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Vulvovaginal Health
Travel Medicine
Cephalosporins
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Dr Amanda Oakley, Hamilton
Stewart Pye, Wellington
Associate Professor Marc Shaw, Auckland/Townsville
Dr Neil Whittaker, GP Reviewer, Nelson

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Contact us:
Mail: P.O. Box 6032, Dunedin
Email: editor@bpac.org.nz
Free-fax: 0800 27 22 69

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Vulnerable children and young people in New Zealand: a primary care approach

Over the past four editions of Best Practice Journal we have presented a series of articles outlining the challenges and issues faced by children and young people in New Zealand who have been abused and neglected, and the people that care for them. In this conclusion to the series, we revisit key messages and highlight actions that can be taken by primary care to address this significant problem.

Almost one quarter of children born in New Zealand come to the attention of Child, Youth and Family (CYF) before their 17th birthday. More than half of these children are Māori. More often than not, these children have a range of unmet health needs and usually lack an effective adult advocate to help ensure these issues are recognised and addressed. Sadly, half of completed youth suicides in New Zealand are in young people who have been known to CYF.

Although most of these vulnerable young people are unlikely to regularly visit a primary health care provider, every contact that takes place must be seen as an opportunity to identify needs and provide solutions, or ensure that the child is referred to someone who can help. It is important to look beyond the presenting condition and explore underlying emotional, behavioural and social issues, including the care they are receiving at home.

Detecting child abuse

Neglect is the most common form of abuse in children and young people. Neglect may be physical, emotional, medical or educational. Emotional abuse is a component of all abuse and neglect. Sleep problems, complaints of physical problems (real or imagined) and anxiety can all be signs of emotional abuse. Physical abuse may be more recognisable as unexplained bruises, abrasions, burns or other injuries. Signs of sexual abuse may be age inappropriate sexual play, knowledge or interest, fear of a certain person or place or physical signs such as itching, bleeding or bruising to the genitals. It is important to remain vigilant for any signs of abuse and to explore reasons given for injuries or illness.

Children who are more likely to be abused or neglected are those exposed in their home to violence, drug or alcohol

use, financial stress, parents/caregivers with mental health issues, parents/caregivers with a history of abuse or a lack of parent/caregiver supervision.

It is sometimes very difficult to identify abuse and the child themselves will not always be forthcoming about what they have experienced. It is not necessary to define the type of abuse that you suspect and it is normal to feel uncertain. Trust your instincts, know the warning signs and listen to what the child and their family are saying. Talk to colleagues, talk to CYF and if the situation is life-threatening, talk to the police. The only action that is wrong is inaction.

If you are worried that a child is not safe or being well looked after, phone:

0508 FAMILY (0508 326 459).

If you think the situation may be life-threatening, phone the Police on 111.

Mental health issues in infants

Problematic care and traumatic home situations do not just affect older children. Early neglect, abuse and parental stress have significant long-term mental health effects for infants. Many infants in New Zealand are taken into state care each year.

Signs of mental health issues in infants may include; failure to achieve milestones, difficulty in regulating emotions and impulses, inappropriate play with other children, inability to problem solve and trust issues.

The factors that increase the risk of abuse or neglect in a child are the same as those which increase the risk of mental health problems in an infant. This includes young parents, parents who are socially isolated and those who have a criminal history. Poverty increases an infant's exposure to multiple difficulties and this disproportionately affects Māori and Pacific peoples.

"Red flags" for mental health issues in an infant include:

- Increased aggression and disruptive behaviour
- Signs of anxiety – "on edge", separation anxiety
- Lack of emotional responsiveness, apathy
- Sleeping or eating difficulties (in conjunction with other problems)
- A parent who does not feel bonded to their infant, has overly negative feelings towards them or fears they may hurt them
- A parent who intimidates or is hostile towards their infant (or vice versa)

Primary care plays a role in helping to identify those families with high needs who require an integrated care approach. This may include referral to specialised infant mental health services and parenting programmes where available. Interventions that decrease social isolation such as playcentres and community programmes are also often helpful.

Mental health issues in adolescents

The most common mental health issues in adolescents are depression (and suicide), conduct disorder and substance misuse. Receiving love is the most important mental health need for any child or adolescent. Also important are the need for safety from violence and abuse of all types and the need for positive development and encouragement.

Adolescent mental health needs that primary care can help to address include:

- Advice and protection for sexual relationships and sexual identity
- Advice and intervention for risky behaviours such as smoking, alcohol and drug misuse
- Assessment of nutrition and activity
- Assessment of specific health conditions or disabilities

It is important to understand that for many adolescents, mental health needs are intertwined with family or whānau, spiritual and physical health. Rather than recognising that they have a mental health issue, many young people will express their distress through criminal behaviour, withdrawal from society, self-harm or substance misuse. Primary care clinicians need to have a broad definition of mental health problems and the ways in which they may manifest.

Young people should be given appropriate treatment and support to address their mental health needs. This may involve referral to specialist services, mentors, community groups or culturally specific programmes.

It's about taking action

Increasing reports of injuries and deaths of children at the hands of the adults that are supposed to be caring for them and the growing number of young people who require help make for alarming statistics.

Whānau Ora and the Government's commitment to child health issues, such as the establishment of Gateway Assessments and more funding for child and adolescent mental health services, provides a stronger infrastructure for helping to address these issues. However, it starts with individuals. One person who listens, takes action and does not ignore the problem may be all it takes to change the course of a young person's life for the better.

Invitation for applications for members of the bpac^{nz} Clinical Advisory Group (CLAG)

bpac^{nz} is an independent organisation that promotes healthcare interventions which meet patients needs and are evidence based, cost effective and suitable for the New Zealand context. We develop and distribute evidence based resources which describe, facilitate and help overcome barriers to best practice.

Through our contract with PHARMAC we are required to establish and maintain a clinical advisory group that is comprised of:

- General Practitioners (2)
- Practice Nurse
- Community Pharmacist
- Hospital Pharmacist
- Clinical Pharmacologist
- Māori health provider
- Geriatrician
- General Physician

CLAG members will have a two year appointment and will be required to attend three meetings per year in Wellington. CLAG members will also be required to review draft material for publications on an ongoing basis.

We require health professionals in the above areas with current clinical knowledge that would assist us in advocating "best practice" to health professionals through our resources.

These positions would be well suited to individuals with excellent communication skills, and the ability to actively contribute within a group setting.

If you would like further details regarding this position please contact: editor@bpac.org.nz

If a position appeals to you please send your application, with your CV, by Monday 30th January, to:

The Editor
bpac^{nz}
P.O. Box 6032
Dunedin

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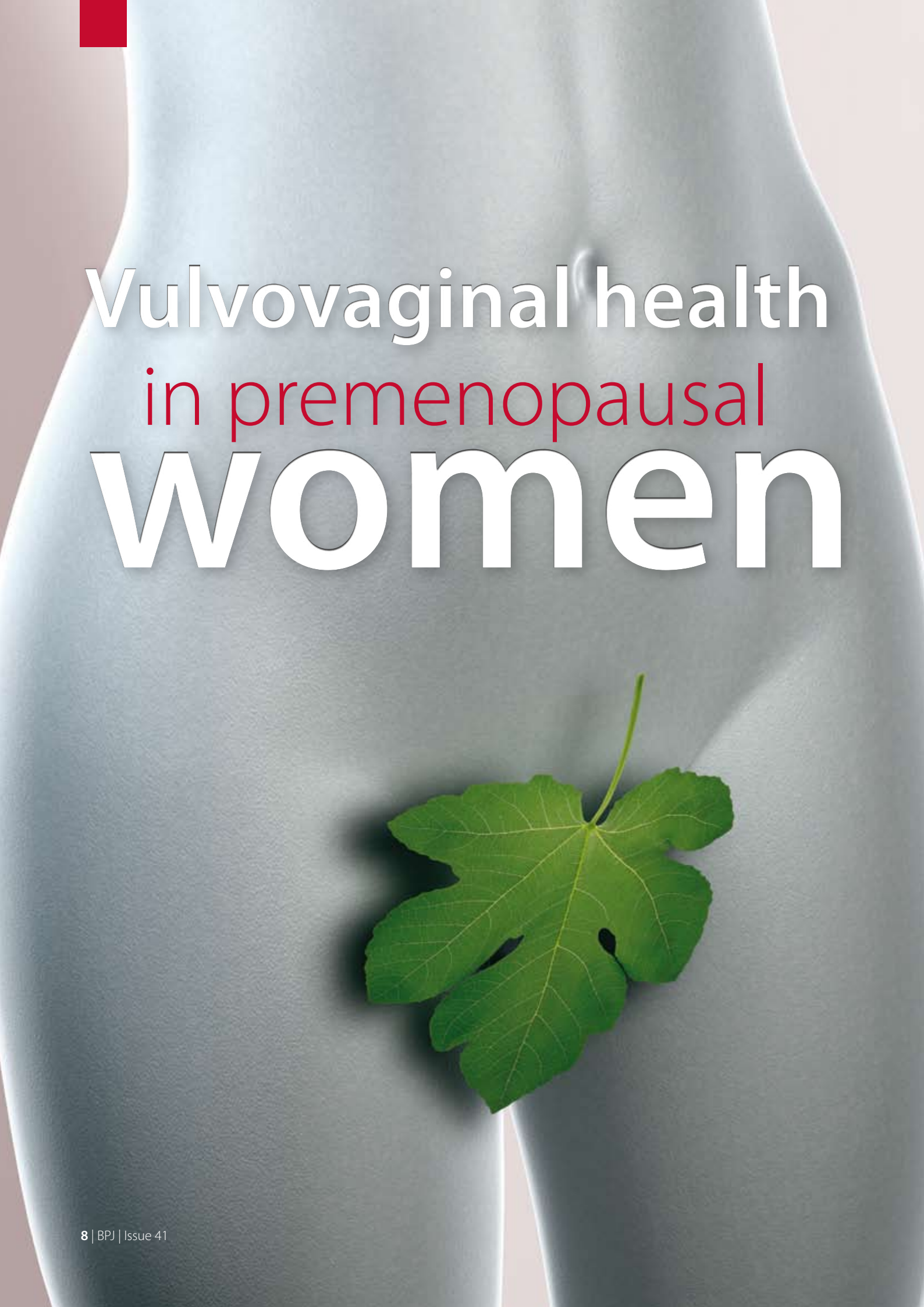
Vulvovaginal health in premenopausal women



Symptoms relating to the vulvovaginal area such as abnormal discharge, itch and pain are common, particularly for women of reproductive age. As well as accounting for numerous general practice consultations, self-diagnosis and self-treatment with over-the-counter products are frequent.

In women who are sexually active, history and symptoms may suggest that a physical examination and microbiological swabs are necessary to exclude a sexually transmitted infection (STI). However, this article focuses on conditions causing vulvovaginal symptoms in premenopausal women where, on the basis of history, STI is unlikely.

Physiological vaginal discharge

Physiological (normal) vaginal discharge is made up of a combination of mucoid secretions from the endocervical cells, sloughed epithelial cells, vaginal transudate and products from the normal flora of the vagina, e.g. lactobacilli.[1] This discharge is characteristically white or clear and has minimal odour. It varies both in quantity and consistency between women, during pregnancy and with the stage of the menstrual cycle. The amount of discharge, although variable, is usually from 1 to 4 mL over 24 hours.[2] During pregnancy, vaginal discharge is thicker and white-cream in colour.

For most women:

- Discharge becomes more obvious near ovulation, when it is clear, slippery and stretchy (similar to raw egg white) for one to four days
- Discharge becomes thicker and tacky after ovulation
- Discharge is obscured once menstruation begins
- There may be little or no obvious discharge after menstruation, and then as ovulation approaches, the amount increases again

It is important to discriminate between physiological and pathological discharge. The history of the discharge (including onset, duration, odour, amount, presence of any intermenstrual or post-coital bleeding or discomfort), pelvic examination and microbiological swab results will assist in making this distinction.

The acidic environment of the vagina helps prevent infection

The normal environment of the vagina and the vaginal secretions is acidic with a pH of 3.8 to 4.4.[1] This pH is maintained by the normal bacterial flora of the vagina, e.g. lactic acid-producing lactobacilli. The acidic environment is thought to help prevent bacterial infections ascending from the lower genital tract.[1] The composition of the vaginal flora, and therefore the pH, may alter for a number of reasons such as age (e.g. the pH is more alkaline in prepubertal children and postmenopausal women), menstruation, sexual activity (blood and semen are slightly alkaline), contraceptive method, medicines and stress.

Alterations in the composition of the vaginal flora are usually due to overgrowth of anaerobic bacteria, which raise the vaginal pH (more alkaline). In some women, this results in itch, swelling, discomfort and an increased vaginal discharge that has changed in colour, consistency and odour.

Bacterial vaginosis

Bacterial vaginosis (BV) results from replacement of normal vaginal flora by anaerobic bacteria such as Gardnerella, Bacteroides and Mobilunculus species. In BV, the vaginal pH increases above 4.[5] The prevalence of BV varies widely among populations, with estimates ranging from 5 – 55 % of women.[1, 5] Although BV is not a STI, it has a strong association with sexual activity and prevalence is higher in women who are sexually active (including

Vulvovaginal hygiene

Women should be advised to avoid the use of soaps, shower gels, bubble baths, shampoos and antiseptics around the genital area. The vulva should be gently washed with tepid or warm water. Non-soap cleansers with physiological pH (5.5) can be used.

"Feminine hygiene" products such as washes, deodorants, powders and creams are rarely appropriate.

