

SKIN INFECTIONS | PERTUSSIS | PNEUMONIA | OBESITY | IMMUNISATION

# Best Practice

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Issue 45 August 2012

“Te moana nui a Kiwa” – Peoples of the Pacific

New Zealand Formulary Launches

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## 14 **Managing skin infections in Māori and Pacific families**

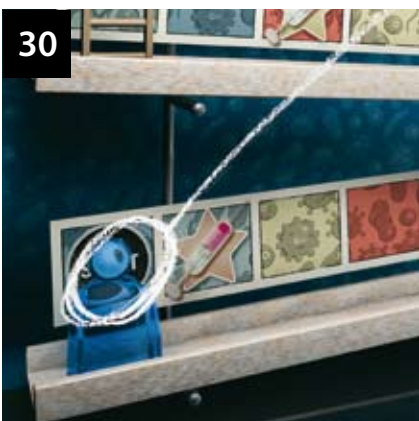
Compared to other developed countries, New Zealand has one of the highest rates of serious skin infections, particularly among children. Over the past decade, the number of children admitted to hospital for treatment of serious skin infections has doubled. Māori and Pacific families are most at risk, therefore targeted education, prevention and control interventions are necessary in order to reduce this burden of disease.



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New Zealand is currently in the midst of a pertussis epidemic. Identifying and treating patients with pertussis early is important in limiting the spread of this potentially fatal infection. Pacific children have a high burden of disease, with almost 30% of pertussis infections resulting in hospitalisation.



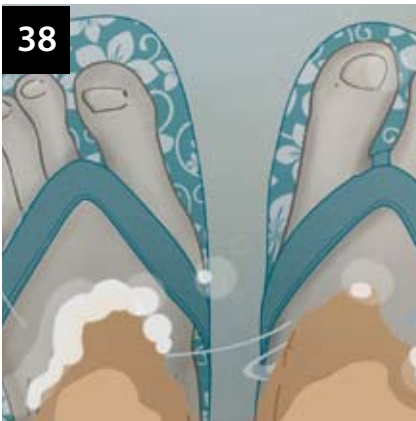
30

## 25 **The management of community acquired pneumonia**

Pneumonia is a significant cause of hospitalisation and mortality among both children and adults in New Zealand. Māori and Pacific peoples are at an increased risk of pneumonia, compared to other people in New Zealand. Prompt identification and treatment will enable patients with less severe community acquired pneumonia to be managed at home, reducing hospitalisation and mortality.

## 30 **How to plan a catch-up immunisation**

Although immunisation rates among Māori and Pacific peoples continue to increase, there is still room for improvement, as immunisation rates in New Zealand lag behind many other developed countries. Misinformation about vaccines, lack of information or poor understanding of the diseases being immunised against, barriers to accessing health services and recent immigration to New Zealand all contribute to incomplete or absent immunisation histories. It is important to actively identify children, and adults, who have missed immunisations and plan and implement a catch-up programme.



38 **Addressing weight issues in young people and families in New Zealand**

New Zealand is one of the most overweight countries in the world. The proportion of people who are overweight or obese is highest among Māori and Pacific peoples. It is important to address this issue from a young age, in order to avoid the health and social consequences of obesity later in life. Talking about weight can be difficult, however, obesity is one of the most significant preventable health problems in New Zealand, and clinicians have a duty of care to discuss it with patients, as with any other health issue.

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Oxycodone



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# Tēnā koutou, Ni sa bula vinaka, Talofa lava, Kia orana, Taloha ni, Malo e lelei, Fakalofa lahi atu, Talofa, Halo olaketa and warm pacific greetings

Whakataka te hau ki te uru,  
Whakataka te hau ki te toka.  
Kia mākinakina ki uta,  
Kia mātaratara ki tai.  
E hī ake ana te atākura.  
He tio, he huka, he hauhu.  
Tihēi Mauri Ora!

*Cease the winds from the West,  
Cease the winds from the South.  
Let the breezes blow over the land,  
Let the breezes blow over the ocean.  
Let the red-tipped dawn come,  
With a sharpened air, a touch of frost, a promise  
of a glorious day*



## Welcome to Best Practice Journal, Issue 45 “Te moana nui a Kiwa” – Peoples of the Pacific

In this issue we focus on the health and wellbeing of Māori and Pacific families in New Zealand. The journal begins with an article explaining the concept of health literacy – this is a “buzz word” that we have all heard, but what does it actually mean for patients and clinicians? Health literacy isn’t just about providing information, it’s about helping people to understand the information and actively building the knowledge and skills of individuals, families and communities.

Main articles cover the management of recurrent skin infections, the current pertussis epidemic and community-acquired pneumonia – all of which have an increased burden in Māori and Pacific peoples. We also look at how to plan a catch-up immunisation programme, which is especially relevant for Pacific peoples who have recently immigrated to New Zealand. It is a sad statistic that New Zealand is one of the most overweight countries in the world. It is vitally important to address weight issues early, and we look at how to manage this in young people and families in New Zealand.

After many years in the planning, we are excited to announce the launch of the New Zealand Formulary! PHARMAC explains what the new Pharmacy Services Agreement means for prescribers, and we look at research which shows that there are major differences in the number of prescriptions dispensed to Māori, compared to non-Māori.

*E rima te’arapaki, te aro’a, te ko’uko’u te utuutu, ’iaku nei*

*Under the protection of caring hands there’s a feeling of love and affection – COOK ISLAND PROVERB*

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# Understanding Health Literacy

Contributed by Susan Reid (Te Rarawa) and Carla White (Ngāti Tama), Workbase

*Low health literacy contributes significantly to health disparities for Māori and Pacific peoples. However, the majority of adult New Zealanders have low health literacy. This has wide ranging implications for people's well being and the provision of health services. Improving health literacy is about more than enhancing the readability of information. It is about building the skills and knowledge of individuals, whānau and communities so that they can evaluate, synthesise and act on the information they receive, to improve their health outcomes.*

## Why does health literacy matter?

More than half of adults in New Zealand have low health literacy, and they are:

- Less likely to use preventative services
- Less likely to recognise the first signs of medical problems
- Less likely to effectively manage their long-term condition
- Less likely to communicate concerns to health professionals
- More likely to be hospitalised due to a chronic condition
- More likely to use emergency services
- More vulnerable to workplace injury

## What is health literacy?

Health literacy is the interaction between the skills and knowledge of individuals and the demands of the health system.<sup>1</sup> In many health settings there is a significant mismatch between the skills and knowledge people need in order to meet the health literacy demands they face, and their actual health literacy skills and knowledge.

In New Zealand, good health literacy has been defined as: **"the capacity to obtain, process and understand basic health information and services in order to make informed and appropriate health decisions"**.<sup>2</sup>

There are three aspects to this definition. Firstly, a person or family has to get the information they need. Secondly, they need to understand the information and decide if it is accurate and sufficient. And finally, they need to act on the information. Patients not acting on information is most commonly cited by health professionals as evidence of non-adherence. But it is equally important to check what happened at the other two stages.

Health professionals need to provide clear, consistent and relevant information and services, where, how and when people need them, and assist people to understand the information and services as required.

1. Prescription to End Confusion, Institute of Medicine, 2004
2. Kōrero Mārama, Ministry of Health, 2010

People's health literacy skills and knowledge are influenced by:

- Familiarity with the health topic and the system
- Available time and resources
- Stress
- Confidence levels
- Attitudes, values and beliefs

The literacy and numeracy demands of the health system are influenced by:

- How services are designed and delivered
- Organisational and funding processes
- The complexity of the health issue
- The communication skills of the health workforce
- The complexity of oral and written communication used, e.g. instructions, information, forms, letters, publications, websites, labels

**Low health literacy should not be confused with low intelligence.** Health care systems are increasing in complexity with a wider range of providers. People are required to be more self-managing, develop new skills to find and manage information, understand and manage their rights and responsibilities and make health decisions for themselves and others.

Health literacy involves:

- Understanding how to navigate and interact with the complex health system
- Understanding what health information is relevant and how to find it
- Developing knowledge and expectations about health and well-being
- Evaluating and understanding health messages, nutrition information, instructions and medicine labels
- Completing medical forms and responding to information requests
- The confidence and ability to talk with health professionals and ask questions

People can have ongoing health literacy needs or episodic health literacy needs. People who have low health literacy will have ongoing difficulties in making informed health decisions, but most people will at some point in their lives experience an episode of low health literacy. Even highly skilled individuals may find the health system too complicated to understand, especially when these individuals are made more vulnerable by poor health.

When a person is diagnosed with a new condition it will take some time to understand the condition, how it is affecting them and what to do about it. It may also require people to prepare for and undergo unfamiliar tests, take new medicines, find clinics and interact with new health professionals. Often people are expected to listen to and read new information, understand and use new vocabulary, speak to new people about new things and monitor results or perform calculations. This is likely to come at a time when people are already feeling ill and stressed.

## What can health professionals do about health literacy?

Health literacy is about more than improving the readability of information and the information flow between the public, health professional and the health system. Health literacy is about building the skills and knowledge of individuals, whānau and communities so that they can evaluate and synthesise the information they receive from the health system and others, decide whether they have enough information, and act on the information. This concept of health literacy relies significantly on health professionals, health organisations and the health system not just providing the information but actively building the health literacy skills and knowledge of individuals, whānau and communities.

The health literacy “problem” is not just the responsibility of the patient. The greatest opportunity for the health sector is to reduce the health system's literacy demands and complexity and to improve the health workforce's communication skills.

## How to reduce health literacy demands

Reducing health literacy demands does not mean “dumbing down” or reducing information. In some cases it may result in more, rather than less, information being shared with patients.

Health literacy demands can be reduced by:

- Making it easier for patients to navigate health services, systems and processes
- Encouraging health conversations and helping people to identify and ask questions
- Finding out what people know as the starting point of any health conversation
- Tailoring the conversation to take into account what they already know
- Making the amount of information or instructions passed on manageable for the patient and their whānau

## Health literacy statistics in New Zealand

The most recent Adult Literacy and Lifeskills Survey (ALLS)\* carried out in 2006, showed that more than half (56.2%) of New Zealand adults have poor health literacy skills. These results are similar to those of Australia, Canada and the United States, which participated in these literacy surveys along with many other OECD countries.

Health literacy skills were measured on a scale of one (very low skills) to five (very high skills). Health literacy skills at level three are considered necessary to cope with the demands of everyday health situations. Only 43% of New Zealand adults have good health literacy, that is, level three and above. This means more than 1.6 million adults in New Zealand have health literacy skills at levels one and two and are limited in their ability to obtain, process and understand basic health information and services in order to make informed and appropriate health decisions.

Elderly people, people with limited education, people with limited income and people with limited language proficiency often have lower health literacy. Māori have much lower health literacy levels than non-Māori, regardless of other demographic factors such as age, gender, income and educational status. However, European New Zealanders comprise the largest group with low health literacy in New Zealand.

\* Available from: [www.educationcounts.govt.nz](http://www.educationcounts.govt.nz)

*Health literacy is not just providing the information but actively building the health literacy skills and knowledge of individuals, whānau and communities*

- Checking that you have been clear when talking to a patient by asking them to “teach-back”
- Encouraging whānau involvement in health conversations
- Going through written information with patients and whānau rather than handing it out to be read later
- Making medication and treatment information clearer
- Following up and monitoring prescribed medicines and instructions
- Redesigning health education resources, letters and forms so they are clear to the audience

## How to develop peoples’ health literacy skills

Every interaction between a patient, whānau and a health professional provides an opportunity to develop people’s health literacy knowledge and skills.

For example, a health conversation can be used to check and build understanding about:

- A health condition
- Essential health terminology
- Each aspect of a health process
- Who can provide support and advice

Most people with low health literacy do not know they have an issue and if they do, they are unlikely to reveal the problem. In many situations it is not possible to know what information has previously been provided to a patient and whānau, what is already understood, or what barriers exist for the patient and whānau in relation to acting on information.

Sometimes health professionals may know when a patient has health literacy needs because someone has helped them to fill in forms or understand appointment letters. However, in most cases it will be difficult to readily determine a patient’s health literacy skills.

Taking a **Universal Precautions approach** to health literacy means providing good clear communication (both written and spoken) to all patients and whānau. This approach maintains the mana of the patient and whānau and, when done effectively, benefits all patients and whānau, not just those with low health literacy.

**Resources** can help to develop health literacy skills and knowledge by including concepts, vocabulary, activities, and information that build on people’s existing knowledge and help them to develop the necessary skills and knowledge



for understanding and managing their health. For example, someone newly diagnosed with high cholesterol may benefit from a resource that helps them:


- Understand and correctly pronounce new vocabulary about cholesterol
- Learn enough about cholesterol to understand what health professionals are asking them to do, and why
- Plan questions to ask health professionals
- Get support to ask questions and manage their treatment

Written resources to develop health literacy skills and knowledge need to go beyond a “plain language” approach and need to be developed in conjunction with the people using the information, to ensure the resources provide the information people need and want, in an accessible way.

Improving health literacy means people will be better able to take care of their health and engage with the health system. For health professionals, better health literacy will lead to improved patient interactions, and better health outcomes.

### Workbase

Workbase is a not-for-profit organisation committed to improving the literacy, language and numeracy skills of people in New Zealand.

 For further information, visit:  
[www.healthliteracy.org.nz](http://www.healthliteracy.org.nz)  
Or contact Susan Reid Ph: 09 361 3800

*Fakamalolo ke he tau amaamanakiaga, ke mafola ai e tau matakainaga*

*Strengthen all endeavours and the community will benefit – NIUE*

*Toko rangatiratanga na te mana-matauranga*

*Knowledge and power set me free – MĀORI*

Quiz feedback for

# BPJ 44

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keyword: feedback



# New Zealand Formulary launches

*On Thursday, 19 July, 2012, the New Zealand Formulary (NZF) was officially launched by the Hon. Peter Dunne, Associate Minister of Health. The NZF is now available online, free of charge, to all healthcare professionals in New Zealand.*

## What is the NZF?

The NZF is an independent medicines information guide for healthcare professionals in New Zealand. The website is also accessible free of charge to the general public.

