in paediatric oral health

www.bpac.org.nz keyword: oralhealth

What to expect inside the mouth • Teething pain • Gingivitis, oral thrush, angular cheilitis, eruption cysts, gum boils, ulcers, herpes simplex virus • Non-nutritive sucking, mouth breathing, bruxism • Fraenal attachments, “tongue-tie” • Tooth trauma

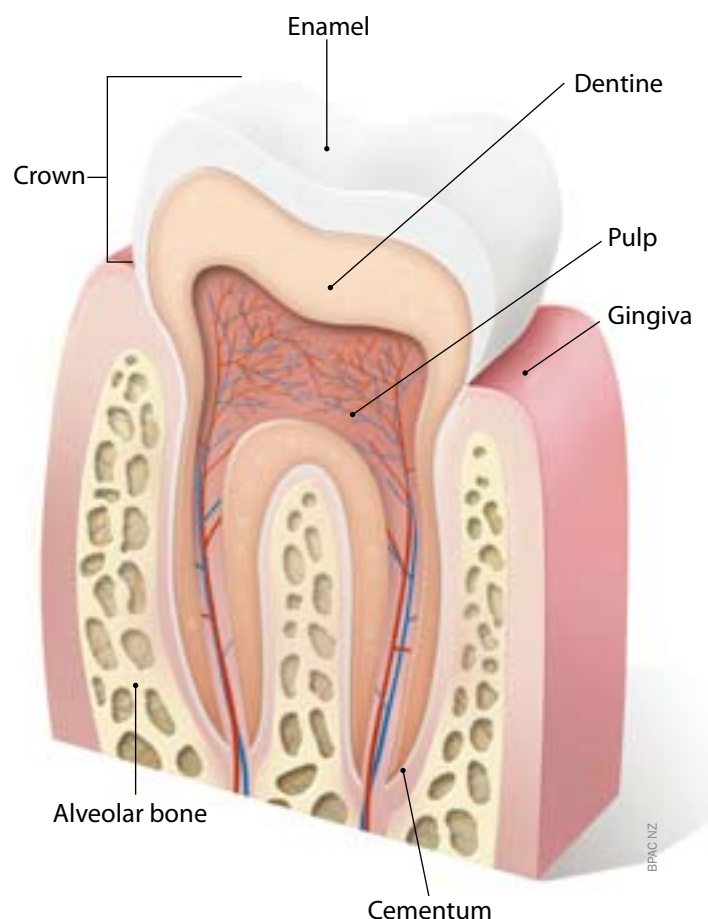
What to expect inside the mouth

In order to recognise abnormal oral health in children, it is important to understand the normal pattern of tooth development and appearance of the mouth.

Anatomy of the tooth

Teeth begin to develop from approximately the sixth week in utero. As the child grows, twenty primary (deciduous) teeth form, erupt and shed and are replaced by 32 permanent teeth. Tooth development is influenced by both genetic and environmental factors.¹

Each tooth has roots in the alveolar bone of the maxilla or mandible with a visible crown that emerges from the gingiva. The tooth is held in place, in the gingiva, by the periodontal membrane. The four components of teeth are enamel, dentine, pulp and cementum.¹



Dental enamel protects the tooth from fracture and wear and is not regenerated once damaged.¹

Dentine forms the structure of the tooth and is produced by the dental pulp which is a specialised tissue responsible for the neurosensory function and reparative potential of teeth. Reparative dentine is formed in response to environmental stimuli such as trauma, tooth wear or caries.¹

Cementum is structurally similar to bone and covers the root surface. If cementum is lost the tooth root may become fused to or resorbed by the alveolar bone.¹


Tooth eruption

The eruption of primary teeth (teething) usually begins between age six and ten months. The front incisors are most commonly the first teeth to erupt, followed by the first primary molar, canines and second primary molars. Tooth eruption is usually bilaterally symmetrical i.e. the left and right teeth appear at similar times. All primary teeth have usually erupted by age 30 months, although this can depend on gender and ethnicity, e.g., girls tend to develop teeth earlier than boys and European children tend to develop teeth later than some other ethnicities.¹

Permanent teeth develop behind the primary teeth in the alveolar bone. As the permanent tooth grows towards the surface, it resorbs the root of the primary tooth, causing it to loosen and fall out. Permanent teeth usually start to emerge at around six years of age. Occasionally the primary tooth remains beside the permanent tooth, but in most cases it will drop out, without treatment, within one year.¹

Abnormal teeth development sometimes indicates a systemic health problem e.g. hypothyroidism. If a child loses primary teeth before the age of four years, has asymmetrical primary or permanent tooth eruption, or eruption is delayed by more than six months after expected, they should be referred to a dentist or paediatrician.

Accelerated primary or permanent tooth eruption may occur in children who are obese, and delayed eruption may occur in those who were born pre-term.¹

 See page 32 for information about the management of teething pain

Appearance of the teeth and gums

Lift the lip

Start to look in the child's mouth as soon as the first tooth erupts. Examine the teeth, gingiva, tongue and oral cavity for abnormalities.

Normal gingiva is reddish pink, smooth, firm and resilient. A slight rolling or rounding at the neck of the tooth is normal. The crown of the tooth should not be excessively covered with gingiva.²

Abnormalities to look for include swelling, redness, bleeding or recession of the gingiva, change in tooth position, premature tooth mobility or tooth loss and heavy plaque or calculus deposits, which are often seen on the outer surface of the incisors and the inner surface of the molars.²

Chalky white spots on the teeth enamel may indicate areas of demineralisation which is an early sign of dental caries.

Tooth decay

Tooth decay is a multifactorial disease in which susceptible tooth surfaces, acidogenic bacteria, saliva, dietary factors and access to fluoride all play a role. A risk factor in young children is constant snacking or grazing and frequent consumption of sugary or starchy foods. Attention to dietary habits, teeth cleaning, plaque removal and fluoride toothpaste promote remineralisation. If there is no intervention, caries will progress.³

Managing teething pain

Symptoms of teething may include excessive drooling, chewing/mouthing, appetite loss and generally unsettled behaviour. Parents often report fever, diarrhoea and other systemic symptoms, however there is no evidence that these symptoms are caused by teething. If a child is systemically unwell they should be assessed for the presence of an underlying medical condition.^{1,4}

Management is symptomatic and includes self-care measures, and oral analgesia if required.

Chewing can ease discomfort

Self-care measures include gently rubbing the gum with a clean finger and allowing the infant to bite on a clean, cool object e.g. a teething ring or wet facecloth. Chilled fruit could be used at snack time in infants who have been weaned, but it should be supervised due to the choking hazard.

Teething rings or other devices should be in one piece to prevent a choking hazard and should not be dipped in



Basic oral hygiene messages for parents

Start brushing teeth as soon as they emerge from the gum

Tooth brushing should begin as soon as the first tooth emerges from the gum.

Use a smear of fluoride toothpaste on a soft, clean cloth or a child-sized toothbrush when the infant is older. This can be increased to a pea-sized amount of toothpaste after six years of age. Instruct the child to spit but not rinse, as fluoride works topically.

N.B. Normal strength toothpaste can be used for children. It is not advised to use “junior” toothpaste which has a lower fluoride content.

Teeth should be brushed for two minutes, twice a day - after breakfast and before bed. When the child can control a pencil and begin to write, they can hold their own toothbrush, however brushing should be supervised until the child is eight to ten years old.⁶

Flossing once a day (or at least three times per week) should begin when two teeth touch - usually when the back teeth appear. Children will need to be assisted by an adult to do this.