Vaginal douching refers to the practice of squirting water or a commercially available douching liquid up into the vagina to wash it out. Some women use this method in an attempt to improve hygiene, particularly after menstruation or sexual intercourse. Vaginal douching is not recommended as it alters the normal vaginal flora and may force bacteria higher into the genital tract. It has been associated with increased risk of bacterial vaginosis, pelvic inflammatory disease, cervicitis, endometritis, ectopic pregnancy, gonorrhoea, chlamydia, HSV and HIV infection.[3, 4]

women who have sex with women).[5, 6] Other factors that may increase the incidence of BV include recent antibiotic use, douching and use of an intrauterine contraceptive device (IUCD).[5, 6, 7]

BV is associated with an increased risk of acquiring a STI (in particular genital herpes and HIV), spontaneous miscarriage, premature rupture of membranes, pre-term labour and infections following gynaecological surgical procedures, e.g. termination of pregnancy or hysterectomy.[5, 7]

Treat women with symptoms of bacterial vaginosis

BV is asymptomatic in approximately 50% of women. Treatment is not usually required in these women, except if they are pregnant or pre-termination.[8, 9] Treatment is recommended for all women with symptoms of BV. However, BV spontaneously resolves in approximately 30% of women.[1, 8]

The most common symptom of BV is an increase in vaginal discharge, usually greyish and watery, with a characteristic fishy odour that may be more obvious after sexual intercourse. Other symptoms such as itch, irritation or pain are uncommonly associated with BV.[8]

Empiric treatment for BV may be given if: [8]

- There is low risk of STI (factors that increase the risk of STI include age <25 years, new sexual partner in the last 12 months, or more than one sexual partner in the last 12 months)
- There are no other symptoms or signs that could suggest another diagnosis, e.g. itch, rash, abnormal vaginal bleeding, fever or pain
- The woman is not pregnant or post-natal, nor recently had a miscarriage, termination of pregnancy or other gynaecological procedure
- The symptoms are not recurrent or persistent after treatment

If the history or examination suggests empiric treatment is inappropriate, particularly if there is a risk of STI, speculum

examination and swabs (including for chlamydia and gonorrhoea) are required.[8]

Treatment for BV is oral metronidazole 400 mg, twice daily, for seven days or a single dose of metronidazole 2 g (5 x 400 mg). Although the single dose option is often preferred by women and may increase compliance, there is some evidence that there is an increased risk of relapse with this dosing regimen.[7, 10]

Adverse effects of metronidazole include nausea or other gastrointestinal disturbance, however, these effects may be reduced if the tablets are taken with food. Women should be advised not to drink alcohol while taking metronidazole and for a minimum of 48 hours after the course of treatment to avoid adverse effects such as flushing, headache, nausea and vomiting.[11]

Ornidazole 500 mg (either single dose of 1.5 g or 500 mg, twice daily, for five days) is an effective alternative to metronidazole for the treatment of BV.[8]

Treatment of male sexual partners of women with BV is not usually necessary.[8, 9]

Treatment during pregnancy and lactation

In women who are pregnant that have symptoms of BV and the diagnosis has been confirmed with microbiology, the seven day course of metronidazole is recommended to avoid high serum levels from the single high dose treatment.[8, 12] A repeat swab should be taken after one month to check the effectiveness of the treatment.[8]

There are differing opinions regarding the screening and treatment of BV in asymptomatic pregnant women. Some guidelines support treatment to reduce the risk of obstetric complications, particularly in women at increased risk (e.g. previous miscarriage or pre-term delivery).[8, 9] Others argue that there is a lack of evidence for treatment and that pregnancy outcomes are not improved after treatment.[5, 7] The decision to treat BV in an asymptomatic woman should be based on her individual circumstances and discussion with her lead maternity carer.

In women who are breast feeding and have symptoms of BV, the seven day course of metronidazole is recommended to reduce its concentration in the breast milk. The taste of breast milk may be altered by metronidazole. Some women may choose to express and discard post-dose milk (peak serum levels occur approximately three hours after administration).[11]

Persistent symptoms

Treatment with metronidazole is usually effective and persistent symptoms are uncommon. If the symptoms persist after treatment:[8]

- Reconsider the diagnosis (examine the patient and take appropriate swabs)
- Check compliance – ask if the whole course of metronidazole was taken
- Consider using a seven day course if the single dose regimen (2 g stat) was used
- If the patient has an IUCD, consider removal of the device and discuss other forms of contraception

Recurrent symptoms

BV is associated with high rates of recurrence. An Australian study reported recurrence rates at one month of 23% and at one year of 58%, despite appropriate treatment.[13]

If the initial episode of BV was clinically characteristic (or vaginal swab results indicated BV) and metronidazole treatment resulted in clearance of the symptoms, empiric treatment may be repeated. If the diagnosis for the initial episode was uncertain and if an examination and swabs have not been performed, it is recommended that this is done and then treatment can be guided by the results.

There is a lack of consistent evidence to support the use of probiotics or agents to restore vaginal acidity, including acetic acid vaginal gel (Aci-jel), in recurrent BV.

Self diagnosis and treatment of candidiasis

It is estimated that up to 75% of women will have symptomatic *Candida albicans* vulvovaginitis at some stage during their life.[7] Because the symptoms are so well known, many women self-diagnose and self-treat with over-the-counter (OTC) products. However, many of these women do not in fact have current infection - one study showed that only 33% of women made the correct diagnosis.[16] Women should be advised not to continue to use OTC products if the symptoms do not improve with treatment or they have recurrent episodes.

When advising a woman who is seeking OTC treatment for vulvovaginal candidiasis, pharmacists may consider recommending that the woman seeks medical advice if any of the following factors are present:[14]

- Age – less than 16 years or over 60 years
- First presentation of abnormal vaginal discharge
- Symptoms that are not typical, e.g. discoloured or offensive discharge, lower abdominal pain or abnormal vaginal bleeding
- Symptoms that have not settled despite appropriate treatment
- Recurrent symptoms – more than twice in six months
- Severe or systemic symptoms
- Pregnancy
- History or concern about sexually transmitted disease

Vulvovaginal candidiasis

Candida is present in the vaginal flora of approximately 20% of healthy women and up to 40% of women who are pregnant.[7] An overgrowth of one species, *Candida albicans*, is responsible for vulvovaginal candidiasis ("thrush") in at least 90% of affected women.[7]

Factors that increase the risk of vulvovaginal candidiasis include:[14]

- Recent use of broad spectrum antibiotics
- Pregnancy
- Diabetes
- Immunosuppression

There is no good evidence that tight or synthetic clothing or specific hygienic habits increase the risk of vulvovaginal candidiasis.[15]

Vulvovaginal candidiasis is characterised by vulvovaginal itch, stinging, burning, non-specific discomfort, external dysuria and superficial dyspareunia. If a discharge is present it is typically white, cheesy or curd-like. On examination there may be erythema, swelling, fissuring and excoriation of the vulva (Figure 1).[7, 14] Signs are typically centred on the vaginal introitus (entrance).

Treat candidiasis empirically

If the history is consistent with uncomplicated vulvovaginal candidiasis and there are no risk factors present for STI, empiric treatment with an intravaginal antifungal cream is recommended.

Appropriate topical treatments are:

- Clotrimazole – fully funded, 2% vaginal cream for three day use or 1% for six day use
- Nystatin – fully funded, 100,000 u per 5 g vaginal cream, used twice daily for 14 days (N.B. stains underwear yellow)
- Miconazole – partly funded, 2% vaginal cream, for seven days

Women should be advised that some vaginal creams may weaken, and therefore reduce the effectiveness of, latex condoms. Vaginal creams can also be associated with swelling, erythema and pruritus (contact dermatitis) in some women.

Treatment with an oral antifungal (fluconazole or itraconazole) may be preferred by some women, as relief from symptoms can be more rapid. From 1 June 2011, a single 150 mg capsule of fluconazole has been funded by endorsement, provided there is a maximum of one capsule per prescription. The prescription must be endorsed, i.e. "certified condition" written next to the item with a signature. N.B. Itraconazole (100 mg) and fluconazole (50 mg, 200 mg) are funded with Specialist endorsement.

The recommended dosing regimen for oral antifungals is:[12]

- Fluconazole 150 mg – one capsule for one day
- Itraconazole 100 mg – two capsules, twice daily for one day OR two capsules, once daily for three days

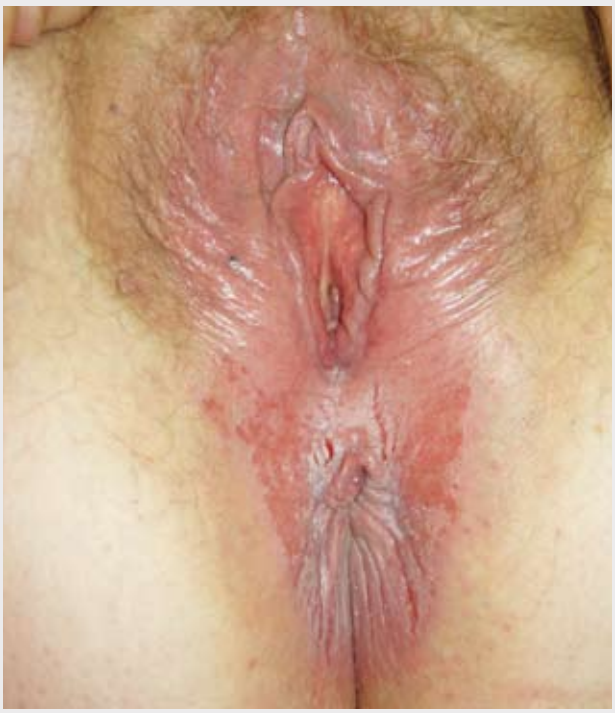


Figure 1: Vulvovaginal and perianal candidiasis with erythema, oedema, fissuring and shallow erosions (Supplied by Amanda Oakley / Dermnet NZ).

A number of products for treating vaginal candidiasis are available OTC, including antifungal creams, pessaries and combinations of the two. Courses range from one day to six days. A single dose OTC fluconazole pack costing approximately $25 is also available.

Treatment of candidiasis in women who are pregnant

Women who are pregnant should be treated with intravaginal antifungals, although a longer course (up to seven days) may be required. The woman should be advised to take care when inserting the vaginal cream using an applicator so that there is no contact with the cervix. Some women may prefer to use vaginal pessaries (without applicator) to avoid any risk.

Oral antifungal medicines such as fluconazole and itraconazole are best avoided during pregnancy (or in women at risk of pregnancy).[12] Both have been shown to be teratogenic in animal studies, however, pregnancy outcome data in women and infants exposed to short courses is so far reassuring. Fluconazole is prefered if an oral azole antifungal must be used in a woman who is breast feeding.

Further treatment and evaluation

There is no indication to treat the male sexual partner of a woman with uncomplicated vulvovaginal candidiasis, unless they are symptomatic (usually short-lasting balanitis presenting with mild discomfort and erythema on the glans penis).

Physical examination and swabs (to confirm Candida and check for BV and STIs) are recommended if there are factors in the history that suggest an alternative diagnosis, there are risk factors for STI, there is a history of recurrent episodes (more than four in one year) or there has been any recent gynaecological intervention.[17]

Although treatment usually gives full resolution of symptoms within seven to 14 days, treatment failure may occur due to:[14]

- Poor compliance with, or incorrect use of, medicines

- Dermatitis* due to an exogenous irritant, e.g. soaps, shower gels or the topical antifungal cream
- Dermatitis* due to scratching or related to irritating metabolites of the yeast
- Misdiagnosis of the initial condition
- Organisms resistant to standard treatment
- Presence of a mixed infection (such as BV, STI)

* Hydrocortisone cream applied to the vulva for a few days is usually adequate to treat dermatitis in this area.

Recurrent vulvovaginal candidiasis

Recurrent vulvovaginal candidiasis, defined as four or more documented, symptomatic infections per year, occurs in 5–8% of healthy women.[14, 15] The majority of cases of recurrent vulvovaginal candidiasis are due to *Candida albicans*, with *C. glabrata* the causative strain in most other women.[18] Some experts consider non-albicans candida species to be non-pathogenic and advise against attempting to eradicate them.[19] Recurrent vulvovaginal candidiasis is thought to be due to persistent colonisation rather than episodes of new infection.[20] Complete eradication of *Candida* is difficult to achieve, therefore the aim of treatment for recurrent vulvovaginal candidiasis is to reduce the colonisation of the vagina with *Candida* to a level where the woman is asymptomatic.[20, 21]

In a woman with recurrent vulvovaginal candidiasis consider whether any of the following factors may be contributing:

- Risk factors for candidiasis including diabetes, frequent antibiotic use, long-term oral steroid treatment and immunosuppression[14]
- An alternative diagnosis, including other conditions that may cause vulval irritation, e.g. dermatitis, lichen sclerosus or lichen planus (Page 16)
- The presence of a resistant species of *Candida*
- Oestrogen, including combined oral contraceptives or HRT. This increases vaginal glycogen, the substrate for the yeast.[22] There is no evidence that stopping the oestrogen will result in reduction in recurrent episodes,[14] however, use of progesterone-only oral contraception or intramuscular medroxyprogesterone may be useful for women with recurrent vulvovaginal *Candidia* infection.[23]

Treatment for recurrent candidiasis

Intravaginal antifungal creams may be used for a longer course, e.g. 10–14 days,[14] however, in some women this may cause irritation or contact dermatitis. An intravaginal antifungal used before and after menstruation may prevent recurrent symptoms.[20] Oral antifungals (fluconazole or itraconazole) can be prescribed for longer courses or taken intermittently (Table 1). N.B. Specialist endorsement is required to obtain the subsidy for these longer courses of oral antifungal medicines.

In women with recurrent vulvovaginal candidiasis, treatment of the male partner is unlikely to be beneficial.[25]

There is no evidence that the ingestion or intravaginal use of *Lactobacillus acidophilus* (or other probiotics) is beneficial in the treatment of vulvovaginal candidiasis.[25, 26] There is, however, no evidence of harm with their use. There is no clear evidence that reducing the amount of sugar (in women without diabetes) or yeast in the diet can help prevent recurrent episodes.

Retained foreign bodies in the vagina

In adult women who present with an offensive smelling vaginal discharge, sometimes associated with intermittent spotting, always ask about the possibility of a retained foreign body such as a tampon or condom. Some women, especially those that use two tampons at once to absorb menstrual flow, may not realise that one of the tampons has been retained and could be the cause of her symptoms. Normally the history of a recent period and a foul odour suggest the diagnosis, which is then confirmed on examination.

The tampon or condom can usually be removed easily but sponge-holding forceps may be required depending

Table 1. Induction and maintenance regimens for the treatment of recurrent vulvovaginal candidiasis:[24]

	Induction	Maintenance
Fluconazole	150 mg, two doses, three days apart **or** 150 mg stat **or** 50 mg daily for 14-28 days	150 mg monthly for six months **or** 150 mg weekly for six months
Itraconazole	200 mg twice daily for one day **or** 200 mg daily for three days **or** 100 mg daily for 14-28 days	100 mg weekly for six months

N.B: Oral antifungal medicines may rarely cause hepatotoxicity and are not indicated for use in women who are pregnant and should be used with caution in women who are breast feeding

on how long the foreign body has been present and its location within the vagina. In most cases the inflammation and infection will resolve after removal of the foreign body. There is limited evidence regarding the need for swabs and antibiotics on a routine basis, decisions should be based on the individual clinical circumstances. If there is fever or other signs of systemic infection, prophylactic antibiotics should be considered. A very rare complication of a retained tampon is staphylococcal toxic shock syndrome.

Tampon related toxic shock syndrome

Staphylococcal toxic shock syndrome (TSS) was first described in 1978.[27] Toxins produced by certain strains of *Staphylococcus aureus* may cause potentially fatal toxic shock with symptoms such as rash, fever, hypotension, vomiting and diarrhoea.[27, 28] Multi-organ system failure may rapidly develop. Although TSS may be associated with conditions unrelated to tampon use, the environment of the vagina during menstruation favours the growth and colonisation of tampons by staphylococci.[27] Tampon related TSS is very rare, with the incidence reported to be one to three per 100,000 women.[28] Changes to the materials and methods used in tampon manufacture in the early 1980's, driven by a peak in the number of fatal cases, has markedly reduced the incidence of tampon-related TSS.[29]

Vulval itch – pruritus vulvae

Although vulval itch is a problem for many women, often embarrassment may delay seeking medical attention. Many women are also likely to have tried to self-treat using OTC products.