The NZF has been developed through a partnership between the Best Practice Advocacy Centre Inc (BPAC Inc), the Best Practice Advocacy Centre New Zealand (bpac<sup>nz</sup>) and the Royal Pharmaceutical Society of Great Britain, publishers of the British National Formulary (BNF).

The NZF is based on the BNF, but has been adapted for the New Zealand healthcare context. It has four main components:

- General notes on medicine use
- Practical guidance on specific therapeutic categories, e.g. cardiovascular, respiratory. Links to supporting local guidance are provided where appropriate.
- Detailed summaries (monographs) of individual medicines
- Details of preparations available and subsidy information (via linkage with the New Zealand Universal List of Medicine)

Sections are included on medicine use in pregnancy, breast feeding, renal disease and palliative care, as well as information on adverse medicine reactions and medicine interactions, incorporating advice and guidance from two reputable sources; Stockley's Interactions Alerts and the

BNF. Information and links are provided to groups such as the National Pharmacovigilance Centre (for adverse drug reporting), Medsafe and the National Poisons Centre.

Figure 1 (over page) shows an example of a medicine monograph in the NZF. Monographs have been designed to allow maximum information within one screen, with "clickable" links to more detailed layers of information.

The NZF team is currently working on an adaption of the BNF for children (BNFc), to produce the first New Zealand Formulary for children (NZFc – available July 2013). In the meantime, where relevant, links are provided directly to the BNFc from the NZF text.

## How do I access it?

The NZF may be viewed online or downloaded as an eBook or PDF from the website. The NZF is publically accessible in New Zealand only. Future versions will also be available integrated within prescribing and dispensing software.

eBook formats include; ePub (universal file format for eReaders excluding Kindle), MOBI (for Kindle) and PDF (for eReaders and computers). Full instructions on downloading the NZF eBook are available from the website.

The NZF can also be accessed within Medtech via an on-screen icon.

## How often is it updated?

The information in the NZF is continually revised by the NZF team and a panel of experts. Updates to the online and eBook versions of the NZF are published monthly, on the first working day of each calendar month. Users may register for email notification of eBook updates.



Visit: [www.nzformulary.org](http://www.nzformulary.org)

## History of the NZF

The concept of a national medicines formulary for New Zealand was first discussed by key players in the NZF partnership, more than twenty years ago. As a result of discussions, the Department of Health issued a "request for proposals" for a national formulary in 1992. The Department envisaged a publication similar in style and content to the British National Formulary, which was provided annually to General Practitioners, but with emphasis on a New Zealand specific context. Unfortunately the funding for the formulary was withdrawn before a contract was established and no further official progress was made on a national formulary for New Zealand for a number of years.

In the meantime, BPAC Inc was established and, as one of its key projects, it began work on investigating the concept of developing a national formulary. The Royal Pharmaceutical Society granted permission for BPAC Inc to access text and editing tools from the BNF, and as a test, one chapter was successfully adapted to New Zealand requirements.

Between 2001 and 2006, the WHO Medicines Strategy, the Ministry of Health's WAVE advisory group and Health Information Strategy and reports from the University of Auckland and BPAC Inc all concluded that a national medicines formulary would be beneficial for New Zealand. DHBNZ, with support from PHARMAC, developed a business case for a national medicines formulary in 2007, which garnered considerable support from the health sector. Funding was allocated in the 2008 Budget for the development of a national formulary, as part of the New Zealand Medicines Strategy. The Hon. Peter Dunne, Associate Minister of Health, was key in securing this

funding, based on consistent feedback he received from healthcare professionals concerning the lack of robust, New Zealand specific medicines information.

The New Zealand Universal List of Medicines (NZLUM) was released in 2010, as a foundation for a national formulary. The NZLUM Steering Group was then charged by the Ministry of Health to establish, what they provisionally titled, the New Zealand Medicines Formulary (NZMF). A request for proposals for the provision of the NZMF was issued in December 2010. Following a detailed evaluation and competitive process, the contract for a national formulary was awarded to the New Zealand Medicine Formulary Limited Partnership (NZMF LP) in September 2011, a collaboration between BPAC Inc, bpacnz and the Royal Pharmaceutical Society.

*"Excellent website. Extremely useful for study and looking forward to using it as a Pharmacist. Everything I need in one, easy to use website, thank you"*

*"NZF is AWESOME! Thank you! Very exciting!"*



New Zealand Formulary

### Table of Contents

This shows the hierarchical arrangement of documents in the NZF and is located on the home page, and the left-hand side of the web page. You can use the Table of Contents to navigate to any chapter or section within the NZF.

### Search function

By clicking on the search NZF tab located on the top right hand corner of the web page, it is possible to search for a specific drug monograph for a particular drug (the left-hand side search box), or to search the entire formulary for a word, phrase or trade name (using the right-hand side search box).

The screenshot displays the NZF website interface. On the left, a 'Table of Contents' sidebar lists various medical categories, with '4.1.1.1 nitrazepam' highlighted. The main content area features a monograph for 'nitrazepam', including sections for Indications, Contra-indications, Cautions, Driving, Interactions, Hepatic impairment, Renal impairment, Pregnancy, Breast-feeding, Adverse effects, Dose, and Patient advice. A 'BNF for Children' link is provided under the 'Infantile spasms' section. At the bottom, a table lists products such as 'nitrazepam tablet' and 'Nitradoc' with their respective legal classifications and subsidies.

### BNF for Children

Where appropriate links are provided to the relevant section of the BNF for children (BNFc).

### Links and hovers

Hyperlinks are shown as blue underlined text and lead you to additional relevant information in other parts of the NZF or to external web sites. Links to Medicines Data Sheets and patient information leaflets are also included.

Figure 1: Example monograph



**NEW**

## CHRONIC CARE MODULE

### Interactions search

By clicking on the interactions tab located on the top right hand corner of the web page, it is possible to search for interactions between medicines.

### Interactions

Within a monograph, interaction information from both the Stockley's alerts database and BNF interactions summaries are provided.

### Pregnancy

Where available the NZF classifies drugs according to the Australian categorisation system for prescribing medicines in pregnancy, 2011, Therapeutic Goods Administration.

### Breastfeeding

Where available, the NZF drug monograph includes information on the drug's compatibility with breastfeeding as provided by Therapeutic Guidelines Limited.

### Adverse effects

Adverse effects are reported as; very common (greater than 1 in 10) and common (1 in 100 to 1 in 10); less commonly (1 in 1000 to 1 in 100); rarely (1 in 10 000 to 1 in 1000); very rarely (less than 1 in 10 000); also reported frequency is unknown.

The **Chronic Care** module (the Common Form) combines features from the Diabetes and CVD Management modules to produce a streamlined, standardised tool that assists in clinical review, disease monitoring and clinical management.

The Chronic Care module features:

- **Dynamic display - only relevant sections are shown**
- **Real-time clinical advice**
- **Pre-population of data from PMS**
- **Patient recalls**
- **Guideline-based rules**
- **Write-backs to PMS**

See [www.bestpractice.net.nz](http://www.bestpractice.net.nz) for more information about this and other *bestpractice* modules.



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# Disparities in the use of medicines for Māori

Recent research into the use of medicines in New Zealand has revealed major differences in the number of prescriptions dispensed to Māori compared with non-Māori. Using data from the Ministry of Health National Collections for all prescriptions dispensed between 1 July 2006 and 30 June 2007, disparities were identified in a number of key areas, including medicines for cardiovascular disease, infectious diseases, diabetes and respiratory conditions.<sup>1</sup> While this data is now five years old, it remains meaningful, and is the only available analysis of gaps in the prescribing of community pharmaceuticals to date. Further details will be available in the full analysis, planned for submission for publication later this year.

To make a comparison between the prescribing for Māori compared with non-Māori, the dispensing data was adjusted to account for population differences. The Māori population has a younger age structure than the non-Māori population,<sup>2</sup> therefore the data was adjusted for age to account for the effects of a comparatively smaller ageing Māori population. The higher rate of disease, earlier onset and poorer outcomes experienced by Māori compared with non-Māori are also well known. To account for this, the data in Figure 1 has been adjusted for "Disability Adjusted Life Years" (DALY) in Māori. These adjustments were based on the Ministry of Health 2001 New Zealand Burden of Disease Study (NZBDS),<sup>3</sup> which quantified the years of life lost by the New Zealand population in 1996 from premature mortality and disability caused by a number of diseases.

The adjusted data in Figure 1 shows that Māori have fewer prescriptions dispensed for pharmaceuticals to treat a number of key conditions. For example, in 2006/07 180,000 fewer prescriptions for cardiovascular medicines were dispensed to Māori than would have been expected in a comparable non-Māori population. Māori are also more likely to have unfilled prescriptions - the non-filling rate is almost 1.5 times that of non-Māori aged over 15 years.<sup>4</sup> There is also evidence that Māori and Pacific peoples do not have their treatment escalated as frequently as non-Māori/Pacific peoples. Most recently, bpac<sup>nz</sup> examined how this affects prescribing for

children with asthma, which demonstrated a lower proportion of Māori and Pacific children being escalated to long-acting beta-2 agonist treatment than children of other ethnicities, despite these populations experiencing a higher rate of severe asthma.<sup>5</sup>

While there are limitations of the data in Figure 1, including the inability to assess potential disparity in medicine use for Pacific peoples due to a lack of specific detailed ethnicity data in the published NZBDS data,<sup>3,6</sup> it shows that there are differences between medicines dispensed to Māori and non-Māori, after adjusting for the most important confounding factors between the populations. This raises some important issues for health professionals to consider in the management of Māori patients.

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**Figure 1:** Deficits (–) or excesses (+) in dispensed medicines for Māori compared with non-Māori, adjusted for age and relative disease burden (DALY loss)<sup>1</sup>

# Managing skin infections in Māori and Pacific families



*The number of people in New Zealand requiring hospitalisation due to bacterial skin infections is rising. Although the majority of patients have skin infections that are mild to moderate in severity and respond to treatment with oral antibiotics in a community setting, some patients develop more serious skin infections that require treatment in hospital. Māori and Pacific families and families from lower socioeconomic communities are more at risk. Healthcare professionals can help prevent these disparities from widening by targeting education, prevention and control interventions.*



## Serious skin infections are increasing

Compared to other developed countries, New Zealand has high rates of serious skin infections, particularly among children, e.g. the rate of cellulitis in children in New Zealand is twice that of children in Australia and the United States.<sup>1</sup> In addition, there is evidence that the situation is worsening. New Zealand public hospital data shows that the number of children admitted for treatment of serious skin infections, e.g. cellulitis and abscess, has almost doubled from 298 per 100 000 children in 1990, to 547 per 100 000 in 2007.<sup>1</sup>

### Ethnicity, age and socioeconomic factors influence rates of serious skin infections

An analysis of the epidemiology of serious skin infections that resulted in hospital admission in New Zealand children from 1990 to 2007 reported that rates were higher among:<sup>1</sup>

- Māori and Pacific children
- Children from lower socioeconomic families
- Preschool children
- Boys
- Children from urban areas and from the upper half of the North Island

From 1990 to 1999 **Māori and Pacific children** were 2.3 and 3.7 times, respectively, more likely to be admitted to hospital for a skin infection than children of other ethnicities.<sup>1</sup> Between 2000 and 2007 this increased to 2.9 and 4.5 times, respectively.<sup>1</sup>

The incidence of serious skin infections is heavily influenced by **socioeconomic factors**. During the period 1990 – 1999 the rate of infection in children from areas classified as NZDep 9 – 10 (most deprived) was 3.6 times greater than for areas classified as NZDep 1 – 2.<sup>1</sup> Between 2000 and 2007 this ratio increased to 4.3.<sup>1</sup>

The highest rates of hospitalisation for serious skin infections occurred in **children aged less than five years**, who had more than twice the risk of serious skin infection than children aged five to nine years.<sup>1,2</sup> The lowest rates were for children aged 10 – 14 years.

The incidence of serious skin infection requiring hospitalisation was significantly higher in **boys** than in girls.<sup>1</sup>




Rates of serious skin infections were 1.8 times higher for **children living in urban areas** compared to those living in rural areas.<sup>1</sup> Higher rates of serious skin infection were found among **children from the North Island** compared to children from the South Island. Rates in the Tairāwhiti (Gisborne) region from 2000 – 2007 were the highest in New Zealand, even when standardised for age, ethnicity and deprivation (see “Epidemiology of skin infections”).<sup>1</sup>

### What are the common pathogens that cause skin infections?

*Staphylococcus aureus* and *Streptococcus pyogenes* (Group A beta-haemolytic Streptococcus) are the most common bacteria that contribute to skin infections. These bacteria are commensals of the skin (inhabit the skin) and invade the skin via any breach in the skin barrier or via mucous membranes. Broken skin can be the result of an injury or be a consequence of a pre-existing skin condition, such as eczema, chickenpox or scabies.

Acute rheumatic fever is most frequently associated with pharyngitis secondary to group A streptococcus, however, there is some evidence that children with *S. pyogenes* skin infections, e.g. impetigo, may also be at risk of rheumatic fever.<sup>5</sup> Post-streptococcal glomerulonephritis can also develop as a complication of *S. pyogenes* skin infections.