Preventing dental caries

Do not give infants sweet drinks before bedtime - water or milk is best. Babies may get dental caries from sucking for long periods of time on bottles containing sweetened drinks or from sleeping with a bottle in their mouth. They produce less saliva at night to neutralise the acidic substances which cause decay. Dummies should always be clean, never shared and never dipped in sweetened substances.⁷

Use a training cup as soon as the child can drink from one and discontinue the use of a bottle from the age of one year. Sweet drinks should only be consumed at meals and avoid fizzy drinks until the child is at least 30 months old.³ Discourage snacking and grazing throughout the day - teeth need a break!

Parents should remember that their own oral health impacts on the oral health of their child. *Streptococcus mutans* is a cariogenic bacteria that can be transmitted from the parent to the child via, for example, by pre-tasting food with the same spoon used to feed, or putting their child's dummy in their own mouth.

sweet substances as this may result in dental caries over time. Teething biscuits and rusks that contain sugar are not recommended.⁴

Pharmacological management – little evidence of benefit for topical teething gels

There is little evidence that topical teething gels are effective in reducing the pain and discomfort associated with teething.^{1, 4} This is partly due to the fact that after application the gel is likely to be rapidly removed by the tongue and saliva.

In the UK, teething gels containing choline salicylate (e.g. Bonjela, Ora-Sed Gel) are contraindicated in children aged under 16 years due to the theoretical risk of Reye's syndrome.⁴ Bonjela has been reformulated with lignocaine in some countries, but not in New Zealand. Medsafe is satisfied that the safety of teething gels containing choline salicylate in children is acceptable when they are used at recommended doses.⁵


Choline salicylate teething gels should not be used in children aged less than four months and the approved dose is to apply a small quantity of gel (i.e. tip of index finger) to the affected area no more than every three hours for pain.⁵

Topical anaesthetics (e.g. containing lignocaine) and complementary therapies such as herbal teething powder

are not recommended as there is no good evidence to support their use. There are also some case reports of serious adverse effects such as seizures with excessive use of topical anaesthetics.⁴

Paracetamol or ibuprofen may be considered

Paracetamol or ibuprofen may be used for teething pain in infants aged three months or older. Paracetamol is preferred in children with asthma or wheeze.⁴

 **Best practice tip:** Sugar free medications should be used for children, where available and appropriate. This is especially important with medications that are held in the mouth such as teething gels.

Teething necklaces pose risk of strangulation or choking

Necklaces made from amber beads have been gaining popularity for use in babies who are teething. It is claimed that the amber soothes the pain of teething when worn next to the skin.

These necklaces are not recommended as there is no evidence that amber is an effective analgesic and they pose a serious risk of choking or strangulation. If parents choose to use this device the infant must be supervised at ALL times while wearing the necklace (including sleeping).⁸

The truth about drooling

Contrary to appearances, babies do not produce more saliva than the average adult – they just let it escape more easily. Drooling may increase at times of teething, This is usually due to the fact that the baby is chewing on items to ease teething pain, therefore more saliva escapes. Most babies cease drooling by 12 to 18 months as they begin to eat more solid

food and their ability to chew and swallow develops adequately.

Babies may also drool more if they have a sore throat and it is painful to swallow. If a parent complains of excessive drooling in their infant consider this diagnosis.

Lumps, bumps and sores

Gingivitis is common in children

Gingivitis is a reversible inflammation of the gingiva caused by dental plaque build-up due to poor oral hygiene. It is commonly seen in children and can be exacerbated by malnutrition and viral infections.²

Gingivitis usually resolves after the plaque is removed, therefore improved oral hygiene is the key to management. Regular supervised tooth brushing with an appropriate sized toothbrush, fluoride toothpaste and the use of dental floss is recommended.

If gingivitis remains untreated, bacterially induced periodontitis may occur. This involves irreversible destruction of the supporting tissues surrounding the tooth, including the alveolar bone. Chronic periodontitis is more likely to occur in adolescence rather than in younger children. However on rare occasions young children may have signs of aggressive periodontitis.²

Children with chronic gingivitis or signs of periodontitis should be referred to a dentist.

Oral thrush: treatment choices, preventing re-infection

Oral thrush (candida) is common in infants and young children because their immune system is immature. It occurs in neonates after exposure to the microorganisms of the vaginal tract during delivery, and in older infants after use of antibiotics or inhaled corticosteroids.⁹

Oral thrush is characterised by white plaques on the buccal mucosa, palate, tongue or oropharynx. If the plaques are wiped off, it leaves a red, raw, painful surface.⁹

Milk or food debris in an infant's mouth can often be mistaken for thrush. In contrast to thrush plaques which are firmly attached, debris sits loosely on the mucosa and does not leave a raw surface when wiped off.

Treat oral thrush with miconazole gel

First-line treatment is with miconazole oral gel (Daktarin Oral Gel) for seven days. Treatment should be continued two days after symptoms resolve.¹⁰ Miconazole gel is contraindicated in children less than six months old or in those with insufficiently developed swallowing reflex.

If the infection has not resolved after seven days, but there has been some response to miconazole treatment, continue for further seven days.

If miconazole has not had any effect or is inappropriate (e.g. child less than six months) a second-line alternative is nystatin suspension (Nilstat Oral drops), 1 mL, four times per day, for seven days.¹⁰

Seek specialist advice if the infant has extensive or severe thrush which is causing difficulty swallowing, there has been no response after two weeks of treatment or the infant has had repeated episodes of thrush.

Application of miconazole gel

Apply directly to affected area after eating (or breast feeding) using the fingertip and leave in contact with the mucosa as long as possible. Be aware of the risk of choking and avoid application to the back of the throat.¹⁰


6 months – 2 years : ¼ measuring spoon* two to four times per day

>2 years: ½ measuring spoon two to four times per day

* A measuring spoon (5 mL) is provided with the product

Preventing re-infection

To prevent re-infection it is important that feeding equipment, dummies and toys that have been in contact with the baby's mouth are sterilised. Also consider that breast feeding mothers may have a yeast infection on their nipples which requires antifungal treatment. The same product used for the baby may be used on the mother's nipple.

 **Best practice tip:** In older children, thrush is a common dose related effect of inhaled corticosteroids. To prevent infection, advise on good inhaler technique, using a spacer to reduce the impact of particles in the oral cavity, rinsing the mouth with water or cleaning teeth after inhalation to remove any drug particles. Consider stepping down the dose of ICS where appropriate.¹⁰

Angular cheilitis

Angular cheilitis, also known as perleche or angular stomatitis, is an inflammatory condition that occurs in one or both corners of the mouth. Presentation includes erythema, painful cracking, scaling, bleeding and ulceration. In children it is particularly associated with drooling, using dummies, licking the lips and sucking the thumb.¹¹

The most common causes are *Candida albicans* or *Staphylococcus aureus*. Contact allergy, nutritional deficiencies (e.g. iron, folate), dry skin, hypersalivation and dermatitis may also play a role.¹¹

Treatment of angular cheilitis is dependent on the cause. A simple first measure is to regularly apply petroleum jelly to the affected area.

If candida is suspected, an antifungal ointment such as miconazole gel or cream (Daktarin Oral Gel, Multichem Miconazole) or nystatin cream (Mycostatin cream) may be used. If infection with *S. aureus* is suspected, topical treatment with fusidic acid cream (Foban) is recommended.¹¹ Mupirocin ointment (Bactroban) can also be used but as it is effective against MRSA, it is best reserved for this.