Causes of vulval itch include:

- Vulvovaginal candidiasis (Page 12)
- Dermatitis – most commonly contact dermatitis from exposure to irritants, e.g. soaps, perfumes, creams, barrier contraceptives, sanitary products, urine.[30] Less frequently, atopic dermatitis may occur in the vulval area. Scratching and rubbing may lead to chronic lichen simplex (Figure 2, over page).
- Shaving, waxing and other methods of hair removal (Page 18)
- Lichen sclerosus, lichen planus (over page)
- Pubic lice, thread worms, scabies (with nodules often found in the groin)

- Viral warts
- Hormonal changes which may result in atrophic vulvovaginitis, e.g. low oestrogen levels in peri and post menopausal women and in women who are breast feeding
- Symptoms of a more generalised dermatological condition, e.g. psoriasis
- Pre-malignant or malignant condition of the vulva (rare) (Page 19)[30]

Treatment depends on identification of the underlying cause whenever possible. An emollient used both as a soap substitute and as a moisturiser may be prescribed. Conventional oral antihistamines may help at night due to their sedative action. Topical corticosteroids should be prescribed for women with contact dermatitis, lichen sclerosus, lichen planus and symptomatic psoriasis. In addition, general advice may include information about avoidance of soaps, shampoos, bubble bath and other products that may irritate or dry the skin. Occlusive underwear or tight fitting clothes may cause irritation of the vulval area.

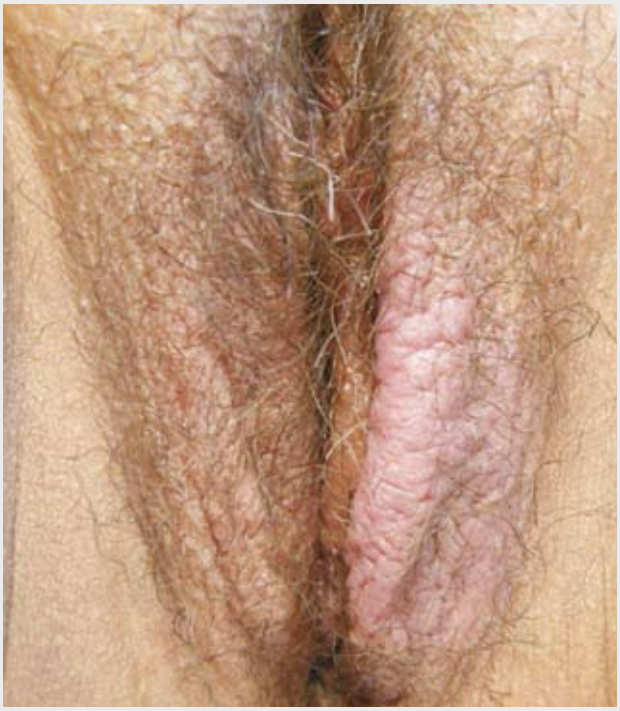


Figure 2: Lichen simplex chronicus demonstrating asymmetrical uninflamed lichenification of labia majora (Supplied by Amanda Oakley / Dermnet NZ).

Lichen sclerosus

Lichen sclerosus is an inflammatory skin disorder, thought to be of autoimmune origin, which in women primarily affects the vulval, perineal and perianal skin (but not the vagina). Although it may occur in women of any age, including prepubertal girls, it is most frequently seen in women aged over 50 years. Symptoms include itch, which is often severe, and pain. On examination, the skin may appear white and thickened or crinkled (Figure 3). Fissures and haemorrhages may be present. If the diagnosis is uncertain based on the clinical appearance, biopsy may be necessary. Most cases should be referred to a specialist in vulvovaginal disease (usually a dermatologist) for confirmation of the diagnosis, treatment and long-term follow up.[31, 32]

Treatment with a topical corticosteroid is not curative but aimed at reducing the symptoms to a tolerable level. Initially a potent corticosteroid ointment (or cream if ointment is not tolerated) e.g. clobetasol (Dermol) is used, however, once symptoms start to settle, less potent corticosteroids can be given or the frequency of application of the potent corticosteroid can be slowly reduced. Lichen sclerosus is a chronic condition and scarring and distortion of the genital anatomy may occur, e.g. narrowing of the vaginal entrance and resorption of the labia minora. Lichen sclerosus is also associated with the development of vulval intraepithelial neoplasia (VIN) and invasive squamous cell carcinoma (incidence of 6%). The vulval skin should be reviewed at least annually in women with lichen sclerosus to detect malignancy early. [31, 32]

Lichen planus

Lichen planus is also an inflammatory skin condition of autoimmune origin with some similarities to lichen sclerosus, however, it is less common. Unlike lichen sclerosus, lichen planus may:

- Affect other areas of the body, e.g. the oral mucosa
- Involve the vaginal mucosa
- Be only rarely seen in children

Symptoms of lichen planus are similar to those in lichen sclerosus, i.e. itch and pain. The vulval subtype of lichen planus is often an erosive form and may cause marked pain, introital erythema and erosions (Figure 4). As with lichen sclerosus, scarring and distortion of the affected areas may occur, but is often more severe. Women with suspected lichen planus should be referred to a specialist in vulvovaginal disease. Diagnosis may be clear from the history and clinical appearance, however, biopsy may be required. Treatment is initially the same as for lichen sclerosus, but lichen planus can be very challenging to control and is more likely to require oral corticosteroids or immunosuppressive medicines. Lichen planus is also associated with a risk of development of vulval malignancies.[33, 34]

"Lumps and bumps"

Lump or bumps in the vulvovaginal area present in a number of ways and there is an extensive list of differential diagnoses. Some women may present with a query about something they perceive to be abnormal which is, when examined, a variant of normal vulvovaginal anatomy.

Bartholin gland cyst or abscess

The Bartholin glands are located on each side of the vaginal opening and produce mucous to assist with lubrication of the vagina. If the duct from the gland becomes blocked a cyst may develop within the duct (Figure 5, over page). This produces a lump, often 1–3 cm in size, which is usually asymptomatic and does not require treatment. Cysts that become larger may cause discomfort during sexual intercourse or when sitting or walking. A painful Bartholin abscess may develop if the fluid within the cyst becomes infected.

Depending on the size and severity of symptoms, treatment options include warm compresses, saline baths, incision and drainage under local anaesthetic or excision or marsupialisation of the gland under sedation or general anaesthetic.[35] Although incision and drainage is the most frequently performed procedure, it is associated with a high rate of recurrence.[35] Oral antibiotics are not

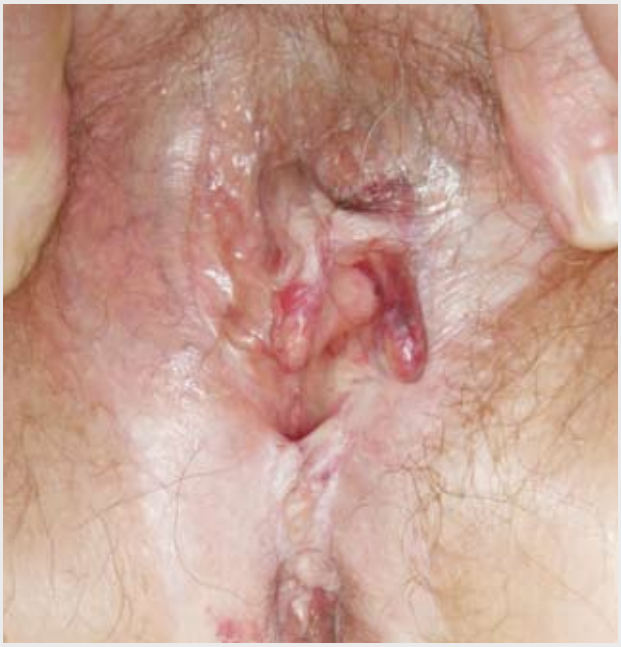


Figure 3: Lichen sclerosus with typical distortion, fusion and resorption of labia minora, oedema, ecchymosis and whitening of vulva and perianal skin (Supplied by Amanda Oakley / Dermnet NZ).

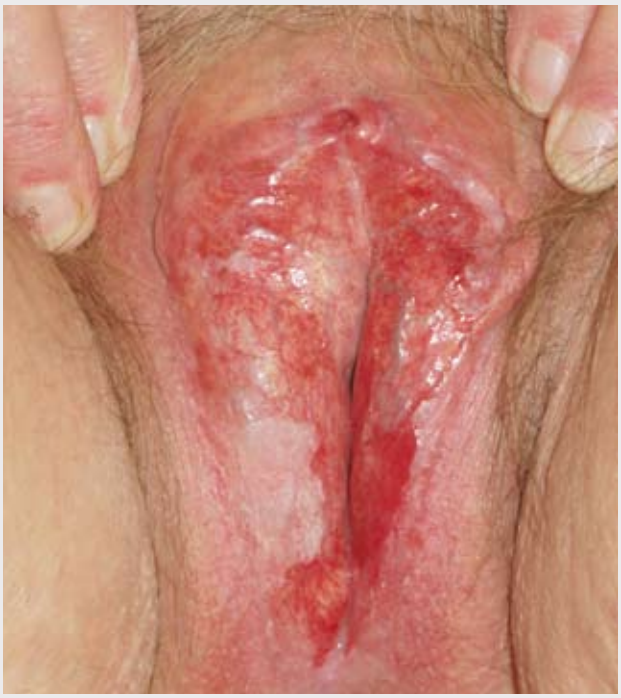


Figure 4: Erosive lichen planus showing destruction and scarring of vulval skin with erosion and atrophy of vaginal introitus (Supplied by Amanda Oakley / Dermnet NZ).

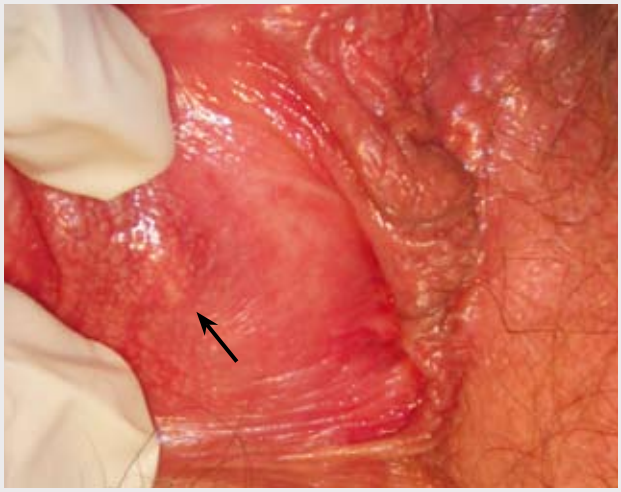


Figure 5: Bartholin gland cyst arising right posterior vestibulum (Supplied by Amanda Oakley / Dermnet NZ).

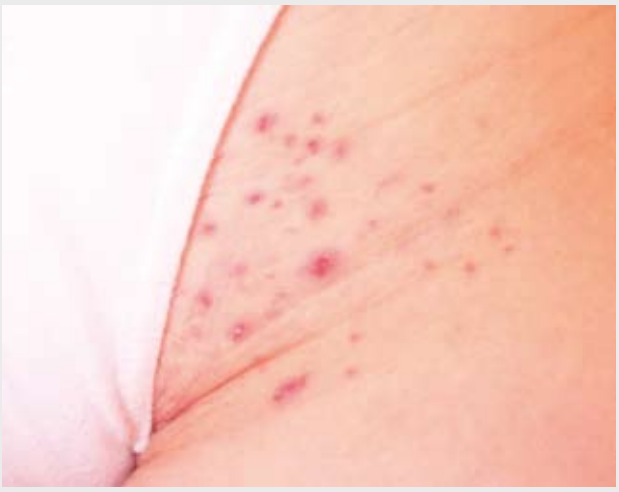


Figure 6: Folliculitis due to shaving pubic hair (Supplied by Amanda Oakley / Dermnet NZ).

indicated unless there is associated cellulitis or systemic symptoms.[35] If required, broad spectrum antibiotic cover is necessary as the infection is usually polymicrobial.

Carcinoma of the Bartholin gland is rare (approximately 1% of genital malignancies in women), however, this diagnosis should be considered in a woman aged over 40 years. Features consistent with carcinoma of Bartholin gland include a mass that is: [35]

- Painless
- Fixed to the underlying tissues
- Solid – however the mass may also be cystic, abscessed or only partially solid

Complications of pubic hair removal

There are many methods used for hair removal such as shaving, depilatory creams, electrical epilation, waxing, electrolysis, light and laser devices. Complications may include infection, ingrown hairs and contact dermatitis. Most hair removal methods cause microtrauma to the skin and allow introduction of bacteria from the skin or from items used in hair removal.[36] Shaving or waxing the pubic hair may cause irritation of the skin or folliculitis (bacterial infection of the hair follicles within the epidermis which presents as multiple papules and pustules that may be itchy or uncomfortable (Figure 6). An abscess may also develop and usually presents as an isolated tender lump, sometimes with surrounding cellulitis.

Folliculitis may resolve spontaneously with conservative treatment (warm compresses, saline baths) although topical antibiotics may be required in some cases. If there is fever, other systemic symptoms, or the woman is at increased risk because of co-morbidities such as diabetes or immunosuppression, oral antibiotics (e.g. flucoloxacillin) should be prescribed.[36] Treatment of an abscess will normally require incision and drainage and/or oral antibiotics depending on the clinical presentation.

Hair removal, pressure or irritation from tight clothing and the tendency for the pubic hair to be coarser and curlier, increase the likelihood of ingrown hairs. A warm compress can be held over the affected area and then the hair lifted free of the skin with a sterile needle. If infection develops, topical antibiotics may be required.

Benign vs malignant vulval skin lesions

Lesions of the vulval area may be benign, pre-malignant or malignant. Malignant lesions may not cause symptoms and there also may not be an obvious mass. Women, who present with chronic vulval itch or irritation, particularly

if there is no apparent reason, should be referred for colposcopy and biopsy. Symptoms of itch, a burning sensation or pain are associated with malignant vulval lesions in approximately 50% of women.[37, 38]

The clinical features used to help distinguish benign from malignant skin lesions anywhere on the body, are also those that may raise suspicion of a vulval malignant skin lesion. These features include:

- Asymmetry
- Irregularity of the border
- Change in colour
- Increase in size
- Bleeding or lack of healing
- Failure to respond to appropriate treatment

Benign skin lesions

Numerous types of benign skin lesions may be found in the vulvovaginal area including:

- Lipomas
- Seborrhoeic keratoses
- Melanocytic naevi
- Skin tags
- Fordyce spots (ectopic sebaceous glands)
- Molluscum contagiosum
- Various rare adnexal neoplasms

Malignant skin lesions

Although most malignancies involving the vulval area occur in postmenopausal women, vulvar intraepithelial neoplasia (VIN) may begin in women aged 30 to 40 years.[39] The lesions may be asymptomatic found during an examination for a routine cervical smear or other unrelated reason. VIN has the potential to progress to invasive carcinoma of the vulva and women with suspicious lesions require referral to secondary care for biopsy and treatment.