## Treating infections of the skin


	Features	Medication	Other treatment
<b>Impetigo</b>  See "Management of impetigo" BPJ 19 (Feb, 2009) and "Skin infections in Pacific peoples" BPJ 32 (Nov, 2010)	<ul style="list-style-type: none"> <li>Highly infectious bacterial infection (usually <i>S. aureus</i> and/or <i>S. pyogenes</i>)</li> <li>Most frequently seen in children but can affect people of any age</li> <li>More common in warm and humid conditions, if the normal skin barrier is impaired and in conditions of poor hygiene</li> </ul>	<ul style="list-style-type: none"> <li>Topical antibacterial (e.g. fusidic acid) for seven days</li> <li>Oral flucloxacillin for seven days if extensive, slow to respond to topical treatment or recurrent</li> <li>Nasal swab and intranasal antibiotics (e.g. fusidic acid) may be required for recurrent infection</li> </ul>	<ul style="list-style-type: none"> <li>Cephalexin oral suspension (25–50 mg/kg/day, in two or three divided doses) is an alternative to flucloxacillin suspension if this is not tolerated</li> <li>Crusted areas can be removed or covered</li> <li>Avoid preschool or school for 24 hours after initiation of treatment</li> <li>Use separate towels and other linen and advise regular hand washing</li> </ul>
<b>Boils and abscesses</b>	<ul style="list-style-type: none"> <li>Commonly caused by <i>S. aureus</i></li> <li>Any breach in the normal skin barrier can lead to the development of a boil, carbuncle or abscess</li> </ul>	<ul style="list-style-type: none"> <li>Most boils and fluctuant abscesses can be treated with incision and drainage alone</li> <li>Oral flucloxacillin for seven to ten days may be considered if there is fever, surrounding cellulitis or a co-morbidity likely to cause complications e.g. diabetes</li> </ul>	<ul style="list-style-type: none"> <li>Fluctuant abscesses require incision and drainage. Children in particular may require referral for surgical drainage under sedation or general anaesthetic</li> <li>Decolonisation may be required in patients with recurrent boils (Page 19)</li> <li>Household linen and clothes should be decontaminated (Page 17)</li> <li>If indicated by nasal swab results, intranasal antibiotics (e.g. fusidic acid) can be considered for recurrent infections</li> </ul>
<b>Cellulitis</b>  See "Skin infections in Pacific peoples" BPJ 32 (Nov, 2010)	<ul style="list-style-type: none"> <li>Usually due to <i>S. aureus</i> and/or <i>S. pyogenes</i></li> <li>Higher incidence in people with conditions such as diabetes, obesity, venous disease, alcoholism and with injury or trauma</li> <li>More frequently seen in children and elderly people but can occur at any age</li> </ul>	<ul style="list-style-type: none"> <li>Oral flucloxacillin for seven to ten days</li> <li>Erythromycin, roxithromycin, cefaclor and co-trimoxazole are alternatives</li> </ul>	<ul style="list-style-type: none"> <li>Flucloxacillin or cephalexin oral suspension recommended for children</li> <li>Referral for IV antibiotics may be required in severe cases, children aged under one year or if cellulitis is periorbital or orbital, surrounds a limb, located over a joint or fails to respond to oral antibiotics</li> <li>Appropriate analgesia and elevation of the affected area is recommended</li> </ul>
<b>Infected Eczema</b>  See "Managing eczema" BPJ 23 (Sep, 2009)	<ul style="list-style-type: none"> <li><i>S. aureus</i> commonly colonises eczema lesions</li> <li>Infection is suggested by lesions that are crusted, weeping or failing to respond to treatment</li> </ul>	<ul style="list-style-type: none"> <li>Topical antibacterial (e.g. fusidic acid) for seven days may be sufficient for localised areas</li> <li>Oral flucloxacillin is required if there are extensive areas of infected eczema</li> </ul>	<ul style="list-style-type: none"> <li>Decolonisation of <i>S. aureus</i> may reduce the severity of eczema in patients with secondary infection (Page 19)</li> </ul>

### Notes:

Cephalexin oral suspension is now available fully subsidised in two strengths (125 mg/5 mL and 250 mg/5 mL). It can be used as an alternative to flucloxacillin oral suspension because it is more palatable, does not need to be taken on an empty stomach and can be given twice or three times daily.<sup>18</sup>

Recommended oral flucloxacillin dose – Adult 250–500 mg; Child 2–10 years 125–250 mg; Child 1 month–2 years 62.5–125 mg; every 6 hours, at least 30 minutes before food.<sup>19</sup>

**People with diabetes** are at increased risk of skin infections, both bacterial and fungal, and often have delayed wound healing.<sup>5</sup> Foot infections are particularly problematic in people with diabetes, and in some cases can result in amputation.

 For further information see: "Screening and management of the diabetic foot", BPJ 31 (Oct, 2010)

**People who are obese** are at increased risk of poor wound healing.<sup>6</sup> A higher incidence of cellulitis, folliculitis, paronychia and boils are associated with obesity.<sup>7</sup> Increased rates of intertrigo are also associated with an increased BMI. This is likely to be due to the characteristic features of larger skin folds where the skin is wetter and warmer and there is increased friction with adjacent skin causing inflammation and maceration. Fungal infections, e.g. *Candidia albicans* and tinea, are common causes of intertrigo.


**People who smoke** are at increased risk of delayed wound healing, which in turn can increase the risk of a skin infection.<sup>6</sup>

**Other factors** that are associated with an increase in the incidence of skin infections include: excessive alcohol intake, pregnancy, recent surgery or trauma, burns, radiotherapy and chemotherapy.

## Management of recurrent skin infections

### The importance of good hygiene

Hand washing is the most effective way to reduce the transmission of microorganisms from one person to another.<sup>8</sup> Hands should be washed frequently with soap and clean water and then dried. The active ingredient in antibacterial soap is not present in sufficiently high concentration to be any more effective than plain soap, e.g. triclosan 0.1 – 0.4%.<sup>9</sup> There are also concerns that use of soaps containing triclosan can promote cross-resistance of bacteria to some antibiotics, such as amoxicillin, tetracyclines and mupirocin.<sup>9</sup> Alcohol based rubs are the most effective method for eliminating bacteria from the hands, however, these products may be unaffordable, and therefore impractical for everyday use.<sup>10</sup>

 **Best practice tip** – When washing your hands after examining a patient, reinforce to parents/caregivers the importance of this simple effective form of infection control.

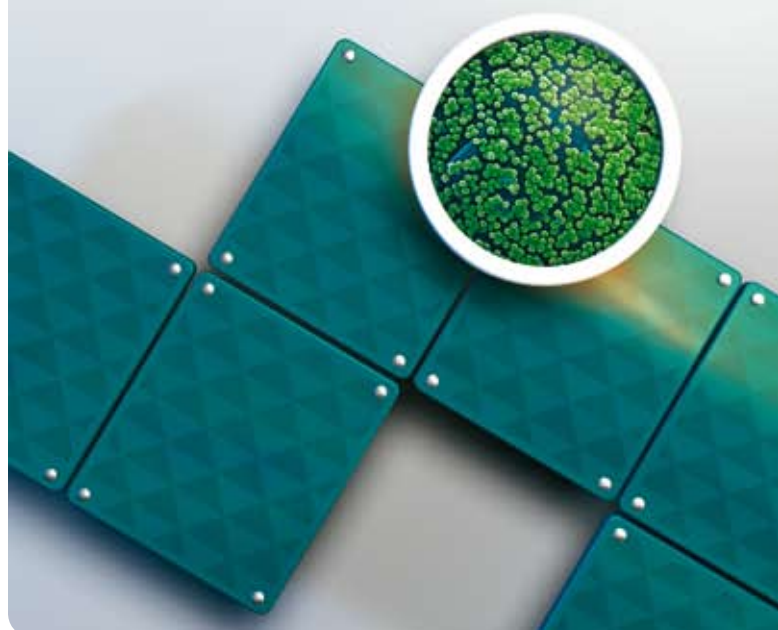
Household cleaning procedures are especially important for families living in crowded conditions. There should be a focus on high-touch surfaces that bare skin is frequently in contact

## The epidemiology of skin infections in primary care

Incidence rates for serious skin infections are largely derived from hospitalisation data, however, the majority of patients with skin infections are managed in primary care. A study has been carried out to determine if the findings relating to the epidemiology of serious skin infections resulting in hospitalisation reflect the situation in primary care.<sup>3,4</sup>

Data collected from General Practitioners in the Tairāwhiti region was compared to hospitalisation data from the same period. The population in the Tairāwhiti region has a high proportion of young Māori and also high levels of deprivation, but even after adjusting for these factors, the rates of serious skin infections in this region are the highest recorded in New Zealand. Although the study was based on a small sample size, it suggests that the epidemiology of skin infections in general practice is similar to that reflected by hospitalisation data.

For every child hospitalised for a serious skin infection, 14 children were estimated to have been successfully treated in primary care.<sup>3</sup> Although lower numbers of pre-school children with skin infections were seen in primary care, these children accounted for approximately two-thirds of those hospitalised. The authors speculate that although this could be due to the small sample size, it may suggest that General Practitioners have a lower threshold for referral in this age group or alternatively the presence of more severe infections.



with, such as bench tops, door knobs, bath tubs and toilet seats. Linen and towels should not be shared. To decrease the chance of an infection spreading to other family members, ideally hot washes should be used for towels and linen, however, this may be unaffordable for many families. An alternative is the addition of a capful of bleach to the regular wash cycle (or when hand washing clothes). Drying clothes in a dryer on a hot setting and using an iron (preferably with steam) may further reduce the bacterial load.

### Encourage good first-aid at home

Explain the importance of cleaning and covering cuts and sores, especially for children at school or preschool and playing contact sports. Clean water is sufficient for cleaning wounds. Generic brands of adhesive plasters can be purchased to cover skin lesions.

### Manage skin conditions such as eczema


Eczema is estimated to affect 15% of Māori children and 16% of Pacific children in New Zealand, compared to approximately 10% of children of other ethnicities.<sup>11, 12</sup> As it is often characterised by *S. aureus* colonisation, eczema significantly increases the risk of invasive bacterial infections.<sup>13</sup> Managing eczema is therefore an important aspect of preventing recurrent skin infections.

The main aims of management are to control the factors that exacerbate eczema, to use anti-inflammatory treatment (e.g. topical steroids) to control exacerbations when they do

occur, and to maintain the barrier function of the skin with emollients.

Routine use of antiseptics and antimicrobial creams for the prevention of infection in pre-existing lesions is not recommended due to a lack of evidence that they are effective, issues of affordability and uncertainty as to whether they promote resistant strains of bacteria.<sup>14</sup> Decolonisation measures may help reduce the severity of infected eczema (Page 19).<sup>15</sup>

It is important that families are given adequate information and explanation, so they understand when to use medicines or other treatments, how to apply them and when to seek further help. Nurse-led eczema clinics for patients and their families are offered by some practices and DHBs.

 For further information see: "Managing eczema", BPJ 23 (Sep, 2009).

### Promote healthy lifestyles

Good nutrition has an essential role in wound healing, as well as being important in maintaining healthy skin.<sup>20</sup> Nutritional deficiencies can cause wounds to heal more slowly, however, there is no clear evidence to suggest that advising people to take specific dietary supplements will improve the clinical outcome.<sup>20</sup> In addition to promoting good nutrition, advice should be given about attaining or maintaining a healthy weight. Smoking cessation remains a vital component when discussing healthy lifestyles.

## MRSA incidence increasing

Methicillin-resistant *Staphylococcus aureus* (MRSA) incidence in New Zealand has slowly increased since 2001. Eight strains of MRSA are currently recognised in New Zealand.<sup>16</sup> In 2010 there were 740 people identified with MRSA in New Zealand (17.3 per 100, 000 people), with approximately half of these cases being categorised as community-associated.<sup>16</sup> MRSA in the community typically affects younger people, particularly Māori and Pacific peoples.<sup>16, 17</sup> Counties Manukau DHB recorded the highest rate of MRSA, with over 40 cases per 100 000, while Northland and Waikato DHBs also recorded rates significantly above the national average.<sup>16</sup>

Patients with any non-healing wound or an infected surgical wound that is not responding to first-line antibiotic treatment should have a wound swab taken to check for the presence of MRSA and to guide antibiotic choice. Appropriate antibiotics for treatment of MRSA in the community include co-trimoxazole, clindamycin (requires specialist endorsement), and tetracyclines, but the choice must be guided by susceptibility information because of the emergence of multi-resistant strains.

## Encourage patients to seek medical attention early

Medical attention should be sought for any wound or lesion in or near an eye, regardless of whether it is infected. As a general guide, people with wounds or other skin lesions larger than approximately 15 mm in diameter, or people with a wound that is failing to improve or worsening should also seek medical attention.

## Decolonisation measures

Decolonisation may be considered where a patient and their family members are developing recurrent skin infections, despite optimised hygiene and wound care measures, and where conditions such as eczema and diabetes are well controlled.<sup>21</sup> There is evidence that the combination of bleach baths, intranasal antibiotics and education about personal and household hygiene is the most effective regimen for *S. aureus* decolonisation in the community.<sup>22</sup>

Decolonisation treatments include:<sup>21</sup>

- Nasal decolonisation with topical antibiotics (applied with a cotton bud or finger), e.g. fusidic acid or mupirocin 2% ointment (usually reserved for MRSA, choice guided by susceptibility testing), twice daily for five days
- Topical body decolonisation with dilute bleach baths (see below) or triclosan 1% solution applied as a whole body wash daily for one week, repeated if required (subsidised by endorsement for patients with recurrent *S. aureus* infections)

Surveillance cultures following a decolonisation regimen are not routinely recommended in the absence of an active infection.<sup>21</sup>

## Bleach baths for decolonisation

Bleach baths can be used two to three times a week (repeated if required) to prevent recurrent *Staphylococcus aureus* skin infections. A quarter to half a cup of unscented household bleach (sodium hypochlorite 6%) can be added to bath water.<sup>23</sup> The patient should stay in the bath for five to ten minutes and then rinse with fresh water. Children should be supervised to avoid ingestion of bath water. If medications or emollients are required they should be applied after the skin has been patted dry. Bleach baths should not be used if there are extensive areas of broken skin.