Good oral hygiene measures and regular use of petroleum jelly can help to prevent recurrence.¹²

Eruption cysts

Eruption cysts are sometimes formed when primary or permanent teeth emerge from the gingiva. They are

caused by fluid accumulation within the follicular space of the erupting tooth. An eruption haematoma is when the fluid is mixed with blood. Eruption cysts and haematomas do not require treatment as they resolve spontaneously when the tooth breaks through.⁹

Gum boils

A parulis or “gum boil” is a lesion (soft, reddish papule) that occurs at the site of drainage of a primary tooth abscess. Treatment of the abscessed tooth usually resolves the parulis. If the tooth is left untreated, the parulis may mature into a fibroma.⁹

Ulcers

Traumatic mouth ulcers are the most common type of ulcer in young children. They are caused by mechanical (e.g. thumb sucking, scratching, lip biting), thermal (foods and beverages that are too hot) or chemical (e.g. toothpaste, mouthwash) injury to the oral tissues and can occur on the edges of the tongue, buccal mucosa, lips or palate. Generally, a traumatic ulcer heals within two weeks and requires symptomatic treatment only.⁹

Aphthous ulcers or “canker sores” are a form of recurrent ulcer that is more common in older children and adults. They are painful, shallow, round or oval ulcers with a greyish base.⁹ They usually persist for longer than a traumatic ulcer and have been associated with vitamin deficiencies, anaemia, food allergies, stress and local trauma, although a specific trigger is often not found.

Herpes simplex virus

Herpes simplex virus 1 (HSV) manifests approximately one week after contact with an infected person. It may be associated with flu-like symptoms, often attributed to “teething”. In young children the virus is commonly expressed as gingivostomatitis, which includes inflamed gingiva, possible bleeding and clusters of small vesicles that become yellow after rupture and are surrounded by a red halo. Smaller vesicles combine to form large painful ulcers.⁹

Treatment is supportive to avoid dehydration – encourage fluid intake including ice or popsicles. Analgesics may also be used. Antiviral treatment such as oral aciclovir is effective only during active viral replication, which precedes symptoms, therefore it is not usually beneficial. Care must be taken to ensure the virus does not spread to the eyes, genitalia or fingernail beds. Symptoms of HSV infection usually start to improve within three to five days and lesions typically fully resolve within two weeks.⁹

After primary infection, HSV lies latent until reactivated by exposure to sunlight, cold, trauma, stress or immunosuppression. When it recurs on the lips it is known as herpes labialis (cold sores). These lesions are typically preceded by tingling, burning or pain at the site. Treatment is with local analgesics. Topical aciclovir is not generally recommended in young children. Sunscreen containing lip balm may help to prevent recurrence of lip lesions.⁹

Oral habits – do they need to be corrected?

Non-nutritive sucking is very common in infants

Non-nutritive sucking (e.g. sucking on a dummy or a digit) is a self-soothing behaviour that occurs in most infants. It is less common by the age of four to five years. Digit sucking is more likely than dummy sucking to persist past this age.¹³

Digit sucking can be associated with malocclusion of the teeth including an open bite, crossbite or excessive overjet (overbite).¹³ In most cases parents can just ignore digit sucking in young children, but treatment may be necessary if physical (Figures 1a and 1b) or psychological factors

become apparent. The American Academy of Paediatric Dentistry recommends that children aged over three years, with a digit sucking habit, should be referred to a dentist for evaluation. Most orthodontists recommend that the habit is corrected before the permanent incisors erupt (approximately from six years old).

Some suggested strategies for intervention include:¹³

- Discontinue comments about digit sucking if parental attention appears to have reinforced the behaviour
- Manage sources of stress and anxiety for the child
- Give positive reinforcement for avoidance of sucking (e.g. sticker chart and praise)



Figure 1a: Child sucking thumb



Figure 1b: Open bite caused by thumb sucking in the same child. Photos kindly supplied by D. Boyd.

Use of a dummy (pacifier) is associated with an increased risk of development of otitis media¹⁴ and early cessation of breast feeding (also shorter duration of feeds and fewer feeds per day).¹⁵ However infants who use dummies have a possible decreased risk of sudden infant death syndrome (SIDS)¹⁶ and may be less likely to suffer malocclusion than those who suck digits. The use of a dummy does not appear to increase the prevalence of caries unless it has been routinely dipped in a sugary substance.

The World Health Organisation (WHO) discourages use of dummies due to the association with early cessation of breast feeding. However the American Academy of Paediatrics recommends that dummies be given to infants at nap time and bed time to reduce the risk of SIDS. It suggests that dummies could be introduced after breast feeding has been established (after approximately one month) and that they should be withdrawn by the time the child reaches three years.¹³

Mouth breathing

Chronic mouth breathing can be caused by nasal

obstruction or congestion (e.g. from allergies), adenoidal hypertrophy or anatomical abnormalities (e.g. cleft palate). It may also be a learned habit.¹³

Chronic mouth breathing can result in narrowing of the maxillary arch (causing a posterior crossbite), over-eruption of the permanent molars and rotation of the mandible.¹³ These effects can create the overall appearance of a long, narrow face. Chronic mouth breathing is also associated with localised gingivitis, usually at the front of the mouth.²

Treatment of the nasal congestion or obstruction improves mouth-breathing and usually results in improved facial morphology over time.

Bruxism (teeth grinding)

Bruxism, or teeth grinding, usually occurs during sleep, but it also may be an unconscious day-time habit. Bruxism is most common between the ages of seven and ten and is rarely seen in adolescence. It does not usually require intervention in children and is self-limiting.¹³

Fraenal attachments: issues and management

Maxillary and mandibular fraenum

In infants, the maxillary fraenum (attached to upper lip) extends over the ridge of the alveolar bone and forms a raphe that connects to the palate. If this raphe persists, it may result in widely spaced central incisors (diastema) (Figure 2).

Treatment of this condition is usually delayed until the permanent teeth have erupted to allow natural closure of the diastema. Immediate treatment is necessary if the fraenum causes tension on a permanent tooth. A fraenectomy may be performed if the appearance of the diastema is unacceptable after natural and orthodontic closure of the diastema.⁹



Figure 2: The large upper labial (maxillary) fraenum is restricting the ability to raise the upper lip and has caused a diastema in the front teeth. Photo kindly supplied by D. Boyd.

The mandibular fraenum (attached to lower lip) less commonly causes a diastema in the bottom front teeth. Management is the same as for the maxillary fraenum.⁹

Ankyloglossia (tongue-tie)

Ankyloglossia (tongue-tie) is a congenital anomaly in which a short lingual fraenum (attached under the tongue) restricts tongue movement.¹⁷

Clinical features of ankyloglossia include:¹⁷

- Short fraenum, connecting at or near tip of tongue
- Difficulty lifting the tongue to the roof of the mouth
- Inability to protrude the tongue more than 1 – 2 mm past the front teeth
- Impaired sideways movement of the tongue
- Notched or heart shaped tongue when it is protruded

There is a lack of consensus as to the clinical significance of ankyloglossia and whether it requires correction.

The majority of infants with ankyloglossia are able to breast feed successfully. However, of those infants who have breast feeding problems, more have ankyloglossia than do not.¹⁷ If an infant with ankyloglossia is having difficulty

breast feeding, a lactation specialist should be consulted first to discuss techniques which may improve feeding.

It is not clearly defined how ankyloglossia affects speech. It may cause articulation problems in some children (depending on the severity of the ankyloglossia) but does not prevent speech or delay its onset.¹⁷ If there is concern the child should be referred to a speech therapist.

Mechanical issues of ankyloglossia can include difficulty with oral hygiene (which may result in periodontal disease), discomfort, a gap between lower front teeth, difficulty licking food or playing a wind instrument.¹⁷

Some experts believe that progressive stretching and use of the fraenum over time leads to elongation, and treatment of ankyloglossia is unnecessary. Others advocate that it should be surgically corrected before problems develop.¹⁷ Treatment decisions should be made between the parents and clinician, on a case by case basis.