Women with symptomatic vulval invasive cancers may present with itch, an obvious lump, pain, ulceration or bleeding. The inner edges of the labia are the most common site for vulval cancer.[38] Approximately 90% of vulval cancers are squamous cell carcinomas, however, other types of malignant lesion may occur in the vulval area such as melanoma, basal cell carcinoma, sarcoma and rarely, adenocarcinoma of the Bartholin gland.[37]

Risk factors for vulval cancer include smoking, VIN, lichen sclerosus, lichen planus, previous HPV infection and positive HIV status.[37, 39]

Vulval Pain

Chronic vulval pain is estimated to affect 16% of women at some point in their life.[40] This is thought to be a conservative estimate of the lifetime prevalence because many women do not seek medical assistance. Women of all ages may be affected, however, it is more common in women of reproductive age. It is frequently associated with sexual dysfunction.

Pain in the vulval area is classified according to whether it is:[40]

- Due to a specific disorder – pain from infection, inflammation, neoplasia and neurologic causes
- Without any evidence of a specific disorder – burning discomfort of the vulva is described as vulvodynia. This may be localised to the introitus (vestibulodynia) and triggered by contact, e.g. intercourse, or generalised and persistent when it is more likely to have a neuropathic origin.

A comprehensive history and physical examination is needed to make an accurate diagnosis of the cause of the pain. A careful assessment of urological, pelvic and anorectal systems should be included. Treating any underlying disorder usually resolves the pain. Vulvodynia may be difficult to manage and consultation with a specialist is recommended. Strategies include an assessment of the pelvic floor, rarely the use of topical medicines (e.g. topical local anaesthetic gels at night and also prior to sexual intercourse) and oral medicines such as tricyclic antidepressants and gabapentin.[40]

Vulvovaginal conditions in pre-pubertal girls

Young girls may present with vulvovaginal symptoms such as itch, discomfort, erythema, vaginal discharge or bleeding. Contributing factors include:[41]

- Low oestrogen levels, resulting in thinner vaginal epithelium
- Less acidic vaginal pH
- Flattened and thinner labia providing a reduced physical barrier to infection
- Close proximity to the anus, particularly once the child is becoming more independent with toileting and washing

A comprehensive history should be obtained and should include questions about the symptoms (type, timing, site), toileting (both bowel and bladder) and perineal hygiene, recent medicines, atopy and, if abuse is suspected, enquiry about social circumstances, i.e. who the caregivers are and what the daily routine of the child is, e.g. daycare, school.[42]

An external physical examination and in some circumstances a swab of vaginal discharge if present, taken from the introitus, may assist in making the diagnosis although in many cases, no clear cause is identified and this is termed non-specific vulvovaginitis.

The majority of vulvovaginal conditions in prepubertal girls are secondary to local irritants causing contact dermatitis, inflammation or infection, often related to hygiene as independence is reached. In younger girls, insertion of foreign bodies into the vagina (e.g. toilet paper, beads or marbles) may cause an offensive, blood stained discharge.

Examples of other conditions that may cause vulvovaginal irritation include:

- *Candida* infection which occurs in 3–4 % of prepubertal girls.[43] Although *Candida* is an important contributor to napkin dermatitis in infants, in older children, infection should be confirmed prior to treatment. Over-diagnosis is common.
- Thread worms, which should be considered if there is nocturnal itch especially if the perianal area is also involved
- Sexual abuse, which may result in a sexually transmitted infection or trauma to the vulvovaginal area
- Chlamydia or Human papillomavirus (HPV) from maternal-child transmission at birth in infants and young children
- Lichen sclerosus, which may present with itch, discharge, discomfort, bowel or bladder symptoms and bleeding and responds to topical corticosteroid (specialist assessment is required)
- Trauma from accidents during sport or playground activities ("straddle" injuries) which may cause significant bleeding. Check that the physical injuries correlate with the history of the accident, i.e. affect the anterior structures (vulva, mons, clitoral hood) rather than the more posterior structures (posterior fourchette and hymenal area)[43]

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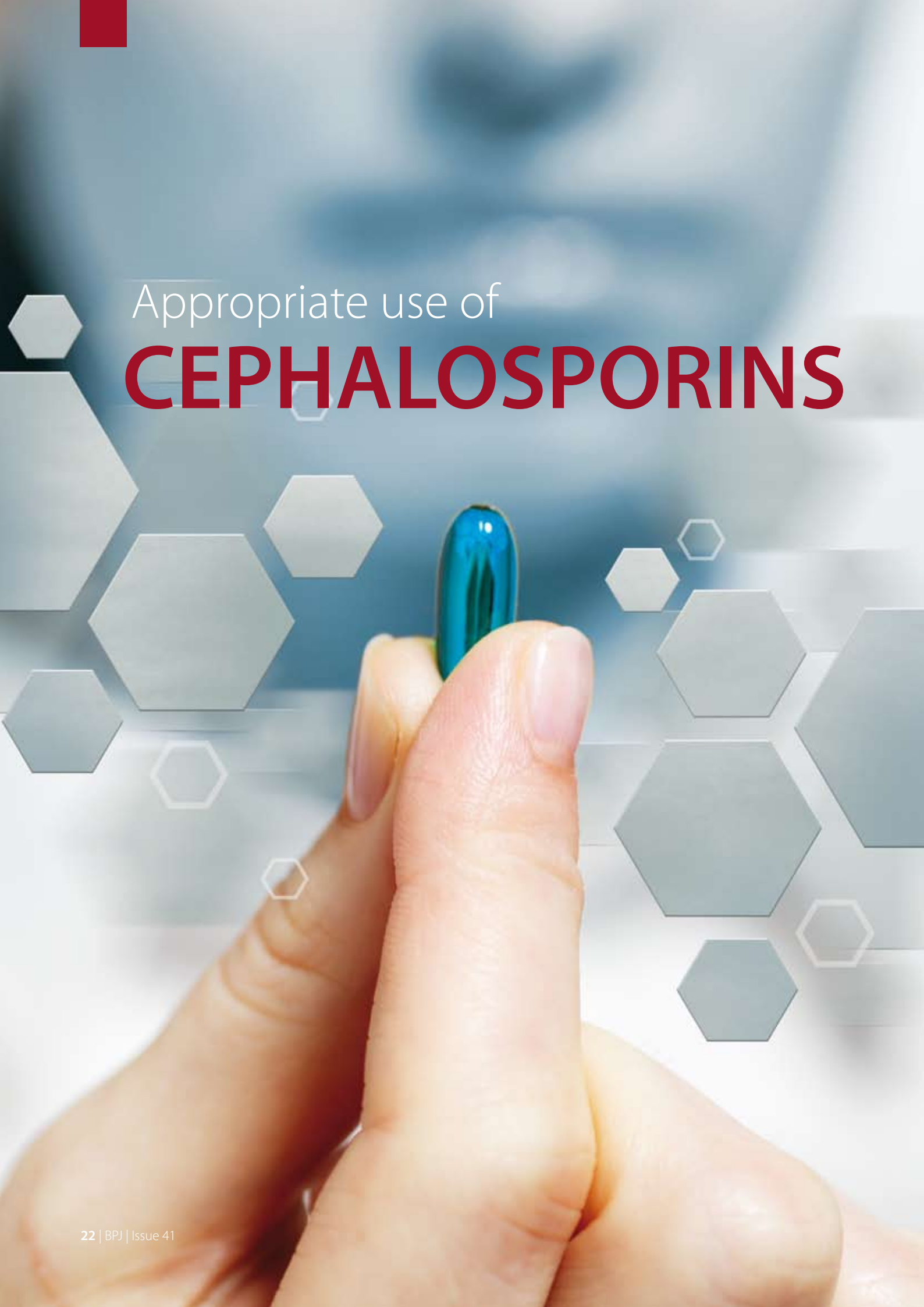

Appropriate use of CEPHALOSPORINS

Understanding cephalosporins

Cephalosporins are broad spectrum antibiotics similar to penicillins. They have a beta-lactam ring which interferes with bacterial cell wall synthesis by binding to penicillin-binding proteins, eventually leading to cell lysis and death.[1] Like amoxicillin clavulanate, cephalosporins should be avoided when a narrower spectrum antibiotic would be effective because they increase the risk of *Clostridium difficile*, MRSA and other resistant infections.

Cephalosporins mainly used in general practice are; **cefaclor**, **cephalexin** and **ceftriaxone** (injection). Other cephalosporins available on the Pharmaceutical Schedule are; cefazolin, cefoxitin and cefuroxime – these medicines are usually prescribed for patients undergoing dialysis and for patients with cystic fibrosis.

Cephalosporins are grouped based on their antibacterial properties and when they were introduced:[2]

- First generation cephalosporins include cephalexin and cefazolin. They have good activity against a wide spectrum of Gram-positive bacteria including penicillinase-producing staphylococci. However, they are not active against methicillin-resistant staphylococci (MRSA). Enterococci are resistant.[2]
- Second generation cephalosporins include cefaclor, cefuroxime and cefoxitin. They are more stable to hydrolysis by beta-lactamases produced by Gram-negative bacteria and therefore have enhanced activity against many of the Enterobacteriaceae, e.g. *Escherichia coli*, Salmonella.[2]
- Ceftriaxone is a third generation cephalosporin. They have the widest spectrum of activity compared to other generations of cephalosporins and are active against Gram-negative organisms, including many of the significant Enterobacteriaceae. They are also very active against streptococci.[2]

Key concepts

- There are few infections where cephalosporins are the antibiotics of first choice and their use should be avoided when other more narrow spectrum antibiotics remain effective
- Ceftriaxone is an appropriate first line treatment for gonorrhoea, pelvic inflammatory disease and epididymo-orchitis
- Ceftriaxone may also be used for suspected meningitis in patients allergic to penicillin (benzylpenicillin is first-line)
- Cefaclor may be considered as a second-line treatment for otitis media, sinusitis, cellulitis, diabetic foot infection and mastitis
- Cephalexin is a third-line alternative for the treatment of urinary tract infection in pregnant women (after nitrofurantoin and trimethoprim)

Indications for the use of cephalosporins

There are few infections where cephalosporins are the antibiotics of first choice (Table 1). Ceftriaxone may be used first-line for some genital tract infections such as gonorrhoea, pelvic inflammatory disease (PID) and epididymo-orchitis (if sexually transmitted pathogens are suspected). Ceftriaxone is also appropriate empiric treatment for suspected meningitis in people allergic to penicillin.

First line indications for cephalosporins

Gonorrhoea A single dose of ceftriaxone 250 mg given intramuscularly is the treatment of choice for gonorrhoea. N.B. Ceftriaxone is subsidised if prescribed for the treatment of confirmed ciprofloxacin-resistant gonorrhoea, and the prescription or MPSO is endorsed accordingly.

Research shows that ceftriaxone attains the optimal concentrations to prevent the development of step-wise

Table 1: First and second-line indications for cephalosporins

First-line indications	Second-line indications
Sexually transmitted infections Gonorrhoea – **ceftriaxone** in combination with azithromycin Pelvic inflammatory disease – **ceftriaxone** in combination with doxycycline and metronidazole Epididymo-orchitis – **ceftriaxone** in combination with doxycycline	**Respiratory tract infections** Otitis media – first-line amoxicillin, second-line erythromycin, co-trimoxazole or **cefaclor** Sinusitis – first-line amoxicillin, second-line doxycycline, co-trimoxazole or **cefaclor**
Serious infections Meningitis – **ceftriaxone** is an alternative to benzylpenicillin	**Skin infections** Cellulitis – first-line flucloxacillin, second-line erythromycin, roxithromycin, co-trimoxazole or **cefaclor** Diabetic foot infections – first-line amoxicillin clavulanate, second-line co-trimoxazole or **cefaclor** in combination with metronidazole Mastitis – first-line flucloxacillin, second-line erythromycin or **cefaclor**
	Urinary tract infections in pregnancy First-line nitrofurantoin, second-line trimethoprim, third-line **cephalexin**

For further information see "Antibiotics choices for common infections", bpac^{nz} (Apr, 2011).

mutations and resistance in Neisseria gonorrhoea.[3] Standard treatment with ceftriaxone has been shown to be greater than 95% effective.[4] Therefore a repeat test to ensure cure is not usually required as long as the patient is asymptomatic after treatment. Azithromycin (oral) is also routinely given when treating gonorrhoea, because co-infection with chlamydia is common.

Ciprofloxacin (500 g stat) is an alternative to ceftriaxone if cephalosporins are contraindicated (most often due to a documented allergy to beta-lactam antibiotics) or if the isolate is known to be sensitive to ciprofloxacin. Ciprofloxacin resistance is becoming increasingly common, with a prevalence of approximately 30% across New Zealand, varying by location.[5]

Pelvic inflammatory disease Broad-spectrum treatment is justified in pelvic inflammatory disease (PID) because the consequences of untreated infection can be serious, e.g. infertility, ectopic pregnancy. The recommended treatment which covers *N. gonorrhoea*, *Chlamydia trachomatis* and anaerobes is ceftriaxone 250 mg IM stat **and** doxycycline 100 mg, twice daily, **and** metronidazole 400 mg, twice daily, for two weeks.
Ceftriaxone is included in the regimen primarily to cover *N. gonorrhoeae.* Patients should be advised to inform sexual partners that they need to be screened and treated if positive for gonorrhoea and chlamydia.

Epididymo-orchitis if STI pathogens are suspected
Ceftriaxone 250 mg IM stat in combination with doxycycline 100 mg, twice daily, for two weeks is recommended for epididymo-orchitis if sexually transmitted infections (mostly chlamydia or gonorrhoea) are the suspected cause. Most guidelines recommend this regimen in men aged less than 35 years.[6] Other risk factors for sexually transmitted infection include urethral discharge and more than one sexual partner in the last 12 months.[7]

Ceftriaxone is an alternative to benzylpenicillin for suspected meningitis

Any patients with suspected meningitis should be immediately transferred to hospital. IV or IM benzylpenicillin should be given while transfer to hospital is being arranged. Ceftriaxone is an alternative to benzylpenicillin for people with suspected meningitis who have a history of immediate allergic reaction to penicillin. Although there is some cross-reactivity between penicillin and cephalosporin allergy, it is appropriate to use ceftriaxone given the seriousness of the infection (Page 26).

Second-line indications for cephalosporins

Cefaclor is used as a second-line alternative for some respiratory tract infections
Cefaclor is a second-line alternative to amoxicillin for suspected acute bacterial sinusitis. Other second-line alternatives are doxycycline or co-trimoxazole. However, in most cases antibiotics are not necessary at all. Eighty percent of sinusitis cases resolve in 14 days without antibiotics. In addition, antibiotics only offer marginal benefit after seven days.[8] Analgesics (e.g. paracetamol or NSAIDs) are the primary treatment for sinusitis.[9] Other treatments that may increase drainage of exudate and improve symptoms include: intranasal corticosteroids, sodium chloride 0.9% sprays and drops, steam inhalations and decongestants.[1] Purulent nasal discharge persisting for more than seven days, facial pain or maxillary tooth ache, unilateral sinus tenderness or fever suggest that bacterial infection is more likely and antibiotics may be appropriate in people with these symptoms and signs.

Cefaclor is also a second-line alternative (as are erythromycin or co-trimoxazole) to amoxicillin for acute otitis media, however, again antibiotic treatment is usually unnecessary. Most cases of acute otitis media can be treated symptomatically (e.g. with paracetamol) and arrangements for a follow-up appointment and antibiotic prescription can be made if no improvement occurs in the next 24 hours. Antibiotics can be considered earlier for those with systemic symptoms, children aged under six months or children under aged two years with severe or bilateral disease.