## Traditional tattooing

Traditional tattooing is a part of the culture of many Pacific peoples, e.g. ta tatau is the process of traditional tattooing from Samoa. Over the last ten years, complications such as severe cellulitis and septic shock have been reported among people who received tatau, including one death.<sup>24</sup> In 2010, the Ministry of Health, in conjunction with community leaders and infectious disease specialists, published guidelines aiming to increase the safety of traditional tattooing.<sup>25</sup>

One of the risk factors for infection may be that the traditional tools used for tattooing are made from materials such as shell, teeth, bone and wood and cannot be sterilised by autoclaving. The best alternative, although not as effective as autoclaving, is for the tools to be carefully cleaned, e.g. with an ultrasonic cleaner, and then soaked in a chemical sterilising solution.<sup>25</sup>

The use of unsafe practices in any form of tattooing can increase the risk of infection, including that of serious blood-borne infections such as hepatitis B and C and HIV. Cellulitis may be difficult to diagnose in the presence of acute inflammation from the localised trauma to the skin and the heavy use of pigments.<sup>26</sup> Local councils in many areas have bylaws which aim to reduce the risks associated with tattooing, however, there are currently no national regulations covering tattooists, their studios or the inks used.



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*Ko te tamaiti te pūtake o te ora*

*The child is the essence of our wellbeing – MĀORI*

# Pertussis:

## an avoidable epidemic

*There is currently an epidemic of pertussis in New Zealand; almost 3000 new infections have been reported so far in 2012 (to the end of July). Identifying and treating patients with pertussis early is important in limiting the spread of this potentially fatal infection.*

### What is pertussis?

Pertussis, commonly known as whooping cough, is a highly infectious illness caused by the Gram-negative bacteria *Bordetella pertussis*.<sup>1</sup> Infection can occur in people of any age but is most severe in young children, and can be fatal. Pertussis infection is characterised by bouts of severe coughing with a high-pitch “whoop” sound on inspiration. The excessive and forceful nature of the cough frequently leads to vomiting and occasionally a petechial rash on the face.

### The incidence of pertussis is increasing

There are a growing number of new pertussis cases being reported in New Zealand. Between January and 20 July, 2012 there were 2966 pertussis notifications, compared to 425 over the same period in 2011.<sup>2</sup> Pertussis epidemics are cyclic, occurring every few years. The 2012 epidemic, to date, is considerably larger than that seen in 2009, although similar to the 2000 and 2004 epidemics.<sup>2</sup>

The outbreak has highlighted ethnic disparities in the progression of the disease and the care of people with pertussis. The highest number of hospitalisations for pertussis is among Pacific children, with 28% of infections resulting in hospitalisation, followed by Māori children, with 13% hospitalised.<sup>2</sup> By comparison, the hospitalisation rate among New Zealand European children who have pertussis is 3%.<sup>2</sup> Over 60% of all hospitalisations for pertussis have been in infants aged less than one year.<sup>2</sup>

Geographically, the majority of cases have been reported in Canterbury, Capital and Coast and Nelson Marlborough DHBs.<sup>2</sup>

### Immunisation offers the best protection, even in an outbreak

The best protection against pertussis is vaccination. It is important to vaccinate on time to offer young infants as much protection as possible, as early as possible. Children aged under one year, and especially infants aged under six weeks, are most at risk of serious infection from pertussis.

The multiple dose pertussis vaccine is between 71 – 85% effective in preventing pertussis.<sup>1</sup> The effectiveness of the vaccine declines considerably over time, with protection lasting between five to ten years.<sup>3</sup> The vaccine can be used preventatively in outbreaks, as initial protection against pertussis develops within 10 – 14 days of immunisation.<sup>4</sup>

However, the pertussis vaccine will be ineffective if infection has already occurred.

The pertussis vaccine is recommended at ages six weeks, three months, five months and four years, followed by a booster dose at age eleven years.<sup>4</sup> In addition, the Ministry of Health recommends that healthcare personnel working with infants, early childhood carers, pregnant women over 20 weeks gestation and household contacts of newborn infants should receive a dose of the vaccine, with the dose repeated every ten years for people who work with infants and healthcare workers, although it is unfunded in the majority of these groups (see "Maternal vaccination now funded").<sup>4</sup>

## How to recognise pertussis

Age and immunisation status influence the clinical presentation of patients with pertussis. Infants aged under one year, particularly infants aged under six weeks, may become unwell very quickly, presenting with apnoea and cyanotic spells, rather than cough. In older immunised children and adults, symptoms usually begin after a seven to ten day incubation period, and are initially mild. Signs and symptoms during this period, known as the catarrhal stage, include mild respiratory symptoms, rhinitis, sneezing and dry, unproductive coughing.<sup>1</sup> Individuals are most infectious during this stage.<sup>4</sup>

After one to two weeks, coughing begins to develop into paroxysmal bouts, each with five to ten coughs, during which the "whoop" noise can be heard on inspiration, particularly in

younger children, however, infants may not whoop.<sup>1</sup> In older children and adults whooping is often not as pronounced, although the cough may still result in gasping or gagging. Bouts of coughing may be followed by vomiting (post-tussive emesis). Episodes of coughing are frequent, can disrupt sleep and usually continue for between two to eight weeks. Coughing is often worse at night in adults and some children.<sup>5</sup>

## Diagnosis can usually be made clinically

A diagnosis of pertussis is likely where the patient has had an acute cough for 14 days or more and has one of: inspiratory whoop, post-cough vomiting, apnoea or paroxysmal bouts of coughing.<sup>6</sup>

If pertussis is suspected in an outbreak situation or in a person epidemiologically linked to a confirmed case, laboratory testing is not required. Testing is also not required for notification of pertussis or to confirm a patient is no longer infectious and can return to early-childcare/school. Testing should be considered if the diagnosis is unclear or where a confirmation is necessary for management of vulnerable contacts, e.g. infants aged under 12 months or women who are pregnant (especially in the last trimester).

Testing for pertussis can be carried out using polymerase chain reaction (PCR), culture or serological testing. PCR is now the preferred method of testing for pertussis and some laboratories no longer offer culture or serological testing. Check with your local laboratory before requesting tests. Compared to

## Maternal vaccination now funded in some DHB's

In response to the current epidemic, some DHB's, e.g. Canterbury, South Canterbury and Counties Manukau, now offer a funded dose of the pertussis vaccine to pregnant women over 20 weeks gestation and new mothers. Check with your local DHB as the eligibility for the funded booster dose varies between regions.

Although there is evidence that antibodies to pertussis are transmitted during pregnancy and breastfeeding, this appears to be often insufficient to protect infants under six weeks.<sup>11</sup> This may be because immunity to pertussis decreases over time, rather than the maternal antibodies being ineffective.<sup>11</sup> A single booster dose given to women during pregnancy aims to boost both maternal and infant immunity prior to the infant receiving their six week immunisation.







pertussis culture, results from PCR testing are obtained more quickly, PCR is more sensitive and has the same specificity. Serology is not useful early in the course of the disease and PCR is generally not useful if the patient has had symptoms for more than three weeks. Note that PCR is expensive, costing approximately \$130 per test, so unnecessary testing should be avoided.<sup>7</sup>

N.B. Care must be taken to send the correct dry swab (orange top tube) rather than the blue topped tube with charcoal transport medium used for culture<sup>†</sup>

**Best practice tip:** In a household with multiple young children, consider testing one family member (with symptoms) to direct the management of other family members, without testing

Notification to the Medical Officer of Health is required for all suspected and confirmed cases of pertussis

## Treatment of pertussis

Antibiotic treatment is recommended to reduce transmission of pertussis, however, it is unlikely to alter the clinical course of illness. Young children can deteriorate rapidly and may require hospitalisation. Azithromycin is now funded for pertussis in children aged under one year (see over page).

**For infants aged under six months** the first-line antibiotic for pertussis is:<sup>8</sup>

- Azithromycin 10 mg/kg, once daily for five days

**For infants and children aged six months to one year** the first-line antibiotic for pertussis is:<sup>8</sup>

- Azithromycin 10 mg/kg on day one, followed by 5mg/kg/day for days two to five (five days total treatment)

**For children aged over one year and adults** the first-line antibiotic for pertussis is:<sup>8</sup>

- Erythromycin 10 mg/kg (400 mg for adults), four times daily for 14 days\*

Treatment is only effective when initiated within three to four weeks of the onset of cough, as after this time most people are no longer infectious.<sup>6,7</sup> Treatment should be given if the duration of cough is unknown. Women who are pregnant in their last trimester should be prescribed antibiotic treatment regardless of the time of onset of symptoms.<sup>7</sup>

Note that macrolides (e.g. erythromycin, azithromycin) are associated with infantile hypertrophic pyloric stenosis in infants aged under three months, however, macrolides remain the most effective option for pertussis infections and the risk from pertussis is considerably higher so treatment is still required in this age-group.<sup>7</sup> Monitoring for complications, e.g. vomiting, becoming forceful, is recommended for four weeks after completion of treatment.<sup>4</sup>

Prophylactic antibiotics are recommended for high risk contacts,\*\* including:<sup>7</sup>

- Children aged less than one year
- People who spend significant time with infants aged less than one year, such as early childhood carers
- Women who are pregnant, particularly in the last month of pregnancy
- Those at risk of severe complications, such as people who are immunocompromised and those with severe asthma

**For prophylaxis of asymptomatic contacts** use either erythromycin or in children aged under one year, azithromycin (at the same dose and duration as for treatment).

In addition, immunisation should be offered to all adult contacts (unfunded) and any children who have not been immunised.

People with pertussis should be advised to avoid early-childhood care, school or work for five days if given antibiotics. People who are not given antibiotics will remain infectious for three weeks post onset of symptoms, and should be excluded for this period.

<sup>†</sup> Blue top swabs can still be used as long as they are placed in a tube without charcoal.

The shorter, orange topped tubes with universal viral medium can also be used.

Check with your local laboratory for the preferred sample method.

\* A Cochrane systematic review indicates that an antibiotic course of three to seven days is as effective as 10 – 14 days for the treatment of pertussis, and is associated with fewer adverse effects, however, this is not recommended in current New Zealand guidance.<sup>9</sup>

\*\* Contact is defined as being in close proximity of an infected person for one hour or more, during the person's infectious period.

## Azithromycin now funded for pertussis

From 1 June, 2012, azithromycin has been available fully funded for use in infants aged under one year with, or at risk from, pertussis.<sup>10</sup> Azithromycin is as effective as erythromycin, and has a shorter and simpler dosing regimen.

Azithromycin is available as a suspension under the brand name Zithromax. The medicine is supplied as granules for oral liquid 200 mg per 5 mL with a pack size of 15 mL. Prescriptions are subject to endorsement and can be prescribed for a maximum of five days per script to infants aged under one year who:

- Have pertussis and the Medical Officer of Health has been notified or;
- Have been in contact with a notified case of pertussis

Practitioners should be aware that this use of azithromycin is not approved by Medsafe and therefore prescribing should comply with Section 25 of the Medicines Act.\*

\* Allows the practitioner to “procure the sale or supply of any medicine” for a particular patient in his or her care, even in a situation in which it is contraindicated, provided that the practitioner offers care of an adequate professional and ethical standard.

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## The management of community-acquired

# pneumonia

*Pneumonia is a significant cause of mortality in children and older people, particularly among Māori and Pacific Peoples. In New Zealand, Māori are six times more likely to die from pneumonia than non-Māori. Prompt identification and treatment will enable patients with less-severe community-acquired pneumonia to be managed at home, reducing hospitalisation and mortality.*

*Waiho i te toipoto, kaua i te toiroa*

*Let us keep close together, not wide apart – MĀORI*

### **The prevalence of community-acquired pneumonia**

Community-acquired pneumonia is a common cause of hospital admission in adults in New Zealand, and has a reported mortality between 6.5% – 8%.<sup>1</sup> Pneumonia is three times more prevalent in Māori than in non-Māori, and Māori have a mortality rate (deaths per 100,000 population) from pneumonia six times greater than non-Māori.<sup>1,2</sup> Pacific peoples are also at an increased risk from pneumonia, compared to European New Zealanders.<sup>3</sup> Vaccines are available to prevent some forms of pneumonia, such as the Pneumovax 23 vaccine. However, the incidence of vaccine-preventable pneumococcal pneumonia in Māori and Pacific peoples is approximately three times higher than in other ethnicities, suggesting that access to these vaccines, or vaccine uptake, is lower in Māori and Pacific peoples.<sup>1</sup>

Certain risk factors for pneumonia are of importance in the New Zealand setting, particularly in children, when compared to other developed nations. Such factors include low socioeconomic status, poor nutrition, low birth weight, reduced rates of breastfeeding, exposure to tobacco smoke, lower housing quality (i.e. lack of insulation and heating, damp, mould, overcrowded conditions) and reduced access to primary healthcare.<sup>4,5</sup>

## Hospital or community- acquired?

If a person has features that indicate pneumonia, and has been hospitalised for more than two days in the previous 90 days, they can be classified as having hospital-acquired pneumonia.<sup>6</sup> Depending on the clinical findings and the co-morbidities of the patient, referral to hospital may be indicated, for IV antibiotics and the identification of antibiotic-resistant organisms. The threshold for referral of a patient with hospital-acquired pneumonia should be considerably lower than for community-acquired pneumonia.

## Pneumonia in children

### The signs and symptoms of pneumonia in children

Children and infants with pneumonia present with a range of symptoms and signs, including:<sup>7</sup>

- Fever
- Tachypnoea (Table 1)
- Increased respiratory effort (e.g. in-drawing, accessory muscle use, grunting)
- Irritability, fatigue
- Difficulty feeding (infants)
- Dyspnoea, stridor or wheeze
- Cough (less common in infants)
- Pleuritic chest pain

Auscultatory signs are less frequently found in young children with pneumonia than in adults – a high fever, tachycardia, increased respiratory effort and rate may be the only signs.

Consider the possibility of alternative diagnoses, such as an inhaled foreign body in younger children.