Fraenotomy is when the fraenum is incised to release it from the tongue. It may be performed with or without anaesthesia. Adverse effects can include excessive bleeding, infection, ulceration, pain, damage to the tongue and recurrence. It should only be performed by an appropriately trained clinician.

Tooth trauma

Approximately half of all children injure their teeth during childhood.¹⁸ If the injury is to the primary dentition, the full extent of the damage cannot be ascertained until the permanent teeth emerge. It is important that injuries to the teeth in children are treated quickly and appropriately.¹⁸

Falls are the most common cause of dental injury among preschool and school-aged children and most falls occur inside the home. Sports-related injuries and altercations are more common in older children and in boys.¹⁸ Orofacial injury occurs in up to 75% of cases of child abuse and

this should be carefully considered in cases of dental trauma.^{19, 20}

Children with overjets (overbite) of greater than 4 mm are two to three times more likely to experience dental trauma (due to the position of their teeth).²¹

If a child presents with a dental injury, first take a neurological history, as dental injuries are classified as head trauma. If there are neurological concerns, refer to secondary care and follow-up accordingly. Refer for dental

assessment if any of the following apply:¹⁸

- The child has spontaneous pain in tooth/teeth following the injury
- Any of the teeth are tender to touch or pressure of eating
- Any of the teeth are sensitive to hot or cold
- There is a change in the child's bite or occlusion (the child may be unable to close the teeth together)
- There is injury to the lips, fraenula, tongue, oral mucosa or palate (tooth fragments may become embedded in the soft tissues and lead to infection and fibrosis)
- There are loose, displaced, fractured or missing teeth

Red flags which may indicate further investigation into intentional orofacial injury:¹⁸

- Bruises in various stages of healing
- Torn maxillary fraenum (upper lip) – except in a child learning to walk
- Bruising of the labial sulcus (space between lip and gum) in infants who are not walking

- Bruising of the soft tissues of the cheek or neck (accidental falls are more likely to bruise the forehead or chin)
- Hand marks or pinch marks on the cheeks or ears
- A history which is confused or does not correspond with the observed injuries

Managing injuries to the primary teeth

The main focus of managing an injury to the primary teeth is to provide immediate comfort and support and to prevent damage to the permanent teeth, which develop in close proximity (Figure 3).

Penetrating injuries or infection can irreversibly damage the permanent tooth. Enamel hypoplasia of the permanent upper incisors may result from an injury in a child less than four to five years old, because this age is prior to the period of calcification of the permanent incisor tooth crowns (Figure 4). The path of the developing tooth may also be altered. Minor blows to the teeth can devitalise the dental pulp or damage the periodontal ligament of the permanent tooth. This may be suggested by discolouration of the crown or an abscess.¹⁸



Figure 3: X-ray of the teeth of a child aged three years, demonstrating the position of the developing permanent teeth. Photo kindly supplied by D. Boyd.



Figure 4: A child with previous history of trauma to the primary upper incisor teeth at approximately age two years. Note the white hypomineralised patches of enamel (enamel hypoplasia) on the permanent upper incisors. Photo kindly supplied by D. Boyd.



Figure 5: A fractured permanent central incisor. Photo kindly supplied by D. Boyd.

Properly fitted mouth guards reduce dental injury

Mouth guards are compulsory in New Zealand for children playing rugby, rugby league and hockey but their use should be encouraged for all contact sports.

Custom-made mouth guards provide the most protection but are also the most expensive. Self-adapted mouth guards (boil and bite) are an acceptable cost-effective alternative.




In addition to decreasing the risk of dental trauma, properly fitted mouth guards can reduce the incidence of concussion and jaw fracture by cushioning the force of the impact.²²

Avulsed primary teeth should **not** be re-implanted because of potential injury to the developing tooth bud. Examine the avulsed tooth to ensure that the entire crown and root are present. An x-ray may be required if there is concern that an avulsed tooth may have been swallowed or aspirated.¹⁸ Tooth fragments can also be embedded in soft tissues.

A severely displaced or loose primary tooth can be removed if there is concern that it may be aspirated. The early loss of primary teeth does not irreversibly affect speech¹⁸ however it may affect the position of permanent teeth.

Prompt dental care is required for a fractured primary tooth to prevent further injury or infection.¹⁸

 **Best practice tip:** Penetrative injuries. When children present with dental trauma, don't forget to check whether there was anything in their mouth at the time of the fall or injury. Consider the possibility of lacerations to the soft palate or other soft tissues.

Managing injuries to the permanent teeth

Any injury to a permanent tooth requires urgent dental assessment. In the permanent dentition, dental fractures are more common than displacement injuries (Figure 5). Tooth fragments can sometimes be reattached. They can be stored in tap water (as there is no root or ligament) to prevent dehydration.¹⁸

An avulsed permanent tooth should be placed back in the socket, taking care to handle the tooth by the crown and not the roots. The tooth may be kept in place with a finger or biting on a gauze pad. Before re-implanting, debris can be removed from the tooth by gentle rinsing with saline. Do not sterilise or scrub the tooth. The prognosis for the survival of an avulsed tooth is inversely related to the time spent outside the mouth (85 – 97% at five minutes to almost 0% at one hour).¹⁸

If it is not possible to re-implant the tooth, it should be stored in fresh, cold milk or in saline. Do not store the

tooth in tap water or in a young child's mouth as it could be swallowed, aspirated or further damaged.¹⁸

Displaced or loose permanent teeth should **not** be moved or pulled out. Refer immediately to a dentist who may treat the tooth using a splint.¹⁸

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www.bpac.org.nz keyword: stroke

CARE OF

STROKE

SURVIVORS



PHOOO
PERFORMANCE PROGRAMME

Post-stroke rehabilitation

The aim of stroke rehabilitation is for the patient to regain the best level of health, activity and participation possible within the limits of any persisting stroke impairment.

Many stroke survivors are left with significant changes to physical, emotional, cognitive and social function and about half of patients who survive for six months will require some help with daily living (bathing, dressing, toileting, feeding and mobility). Stroke survivors are at risk of physical complications such as falls and long term psychological and emotional problems. Ongoing management of complex needs is often required after discharge from hospital.

Recovery of function following a stroke varies depending on the part of the body affected. Depending on the severity of the stroke, maximum functional improvement in paralysed limbs is seen within two to six months. In

contrast improvement of speech, domestic and working skills and unsteadiness can continue for two years or more. Early rehabilitation uses techniques that focus on neuroplastic change, and later rehabilitation encourages adaptive responses and coping strategies.¹

The organisation of hospital services to provide specialised Stroke Units is the most important advance in stroke care. Best outcomes are associated with specialist multidisciplinary in-patient care in a stroke unit and with therapy that commences immediately or within days after a stroke. Patients who receive care in a stroke rehabilitation unit are more likely to be alive, independent and living at home (NNT = 33, 20, 20 respectively) than patients who receive non-specialist care or care within a general rehabilitation unit.² The benefits of stroke unit care are seen for all ages, genders and across the range of severity.³

Key concepts


- Best outcomes after stroke are associated with prompt specialist multidisciplinary in-patient care in a stroke rehabilitation unit
- Stroke survivors require regular follow up in the community and should be referred for further therapy or specialist assessment depending on their problems
- It is useful to have a systematic way of checking for physical and practical problems with everyday living
- It is recommended to assess for hidden problems such as depression, anxiety, dementia or pain
- Together with stroke survivors, carers require information and long-term practical, emotional, social and financial support


Stroke survivors require regular follow up after discharge

Leaving hospital after a stroke can be a frightening and difficult experience. This is often the time when stroke survivors suffer the greatest feeling of abandonment as well as facing a diversity of ongoing problems as they adapt to the longer term impact of the stroke.