Serum sickness type syndrome with cefaclor

Cefaclor has been associated with serum sickness-like reactions, especially in young children, and typically after several courses. Symptoms include skin reactions, arthralgia and lymphadenopathy, which may last for six to twelve days. A full recovery usually occurs after stopping cefaclor.[1]

Probenecid increases the activity of cephalosporins

Probenecid reduces renal and gut secretion of cephalosporins (excluding ceftriaxone), increasing their half-life and prolonging their activity. Probenecid 250–500 mg can be given orally three to four times daily to increase serum and tissue antibiotic levels. Monitor for adverse effects of cephalosporins and halve doses of NSAIDs if taken concomitantly.[1, 6]

Cephalexin is appropriate as a third-line option for UTI in pregnant women

Cephalosporins are not associated with an increased risk of congenital malformations when used in pregnancy and are therefore considered safe to use.[1] However, it is recommended that cephalexin is reserved as a third-line option after nitrofurantoin (avoid at 36+ weeks) and trimethoprim (avoid during first trimester) for the treatment of UTI in pregnant women because it is a broad spectrum antibiotic and increases the risk of *C. difficile*. *C. difficile* infection can be life-threatening in pregnant women, with case reports of both maternal deaths and stillborn infants.[10]

Cefaclor may be used as a second-line option for mastitis, cellulitis and diabetic foot infections

Cefaclor has good activity against a wide spectrum of Gram-positive bacteria and also has activity against Gram-negative bacteria, particularly *Haemophilus influenzae*. This makes it suitable as a second-line option for treating mastitis (first-line flucloxacillin, other second-line option erythromycin) and cellulitis (first-line flucloxacillin, other second-line options erythromycin, roxithromycin or co-trimoxazole). It may also be used as a second-line alternative to amoxicillin clavulanate to treat diabetic foot infections (in combination with metronidazole). Co-trimoxazole plus metronidazole is another second-line option.

Issues associated with cephalosporins

Cross-reactivity with penicillin allergy is often over-estimated

Penicillin allergy is reported by up to 10% of people, however, many do not have a true (IgE mediated) allergy. True allergy is recognisable by clinical features such as urticaria, laryngeal oedema, bronchospasm, hypotension or local swelling within 72 hours of administration or a pruritic rash, developing even after 72 hours.[11]

Cross-reactivity between penicillins and cephalosporins of 10% is widely quoted, however, this is now believed to

be an overestimate. This estimation was largely based on reviews in the 1970s which included the following limitations:[11]

- Up until 1982, compounds relating to penicillin had been produced commercially using the cephalosporin mould and the cephalosporins used in these reviews were contaminated with penicillin
- The fact that people with penicillin allergy are three times more likely to have adverse reactions to other drugs was not accounted for
- The definition of allergy was imprecise and differed between studies

A more recent review suggests that the cross-reactivity between first generation cephalosporins and penicillins is closer to 0.5% than 10% and that second and third generation cephalosporins (e.g. ceftriaxone) are unlikely to be associated with cross-reactivity as they have different side chains to penicillin.[11]

It is still considered appropriate to avoid cephalosporins in patients who have a history of an immediate hypersensitivity (Type I allergy) to penicillins for mild to moderate infections when a suitable alternative antibiotic exists. However, in life-threatening cases (e.g. suspected meningitis) where a cephalosporin is essential because a suitable alternative is not available then a second or third generation cephalosporin (such as ceftriaxone, but excluding cefaclor) can be used with caution.[12]

Gonorrhoea shows potential signs of resistance to cephalosporins

Cephalosporins are now widely used for the treatment of gonorrhoea, following the development of resistance to fluoroquinolones. In New Zealand the recommended treatment is IM ceftriaxone which is the same advice given by the United States Centres for Disease Control and Prevention (CDC). United States data is now showing that the percentage of isolates with elevated mean inhibitory concentrations (the lowest concentration that will inhibit the growth of a microorganism) to cephalosporins (cefixime and ceftriaxone) has increased during the last ten years. These trends are concerning because the emergence of resistance to fluoroquinolones followed a similar pattern in the United States as what is now being seen with ceftriaxone. Cephalosporin treatment failures have also been reported in Europe and Asia.[13]

Although cephalosporins are still effective, the CDC is advising health-care providers to be vigilant for gonorrhoea treatment failures after using a cephalosporin (shown by persistent symptoms or a positive follow-up test despite treatment).[13]

Extended-spectrum beta lactamases

Extended spectrum beta lactamases (ESBLs) are produced by some bacteria and confer resistance to all penicillins and cephalosporins, including the extended spectrum cephalosporins (e.g. ceftriaxone, cefuroxime) that were originally designed to resist the action of older beta-lactamases. Many of these organisms producing ESBLs may also be resistant to other antibiotic classes, e.g., aminoglycosides, sulphonamides and fluoroquinolones, limiting treatment options for patients infected with ESBL-producing organisms.[14] ESBLs are most common in *Escherichia coli* and *Klebsiella pneumoniae*. The most typical type of infection they cause is urinary tract infections, however, they can cause serious infections in the blood stream, in which case they are likely to be resistant to many of the empirical antibiotics used for these infections.

Infections with ESBL-producers are most common amongst elderly people or those who have recently been in hospital, received antibiotic treatment or travelled overseas. The incidence of these infections has been increasing in New Zealand and globally and is of concern because these organisms are resistant to many commonly used antibiotics. As with other types of antibiotic resistance, minimising the spread of resistant organisms relies in part on only using antibiotics when necessary and at appropriate doses for the correct duration in both the community and inpatient settings.[14]

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WHAT ARE YOUR THOUGHTS ON PROSTATE SCREENING IN GENERAL PRACTICE?

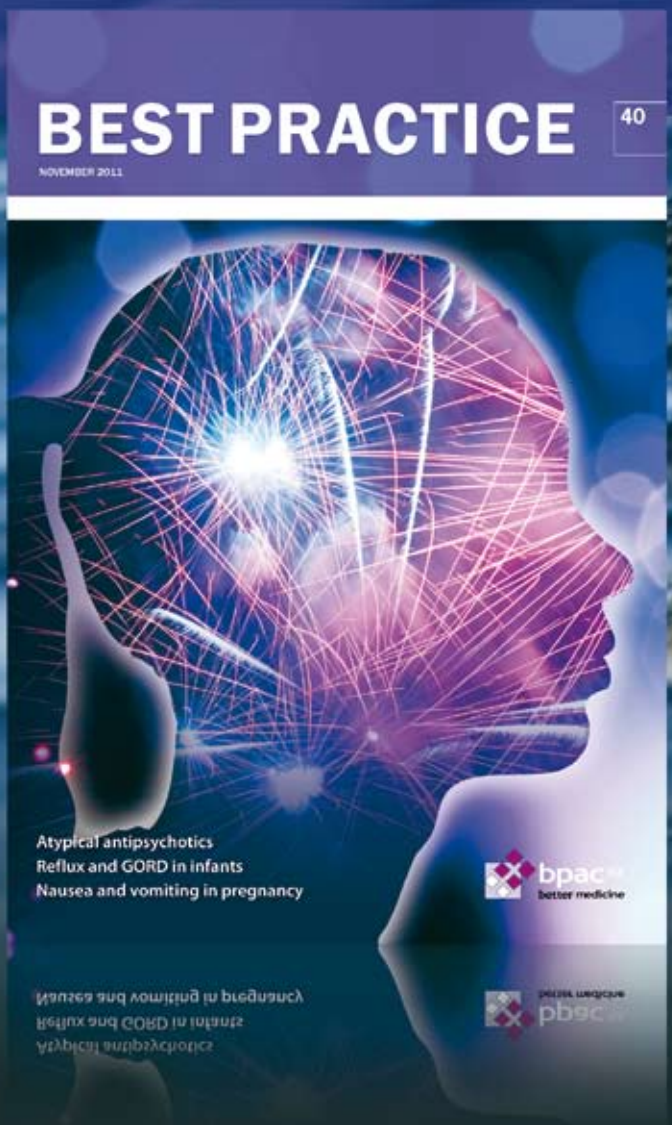
The Department of Surgery in Wellington, Otago University is researching GPs practices towards prostate cancer screening. We need your response as it is the GPs of New Zealand who will shape how prostate cancer is screened for in the future.

Our questionnaire will take less then six minutes and is totally anonymous. Thank you for your time. Visit the following website:

www.surveymonkey.com/s/OtagoUniGPPSA

For further information or for a full study protocol contact Dr. Simon van Rij:

simon.vanrij@ccdhb.org.nz



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Providing medical advice to travellers

See the traveller early

New Zealanders love to travel. In the year to September 2011, New Zealand residents made over two million short-term trips overseas.[1] World Health Organisation (WHO) guidelines recommend that where appropriate, travellers visit a health professional six to eight weeks prior to international departure. This allows sufficient time for any vaccination schedules to be completed.[2] It is important that this message is promoted to improve individual health and safety and to prevent the spread of infectious disease.

Ask detailed questions

The degree of health risk an international traveller is exposed to will be determined by their underlying health and the nature of their intended travel. Medical recommendations should be based on the risk assessment of both the traveller's health and the country of destination.

Best Practice tip: A checklist for obtaining relevant information is a good way to streamline consultations. The Centers for Disease Control and Prevention (CDC) provides a suggested format for travel consultations, in the "Yellow Book", available from: **wwwnc.cdc.gov/travel/page/yellowbook-2012-home.htm**

Health status

Health risks associated with travel are increased for young children, elderly people, people with disabilities, pregnant women, people who are immunocompromised, people with a long-term medical condition and those travelling to a remote destination. A simple "fit to fly" test is to determine whether the patient can walk 50 m or climb one flight of stairs at normal pace without discomfort.[3]

Air travel is contraindicated in **infants** aged under 48 hours.[2] Generally, it is advisable to wait one to two weeks after birth before an infant travels by plane, to ensure that the anatomy of the respiratory system has fully developed.[3] Parents should ensure that infants are adequately hydrated at all times.[4] Malaria is particularly harmful to infants so travel to high-risk regions should be avoided if possible.

Pregnancy is not a barrier to air travel for healthy woman with uncomplicated pregnancies. Air travel is generally the safest in the second trimester. Airlines have individual policies on pregnant passengers and in some cases a doctor may be required to provide written verification that a pregnant woman is fit for travelling. Malaria during pregnancy can be extremely harmful both to mother and foetus. Travel to areas where malaria is prevalent should be avoided where possible.

Key concepts

- Travellers are encouraged to seek advice from a health professional six to eight weeks prior to departure to an international location – two or more appointments may be required
- Medical recommendations to travellers should be based on a risk assessment of both their underlying health and the duration, purpose and destination of their intended journey
- A travel medicine assessment typically includes advice about avoidance of risks, prescription of prophylactic medicines such as antimalarials and administration of indicated vaccinations

People with a **long-term medical condition** should take all necessary medicines with them in their carry-on luggage with additional supplies in their checked-in luggage. However, insulin should not be placed in cargo as cold temperature can cause it to freeze and denature. All medicines should be clearly labelled in their original containers and accompanied by a letter from a doctor detailing the need and purpose of the medicine.

Women taking **oral contraceptives** should confirm that their medicine is available in the country of destination, if their supply will run out while travelling. In some cases it may be advisable to switch to a form of oral contraceptive known to be available, prior to departure, or to use a longer-acting contraceptive for convenience while travelling, e.g. intra-uterine device, implant.

Uncomplicated **urinary tract infections** (UTIs) are common amongst young, otherwise healthy women.[5] Consider prescribing a supply of antibiotics for female travellers with a history of recurrent UTIs.

Destination and purpose

Countries with poor water quality and hygiene standards may have high rates of infectious disease. In developing countries and areas affected by natural disaster, outbreaks of disease can be rapid and unpredictable. It is important to gather specific details on the itinerary of the traveller including whether they are visiting cities or provincial areas, the purpose of the visit and what kind of activities or work they will be engaged in.

Additional factors

There are numerous other factors that may impact on a traveller's health. Travellers that venture into more remote areas increase their risk of insect-borne infection. Budget conscious travellers may be at increased risk from contagions in crowded public transport or unsanitary accommodation, while "thrill-seekers" may be exposed to many different sources of infection and injury.[6] Encouraging people to think ahead can help them to minimise their own exposure through avoidance strategies.

 All travellers should be advised to purchase medical insurance before beginning their journey and to register their details on the New Zealand Ministry of Foreign Affairs and Trade website, which also has updated travel warnings: **www.safetravel.govt.nz**

Educate to reduce risk

Traveller's diarrhoea

Traveller's diarrhoea affects up to 60% of travellers who visit high-risk destinations.[7] Diarrhoea is defined as three or more loose or liquid stools a day and may be accompanied by nausea, vomiting, abdominal cramps and fever.[8] The most common reason is bacteria, but viruses and parasites may also be causative.

What to tell people at risk? Advise the traveller, that if diarrhoea begins, it is important that fluid intake is increased to compensate for losses. An oral rehydration solution can be purchased, or made by adding six level teaspoons of sugar and one level teaspoon of salt to one litre of bottled water.[2] An anti-motility medicine, e.g. loperamide, may be used for immediate symptom control, however, these medicines are contraindicated in children aged less than three years and are not recommended for children aged under 12 years. Ciprofloxacin may be given empirically to limit the duration of the illness (500 mg, twice daily, for three days). Azithromycin is the first-line choice for children and pregnant women and visitors to the Indian subcontinent, where there is resistance to fluoroquinolones. A supply of antibiotics and anti-motility medicines may be prescribed prior to travel.

A vaccine is available which provides protection against cholera and traveller's diarrhoea caused specifically by *Escherichia coli* (protective efficacy is approximately 60%).[9] However, this vaccine is only indicated for travellers who may be particularly vulnerable to infection, e.g. spending a long period of time in high risk areas.[10] The vaccine (Dukoral) costs approximately $60 and is in the form of an oral suspension.

Long-haul air travel

Cabin pressure in commercial aircrafts is normally equivalent to 1500 m to 2000 m, with humidity ranging from 10–15%.[3] Passengers must also contend with the noise, vibration, cramped space and jet lag associated with airline travel. Drying of airways, corneas and skin is common. Travellers should be encouraged to maintain adequate levels of hydration and to use a skin moisturiser if required. Most airlines are able to offer additional services to passengers with special needs, such as specific meals, medical oxygen, wheelchairs and specific seating.

People taking regular medicines may need to be given advice on adjusting their dosing intervals in response to the timing of meals on board flights and changing time zones.

Hypnotics may be prescribed to help alleviate sleep loss during the flight, however, these medicines do not alter circadian cycles. Medicines should be prescribed at the lowest effective dose and ideally should not be prescribed for the first-time for a patient, for use during a flight.

Deep vein thrombosis (DVT) is associated with long-haul travel (over four hours) and can lead to pulmonary embolism or venous thromboembolism (VTE), which can be fatal. People at increased risk of VTE include those with pro-thrombotic states (e.g. deficiencies of antithrombin III, protein C, protein S), a history of VTE, recent surgery or a significant medical illness. Advice should be given to wear correctly fitted compression stockings and consider prescribing prophylactic low molecular weight heparin. People who are not at increased risk of VTE do not require prophylactic medicines. All passengers on air flights should be advised to regularly stretch the lower limbs and take any opportunity to walk around the cabin. This is especially important for pregnant women. In addition, comfortable, non-restrictive clothing should be worn.