**Table 1:** Tachypnoea in children based on age<sup>8</sup>

Age	Tachypnoea (breaths/minute)	Severe tachypnoea (breaths/minute)
< 2 months	> 60	> 70
2 – 12 months	> 50	> 60
> 12 months	> 40	> 50

## Further investigations are not usually required in community care

Chest x-ray, laboratory investigations (e.g. full blood count and CRP), and microbiological testing are not routinely recommended for the investigation or confirmation of uncomplicated pneumonia in children in primary care.<sup>8-10</sup> Chest x-ray may be considered where a clinical diagnosis is difficult or unclear, the history is suggestive of foreign body aspiration or there are chest signs (e.g. dullness to percussion) that may suggest pleural effusion or collapse.<sup>7</sup>

### When to refer children to hospital

The decision to refer children with pneumonia to hospital should be based on the history, clinical features, age and the presence of co-morbidities. Referral to hospital should be strongly considered for any child with one or more of the following:<sup>8,10</sup>

- Aged less than six months
- Drinking less than half their normal amount
- Oxygen saturation  $\leq 92\%$  on pulse oximetry
- Severe tachypnoea (Table 1), apnoea
- Increased respiratory effort
- Signs of fatigue
- Temperature  $< 35^{\circ}\text{C}$  or  $> 40^{\circ}\text{C}$
- Decreased breath sounds or dullness to percussion
- Where there is a concern that home-based care will not provide careful observation, compliance with treatment recommendations or follow-up if symptoms worsen

### Management of community-acquired pneumonia at home

Pneumonia is usually caused by inhalation of micro-organisms from the upper respiratory tract.<sup>1</sup> *Streptococcus pneumoniae* is the most frequently identified pathogen in community acquired pneumonia world-wide and in New Zealand.<sup>1-3</sup> Other organisms include viruses (particularly respiratory syncytial virus, RSV, in infants), *Chlamydia pneumoniae*, *Mycoplasma pneumoniae*, *Haemophilus influenzae* and *Staphylococcus aureus*.

Antibiotics should always be prescribed to children with community-acquired pneumonia, even if a viral infection is suspected, as differentiating the pathology of pneumonia is difficult and a bacterial component may still be present even where a virus is the primary causative agent.<sup>8</sup> Treatment is empiric and not usually tailored to a specific organism. There are a wide range of pathogens responsible for community-

acquired pneumonia in children, so laboratory investigation is not routinely recommended as it isolates the pathogen in 2–50% of infections only.<sup>8</sup>

For children, first-line antibiotic choice is:<sup>8</sup>

- Amoxicillin 25 mg/kg, three times daily, for seven days

Atypical infections are uncommon in children aged under five years, but erythromycin may be used as an alternative in children aged over five years if treatment fails or if the infection is suspected to be atypical:

- Erythromycin 10 mg/kg, four times daily, for seven days

Maintaining adequate hydration is important and parents/caregivers should be instructed on how to do this (i.e. frequent intake of small amounts). Paracetamol may be used for analgesia particularly if there is pleuritic chest pain that may result in shallow breaths or prevent coughing.

### Follow-up after treatment

Most children with pneumonia show improvement within 24 – 48 hours of antibiotic treatment and continue to improve over time. Children who have persistent symptoms should, however, be reviewed as cough and mild shortness of breath on exertion may persist for several weeks. Children who had atelectasis on a chest x-ray at the time of initial diagnosis should have a follow-up chest x-ray at six weeks and be referred to a paediatrician if the collapse has not resolved.<sup>8</sup>

## Pneumonia in adults

### The signs and symptoms of pneumonia in adults

Although adults with pneumonia may often present with symptoms and signs specific to the chest, they may also present with less specific and more varied respiratory and systemic symptoms. Symptoms and signs can therefore include:<sup>7</sup>

- Cough
- Fever (>37.8°C)
- Tachypnoea (>25 breaths/minute)
- Tachycardia (>100 beats/minute)
- Dyspnoea
- Sputum production
- Pleuritic chest pain
- Focal signs on auscultation such as bronchial breathing, coarse crepitations and vocal fremitus, and dullness to percussion
- Rigors, night sweats

- Myalgia, fatigue
- Confusion
- Gastrointestinal symptoms, e.g. nausea

In the absence of sore throat and rhinorrhoea, symptoms such as fever, cough, sputum production, dyspnoea and pleuritic chest pain are strongly suggestive of pneumonia, however, older patients have an increased likelihood of presenting with confusion and a reduced likelihood of fever and cough.<sup>9,11</sup>

Also consider the possibility of alternative diagnoses such as lung cancer, bronchiectasis, COPD, pleural effusion and tuberculosis.

### Further investigations are not usually required in community care


Chest x-ray, laboratory investigations (e.g. full blood count and CRP) or microbiological testing is not routinely required in a community-care setting.<sup>9, 10, 12</sup> Chest x-ray is recommended when: the diagnosis is unclear or difficult, there is dullness to percussion or other signs of an effusion or collapse and when the likelihood of malignancies is increased, such as in a smoker aged 55 years.<sup>9</sup>

### When to refer to hospital

The decision to refer patients to hospital should be based on their clinical features and the presence of co-morbidities. There is a lower threshold for referral for patients aged over 65 years. Referral to hospital should be strongly considered for any patient with one or more of the following features:<sup>11</sup>

- Co-morbidities, such as cardiac failure, renal or hepatic impairment
- Altered mental state (confusion)
- Pulse rate > 125 beats per minute
- Respiratory rate > 30 breaths per minute
- Oxygen saturation level ≤ 92%
- Systolic blood pressure < 90 mmHg or diastolic blood pressure < 60 mmHg
- Temperature < 35°C or > 40°C
- Where there is a concern that home-based care will not provide careful observation, compliance with treatment recommendations or follow-up if symptoms worsen

The decision to refer can be aided by pneumonia-specific algorithms, such as the CRB-65 score. The score is based on the presence of confusion, raised respiratory rate, low blood pressure and the age of the patient.<sup>10</sup>

 For further information on pneumonia algorithms visit:  
[www.brit-thoracic.org.uk/guidelines/pneumonia-guidelines.aspx](http://www.brit-thoracic.org.uk/guidelines/pneumonia-guidelines.aspx)

### The management of pneumonia in adults

All people with suspected pneumonia should be prescribed antibiotic treatment, even where viral aetiology is suspected.

**For adults** first-line antibiotic choice is:<sup>13</sup>

- Amoxicillin 500 mg – 1 g, three times daily, for seven days

For suspected atypical infections, or if the patient has not improved within 24–48 hours, erythromycin (or roxithromycin), or doxycycline should be added to amoxicillin:

- Erythromycin ethyl succinate 400 mg, four times daily, for seven days (twice daily dosing may also be used– half the daily dose is given every twelve hours)
- Roxithromycin 300 mg, as a single daily dose or 150 mg twice daily, for seven days
- Doxycycline 200 mg stat then 100 mg once per day

For people with an allergy to penicillin, erythromycin or roxithromycin can be used first-line.

Doxycycline or amoxicillin clavulanate are appropriate choices if post viral/influenza pneumonia is suspected, to provide coverage for *S. aureus*.

Patients should be advised to stay hydrated and to use analgesia for chest pain or sore throat, as required. Antitussive preparations are unlikely to be beneficial.<sup>15</sup>

### Follow-up after treatment

Patients with pneumonia who do not show signs of improvement within 48 hours of beginning treatment should have their antibiotic treatment broadened or be referred to hospital.

Adults should ideally be reviewed six weeks after treatment. In patients with poor clinical recovery, chest x-ray should be considered to rule out underlying malignancy.<sup>11</sup> People with pneumonia aged over 50 years who smoke should also be assessed for the possibility of underlying malignancies. This includes assessment for any clinical features of lung cancer, arranging a chest x-ray once antibiotic treatment has been initiated and a follow-up x-ray at six weeks.<sup>7</sup> Smoking cessation advice should be offered.

## Immunisation should be offered to people at risk of pneumonia

Three vaccines are available in New Zealand to prevent some forms of pneumonia.

All children should receive four funded doses of the 10-valent pneumococcal vaccine PCV10 Synflorix at ages six weeks and three, five and fifteen months, as per the New Zealand Immunisation Schedule.<sup>15</sup> The 13-valent vaccine, PCV13 Prevenar 13, is used for children at high-risk of complications, followed by the 23-valent vaccine, 23PPV Pneumovax 23, after age two years.<sup>15</sup> Vaccination with PCV13 and 23PPV is funded for high-risk children aged under five years and for all people with functional or anatomic splenectomy. For all other high-risk people, vaccination is recommended, but not funded.<sup>15</sup> N.B. South Canterbury DHB is offering funded pneumococcal vaccine to people aged over 65 years at high risk.

Children at high risk include those with the following conditions:


- On immunosuppressive treatment or radiation therapy
- Primary immune deficiencies
- HIV
- Renal failure or nephrotic syndrome
- Organ transplants
- Cochlear implants or intracranial shunts
- Chronic CSF leaks
- On corticosteroid therapy for more than two weeks, at daily prednisone dose of  $\geq 2$  mg/kg or a total dose  $\geq 20$ mg
- Pre-term infants, born at under 28 weeks gestation
- Chronic pulmonary disease (including asthma treated with high dose corticosteroid therapy)
- Cardiac disease with cyanosis or failure
- Insulin dependent diabetes
- Down syndrome

Adults aged over 65 years and those at increased risk of complications from pneumonia should receive the vaccine Pneumovax 23. The duration of effectiveness is not known for Pneumovax 23, although seroconversion is likely to be less in people with immune deficiencies and some co-morbidities. Healthy people aged over 65 years generally only require a single dose but those at high risk should receive a second dose three to five years after their first dose\*.

\* Amended September 2012

Adults at a higher risk of pneumococcal disease include those:<sup>15</sup>

- With functional or anatomic asplenia, e.g. sickle cell disease, splenectomy
- With a chronic illness, e.g. congestive heart failure, cardiomyopathies, chronic obstructive pulmonary disease, asthma, bronchiectasis, diabetes, chronic liver disease, or nephrotic syndrome
- Who are immunocompromised or are taking immunosuppressive treatment, e.g. HIV infection, congenital immunodeficiency, haematologic and solid tumors, radiation therapy, and organ or bone marrow transplantation
- With a cerebrospinal fluid leak
- With cochlear implants or intracranial shunts

 For further information see: "Pneumococcal vaccine for adults: Pneumovax 23", BPJ 35 (April, 2011).

The seasonal influenza vaccine is also recommended for people at high risk, to help to prevent post-viral pneumonia or pneumonia secondary to influenza. Funded vaccination for eligible people has now been extended to 31 August, 2012.

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# How to plan a **catch-up immunisation** programme






*Immunisation rates in New Zealand continue to increase, especially among Māori and Pacific children. However, there is still room for improvement, as latest figures show that in 2011 one in ten children did not complete their immunisation schedule. Misinformation about vaccines, lack of information or poor understanding of the diseases being immunised against, barriers to accessing health services and recent immigration to New Zealand all contribute to incomplete or absent immunisation histories. It is important to actively identify children, and adults, who have missed immunisations and plan and implement a catch-up programme.*

## Immunisations in New Zealand

Immunising against communicable diseases has been a health priority in New Zealand since 1926 when the diphtheria vaccine first became available in orphanages and some schools. Fourteen vaccines are now routinely offered on the New Zealand immunisation schedule, which is reviewed every two years, and new vaccines added as appropriate. The result has been a significant decline in all vaccine preventable diseases in New Zealand over the last century.<sup>1</sup> Immunisation coverage in New Zealand has risen significantly since vaccination for children became a PHO Performance Programme (PPP) indicator in January, 2006 (a funded indicator from July, 2008). Achievement rates for the PPP indicator “age-appropriate immunisations completed by age two years” have risen from approximately 45% in 2007 to 92% in March 2012.<sup>2</sup> Importantly, the gap between the high need group (Māori and Pacific Peoples and people living in decile 9/10 socioeconomic areas) and the total population has narrowed to only 0.8%. For some immunisations, Māori and Pacific peoples have a significantly higher uptake than the New Zealand population as a whole. For example, the immunisation rate for human papillomavirus in 2010 was 52% for the total population, but 57% for Māori and 70% for Pacific peoples.<sup>3</sup> This stands as an example of the effectiveness of well-targeted, well-planned campaigns.

## From ambiguous acronym to deadly disease

- BCG** – Bacille Calmette-Guérin (Tuberculosis)
- DTaP** – Diphtheria, Tetanus and Pertussis
- HepB** – Hepatitis B
- Hib** – Haemophilus influenza type b
- HPV** – Human Papillomavirus
- IPV** – Inactivated Polio
- MenACWY** – Meningococcal
- MMR** – Measles, Mumps and Rubella
- PCV** – Pneumococcal conjugate
- Pneumo\_ps** – Pneumococcal polysaccharide
  - Td** – Tetanus and Diphtheria (for older children and adults)
  - Tdap** – Tetanus, Diphtheria and Pertussis (used for the age eleven vaccination)

 Many antigens are given as combined vaccines to reduce the number of injections required, particularly in younger children, e.g. “DTaP-IPV-Hib-HepB” and “DTaP-IPV”.

### *la su'i tonu le mata o le niu*

*To go about an undertaking in the proper way – SAMOAN*

### *Māu anō e rapu he oranga*

*Your livelihood in your own hands – MĀORI*

Despite evidence of increasing success, there is still opportunity to improve. The United Nations Children's Fund and the World Health Organisation rank New Zealand 24<sup>th</sup> out of 25 developed nations for immunisation rates (i.e. the second worst performer).<sup>4</sup> At present, one in ten children has not completed their age-appropriate immunisation schedule by their second birthday.<sup>2</sup> Immunisations may be missed completely or not received on time, leaving children at risk, particularly of pertussis and pneumococcal disease, when they are at their most vulnerable. In addition, recent immigrants to New Zealand, particularly children, may require complete vaccination courses, boosters, or catch-ups in order to be compliant with the New Zealand Immunisation Schedule.

### Identifying patients who require a catch-up

Practices are encouraged to implement processes to regularly assess the immunisation status of patients, particularly young children. A child that has not had sufficient vaccinations can be identified by checking patient records, accessing the National Immunisation Register and asking parents/caregivers. If vaccination is declined for a child by parents/caregivers, practitioners should set a reminder in the patient's record to periodically revisit this decision. Childhood immunisation Outreach Services can also be utilised.

For individuals or families who have recently immigrated, ask about immunisation record cards or child-health booklets. Only documented immunisations should be used to assess the patient's immunisation status.