General practice is ideally placed to undertake comprehensive reviews and coordinate best care in the community. Primary care follow up should be scheduled within the first few weeks following discharge from hospital, and then regularly at intervals appropriate to the clinical need.

Follow up should address:

- Information and education: enquire about information needs and access to voluntary organisations, peer support etc
- Secondary prevention: reinforce lifestyle changes and check medicine treatment for secondary prevention ( see BPJ 26, March 2010, “Secondary stroke prevention”)
- Physical needs: review the impact of the stroke on activities of daily living, and need for further referral, practical aids and rehabilitation
- Emotional and other hidden needs: screen for depression, pain, continence and sexual issues
- Social and carer needs: review the care plan and address the carer’s needs

 **Best practice tip:** On receiving a discharge letter, following a hospital admission for stroke, schedule a consultation with the patient and carer/whānau either in the surgery or at their home. A double appointment may be beneficial and consider whether a joint home assessment with the rehabilitation team is possible, especially in cases involving significant disability.

Assess the need for advice, information and peer support

Receiving information after a stroke is one of the most important needs reported by stroke survivors and their carers, even years after the stroke. Face to face discussion is highly valued and can be backed up with written material.

The Stroke Foundation has a free public helpline and provides information through literature and videos and their website. Field officers are located nationwide and many areas have stroke support clubs. Meeting with other stroke survivors and carers provides invaluable social support, experiential knowledge and a social comparison.⁴


Stroke Foundation helpline:
0800 STROKE (0800 78 76 53)
Website: www.stroke.org.nz

Review physical needs

Physical and practical problems with everyday living are common following a stroke. Although the major part of physical recovery following a stroke occurs in the first six months, functional improvements in activities of daily living and fitness (lessening of disability or handicap) often continues long after specific neurological deficits have ceased to change. Most stroke survivors value opportunities for greater independence.

Because there is such a wide area of health and potential disability to assess, as well as responding to the main concerns of the stroke survivor and carer, it is helpful to have a structured way to check for any areas of difficulties. The following approach may be useful:

- Ask the stroke survivor and carer to fill out a simple checklist prior to the consultation to indicate any problem areas and help guide priorities.

 An after stroke checklist is available for download from the bpac^{nz} website: www.bpac.org.nz keyword: strokecheck

- Talking through the activities of a normal day in a chronological sequence provides a simple systematic approach to identifying problem areas e.g. getting up in the morning, personal hygiene and toileting, dressing, breakfast and other meals, activities and leisure.

Screen for silent problems such as depression and pain

Some problem areas may not be apparent during a routine consultation, unless already highlighted on a self-completed checklist. It is recommended to assess for depression, anxiety, dementia and pain, and discuss topics that may cause embarrassment such as incontinence, physical intimacy and sexual intercourse.

Review the care plan and address the carer's needs

When consulting with stroke survivors it is important to consider the needs of the carer and whether the care plan is appropriate. Has the stroke survivor been discharged home to a distressed relative and too little help? The impact of the stroke on a partner or spouse can be devastating. Carer strain, anxiety and depression are very common after stroke.⁵

Together with stroke survivors, carers need information and long term practical, emotional, social and financial support. The carer can often need as much input as the stroke victim; ranging from counselling to cope with the changes in their life, to respite care to allow them a break. Closer medical supervision may also be required as often carers are elderly and have their own medical problems.

Who to refer to for stroke related problems

When stroke related problems arise key specialists for referral for ongoing rehabilitation include:

- Continence advisors for incontinence assessment and treatment
- Dietitians for advice on healthy eating, especially if poor swallowing or artificially fed, under or overweight or diabetic
- Occupational therapists for help with independence in all daily activities including self-care (personal care), leisure and work, including driving assessment where appropriate
- Orthotics service to help correct abnormality or assist function of a disabled limb
- Physiotherapists for any movement difficulties, fitness, falls prevention and musculoskeletal complications such as shoulder pain
- Podiatrists for foot care especially if difficulty caused by paralysis or spasticity
- Psychiatric and neuropsychology support for depression, mood swings, personality changes, and dementia assessment and support
- Specialist clinics such as pain or spasticity clinics
- Speech and language therapists for difficulties with communication, cognition and swallowing



Practical tips for problems associated with stroke

Key references: New Zealand Stroke Foundation “Life after stroke”⁶ and Australian National Stroke Foundation “Guidelines for stroke rehabilitation and recovery”.⁷

Continued exercise and therapy improves movement

Weakness on one side (hemiparesis) is often the single most disabling factor after stroke.⁸ Reduced movement, weakness, clumsiness, impairment to balance and changes in tone all impact on the simple ability to move e.g. in bed, to roll, sit up, stand and walk.


Stroke survivors should be encouraged to be as physically active as possible, maintain walking and return to usual activities. Even after the initial recovery, further improvement may be seen with ongoing exercise, practice of activities of daily living and outpatient/community therapy.⁹ National guidelines recommend that all stroke survivors with activity that has deteriorated since discharge (six months or later) should have access to further targeted therapy to recover any ground lost (e.g. physiotherapy, occupational therapy, speech therapy, psychologist).


Stroke survivors are at much greater risk of falls and of serious injury

Falls are more common in people after stroke compared to age-matched controls. Over one-third of stroke survivors will fall in the first year.¹⁰ Risk factors for falls are similar to those for older people in general. In stroke survivors there is a relationship between falling and depression but it not known whether the depression increases the risk of falling or if falling increases depression in this group.¹⁰

Stroke is strongly associated with secondary osteoporosis, similar to other neurologically incapacitating disorders.¹¹ Stroke survivors who do fall are at increased risk of injury compared with the general population (8% stroke survivors

compared to 3% general population),¹² particularly hip fractures (relative risk for hip fracture within two years of stroke is 1.4 [95%CI, 0.92 to 2.07]).¹³

 **Best practice tip:** screen for falls risk and osteoporosis risk (FRAX) in all patients after stroke. Consider treatment with calcium, vitamin D and bisphosphonates.

 For further information see:

- BPJ 26 (Mar, 2010) “Falls in older people: causes and prevention”
- Best Tests (Nov, 2008) “Osteoporotic fracture prevention: a new approach”
- BPJ 17 (Oct, 2008) “Prevention of osteoporosis”

Spasticity in the arm or leg following stroke should not be routinely treated

Spasticity is not a major determinant of physical impairment therefore, spasticity that is not interfering with a stroke survivor’s activity or personal care, does not require treatment.

Consider treatment if spasticity is causing abnormal posturing or involuntary spasms that interfere with activity, discomfort/pain, or difficulties in personal care, e.g. hand hygiene in a flexed hand.¹⁴

- First line treatment is physical therapies such as stretching and dynamic splinting¹⁵ (physiotherapy referral).
- Intramuscular injection with botulinum toxin may be effective¹⁶ and is available via specialist stroke and rehabilitation services where other specialist therapies can also be considered.
- Oral anti-spasmodics, e.g. baclofen are not recommended for routine treatment. They provide marginal benefit, if any, for this indication and are associated with high levels of adverse reactions.¹⁷

Improving independence in personal care, around the home and getting out


At six months post stroke, about half of patients are partially or totally independent in their activities of daily living such as bathing, dressing, toileting, feeding and mobility. By one year this has increased to about two-thirds and further recovery in function is often seen long after neurological deficits have ceased to change.¹⁸

Being able to complete everyday activities as independently as possible is important for most stroke survivors. Stroke survivors who have limitations on any aspect of activities of daily living can be referred to occupational therapy, for advice on coping with the disabilities and information on available aids, equipment, and home or work adaptations as required.