For further information about VTE prophylaxis and treatment, see: “The use of antithrombotic medicines in general practice”, BPJ 39 (Oct, 2011).

Descent from altitude can cause pain in the middle ear and sinus cavities due to unequal air pressure. This may be particularly bad in women who are pregnant, due to tissue hyperplasia , and in young children, who often have poor eustachian tube function. Equalising pressure in the ears can alleviate these symptoms. This can be achieved by swallowing, chewing or by holding the nose and gently generating pressure against a closed mouth (Valsalva maneuver). Infants can be assisted by upright feeding, use of a pacifier or eating. Avoiding the consumption of gas-producing food in the day before a flight can ease discomfort caused by intestinal gas expansion.[3]

After arriving at the destination, it is important to try to adapt to the new time zone and local customs as quickly as possible. If sleep is required (and it is daytime), a short rest of no more than two hours is advised.[3] Exposure to natural light is recommended to help to “reset” the circadian cycle.

For further information about treating traveller's diarrhoea see: "Antimicrobials, choices for common infections", bpac^{nz} (Apr, 2011).

Heat and humidity

Loss of water and electrolytes can cause heat exhaustion and heat stroke. Travellers should be advised to drink sufficient fluid to maintain normal urine production. Older travellers need to take particular care, as the thirst reflex and ability to concentrate urine diminishes with age.[11]

Fungal skin infections such as tinea pedis are often accelerated by heat and humidity.[12] Frequent showering and thoroughly drying the skin can help to reduce the incidence of such infections.

Cook it, peel it, boil it - or avoid it!

The following general advice can be given to any traveller to a region where infectious disease is a concern:

Fluids	▪ All water (other than bottled water) should be boiled before drinking, or filtered and chemically disinfected ▪ Avoid ice, unless made from clean water ▪ Boil unpasteurised milk
Food	▪ Do not eat uncooked food or food that has been left uncovered at room temperature. ▪ Food that is thoroughly cooked and served above 60 degrees Celsius is generally safe ▪ Avoid dishes containing raw or uncooked eggs ▪ Avoid ice cream from unreliable sources
Behaviour	▪ Use bottled water to brush teeth ▪ Always wash hands before preparing food ▪ Obtain local advice about the safety of buying any shellfish and seafood

Basic first aid kit for travellers

- Paracetamol (for pain)
- Antiseptic cream, e.g. povidone-iodine
- Antihistamine tablets, hydrocortisone cream (for allergies, bites and stings)
- Prophylactic antibiotics, e.g. for diarrhoea
- Loperamide (for diarrhoea)
- Insect repellent, sun screen
- Water sterilising tablets
- Dressings for blisters

Avoidance is the first line of defence

Travellers can significantly reduce their risk of exposure to disease and injury by avoiding situations with increased risk and practicing effective management strategies, e.g. using insect repellent.

Animals

Rabies is prevalent in many countries and is transmitted by animal bites, scratches or licks (in the site of broken skin). When animals become infected with rabies they may be aggressive and bite without warning, therefore animals should not be approached. Rabies is mainly transmitted by dogs, however, any mammal can transmit the disease, e.g. bats, cats or monkeys. People travelling to regions where rabies is prevalent should consider pre-exposure vaccination (Page 38) before departure.

Advise travellers that in the event of an animal bite, the lesion should be immediately and thoroughly washed with disinfectant, soap or detergent and medical care sought.

Insects

Humans can be infected by a number of insect-borne infectious diseases such as malaria, chikungunya fever and dengue fever. Transmission risk varies by region and fluctuates with season. Infection risk can be reduced by seeking accommodation in urban areas and sleeping in air-conditioned rooms.

Travellers should be advised to apply an insect repellent containing 30% DEET (adults, children aged over three months and pregnant women). Insecticide can also be applied to clothes. Spraying a bedroom with insecticide before sleeping and using a mosquito coil in conjunction with a sleeping net provides a high degree of protection. Sleeping nets should have mesh holes no larger than 1.5 mm and their effectiveness is increased if pre-treated with permethrin. Wearing long-sleeved clothing and tucking trousers into socks in flea and tick infested areas is also recommended.

Malaria

Malaria is caused by one of five Plasmodium protozoan parasites – *P. falciparum* (the most severe), *P. ovale*, *P. malariae*, *P. vivax* and *P. knowlesi*. The parasite is transmitted by female Anopheles mosquitoes, which generally bite between dusk and dawn. The various forms of malaria have an incubation period from seven days and the disease is characterised by a fever with chills, headache, muscular aching, weakness, vomiting, cough, diarrhoea and abdominal pain.

Malaria is present in some regions in the following areas:

- Pacific countries west of Fiji, e.g. Papua New Guinea, Solomon Islands, Vanuatu, Indonesia
- Southeast Asia and India
- Africa and South America

There are several antimalarial medicines available in New Zealand (Table 1, over page). Antimalarial drug resistance is spreading and prophylaxis recommendations vary from country to country. It is important to remind patients

Travelling to high altitude

Most people, including those with stable coronary disease, hypertension, diabetes, asthma or mild chronic obstructive pulmonary disease (COPD) and pregnant women, can generally travel to locations at high altitude, e.g. mountainous regions, without complications - although their condition should be monitored. However, people with unstable angina, pulmonary hypertension, moderate to severe COPD or sickle cell anaemia are advised not to travel to high altitude locations.[2]

When travelling to higher altitudes, gradual ascent and adequate hydration is advised. Even after acclimatisation has occurred, aerobic ability is impaired and travellers may still have problems with sleep.

Above altitudes of 2500 m the risk of high-altitude illness increases markedly. This is exacerbated by the consumption of alcohol or physical exertion.[13, 14] Acute mountain sickness refers to a collection of symptoms including; headache, fatigue, nausea, dizziness, sleep disturbance, and in rare cases, pulmonary or cerebral oedema. Symptoms can occur within one to 12 hours of reaching altitude and often spontaneously resolve within 24–48 hours, or after descent to lower altitude. Gender and fitness levels have little influence on predisposition to acute mountain sickness.[15]

Table 1: Antimalarial medicines available in New Zealand

Antimalarial	Cost	Prophylactic dose	Contraindications and cautions	Adverse effects
Hydroxychloroquine sulphate	Fully funded	400 mg, once per week; adults 5 mg/kg, once per week; children Begin two weeks before departure, continue until four weeks after returning	Contraindications: maculopathy, age under six years Interactions: monoamine oxidase inhibitors, digoxin, antidiabetics	Gastrointestinal disturbance, headache, skin reactions, hair loss, visual disturbance
Doxycycline	Funded as an antibiotic only	100 mg, per day; adults 2 mg/kg, per day; children aged over 12 years. Begin two days before departure, continue until four weeks after returning	Contraindications: pregnancy (especially after first trimester), breast feeding, age under 12 years Caution: concurrent use of oral retinoids or vitamin D	Gastrointestinal disturbance, photosensitivity (can be severe), oesophagitis, enamel hypoplasia, tooth discolouration, hepatic dysfunction
Atovaquone + proguanil (malarone)	~ $100 (12 tablets)	Atovaquone 250 mg and proguanil 100 mg (one tablet), per day; adults and children > 40 kg Begin one to two days before departure, continue until one week after returning	Contraindications: severe renal impairment	Gastrointestinal disturbance, oral ulcers, headache, dizziness, muscle pain, pruritis, alopecia
Mefloquine	~ $60 (8 tablets)	250 mg, once per week; adults and children > 45 kg Begin one week before departure, continue until four weeks after returning	Contraindications: severe renal or hepatic impairment, psychiatric disturbance, history of convulsions	Gastrointestinal disturbance, anxiety, depression, confusion, dizziness, headache, somnolence, neuropathy, memory impairment, tinnitus, convulsions, sleep and visual disturbances

that no antimalarial medicine is 100% effective and that mosquito bite avoidance is essential.

Antimalarial medicines may be taken by pregnant women if the benefit of prophylaxis outweighs the risk associated with the medicine. However, where practical, pregnant women are advised to avoid travelling to areas where malaria is prevalent. The Australian Therapeutic Goods Administration pregnancy classifications for antimalarial medicines are; hydroxychloroquine and doxycycline category D, mefloquine category B3 and atovaquone and proguanil category B2.

The WHO publishes regularly updated information about malaria prevalence, drug resistance and recommended antimalarial prevention, including an interactive map. This also includes information about yellow fever and rabies requirements:
www.who.int/malaria/travellers/en

Treating patients upon return

Malaria can be fatal if treatment is delayed beyond 24 hours of symptom onset. Unexplained fever occurring in people within three months of leaving a high-risk country is a medical emergency. All patients with suspected malaria require an immediate blood test to detect the presence of parasites. If there is a delay in confirming a diagnosis then empiric treatment with an antimalarial medicine other than that used for prophylaxis is indicated.

Vaccinate where appropriate

Travel provides an opportunity to review a person's immunisation status. Required vaccinations will depend on the patient's immunisation history, country of destination, duration of travel and the length of time until departure.

The New Zealand immunisation schedule covers all vaccinations that are routinely recommended by the WHO for travellers.[16] A combined booster for tetanus and diphtheria is recommended for travellers when the last vaccination for these diseases was greater than ten years ago. A booster vaccination against polio should also be considered for those travelling to regions where the disease is prevalent.[17] Generally, where a patient's level of immunity is uncertain (e.g. immunisation received many years previously), it is recommended that a booster vaccination be given. When immunity status is unknown, blood tests can be taken to establish immunity to specific diseases.

Vaccines that are not covered by the national schedule

The following vaccines may be considered depending on the traveller's destination. N.B. these vaccinations are not funded.

Hepatitis A is transmitted via the faecal-oral route. The incubation period is 14–60 days. The regimen is a single dose with a booster six to 12 months later for any person aged over one year. Immunity occurs after 14 days and is thought to persist for at least 25 years. However, the vaccine can be administered up to the day of departure and still provide some level of protection.[2] Combined hepatitis A and B vaccines can be administered and a combined hepatitis A and typhoid vaccine is also available.

Typhoid is an acute febrile bacterial infection transmitted through ingestion of food or water contaminated with *Salmonella* typhi. The incubation period is generally one to four weeks, but can be as little as three days or up to two months. Immunity occurs in approximately 70% of people, seven days after vaccination. A booster dose is required every two to three years. Immunisation of children younger than age two years is not recommended.

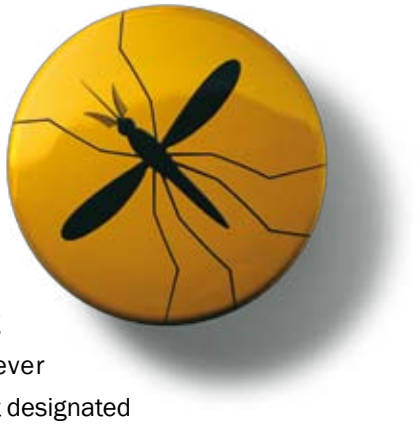
Influenza season in the northern hemisphere occurs from approximately October to May. All people aged 65 years or older, people with co-morbidities, pregnant women and children aged between six months and five years should be encouraged to be immunised prior to travel to the northern hemisphere during "flu season". Although influenza vaccines given in the southern hemisphere may not be as current as the latest northern hemisphere vaccinations, they are still likely to provide some degree of protection to travellers vulnerable to infection.

Japanese encephalitis is a mosquito borne virus transmitted to humans from pigs and birds and occurs in almost all Asian countries. Most infections are asymptomatic, however, approximately 25% of symptomatic cases are fatal.[2] The risk of infection to most travellers is very low. The incubation period for this disease is five to 15 days. A vaccine is available as a series of two doses which are given 30 days apart. The time to immunity is ten days and lasts for approximately one year.

Meningococcal disease is a bacterial inflammation of tissues surrounding the brain and spinal cord and is transmitted through respiratory secretions. The incubation period is generally three to four days, but can be up to ten. There are two types of meningococcal vaccine available in New Zealand – quadrivalent and meningococcal C vaccines. Quadrivalent vaccination is recommended for travellers to Sub-Saharan Africa or Mecca. A single dose vaccine provides immunisation for approximately three years, beginning ten days after administration. The quadrivalent vaccine does not provide protection against meningococcal B, which is present in New Zealand (N.B. meningococcal B vaccine is no longer available in New Zealand). Meningococcal C vaccine is intended for infants and young adults living in hostel situations and is not specifically a travel-related vaccine.

Rabies is a viral infection transmitted via animal bites, licks or scratches. Rabies causes acute encephalitis in humans and is often fatal. Pre-exposure immunisation does not prevent rabies and does not eliminate the need for rabies treatment, however, it reduces the number of vaccine doses required and increases the length of time in which medical help can be sought, should an incident occur. A full course of pre-exposure intramuscular rabies vaccinations can be given to anyone aged over one year and includes doses on days 0, 7 and 21 to 28, with immunity occurring after 30 days. Post-exposure vaccination for rabies comprises five vaccine doses for people not previously vaccinated or two doses for those who have been previously vaccinated.