### Assessing what vaccines are required

All children and young people aged less than 16 years should have a minimum set of immunisations (Table 1).<sup>1</sup> Adults will also benefit from a catch-up programme, however, many vaccines are not funded in people aged over 16 years, such as PCV and MenACWY. The focus of a catch-up programme is to deliver the required antigens, in the required number of doses, as quickly as possible. An antigen is the disease unit that is included in a vaccine, e.g. the MMR vaccine contains antigens for measles, mumps and rubella. People who have been immunised in other countries may not have received the same vaccines as those administered in New Zealand, but they may still have received the recommended antigens. For example, the OPV, oral polio virus vaccine, is used in Fiji, rather than the DTap-IPV-Hib-Hep vaccine used in New Zealand, which contains the inactivated polio virus. Both vaccines contain the same antigen, the polio virus, so a child immunised with the OPV in Fiji does not require the IPV when being caught up in

**Table 1:** Recommended total doses of priority immunisations, by age<sup>1</sup>

Vaccine antigen	Age at immunisation commencement			
	< 12 months	12 – 48 months	4 – 7 years	7 – 16 years
DTaP	3	3	4	
Tdap or Td <sup>+</sup>				4 <sup>^</sup>
IPV	3	3	4	3
Hep B	3	3	3	3 <sup>~</sup>
Hib	3	1	1	
PCV <sup>*</sup>	3	2	2	
MMR		1	2	2
HPV <sup>#</sup>				3

+ Diphtheria and tetanus with or without pertussis


<sup>^</sup> Two years required between doses three and four. After age seven years use Td for the initial course and Tdap for the age 11 years booster. Tdap can be used for the full course to offer greater pertussis protection but is not funded

<sup>~</sup> Two doses may be given if commenced in children aged 11 – 16 years; use HBVaxPro 10 mcg, second dose four months after the first

<sup>\*</sup> Ideally use the same-valent vaccine for all doses. A minimum of eight weeks is required between doses if commenced after age 12 months

<sup>#</sup> Recommended age is age 12 years. Funded catch-up available up to age 20 years. Females only

New Zealand, although they may still require the rest of the antigens in the DTaP-IPV-Hib-Hep vaccine.

 The World Health Organisation regularly updates their “vaccine-preventable disease monitoring summary”, which has information on immunisation schedules for other countries. For further information, or to check the schedule of a particular country, visit:

[www.who.int/immunization\\_monitoring/data/en/](http://www.who.int/immunization_monitoring/data/en/)

**If the schedule has been interrupted or is partially complete by New Zealand standards**, it is not necessary to repeat prior doses or start the schedule again.<sup>1</sup> Subtract the number of received doses of each antigen from the number required (Table 1) and administer the remaining doses with the appropriate timings.

Note that the maximum number of doses that a child needs is reduced if they begin a vaccination catch-up programme when older, due to a greater immune response or a reduced risk of acquiring severe disease with increasing age (Table 1).


**If the immunisation history of a person is unknown, undocumented or they have not received any previous vaccinations**, a full course of age-appropriate vaccinations should be given. In general, there are no significant adverse effects associated with receiving extra doses of a vaccine. The exceptions are the tetanus and diphtheria vaccines, which are associated with an increased risk (0.5 – 7%) of local and systemic adverse effects, such as localised swelling and fever <39°C.<sup>5</sup> Where there is no documentation of diphtheria or tetanus vaccination, catch up doses should still be given, although greater monitoring for adverse reactions is necessary.

**The New Zealand Immunisation Schedule** (Table 2, over page) should be followed once a child is up to date with their immunisations for their age.

### **Additional immunisations may be required for recent immigrants**

Most children who have immigrated from developing countries will have received the tuberculosis vaccine, three doses of the diphtheria/tetanus/pertussis vaccine and the oral polio vaccine by age six months and one dose of some form of the measles vaccine by age 15 months.<sup>1</sup> They are unlikely to have had haemophilus influenzae type B, pneumococcal, HPV or the full measles/mumps/rubella (MMR) vaccines. In some cases, MMR may have been given to infants aged less than one year, but this should not be counted towards the New Zealand schedule.

In addition to the vaccines on the New Zealand immunisation schedule, people who have recently immigrated to New Zealand may require additional vaccines, based on their risk and history:

- Tuberculosis vaccine is funded for people emigrating from a country with greater than 40 infections per 100,000 people, e.g. Vanuatu, who do not have documented history of the vaccine.  Data on the prevalence of tuberculosis can be found at: [www.who.int/topics/tuberculosis/en/](http://www.who.int/topics/tuberculosis/en/)
- Varicella vaccine is recommended, but unfunded, for adults and children born in tropical countries. The incidence of varicella is lower in most tropical countries than it is in New Zealand, so natural immunity rates are likely to be lower. This is particularly important for women of child-bearing age, and immunisation should be encouraged where finances allow. The vaccine costs approximately \$90 per dose.
- Hepatitis B vaccine is extremely important in people who have immigrated to New Zealand from South or East Asia, where prevalence is between 10 – 15% of the population. It is recommended that all children aged less than 16 years be vaccinated against hepatitis B as per the New Zealand Immunisation Schedule. In addition, if a member of the household is found to be a hepatitis B carrier, the entire household should be screened and immunisation offered to those who are non-immune, regardless of age

## **How to deliver the required vaccines**

### **Spacing doses of the same vaccine**

An accelerated programme for a primary vaccine course, which does not adhere to the spacing used in the standard immunisation schedule, can be used when catching up a child who has missed doses. The minimum time between administering doses of the same vaccine should be four weeks, regardless of the vaccine.<sup>1</sup> Boosters are given a minimum of four to six months after a primary course. The spacing of boosters ranges from months to years depending on the vaccine and the schedule. In general, a booster will be the third or fourth scheduled dose. For example, the fourth dose of pneumococcal conjugate vaccine on the infant schedule is a booster dose and the third dose of HPV vaccine is a booster dose (see Tables 1 and 2).<sup>1</sup>

### **Administering multiple vaccines in one consultation**

Multiple vaccines can be given in a single consultation. It is recommended that practitioners follow the New Zealand

**Table 2:** The New Zealand immunisation schedule<sup>1</sup>

Vaccine	Brand name	Schedule										Notes
		6 weeks	3 months	5 months	15 months	4 years	11 years	12 years	45 Years	65 Years		
Bacille Clamette-Guérin	BCG vaccine											Babies at risk and specific individuals as a result of TB follow-up
Hexavalent diphtheria, tetanus toxoid with acellular pertussis, Hib, Hep B and IPV	Infanrix-hexa	●	●	●								
Diphtheria and tetanus toxoid with acellular pertussis, and inactivated polio	Infanrix-IPV					●						
Hepatitis B	HBvaxPro											High-risk groups
Haemophilus influenzae type b	Act-HIB				●							
Human papillomavirus (HPV) (females only)	Gardasil							●				Three doses, catch-up programme in place
Influenza	Fluarix or Fluvax										●	High risk groups, pregnant women; required annually
Inactivated polio vaccine (IPV)	IPOL											High-risk groups
Meningococcal ACWY	Mencevax ACWY or Menomune ACYW-135											High-risk groups
Measles, mumps and rubella (MMR)	MMR II				●	●						
Pneumococcal conjugate vaccine (PCV)	Synflorix	●	●	●	●							High-risk groups and in outbreak (Prevenar 13)
Pneumococcal polysaccharide	Pneumovax 23											High-risk groups and in outbreak
Tetanus and diphtheria toxoid of older children/adults	ADT Booster									●	●	
Tetanus, diphtheria toxoid and acellular pertussis	Boostrix							●				High-risk groups

schedule (Table 2), as closely as possible when applicable, however, if several vaccines need to be caught up, it is safe to give more than one in any single session. Each vaccine should be given with a separate syringe, at a different site.<sup>1</sup> If necessary, two vaccines can be given in the same limb, separating injection sites by at least 2 – 3 cm. Spacing vaccines over several visits, to avoid multiple injections in one consultation, is not recommended, as this increases the chance of incomplete vaccination.<sup>1</sup>

**Use combination vaccines** to reduce the number of injections given, unless contradicted by age. For example, a child aged six years should have had four DTaP, four IPV, three Hep and one Hib antigens. These can be given as three combined DTaP-Hib-Hep-IPV vaccines and one DTaP-IPV vaccine, as is done in the New Zealand Schedule.

**Live vaccines**, such as MMR or varicella vaccines, may be administered in the same consultation. If this is not possible, different live vaccines should be administered a minimum of four weeks apart to avoid possible reduced immune response.<sup>1</sup>


 The New Zealand Immunisation Schedule has further advice and examples on how to plan a catch up programme, see: [www.health.govt.nz/publication/immunisation-handbook-2011](http://www.health.govt.nz/publication/immunisation-handbook-2011) or contact 0800 IMMUNE or your immunisation co-ordinator

## Eligibility for funded vaccines for immigrants

In New Zealand, eligibility for funded health and disability services is limited to:

- New Zealand citizens (including associated states and territories: Cook Islands, Niue and Tokelau)
- Holders of resident visas or permanent resident visas
- Registered refugees
- All children aged under 17 years of a New Zealand citizen, or New Zealand resident

Citizens of Fiji, Samoa, Tonga, Kiribati, Tuvalu and Vanuatu may be eligible for funded health care through a special agreement between Governments.

 For further information on patient eligibility, or special agreements, visit: <http://www.health.govt.nz/new-zealand-health-system/publicly-funded-health-and-disability-services/services-pacific-island-people>



## PHO Performance Programme indicators for immunisations

The PHO Performance Programme (PPP) currently has three funded immunisation based indicators; "Age appropriate vaccinations for eight month olds" (a new indicator from 1 July 2012), "Age appropriate vaccinations for two year olds" and "65 years + influenza vaccination coverage".

**Age appropriate vaccinations for 8 month olds** indicator is the percentage of children who are fully immunised for their age, by age eight months.

The programme goal for indicator is: for at least 85% of the enrolled patient population aged under eight months to have received the full set of vaccines included in the immunisation schedule.<sup>2</sup>

N.B. This goal will increase to > 90% by 1 July 2014 and >95% by 31 December 2014.

Performance is calculated each quarter, by the number of children who turned eighth months in the previous quarter, who have received the full complement of immunisations, divided by the total number of children who turned eight months in the previous quarter, enrolled at that practice.<sup>2</sup>

**Age appropriate vaccinations for 2 year olds** indicator is the percentage of children who are fully immunised for their age, by age two years.

The programme goal for the indicator is: for at least 95% of the enrolled patient population aged under two years to have received the final dose of the full set of vaccines included in the immunisation schedule.<sup>2</sup>

Performance is calculated each quarter, by the number of children whose second birthday fell in the previous quarter, who have received the full complement of immunisations, divided by the total number of children whose second birthday fell in the previous quarter, enrolled at that practice.<sup>2</sup>

**Sixty-five years+ influenza vaccination coverage** indicator is the percentage of all people aged 65 years or over who have received an annual influenza immunisation.

The programme goal for influenza vaccination is: for at least 75% of the enrolled patient population aged 65 years or over to have received the influenza vaccine during the most recent influenza campaign.<sup>2</sup>

Performance is calculated by the number of people aged 65 years or over who have received their immunisation by the final date for the most recent campaign, divided by the total number of people aged 65 years or over enrolled at that practice.<sup>2</sup>



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Addressing **weight issues**  
in **young people and**  
**families** in New Zealand



*Māori and Pacific peoples are disproportionately affected by obesity in New Zealand. As obesity increases the likelihood of developing diabetes and cardiovascular disease (CVD), it is critical to address weight issues early, well before CVD risk assessments begin. Talking about weight can be difficult but it is essential to help address the growing prevalence of obesity in New Zealand.*

## One in five children in New Zealand are overweight

New Zealand is one of the most overweight developed nations in the world, with more than one in three adults and one in five children classified as overweight or obese.<sup>1,2</sup> The proportion of people who are overweight or obese is higher among Māori and Pacific peoples than Europeans in New Zealand. This disparity begins from a young age – the percentage of children in the 2006/7 National Health Survey (the most recent national data) who were obese, was 23.3%, 11.8% and 5.5% for Pacific, Māori and European children respectively.<sup>2</sup> This results in increased incidences of obesity, type 2 diabetes and cardiovascular disease (CVD) among Māori and Pacific adults.<sup>3,4</sup>

It is recommended that CVD risk assessment and diabetes screening begin at age 35 years for Māori and Pacific males and age 45 years for Māori and Pacific females, however, lifestyle issues such as weight, diet and exercise should be addressed well before this age.

## Discussing and monitoring weight should be a core part of general practice care

Most children will be weighed and have their height recorded regularly from birth until age five years as part of the Well Child/Tamariki Ora programme. Regular measurement of height and weight after this age should remain a part of routine care in general practice.<sup>5</sup>

A flexible approach to managing weight should be applied for children aged less than five years. Children aged over five years should be eating a healthy, balanced diet, consistent with adult recommendations, and management should begin for those who are overweight.<sup>6</sup> In older adolescents and adults, management should become increasingly more stringent, as the likelihood of complications from obesity increases with age.<sup>7,8</sup>

## Use BMI to measure adiposity and waist circumference to measure risk

Body mass index (BMI) and waist circumference are two practical, indirect measures of obesity, and the risk associated with obesity.

BMI is the accepted method of measuring adiposity in both adults and children.

$$\text{BMI} = \text{Weight (kg)} / \text{Height (m)}^2$$

In children, BMI calculations need to be adjusted for age and gender using World Health Organisation standardised guides. Most patient management systems will have an age-standardised BMI chart to help interpret figures for children.