No driving within one month after a stroke

After a person has had a stroke, they should not drive for at least one month.¹⁹

After this time if there is doubt about driving fitness due to residual disability, a driving assessment by an occupational therapist trained to provide off road and/or on road assessments should be undertaken.

 For more information see: "Medical aspects of fitness to drive", available from www.nzta.govt.nz and BPJ 26 (Mar, 2010) "Driving rules and assessment in older people".


Driver licences are generally not granted on Class 2, 3, 4 or 5 licences (heavy transport/passenger endorsement) following a stroke. However, if the stroke survivor has made a complete recovery and has a supporting report from a specialist neurologist or physician, then the possibility of a return to driving can be considered by the Licensing Agency.

Ask stroke survivors if they are experiencing pain


Pain after stroke is common and is seen in up to 50% of survivors.²⁰ All patients should be asked if they are experiencing pain.

There are numerous possible causes of the pain. Two main types to consider are:

- **Musculoskeletal pain** from immobility and abnormal posture is particularly common in people with arthritis, spasticity and contractures. A subtype of musculoskeletal pain is shoulder pain. This is seen in up to 80% of stroke survivors with upper limb weakness in the first year after stroke.²¹ Musculoskeletal pain may improve with physiotherapist advice and improved handling techniques, posture and movement. Treat with simple analgesics and increase, as necessary, up the World Health Organisation (WHO) analgesic ladder. Musculoskeletal pain that is not controlled may require referral for specialist treatment.

 For further information see BPJ 16 (Sep, 2008) "Pharmacological management of chronic pain"

- Up to 8% of stroke survivors experience **central post stroke pain** (CPSP).²² This is felt as a superficial, unpleasant burning, lancinating or pricking sensation. It is often made worse with touch, water or movement. If there are no contraindications the first line neuropathic analgesic for CPSP is a tricyclic antidepressant such as nortriptyline.²³ Other options are anticonvulsants and opioids. CPSP that is poorly controlled within a few weeks should be referred to a specialist in pain management.


 For further information see BPJ 16 (Sep, 2008) "Pharmacological management of neuropathic pain"

Fatigue may improve with treatment of disrupted sleep, depression, anxiety and pain

Many stroke survivors report substantial fatigue and describe it as the most difficult symptom they have to cope with.²⁴ Fatigue may affect mood, cognition and communication, worsen physical symptoms and the ability to participate in activities and increase risk of falls. It is multifactorial in origin.²⁵


Management consists of:

- Providing reassurance that fatigue is usual after stroke
- Planning daily activities to allow for regular rest periods
- Treating associated conditions such as disrupted sleep, depression, anxiety and pain
- Screening for other medical causes of fatigue e.g. anaemia, hypothyroidism, sleep apnoea

 Stroke Foundation “Fatigue after stroke” information sheet, available from: www.stroke.org.nz/pdfs/resources/SF2116FatigueLR.pdf

Nutritional problems are common in people who have had a stroke

To identify adults who are at risk of malnourishment or are malnourished, the Malnutrition Universal Screening Tool (MUST) is recommended. Referral to a dietitian or to a speech and language therapist, for swallowing problems, may be required.

 For further information see BPJ 15 (Aug, 2008) “Strategies to improve nutrition in elderly people”.

MUST is available from: www.bapen.org.uk

Control of bladder and bowel often improves over time

In the acute post-stroke period faecal and urinary incontinence is very common. A proportion of stroke

survivors continue to have problems (20% have urinary incontinence six months post stroke) and incontinence is one of the key reasons for referral to long term care.²⁶

The causes of incontinence are multifactorial. Faecal incontinence is often associated with constipation and overflow.²⁷ The three most common reasons for urinary incontinence are urge incontinence, urinary retention and functional incontinence.


Diagnosis of incontinence is based on the history, examination (including rectal examination), and possible further investigations. Treatment depends on the cause (Table 1). In the community setting patients may be referred to a continence adviser. Where continence is not achieved, containment aids, e.g. pads, can be used.

Take the initiative to talk about sex

Sexual dissatisfaction is very common after stroke but rarely discussed unless prompted by a health professional.

Psychological and interpersonal factors may include lack of communication, diminished self esteem and sense of attractiveness, depression, fatigue, fear of sexual failure or fear of causing a stroke.²⁹ These factors have a significant influence on sexual intimacy and compound the physical problems after stroke such as difficulty with positioning, anorgasmia and erectile or lubrication difficulties.

Sildenafil (a PDE5 inhibitor) may be used with caution to treat erectile dysfunction post stroke. Contraindications are very recent stroke (less than two weeks), unstable cardiovascular conditions and concomitant use of nitrates.

 For further information see BPJ 12 (Apr, 2008) “Erectile dysfunction”

Information on intimacy after stroke is available from the Stroke Foundation: www.stroke.org.nz/pdfs/resources/Sexuality-Booklet.pdf

Table 1: Summary of treatment strategies for incontinence²⁸

Type of incontinence	Management strategies
Faecal (often associated with constipation)	<ul style="list-style-type: none"> ▪ Rectal examination ▪ Minimise use of medicine with anticholinergic properties e.g. antipsychotics, TCAs, oxybutinin, antiemetics ▪ Review hydration and dietary fibre ▪ Laxatives ▪ Bowel training e.g. daily routine to promote defaecation
Urge incontinence	<ul style="list-style-type: none"> ▪ Bladder retraining e.g. scheduled voiding regimen ▪ Anticholinergic medicines e.g oxybutinin
Urinary retention with overflow	May be aggravated with constipation and anticholinergic medicines. If severe, consider urinary catheterisation (intermittent if practical)
Functional incontinence (unable to toilet successfully because of problems with cognition, communication, mobility, undressing, etc)	Usually requires a multidisciplinary approach

Mood and emotions


Psychological and emotional issues may be significant after stroke even when there has been good physical recovery. Key issues are recognising and coping with the limitations caused by the stroke, grief for what has been lost, fear of another stroke, generalised anxiety, frustration and depression and coping with stigma and social isolation.³⁰

One-third of stroke survivors develop depression or an anxiety disorder

Regularly screen for depression and anxiety in stroke survivors. Depression is very common in people who have had a stroke. At six months post-stroke approximately one-third to one-half of stroke survivors will be depressed³¹ and 3 to 9% will have major depression.³² Similar figures occur for anxiety.³³

Treatment strategies for stroke related mood disorders are similar to those for the general population. Stroke

survivors with depression or anxiety that does not respond to standard measures, is causing distress and is interfering with recovery, should be assessed by an expert e.g. clinical psychologist, psychiatrist.³⁴

 For more information see:

- BPJ (Special edition, 2009) “Adult depression”
- BPJ 11 (Feb, 2008) “Depression in elderly people”
- BPJ 25 (Dec, 2009) “Generalised anxiety disorder in adults”

Emotional lability may be treated with antidepressants

Stroke survivors who have exaggerated changes in mood such as uncontrollable laughing or crying, or heightened irritability or anger, may be experiencing emotional lability.³⁵ Antidepressants, such as SSRIs, are first-line treatment to lessen the frequency and severity of outbursts and reduce anger.³⁶

Dementia is very common after stroke

Around 10% of people will be diagnosed with incident dementia soon after a new stroke. More than one-third of stroke survivors will have a diagnosis of dementia after recurrent stroke. Dementia and cognitive impairment post-stroke usually requires detailed cognitive assessment and a full multidisciplinary re-assessment such as referral to stroke team or psychogeriatrician.