Yellow fever is a viral haemorrhagic fever transmitted from monkey to person, or person to person after mosquito bite. The incubation period is three to six days. Yellow fever vaccination is given in a single dose with complete immunity occurring within ten days. Yellow fever vaccination is available only at designated yellow fever clinics. Some countries, such as those in Sub-Saharan Africa and South America, require that travellers carry a written record of Yellow Fever vaccination (or a written opinion from their physician if the vaccination is contraindicated for medical reasons). International vaccination certificates can be downloaded from the WHO website: **www.who.int/ihr/IVC200_06_26.pdf**



Travel resources available for health professionals

The World Health Organisation provides a comprehensive website and an annual publication: "The international travel and health book", which can be accessed and downloaded online: **www.who.int/ith/en**

The United States Centers for Disease Control provides the latest updates on outbreaks of infectious diseases around the world, including recommended vaccinations. It also publishes a biannual resource for those who advise international travellers about health risks: **www.cdc.gov**

The Aerospace Medical Association produces medical guidelines for airline travel, covering many common long-term conditions:
www.asma.org/publications/medicalguideline.php

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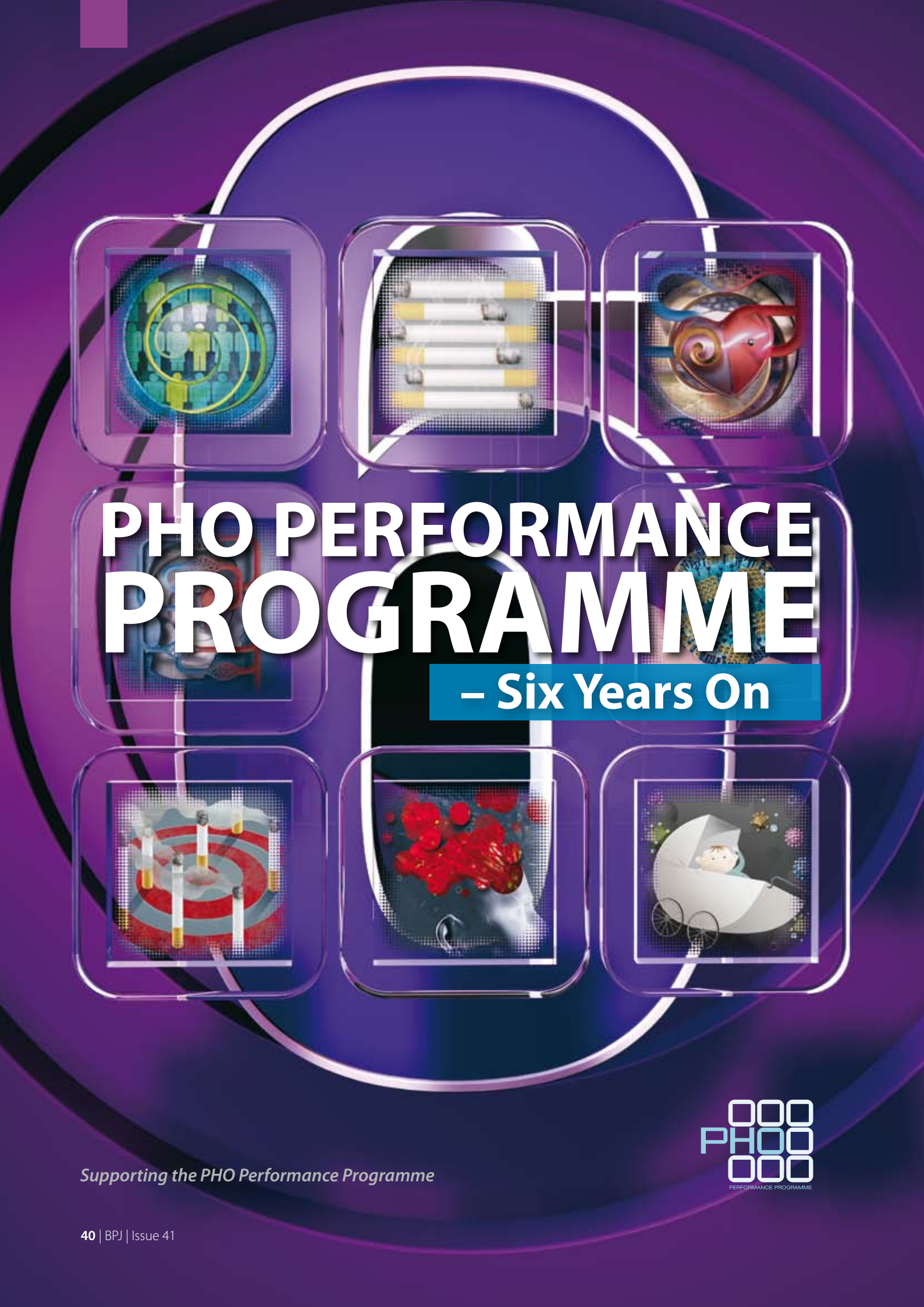


PHO PERFORMANCE PROGRAMME

– Six Years On

Supporting the PHO Performance Programme

A brief history of the Programme

The PHO Performance Management Programme, later renamed the PHO Performance Programme (PPP), was established in 2005 as a voluntary programme, in response to reports from the Clinical Performance Indicator Project (2005) and Referred Services Group (2002). The main aim of the Programme is to improve the health of enrolled populations and reduce inequalities in health outcomes through supporting clinical governance and rewarding quality improvement within PHOs.

The Programme has had a number of successes in its six years. Key highlights include:

- Improved performance against targeted indicators
- Reduced health inequalities
- Established strong governance arrangements including provider representation
- Evidence of the effectiveness of primary care
- Improved data for quality improvement, policy development and planning
- Alignment with other performance measures to minimise the collection burden on primary care

These successes have been achieved through hard work and good sector engagement, but this was not always an easy path.

The initial set of Programme indicators were developed by a PHO Clinical Performance Advisory Group and a joint DHB/Ministry of Health project team, with guidance from a Referred Services Management Expert Steering Group. The first pre-requisite phase began in July 2005 and the first six monthly performance periods began on 1 January 2006, with 29 PHOs participating. Despite some initial criticisms, participation in the Programme continued to grow and by July 2007 all of the then 82 PHOs had joined.

A new governance structure for the PPP was introduced in 2008, involving provider, PHO, DHB and Ministry of Health representatives. This Governance Group still exists today and has provided strong leadership and guidance for the Programme to ensure it continues to add significant value to the sector. The Governance Group is supported by the Programme Advisory Group, which provides expert advice on the content of the Programme and ensures clinical relevance and evidence base as well as considering implementation options, policy priorities and alignment and business sustainability.

Under these governance arrangements the Programme has matured and it now places a greater emphasis on quality improvement. This is achieved via a step-wise approach, starting with recording, then moving on to activities and finally on to patient outcomes. An example of this is the management of patients with diabetes. Measures currently exist to record a diagnosis of diabetes and to actively manage patients who have been detected through regular reviews. Now a third phase measurement is being considered to assess how well these patients are responding to their management. Once recording is well established, it is planned that these indicators will cease to be funded directly, but will transition to qualifying criteria for payment of incentives for the management of patients with diabetes.

The continuous improvement approach is supported by a number of incentive mechanisms. Incentive payments are distributed based on the rate of progress being made rather that just absolute performance against the target agreed between the PHO and the DHB. This mechanism recognises that PHOs serve diverse populations with different needs and a one size fits all approach, based on nationally consistent targets, could lead to the undesirable situation where PHOs serving the highest need communities with the most difficult to reach populations would receive the smallest incentive payments.

The reduction of health inequalities also remains an important objective. This is recognised in the incentive payments structure where a higher payment is given to PHOs for successful improvement in the higher need population. For the purpose of the Programme, the high need population is defined as; people who are of Māori or Pacific ethnicity or who live in the most deprived quintile areas.

Other incentive mechanisms include the development of business intelligence tools for the PHOs and the distribution of information in ways that are useful for PHOs (and their practices) and DHBs to inform improvement.

Has the Programme delivered value?

Earlier this year the Programme surveyed its stakeholders to assess its value. Whilst this survey only received 90 responses these were well distributed among Providers, PHOs and DHBs. Figure 1 illustrates that overall, most respondents found the Programme to be valuable.

How has the Programme measured up?

The Programme has now been running for approximately six years and for many Programme indicators there is sufficient history to identify whether improvements have been made in the target populations.

Whilst it could be argued that some of the improvements reported are merely down to better recording of activity that was already being undertaken in General Practice before the Programme was established, it is also true that systematic recording and measurement is an element of a quality system.

> *"We can only be sure to improve what we can actually measure".* – Lord Darzi, Next Stage Review report, NHS, 2008

As with any other complex system it is sometimes difficult to isolate the success of the Programme from other factors influencing performance.

With these caveats the performance against some of the key indicators covering health priority areas are examined as follows.

Age appropriate vaccination for two-year-olds

This indicator was originally measured using data derived directly from primary care and counted the proportion of enrolled two-year-old children recorded as being fully immunised. Following discussions with PHOs and extensive patient-by-patient analyses proving the reliability of the national immunisation register (NIR), this indicator was transitioned to using the NIR as the data source by 1 January 2011. Now this indicator measures the percentage of children aged two years who have received the complete set of final dose age appropriate vaccinations. The number of fully vaccinated children is compared with the number of children on the enrolment register who turned age two

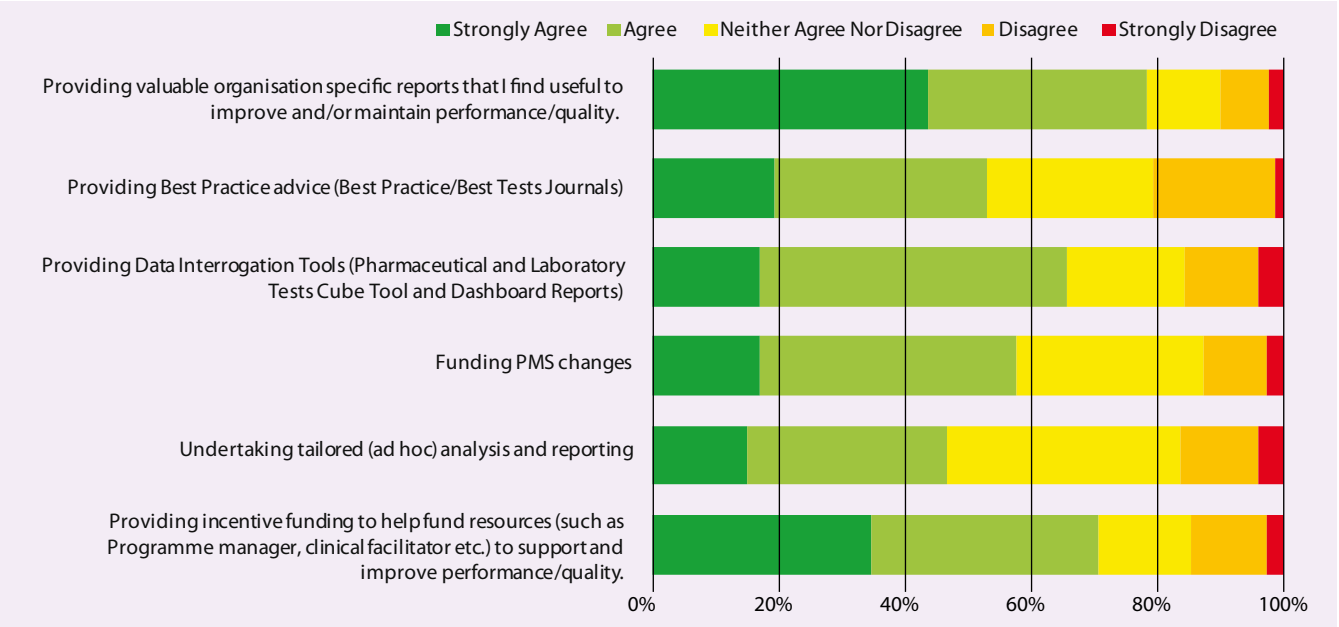


Figure 1: PPP stakeholder survey 2011; summary of key results

years during the period, even if they are not recorded on the NIR. For this reason the Programme usually reports slightly lower rates of immunisations than are quoted for DHBs in the Health Target where only children recorded on the NIR are reported.

The Programme goal was originally set at 85% but has recently been raised to 90%, and will further increase to 95% in 2012, to maintain alignment with the Health Target.

Since this indicator was first funded in October 2007 PHOs have continued to improve their performance. The current rate of immunisation in two-year-olds is 87.2% amongst the high need population and 88.0% for the total population (Figure 2). The gap between the rates achieved for the high need population and the total population continues to close and is now just 0.8%.

Breast cancer screening

Originally this indicator measured the percentage of women aged 50 to 64 years who had a mammogram as part of the national breast screening programme (BreastScreen Aotearoa), within the last two years. In January 2011 this age range was extended to include women aged 65 to 69 years to reflect the current target population for the national breast screening programme. This change has increased the reported figures for this indicator by 0.4% in the latest reporting period.

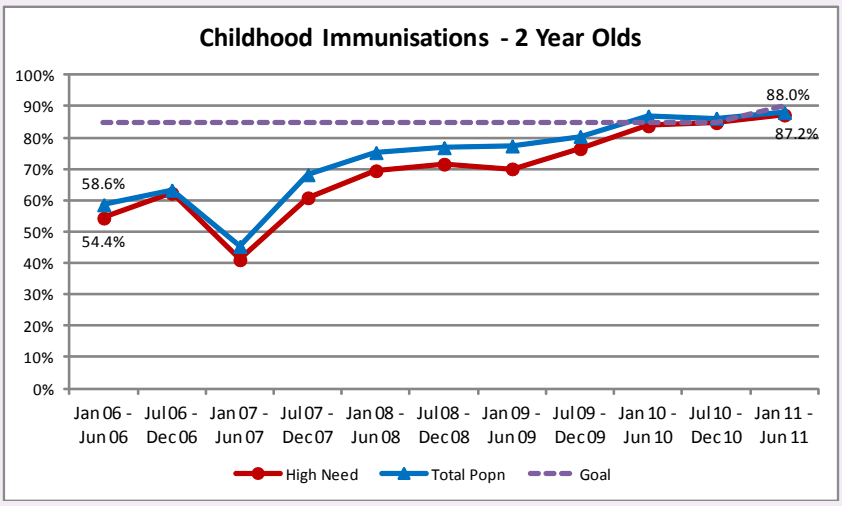
Only publicly funded mammography screenings performed by BreastScreen Aotearoa are counted by the Programme. True coverage rates, which include private mammography screenings, are likely to be higher, particularly for the total population measure, which is an information only indicator.

Breast cancer screening rates have improved steadily over the time period, with a 13% rise in rates recorded overall and a 19% improvement in rates for the high need population – reducing reported health inequalities (Figure 3, over page). Provided current rates of improvement are maintained, the Programme goal of 70% coverage should be achieved for the high need population group within the next two years.

Cervical cancer screening

This indicator measures the percentage of women aged 20 to 69 years who have received a cervical screen within the past three years. Data provided by the National Cervical Screening Programme is used to calculate this measure so women who choose to opt off the National

Figure 2: Percentage of children aged two years, enrolled in a general practice in New Zealand, who have been fully immunised



Screening Programme's register will not be counted by the Programme, even if they have had a cervical screen within the past three years. All figures are also adjusted at the national age related rate to allow for women who have had a hysterectomy and do not require cervical screening.

Although progress has been made over the lifetime of the Programme and rates have risen by 5%, improvement has now slowed and the national rate remains just below the Programme goal of 75% coverage (Figure 4). Progress has been slightly better for the high need population and the gap between the two populations has now reduced to 8% from over 11%.

Ischaemic cardiovascular disease detection

This indicator measures ischaemic CVD diagnoses recorded in primary care against a national model of expected rates for patients aged 30 to 79 years.