In children and adolescents:<sup>5</sup>

- Overweight is classified as BMI >85<sup>th</sup> percentile
- Obese is classified as BMI >95<sup>th</sup> percentile

In people aged over 20 years:<sup>6</sup>


- Overweight is classified as BMI >25 kg/m<sup>2</sup>
- Obese is classified as BMI > 30 kg/m<sup>2</sup>

BMI should not, however, be used in isolation as a measure of unhealthy weight. BMI is less accurate in Māori, Pacific and South and East Asian people.<sup>9,10</sup> In practice, a slightly higher threshold for BMI values can be applied in Māori and Pacific peoples and slightly lower threshold in South and East Asian peoples.<sup>9</sup> In addition, people who have a higher than normal degree of musculature are likely to be classified as overweight or obese if assessed using BMI alone.

**Waist circumference** can be used to further quantify risk and to assess the progress of interventions. Central obesity, seen

as an increased waist circumference, is a proxy measure of intra-abdominal, or visceral, fat.<sup>11</sup> Central obesity, as opposed to peripheral obesity (excess fat on buttocks, hips and thighs), is a risk factor for cardiovascular disease and type 2 diabetes.<sup>6</sup> Measurements are taken at the mid-point between the iliac crest and bottom rib or around the umbilicus if these are obscured. Risk is increased with a waist size greater than 102 cm in men and 88 cm in women.<sup>11</sup> In children, ideal waist circumference is more difficult to assess, but a circumference approximately half that of the patient's height can be used.

Additional measurements, such as waist-to-hip and waist-to-height in adults, are of limited clinical use if BMI and waist circumference are used regularly.<sup>11</sup>

 For growth, height and BMI charts for children see: [www.health.govt.nz/publication/clinical-guidelines-weight-management-new-zealand-children-and-young-people](http://www.health.govt.nz/publication/clinical-guidelines-weight-management-new-zealand-children-and-young-people)


## Raising the issue of weight

Talking about weight can be uncomfortable for clinicians, patients and their families. However, obesity is one of the most significant preventable health problems in New Zealand, and clinicians have a duty of care to discuss it with patients, as with any other health issue, such as smoking cessation or cardiovascular disease risk.

After calculating a BMI value that is high, initiate a discussion on unhealthy weight. One way to lead into a discussion is to use BMI charts to indicate to the patient, or in the case of a child, to the family, that they are outside the healthy range. Consider using terms such as “unhealthy weight”, “overweight” and “weight issue”, while avoiding terms such as “obese” and “fat” as these may be stigmatising. Care should be taken to tailor the discussion to the individual patient, taking into account the sensitive nature of the topic and the discrimination that most overweight people regularly face. Evidence suggests that patients and families are often highly motivated to address and rectify their weight issues, and in many cases expect clinicians to raise the subject.<sup>12</sup>

It may be helpful to ask the patient (and family if appropriate) about their views of their own weight, and any possible reasons for weight gain.<sup>6</sup> Discuss the drivers that lead to obesity, such as barriers to eating well (e.g. perceived expense of healthy foods, lack of time to prepare meals) and genetic predispositions. However, while it is acceptable to acknowledge that obesity has a genetic or societal component, this does not mean that it is unavoidable or untreatable.

Reinforce the range of benefits from being at a healthy weight and emphasise that support is available to help them achieve weight loss goals.

 For resources and success stories that can be shared with patients, see:

[www.oneheartmanylives.co.nz/tane-stories.html](http://www.oneheartmanylives.co.nz/tane-stories.html)

## Perform a weight “risk assessment”

If a person is at an unhealthy weight, discuss and consider their personal and family history (e.g. family history of premature cardiovascular disease, dyslipidaemia, type 2 diabetes or hypertension) and any relevant risk factors that may be contributing to their excess weight, including any consequences of their current weight.<sup>5</sup>

Relevant risk factors for obesity:

- Parental obesity (for overweight children)
- Sedentary lifestyle
- A history of gout, musculoskeletal pain or other conditions that may limit activity

Associated lifestyle factors:

- The patient or family's usual diet (especially high-sugar drinks and take-away foods)
- Their usual exercise time (outside play-time is a suitable proxy in young children, sports for older children, sport and biking/walking to work for adults)
- Their usual sedentary time (ask about “screen time”; television, console or computer gaming and internet time)
- Cultural aspects that may increase risk, e.g. large group meals after church gatherings, weddings or funerals

Adverse consequences of obesity that may include:

- Psychosocial problems, e.g. low self esteem, behavioural problems, anxiety, depression, bullying
- Insulin resistance and/or type 2 diabetes
- Orthopaedic problems, e.g. joint problems
- Cardiovascular conditions
- Respiratory conditions, e.g. snoring, obstructive sleep apnoea, daytime somnolence
- Reproductive issues, e.g. irregular periods, polycystic ovary syndrome
- Gastrointestinal problems, e.g. fatty liver, cholelithiasis
- Other co-morbidities such as breathlessness on exertion, tiredness, excessive sweating

Efforts or actions already taken to control weight:

- Dietary interventions
- Exercise regimens
- If unsuccessful, reasons why

Medicines that could be contributing to an increase in weight such as:

- Antidepressants, atypical antipsychotics (particularly olanzapine), hormonal contraceptives, corticosteroids, and anticonvulsants, e.g. sodium valproate

Perform a clinical examination that, depending on the age of the patient, may include:<sup>5</sup>

- Blood pressure
- Heart rate
- Check for the presence of intertrigo (inflammation and rash of body folds), hepatomegaly (enlarged liver), acanthosis nigricans (brown to black, velvety hyperpigmentation of the skin, usually found in body folds, that indicates insulin resistance)
- Check for co-morbidities (e.g. poorly controlled asthma in a child, gout in adults) that may affect the patient's ability to exercise

### The role of laboratory testing

The value of laboratory investigation in children and adolescents who are overweight is limited, as the results are unlikely to alter how they are managed. However, the threshold for testing decreases in older age-groups, as the likelihood of co-morbidities increases and management options change.<sup>8</sup> In people who are overweight, testing should be considered well before the start of formal cardiovascular and diabetes risk assessment (i.e. at age 35 for Māori and Pacific males and age 45 for Māori and Pacific females).

Consideration of laboratory investigation in overweight children and adolescents should be based on the patient's age, clinical examination, co-morbidities and family history of type 2 diabetes or dyslipidaemia. Early testing for diabetes is likely to be beneficial for at-risk individuals from a young age. The recommended first-line test for most people is HbA<sub>1c</sub>, however, fasting glucose and in some cases, oral glucose tolerance testing may be required because HbA<sub>1c</sub> is less reliable in children and adolescents.<sup>13</sup>

Laboratory testing for diabetes is recommended in children and adolescents with a BMI greater than the 95<sup>th</sup> percentile

who have any of the following features:

- Are of Māori, Pacific, or South or East Asian ethnicity
- Have a family history of early onset type 2 diabetes (including maternal gestational diabetes)
- Show signs of insulin resistance, e.g. acanthosis nigricans

Where appropriate laboratory investigation should include:

- Serum creatinine – note that the traditional means of estimating eGFR in adults (the MDRD equation) is not applicable in children
- Lipid profile (non-fasting is adequate)
- Liver function tests if fatty liver is suspected, i.e. obesity and hepatomegaly
- TSH if there is a clinical suspicion of hypothyroidism


### Conditions to be aware of in overweight and obese young people

There is an association between obesity and some very rare endocrine disorders in children. These conditions, such as Cushing's syndrome, are characterised by reduced height, central obesity, rounding of the face and a wide range of other non-typical symptoms. If suspected, the child should be referred to a paediatrician.

### How to manage patients who are overweight or obese

Weight should be initially managed through diet and lifestyle changes, in conjunction with community-based health and education programmes. The intensity of interventions should be based on the presence of co-morbidities and the age of the patient, as risk of weight-related complications increases with age.<sup>6</sup> For children, maintenance of their current weight should be the focus, as this allows the child to "grow into their weight". For adolescents and adults a weight loss goal of 0.5 – 1 kg per week should be used.<sup>6, 14</sup> "Green prescriptions" are useful for stating goals and how to achieve them.

A plan that enables and encourages greater knowledge of health and weight, a healthier diet, a healthier environment and an increased level of activity, and that includes the family/whānau, particularly the person who usually does the shopping and prepares meals, will help most people address their weight.

 For further information see: "Promoting healthy lifestyles for Pacific peoples", BPJ 32 (Nov, 2010).

## Dietary approaches

The goal of dietary interventions to assist weight control should be to educate patients and their families about healthy food choices and encouraging eating together.

Start by asking the patient where they think they could make improvements to their diet, and then work together to improve the family's diet plan and knowledge about a healthy diet. A child's eating habits are learned at home. The amount of food they are served per meal becomes the amount they learn to feed themselves. A Cochrane review found that educating children aged under 12 years about healthy food was more effective for weight-loss, in the long term, than actively reducing the amount of energy dense foods the children consumed.<sup>4</sup>

Specific advice should include:<sup>3,5</sup>

- Eat together as a family at the table, as often as possible
- An appropriate meal size is the size of the person's two cupped hands, an appropriate serving size is the palm of one hand (this works well for both adults and children)
- Eat breakfast every morning and make healthy choices, e.g. sugar-free cereals rather than toast with butter
- Eat a variety of foods and include whole grains and cereals, fruits and vegetables, lean meats and fish and low-fat dairy products wherever possible
- Reduce intake of foods high in carbohydrates, such as potatoes, white bread, taro and rice
- Eat regular smaller meals, and avoid a large meal at night, to help to reduce hunger and maintain a healthy metabolism
- Water and low-fat milk should ideally be the only drinks allowed (children aged under two years require full fat milk)
- Reduce alcohol intake
- Reduce the amount of take-away foods consumed and select healthier options
- Avoid snacking, but if hungry between meals choose healthy options such as fruit, vegetables or low-fat yoghurt

Provide, or direct to, resources the patient can take home or access online. Where possible, consider referral to a dietitian, although waiting times and cost may be an issue for some families.


 For further information and printable resources, refer patients to: [www.healthed.govt.nz/health-topic/healthy-eating](http://www.healthed.govt.nz/health-topic/healthy-eating)

## Changing activity levels

It is recommended that children aged over five years undertake 60 minutes exercise every day (active play or sports) and children aged less than five years be active for a minimum of three hours (moving, walking). Adults should undertake a minimum of 30 minutes of moderate to vigorous exercise per day, e.g. jogging, brisk walking, kilikiti (traditional ball game, similar to cricket), waka ama (outrigger canoe racing).<sup>5</sup> Activity can be broken up over the course of the day into short "bursts". People who have previously been sedentary, may need to "start slow" and work their way up to the goal amount of activity. Any exercise is better than none. Encourage parents of overweight children to be healthy role models and to make exercise a regular part of every day.

Specific advice to help increase activity levels should include:<sup>5,15</sup>

- Limit "screen time" to two hours per day or less
- Include the whole family in activities wherever possible, particularly where cultural activities are available such as church group activities, dancing, mahinga kai (traditional food gathering activities) and kapa haka (Māori performing arts)
- Simple, inexpensive options should be suggested first, such as a going for a walk, kicking a ball around or walking to school or work
- Include a mix of muscle-strengthening (swimming, playing at a playground), bone-strengthening (running) and aerobic activities (touch rugby, cycling)
- For people who have not previously been active: "prescribe" 5 – 10 minute sessions of light exercise (50 – 75% of peak exertion), and work up to the recommended daily minimum<sup>16</sup>

 For further information refer patients to: [www.r2r.org.nz](http://www.r2r.org.nz) and [www.sparc.org.nz](http://www.sparc.org.nz)

## Sleep is an important part of weight loss

Sleep is very important in maintaining a healthy weight (Table 1). A New Zealand study found that in children aged less than five years, each additional hour of nightly sleep was associated with a BMI reduction of 0.48 kg/m<sup>2</sup> by age seven years.<sup>17</sup> Similarly, a Canadian study found that getting less than 10 hours of sleep per night was independently associated with increased BMI in a cohort of children.<sup>18</sup> A good indicator of children and adolescents receiving sufficient sleep is how long they sleep-in on the weekends; if the child is sleeping considerably more on the weekends than during the week they are likely to be working off accumulated "sleep debt" and should be enabled to sleep more during the week.

**Table 1:** The recommended daily sleep requirements for different age groups<sup>17-19</sup>


Age group	Recommended daily sleep requirements
< 1 year	14 – 15 hours
1 – 5 years	12 – 14 hours
5 – 15 years	10 – 11 hours
15 -19 years	9 – 10 hours
Adults	7 – 9 hours

### Behavioural approaches

Behavioural approaches to weight management reinforce healthy lifestyle and diet choices and are important in maintaining a healthy weight once it is achieved. Behavioural changes include actions to identify why a person might over-eat, developing a routine for eating meals, activity and sleeping, learning more about healthy food and encouraging self-monitoring and goal setting.

Specific advice should include:<sup>5</sup>

- Use activities such as grocery shopping as an opportunity to educate children about healthy food choices (or for children to educate their parents)
- Encourage achievable goal-setting practices, e.g. "I will do five minutes of exercise per day for week one, ten minutes per day in week two, and keep increasing each week until my goal level of 'X' minutes is achieved" or "I will replace fizzy drinks with water or milk, except on Sundays, when I am allowed to have one can of zero-sugar fizz". These should then lead into longer term goals with the aim of a healthier weight and improved overall health
- Eat healthy snacks before going to functions, such as church groups, weddings, funerals, to help avoid overeating on less healthy options
- Discuss "danger times" and triggers for snacking, such as boredom, sitting in front of the TV and stress and suggest ways to counteract them, such as eating before going supermarket shopping, finding hobbies to reduced boredom or using exercise rather than food to combat stress
- Suggest the use of appropriate rewards not based on food for when the child meets a goal, e.g. going to a water-slide or visiting the beach

 For further information refer patients to: [www.feedingourfamilies.org.nz](http://www.feedingourfamilies.org.nz)

### Refer to community support groups whenever they are available

Peer support is a powerful tool in weight management, as is seen with many other medical issues, such as smoking cessation.<sup>5, 6</sup> Support from family and friends can also be valuable. Anecdotal evidence suggests that when another person is responsible for the weight loss of a close friend or relative, and vice versa, their commitment and success with weight loss is greater.