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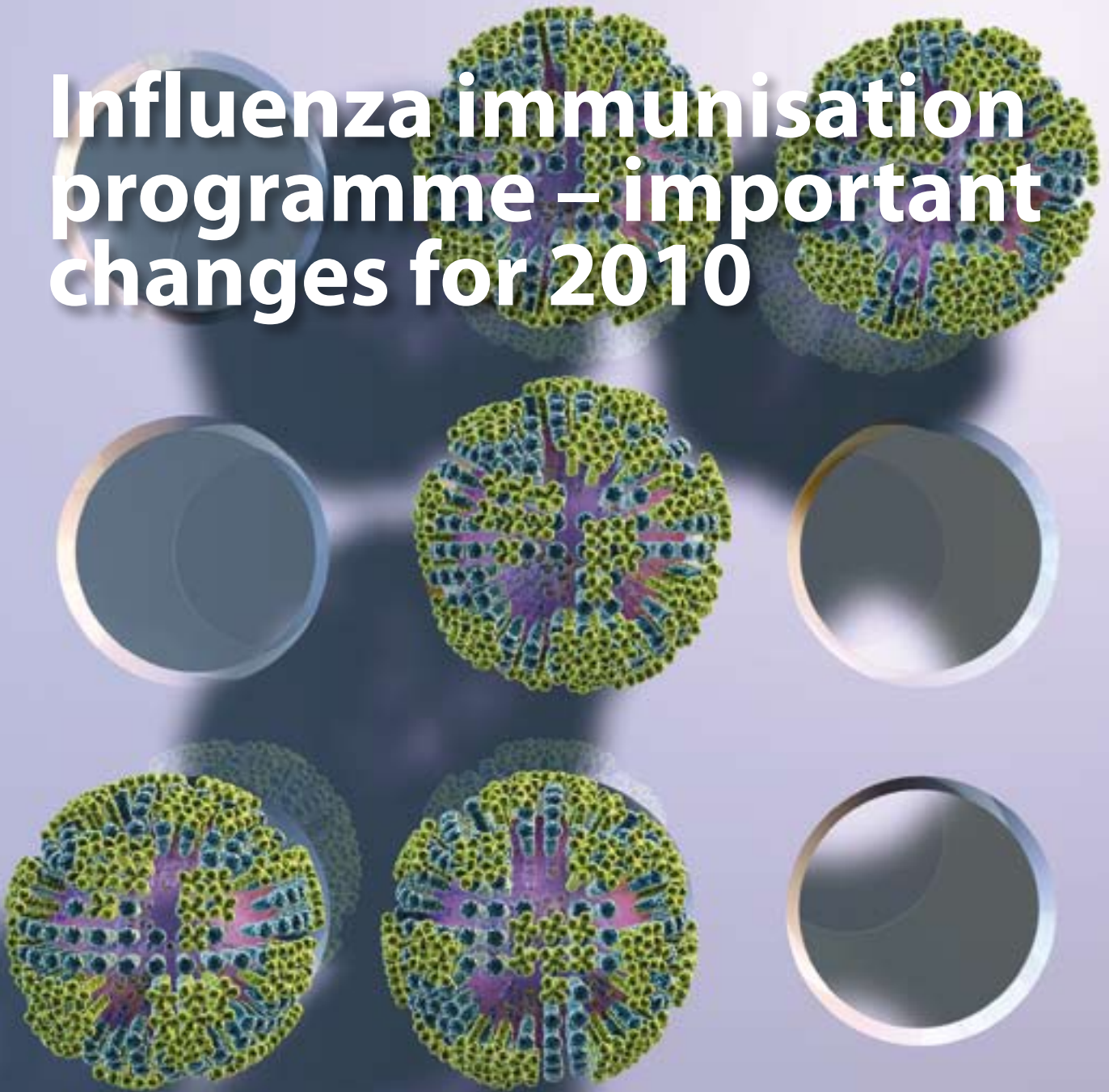


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Influenza immunisation programme – important changes for 2010



Key concepts:

- A two stage programme for the influenza vaccination has been implemented for 2010
- Eligibility criteria for funded vaccination has been broadened
- Children aged six months to eight years will require two doses of seasonal vaccine

Two stage programme

The influenza programme is being implemented in New Zealand this year as a two-stage programme using monovalent and trivalent vaccines.

Stage One: Early Protection Programme, commenced February 2010

This programme used Celvapan, a monovalent vaccine which protects against pandemic H1N1 influenza only. Two doses were given three weeks apart. The programme was aimed at specific priority groups including front-line health workers and people at risk of severe outcomes from pandemic H1N1 influenza.

The H1N1 vaccine was offered before the seasonal vaccine, to provide protection as early as possible to those at highest risk of influenza. Experience in the Northern Hemisphere suggested that influenza could arrive earlier this season, and the predominant strain would be pandemic H1N1.

Stage Two: Seasonal Influenza Immunisation Programme, commenced March 2010

The 2010 Seasonal Influenza vaccine has been formulated to include three strains of virus:

- A/California/7/2009(H1N1)-like strain
- A/Perth/16/2009 (H3N2)-like strain
- B/Brisbane/60/2008-like strain

Two doses needed for children under nine

All children aged from six months to eight years receiving the seasonal influenza vaccine should have two doses at least four weeks apart, in order to optimise immunity to pandemic H1N1. This is regardless of whether they have received seasonal vaccine in previous years.

Seasonal vaccine after receiving one dose of Celvapan

People who have received only one dose of Celvapan can get effective protection against pandemic H1N1 influenza by either receiving:

- A second dose of Celvapan (at least three weeks after the first dose), then proceeding to seasonal vaccine

Or

- A single seasonal influenza vaccination. Note, if one dose of Celvapan has been given it is recommended there be a four week gap before giving seasonal influenza vaccine to high risk individuals to offer better protection.

Seasonal influenza immunisation is funded in 2010 for the following groups:

- People aged over 65 years
- Pregnant women (in any trimester)
- Morbidly obese people (BMI ≥ 35 in those aged over 18 years)
- Children aged from six months to their fifth birthday, if enrolled in an eligible practice, or considered at high risk (see over page)
- People with the following chronic medical conditions:
 - Cardiovascular and cerebrovascular disease (except hypertension and/or dyslipidaemia without evidence of end-organ disease)

- Chronic respiratory disease except asthma not requiring regular preventive therapy
- Diabetes
- Chronic renal disease
- Cancer (except non-invasive basal or squamous cell carcinoma)
- Other conditions including immune suppression, autoimmune disease, HIV, transplant recipients, neuromuscular and CNS diseases, haemoglobinopathies and people aged under 19 years on long term aspirin therapy


Children not covered in the free vaccination programme should be considered for vaccination when:

- They are in a household living, or in frequent contact, with a ‘high risk’ individual
- They are in a boarding school or institutional environment

Eligibility criteria for funded vaccine for children

Children from age six months to five years may receive the seasonal influenza vaccination funded if they are enrolled at an eligible practice. Eligible practices are those which have 50% or more of enrolled children under six years identified as high needs (Māori, Pacific, high deprivation). Visit www.influenza.org.nz/?t=884 to see if your practice is eligible.

In addition to the list of eligible practices, permission has recently been granted by the Ministry of Health for general practices to use their discretion and offer free seasonal influenza immunisation to children from high deprivation backgrounds aged between six months and five years. This includes children who are considered at higher risk of the complications of influenza e.g. children living in poverty, crowded housing, recurrent medical presentations, household smoking, Māori, Pacific ethnic groups.