Clinicians should become familiar with community projects and groups that can help provide culturally appropriate advice, education and support to people trying to maintain a healthy weight.

Where community support is not available, consider organising a peer support group within the general practice clinic. This may also involve sessions from dietitians, diabetes clinicians or community leaders.

### Continue support, and where necessary, refer


For children aged over five years who are at an unhealthy weight, weight and height checks every three months are recommended until the child returns to a healthy weight.<sup>5</sup> Adults at an unhealthy weight require regular monitoring, but greater flexibility is acceptable. Regular, ongoing visits to a practice nurse for lifestyle and dietary advice are often beneficial and encourage patients to remain motivated. For many cultures, knowing the person who is giving medical advice is important and without this rapport most patients will be polite, but will not question clinicians or gain a better understanding, leading to a lack of change.

Discussion with a paediatrician may be required for children and adolescents if:<sup>15</sup>

- The underlying cause of unhealthy weight needs to be assessed
- The young person has significant co-morbidities or needs that cannot be managed in primary care

If lifestyle and dietary methods fail, pharmacological management may be considered in adults, however neither of the two available medicines (orlistat and phentermine) are

funded. Weight-loss medicines are only an adjunct to lifestyle changes and produce only moderate reductions in weight. Weight is often regained when the medicine is stopped if other lifestyle factors have not changed. Referral to a surgeon may be indicated in adults if bariatric surgery is being considered (usually if BMI > 40 or BMI > 35 and there is a weight related medical condition).

 For further information on the pharmacological management of obesity, see: "Medicines for weight loss – do they work?", BPJ 27 (April, 2010).

### *O le upega tautau, 'ae fagota*

*If at first you don't succeed try, try and try again – SAMOAN*

### *Tama tu tama ora, tama noho tama mate*

*An active person will remain healthy while a lazy one will become sick – MĀORI*

## Healthy mums, healthy babies: nutrition in pregnancy


Prenatal nutrition is an important aspect of child health. A healthy diet, with sufficient, but not excessive, energy intake, and higher nutrient, vitamin and mineral intake is required prior to and during pregnancy. Infants of overweight mothers have been shown to have a higher average birth-weight, a higher rate of peripartum complications, and a higher incidence of type 2 diabetes and obesity later in life.<sup>20</sup>

Māori and Pacific women, in general, have a higher BMI prior to pregnancy and experience greater weight gain during pregnancy than European women.<sup>21</sup> The infants of Pacific women in particular weigh significantly more than European and Māori infants.<sup>21</sup>

Women who are pregnant, or intend to become pregnant, should be encouraged to eat a healthy, balanced diet. It is not necessary to "eat for two" – nutritional intake should be based on hunger. As a general guide, food intake may be increased by approximately 10% from the second trimester onward. Recommended weight gain during pregnancy varies based on pre-pregnancy weight, with less weight gain recommended in women with initially higher BMIs.

Folic acid supplementation is essential before and during pregnancy and iodine supplementation during pregnancy. Iron supplementation is recommended in some women in the second and third trimesters. These supplements may be prescribed fully subsidised, for pregnant women.

Women who are pregnant should be encouraged to include regular, moderate physical activity for 30 minutes per day.<sup>21</sup> Most exercise is acceptable during pregnancy, though women who are pregnant should be advised to avoid: exercises involving lying flat on the back, contact sports, scuba-diving and sports with a high risk of falling such as skiing, cycling or horseback riding. Women who are breast feeding should also be encouraged to maintain a moderate level of activity, however, nutritional intake may need to be adjusted to ensure that if the mother is aiming to lose weight, she is not doing so too rapidly, as weight loss of more than 0.5 kg/week can affect maternal health and milk production.<sup>21</sup>

 For more information see: "Nutrition and supplements during pregnancy", BPJ 18 (December, 2008).

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# New service model for community pharmacy

*There are significant and far reaching changes that occurred with the implementation of the new Pharmacy Services Agreement, which started on 1 July 2012. It is important that clinicians understand what changes are occurring.*

## Did I know anything about this?

### General Practice has been involved in the development of the new service model

Community pharmacists, DHBs, pharmacy sector agents, PHARMAC and the wider health sector have developed the new service model over the past two years. A steering group, which included a representative of the RNZCGP, met every six weeks until November 2011. Meetings have been held with the GP Leaders Forum, the Community Pharmacy Leaders Group, RNZCGP, NZMA, GPNZ and the Pharmaceutical Society to seek feedback on the proposed changes. All organisations are very supportive of the approach.

### Why change?

Under the previous model, pharmacies were paid on volumes of medicines dispensed. The resulting expenditure growth

in pharmacy dispensing costs has become unsustainable, and the linking of funding to volumes had little relationship with patient outcomes. In 2009/10 the total cost of dispensing fees was \$320 million, of which \$82 million was spent on dispensing medicines under the Close Control Pharmaceutical Schedule Rule (now referred to as "Dispensing Frequency"). Of the \$82 million spent on Close Control, more than half (\$46 million) was spent on weekly dispensing.

The Close Control regulation has provided a mechanism for pharmacies to dispense more frequently to some patients. However, it appears that there is currently an element of over-use of this regulation. Aside from trialling new medicines, weekly dispensing should be an exception, rather than a rule, e.g. for people with safety issues.

The new funding model is designed to be patient-centred and will allow pharmacists to better tailor medicines adherence and compliance services to patients, particularly those with multiple co-morbidities and taking many medicines. Pharmacists will also be encouraged to work with doctors and nurses and become part of the health care team.

The key strategic drivers for the new model include:


- The desire to give pharmacists incentives to better use their clinical medicines management expertise
- Re-orienting community pharmacy services around the patient and facilitating increased integration with prescribers across all settings of care, but in particular with general practice
- The need to ensure that the funding for community pharmacy is linked to patient outcomes
- The requirement for the funding model to be sustainable



## In practical terms what will the pharmacy be doing?

The key activity is that Pharmacists will now be identifying patients who qualify for focussed care, under the Long Term Conditions (LTC) rules. These patients are likely to have complex co-morbidities and/or have difficulties with medicines compliance. An objective assessment tool to aid Pharmacists in identifying patients for LTC has been developed and piloted in 30 pharmacies. General Practitioners can refer patients to be assessed for eligibility for the LTC service, by indicating this on a prescription, e.g. "Refer for LTC assessment", or by contacting the pharmacist directly. Other health professionals may also refer patients for LTC assessment, as can family members or the patient themselves.

Pharmacists will be funded to assist in the management of these patients, and one of the outcomes will be to determine the dispensing frequency of their medicines. If patients are compliant with their medicines and do not require special care, it is likely that the pharmacist will reduce the dispensing frequency. Patients who are currently dispensed medicines under Close Control can be maintained on this regimen ("Dispensing frequency") until they are assessed for eligibility for the LTC service. Pharmacists have until 31 January 2013 to assess these patients, so the change does not have to be immediate.


 The LTC assessment tool is available from:  
[www.centraltas.co.nz/DHBSHaredServices/Pharmacy/LatestRelease/tabid/242/Default.aspx](http://www.centraltas.co.nz/DHBSHaredServices/Pharmacy/LatestRelease/tabid/242/Default.aspx)

## As a doctor/nurse what do I have to do?

- In the first instance, understand the changes! It will be worthwhile inviting your local pharmacist(s) over to talk to them about how you can work together. Some areas are holding combined general practice/pharmacy meetings and we would encourage you to attend these.
- Recognise that you are no longer required to stipulate the frequency of dispensing, or write "close control" on your prescriptions; the pharmacist will determine the dispensing frequency.
- If you do wish to specify the dispensing frequency, you need to endorse the prescription with the frequency of supply, e.g. 7 days + 11 repeats. You do not need to write "Close Control".

## So what has not changed?

- There will continue to be a list of "safety medicines", such as tricyclic antidepressants and antipsychotics, which can be prescribed more frequently. The period of supply is determined by the prescriber. The prescriber should specify the maximum quantity to be dispensed at one time. Individual items do not need to be initialled. Codeine and buprenorphine with naloxone have been added to the safety medicines list. If you have co-prescribed other (non-safety) medicines, the pharmacist will determine if these should be dispensed at the same frequency as the safety medicines. No further notation is required for these medicines.

 The list of safety medicines is available from:  
[www.pharmac.govt.nz/cc](http://www.pharmac.govt.nz/cc)

- Some PMS systems have an "initial trial period" prescribing function. This system will remain in place. This means that you can prescribe, for example, one week of medicine to assess tolerance, and, if tolerated, the patient can return to the pharmacy to collect the rest of the prescription.
- Dispensing frequencies for residential care facilities will not change.

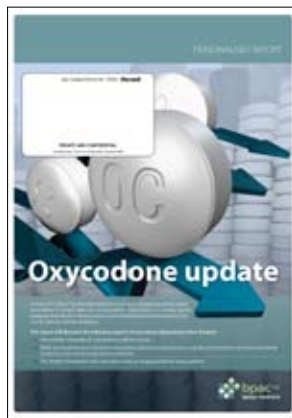
## What about compliance packaging (Blister packs)?

The previous Close Control regulation was frequently used as a mechanism to fund blister packs. That funding mechanism will no longer exist. Blister packaging will be available, but the cost for this is at the discretion of individual pharmacies.

## Where do I learn more?

Further information about the new Pharmacy Service Model and changes to dispensing frequency rules is available from:

- [www.pharmac.govt.nz/cc](http://www.pharmac.govt.nz/cc)
- [www.centraltas.co.nz/DHBSHaredServices/Pharmacy/LatestRelease/tabid/242/Default.aspx](http://www.centraltas.co.nz/DHBSHaredServices/Pharmacy/LatestRelease/tabid/242/Default.aspx)



### Oxycodone: are the right issues being addressed?

Dear Editor,

You wish to reduce the prescribing of oxycodone because it is expensive – fair enough, and you are putting the onus on General Practitioners to not prescribe this drug. But there are two problems that I doubt you can overcome:

1. Patients are being discharged from hospital on this drug and with their pain satisfactorily controlled. Is your programme aimed at re-educating hospital doctors, junior and senior, about the costs of this drug?
2. Oxycodone comes in a 5 mg long-acting form. The lowest dose of morphine is a 10 mg long-acting form. If you are an old person needing 24 hour pain relief, which option would you prefer to start on? It's obvious isn't it - 5 mg is safer than 10 mg, so start safe.

Your analysis of my prescribing and spending on this drug thus does not have any impact on me at all, expect to make me grumpy that the true issues are probably not being addressed.

*General Practitioner, Whangarei*

bpac<sup>nz</sup> first addressed the issue of inappropriate oxycodone prescribing in November 2009 (BPJ 24). At the time, oxycodone dispensings had been rapidly increasing, driven by a prominent marketing campaign. We challenged General Practitioners to consider the appropriateness of their prescribing of this medicine. Based on the feedback we received, the feeling was that most oxycodone prescriptions were being initiated in secondary care.

In May 2012 we raised the issue of oxycodone prescribing again. This time we included data on the origin of prescriptions, and found that 70% of oxycodone was being initiated outside of general practice. We acknowledge that this is mostly a “secondary care problem”, and we are currently looking at ways to deliver messages about appropriate oxycodone prescribing to secondary care, but the data also showed that 17% of prescriptions initiated in secondary care are continued in general practice and 30% of oxycodone is initiated in general practice. We encourage primary care clinicians to lead the way in the appropriate use of this medicine in the community.

Morphine can be prescribed as a safe first-line option for moderate to severe pain. Oxycodone is approximately twice as potent as morphine, therefore 5 mg controlled release oxycodone is equivalent to 10 mg long-acting morphine. Both medicines have similar safety profiles, although, there is some evidence that oxycodone has more addictive potential than morphine.

**Editor**

### Drivers of increased oxycodone use

Dear Editor,

Thank you for your personalised report on oxycodone useage (“Oxycodone update”, May 2012). I do recall your report of June 2011. I have not changed my prescribing habits in light of that report, or even your more recent update.

I feel there are two drivers to the increased use of oxycodone that you have not touched on in your report. One is the increased use of opiates for chronic non-malignant pain, particularly for those with chronic arthritis conditions. Many of these people are already taking, or intolerant of, anti-inflammatories and simple analgesics, and have been unable to access orthopaedic surgery in the public sector. These people get some measure of relief from opiate pain killers, with low risk of diversion or serious dependency.

The second feature which takes the prescription of oxycodone over morphine is PHARMAC's decision to choose a slow release morphine product which does not work. This left the field wide open for a medication that does work, and for the stated 12 hour duration. One can also argue that oxycodone has a fairly

*linear titration curve without any side effects, such as found with tramadol.*

*I trust this sheds some light on why oxycodone may be being initiated in general practice against your best wishes.*

**General Practitioner, Tauranga**

Increased use of strong opioids for chronic non-malignant pain would certainly explain the overall increase in opioids dispensed in New Zealand over recent years. As oxycodone prescriptions are the main contributor to this increase, it is safe to assume that people with chronic non-malignant pain are being prescribed oxycodone. However, depending on the patient, the condition being treated and individual psychosocial factors, prescribing a strong opioid may not always be appropriate, and oxycodone should be reserved for people who are unable to tolerate morphine.

There is limited evidence to support the use of strong opioids for chronic non-malignant pain, however, in practice sometimes they will be required, when "all else fails". The reason that morphine is chosen first-line is that it is equally effective as oxycodone, has a similar adverse effect profile, is less expensive, and there is evidence that oxycodone may have a greater addictive potential. The article "Oxycodone – what can primary care do about the problem?" in BPJ 44 (May, 2012) discussed the role of strong opioids for chronic non-malignant pain and included guidance developed by the Australian and New Zealand college of Anaesthetists

There are currently two fully subsidised forms of long-acting morphine – Arrow Morphine LA and m-Eslon. We are unaware of any published data that shows these medicines to be ineffective for a 12 hour duration. We are interested in any other anecdotal reports of this lack of effect. If this is a widespread consensus, then it would indeed go some way to explain why oxycodone may be prescribed in preference to morphine.

**Editor**

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