 **Best practice tip:** Make it count. Practice staff claiming for vaccinations should ensure that the NHI number is included on the claim and the PHO enrolment register in order for payments to be processed.

Resources:

Ministry of Health. Early protection immunisation programme – information pack. Available from: www.moh.govt.nz/moh.nsf/indexmh/influenza-a-h1n1-2010-programmes

Ministry of Health Immunisation advice line (for the public): phone 0800 IMMUNE (0800 466 863)

For payment/claiming queries (for practices) phone Ministry of Health: 0800 458 448 (select option 5)

National influenza strategy group. www.influenza.org.nz

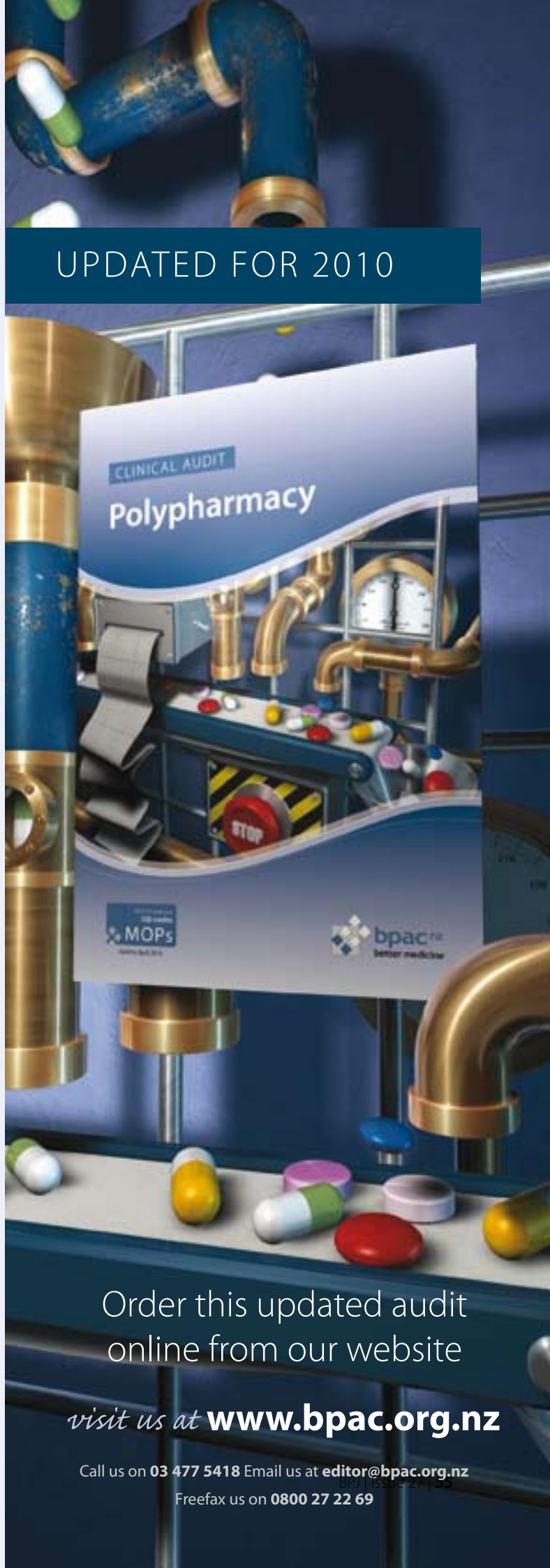
For weekly influenza surveillance updates, visit: www.surv.esr.cri.nz/virology/influenza_weekly_update.php

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Medicines in pregnancy

Dear bpac,

What resources do you recommend for information about the safety of medicines in pregnancy?

Practice Nurse, Christchurch

Questions about the safety of medicines in pregnancy arise when a pregnant woman is already taking an established treatment, or when a new medicine is being considered to treat a condition that occurs during pregnancy.

The medicine's Safety Data Sheet usually contains some information about use during pregnancy but this is often insufficient to guide decision making. Manufacturers are not going to recommend a medicine's use in pregnancy if there is any uncertainty or the absolute safety cannot be guaranteed or proven. However, if the medicine is known to be teratogenic in humans or contraindicated in pregnancy this should be clearly stated in the data sheet.

The level of information required will depend on the clinical context. For more complex scenarios, the first step may be to contact a specialist for advice about on-going management; e.g., a woman with depression or epilepsy.

For more routine questions there are a number of quick reference resources available which provide useful guidance. Some examples are:

- The British National Formulary (BNF) contains a section on use of medicines in pregnancy. While this often re-iterates the manufacturer's information, it does clearly point out medicines that are known to be teratogenic and those with definitive safety concerns. A useful feature is the description of the trimester(s) of risk and at what stage of pregnancy the medicine will pose the most risk to the foetus.
- Christchurch Drug Information (Clinical Pharmacology) website provides a good overview of the general principles of prescribing in pregnancy.

There are also articles on a few specific medicines but the list is not comprehensive.

www.druginformation.co.nz/pregnancy.htm

- Prescribing Medicines in Pregnancy (Therapeutic Goods Authority – Australia) is a comprehensive resource that assigns a “pregnancy safety category” giving an indication of the relative safety of the medicine based on the available evidence. A copy of the booklet can be downloaded as a pdf and printed. Although the latest edition was published in 1999, a full update is due very soon. The web site includes some updates and amendments to the original publication. www.tga.gov.au/DOCS/HTML/mip/medicine.htm

The most up-to-date information should always be sought, especially in the case of newer drugs. Medsafe provides information on current safety concerns and updates to datasheets. This is available from www.medsafe.govt.nz keyword: pregnancy.

Defining polypharmacy

Dear bpac

I note in your article “Falls in older people: causes and prevention” (BPJ 26, March 2010), that polypharmacy is defined as “the use of four or more medicines”. However, this is at odds with the definition used in the bpac^{nz} Polypharmacy POEM (May, 2006) as, “the addition of one or more drugs to an existing regimen which provides no additional therapeutic benefit and/or causes drug related harm”.

There is a lot of confusion out there and an assumption that polypharmacy is bad and the number of medicines a person takes should automatically be reduced, when in fact four medicines might all be indicated and work perfectly well, and there may well be a clinical need for one or two more for that person. To many, polypharmacy equates with wasted money. A standardised definition

is needed – that is something I thought we had with bpac^{nz}'s work in May 2006.

If possible, could bpac^{nz} promote one definition of polypharmacy in an effort to get this complex issue better understood?

Pharmacist, Palmerston North

Polypharmacy is difficult to apply a standard definition to and various values have been used in the literature, ranging from four to seven or more medicines. A value (i.e. number of concurrent medicines) has often been selected for research purposes so that associations can be made between events (e.g. falls, interactions, hospital admissions) and the “degree” of polypharmacy. This is the context of the statement in the BPJ 26 which described a link between polypharmacy and increased risk of falls. This is an association rather than a causal relationship and does not take into consideration specific regimens which might be perfectly justified.

The statement in the May 2006 polypharmacy POEM was based on a therapeutic view rather than a research or literature based definition. In this context our assertion is that that one additional medicine is “polypharmacy” if it is not indicated, no longer required or causes drug-related harm.

The main message is to encourage regular medicines review. This edition of BPJ (BPJ 27) includes an article which provides practical guidance on how to stop unnecessary medicines in older people.



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“The capacity to blunder slightly is the real marvel of DNA. Without this special attribute, we would still be anaerobic bacteria and there would be no music.” — Lewis Thomas

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A close-up, slightly blurred photograph of a child's face, focusing on the eye and nose area. The child is wearing a light-colored hat with a dark blue stripe. The background is a solid, bright yellow color.

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