Prior to 2010 there were problems obtaining complete data for this indicator from primary care systems and collection was limited to a subset of ischaemic heart disease. High levels of detection are now being reported, with all PHOs recording detection rates in excess of prevalence estimates (Figure 5). Work is being conducted to understand why such high rates are being reported and

Figure 3: Percentage of women aged 50 to 64 years (50 to 69 years from 2011), enrolled in general practice in New Zealand, who have been screened by the national breast screening programme within the last two years

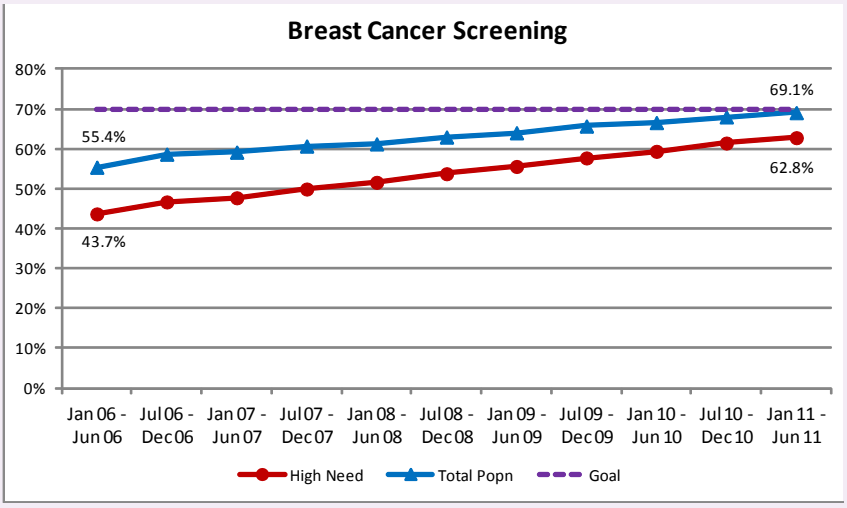
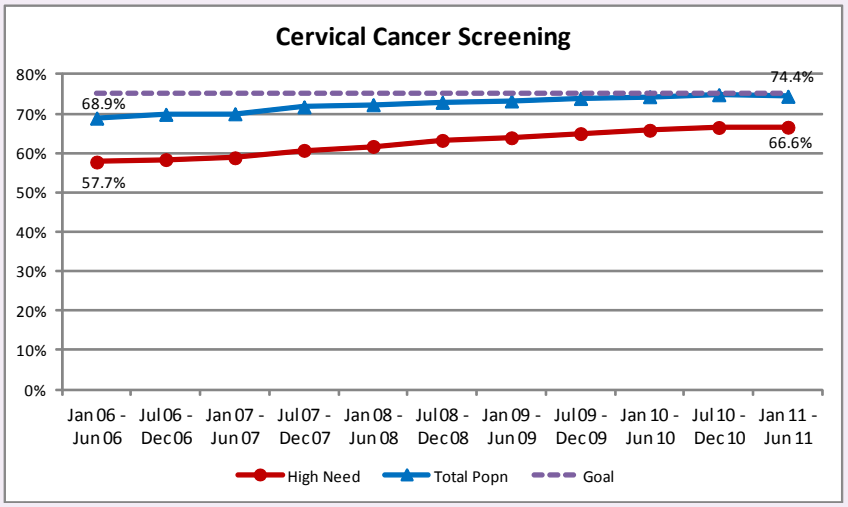


Figure 4: Percentage of women aged 20 to 69 years, enrolled in general practice in New Zealand, who have had a cervical screening test within the last three years



to ensure that, in the future, more realistic performance figures are produced by the Programme. The number of patients being recorded with ischaemic CVD in primary care has risen steadily over the past three reporting periods.

Cardiovascular risk assessment

This indicator measures the percentage of enrolled patients in the target population who have had their cardiovascular risk recorded within the past five years. This indicator was introduced in 2008 with a Programme goal of 80% coverage to be achieved within five years.

The target population for this indicator is:

- Males of Māori, Pacific or Indian sub-continent ethnicity aged 35 to 74 years
- Females of Māori, Pacific or Indian sub-continent ethnicity aged 45 to 74 years
- Males of any other ethnicity aged 45 to 74 years
- Females of any other ethnicity aged 55 to 74 years

Although the capture of CVD risk information has been occurring in primary care across the country for many years, this indicator is relatively new to the Programme. Improvements continue to be made in the systematic recording of this information within practice management systems and subsequent capture by the Programme. Currently the rate of CVD risk assessment is well below the 80% Programme goal (Figure 6).

Figure 5: Percentage of people, enrolled in general practice in New Zealand, who have been diagnosed with ischaemic CVD

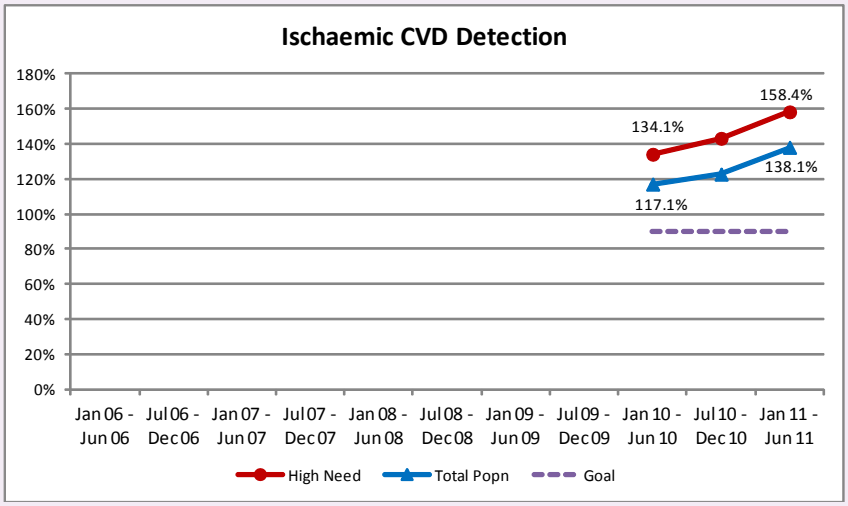
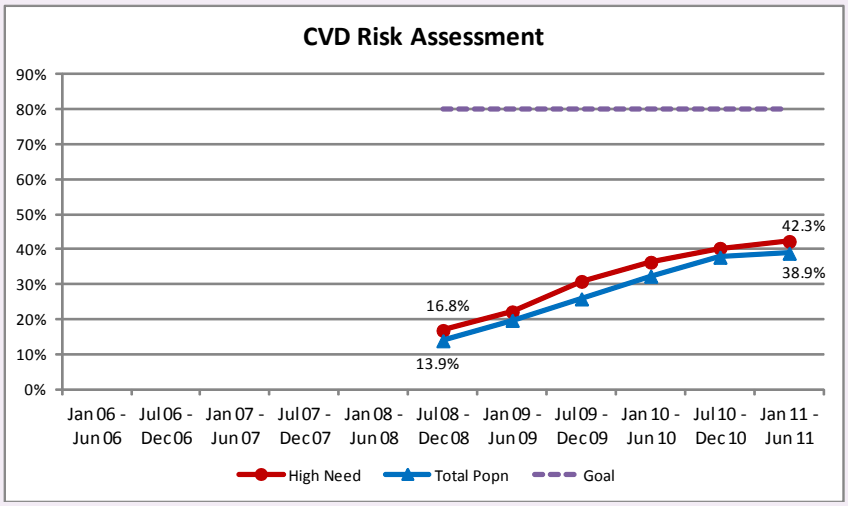


Figure 6: Percentage of people in the target population, enrolled in general practice in New Zealand, who have had a CVD risk assessment within the past five years



Diabetes Detection

The diabetes detection indicator compares the number of patients aged 15 to 79 years, recorded with a diagnosis of diabetes in primary care, against a national model of expected rates of diabetes, based on indicators of disease taken from other sources such as pharmaceuticals dispensed, laboratory tests ordered and hospital records.

Progress against this indicator is complicated by refinements made to the national diabetes prevalence model. In fact, one of the successes of the Programme has been the refinement of the national prevalence model as a result of feedback that primary care has been able to provide the diabetes team at the Ministry of Health. Despite these improvements, the prevalence model continues to understate the number of people with diabetes, particularly amongst the Māori and Pacific population. As a result, detection numbers exceed 100% (Figure 7).

Interestingly, a recent report from the National Health System (NHS) in the United Kingdom found that 2.2% of patients classified as having diabetes, did not actually have this condition.* If this was also the case in New Zealand, it would provide further explanation of the current Programme results.

* Report available from: www.diabetes.nhs.uk/areas_of_care/diagnosis_and_continuing_care/classification_of_diabetes/

Figure 7: Percentage of people, enrolled in general practice in New Zealand, who have been diagnosed with diabetes

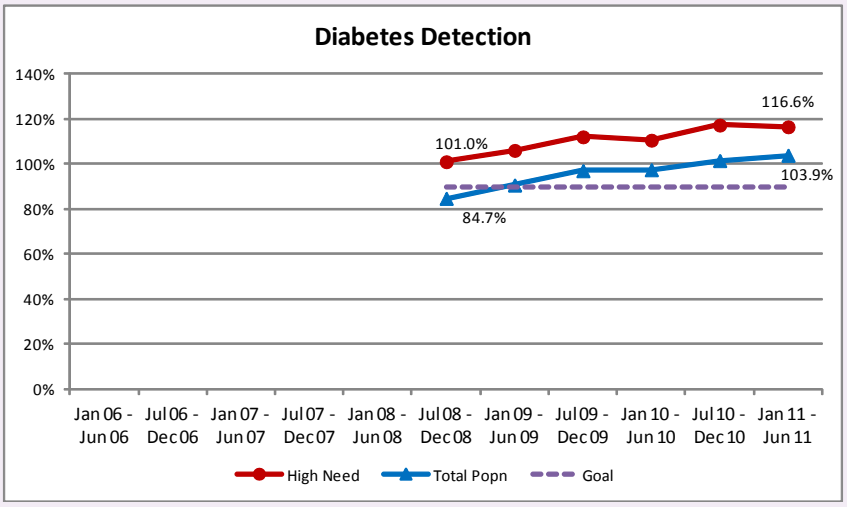
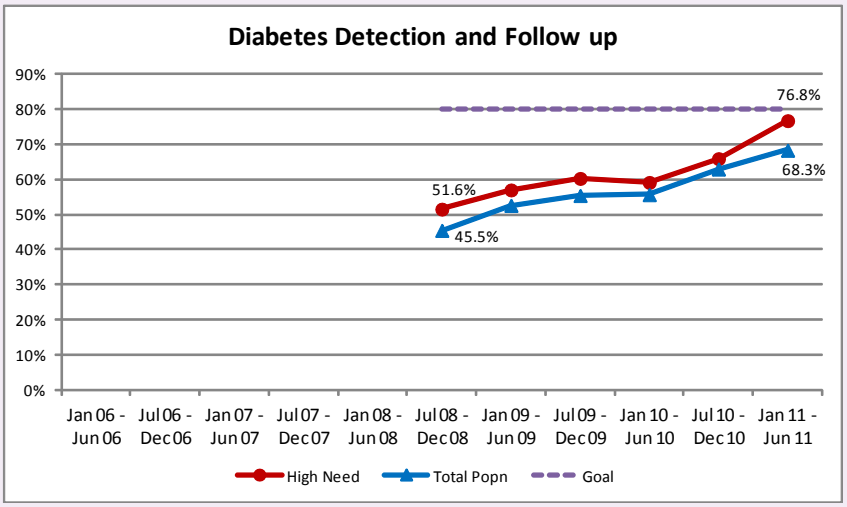


Figure 8: Percentage of people with diabetes, aged 15 to 79 years, enrolled in general practice in New Zealand, who have received an appropriate diabetes review at least annually



Diabetes Detection and Follow Up

This indicator measures the proportion of the population with diabetes, aged 15 to 79 years, who are receiving an appropriate diabetes review at least annually. A diabetes review is expected to include the measurement of HbA_{1c}, microalbuminuria and lipids, review of cardiovascular risk, examination of the feet, retinal screening (every two years) and review and updating of the patient's care plan. The Programme goal is that at least 80% of this population should receive a diabetes review each year.

Currently there are technical difficulties in collecting this data from PHOs who do not use the Get Checked Programme to provide diabetes reviews; these difficulties are being addressed by the Programme on a case by case basis.

This indicator currently uses the national prevalence model as the denominator, rather than the number of patients identified by primary care. Therefore, improved performance against this indicator partly reflects changes in the prevalence model (Figure 8). When compared against the number of people with diabetes recorded by primary care, annual review rates have risen from 51% to 65.8% (total population) and 53.6% to 65.9% (high need population) since July 2008. Some of this reported increase reflects improvements being made in collecting this data via PHOs.

Seasonal influenza vaccination coverage

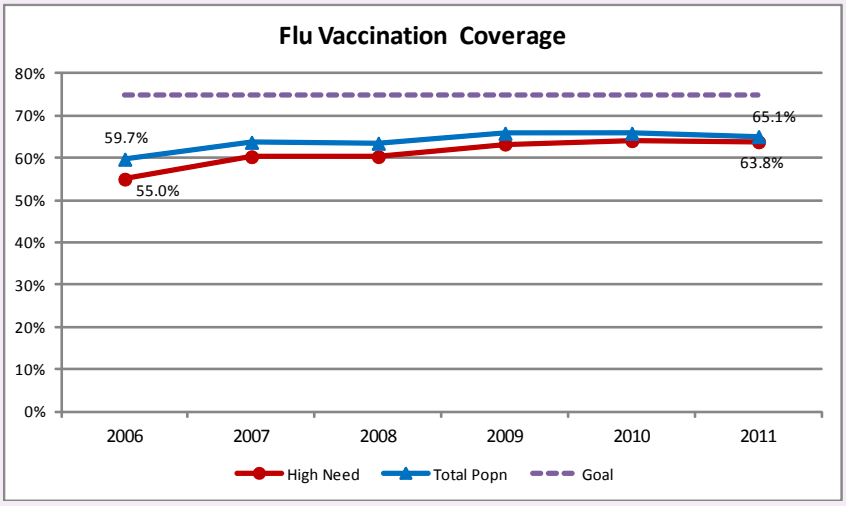
This indicator measures the rate at which patients aged over 65 years receive seasonal influenza vaccinations, each year between January and June. This data is sourced from claims data rather than directly from primary care so patients paying for their own vaccinations or where vaccinations are delivered outside a practice setting may not be counted.

Although some progress was made in the first few years of the Programme, additional progress has been slow for this indicator since then and the coverage rate reported by the Programme remains 10% below the Programme Goal of 75% coverage (Figure 9).

Smoking Status Recorded

This indicator measures the proportion of the enrolled population aged 15 to 74 years who have had their smoking status recorded. The Programme goal is that smoking status will be recorded for at least 90% of the population. A minimum of 70% of this population must have their smoking status recorded before the PHO is eligible to receive incentive funding for primary care to provide brief advice or cessation support. This applies to the performance period ending 31st December 2011 and in subsequent years.

Figure 9: Percentage of people aged over 65 years, enrolled in general practice in New Zealand, who have received a seasonal influenza vaccination



This indicator is measured from data taken from practice management systems and provided to the Programme as a PHO aggregate.

This indicator was only introduced as a funded indicator from 1 January 2011 so it is too early to assess any significant trends. Overall the results show an encouraging positive trend in performance, which has been most rapid for the high need population group, typically resulting in more equitable performance between the population groups (Figure 10).

Programme successes

The Programme has been instrumental in building a rich database of evidence of the work being done in primary health, to improve the health of the population through immunisation, screening, health promotion and the management of longer-term conditions. This is invaluable in helping inform policy and planning decisions around the future of health care.

The Programme has helped develop standards for the systematic recording of specific health information, and where necessary, funding changes to practice management systems. This has led to improved data quality - debates about the quality of the data are now more often about what the information is saying and how this can be used to inform better quality care. The sector is now placing increasing demands on the Programme to deliver more detailed timely data.

The Programme is currently working with the Ministry of Health and other agencies to ensure, wherever possible, that Programme indicators align with similar measures used elsewhere and, where practical, ensure that data collected by primary care providers form the basis for primary care health targets.

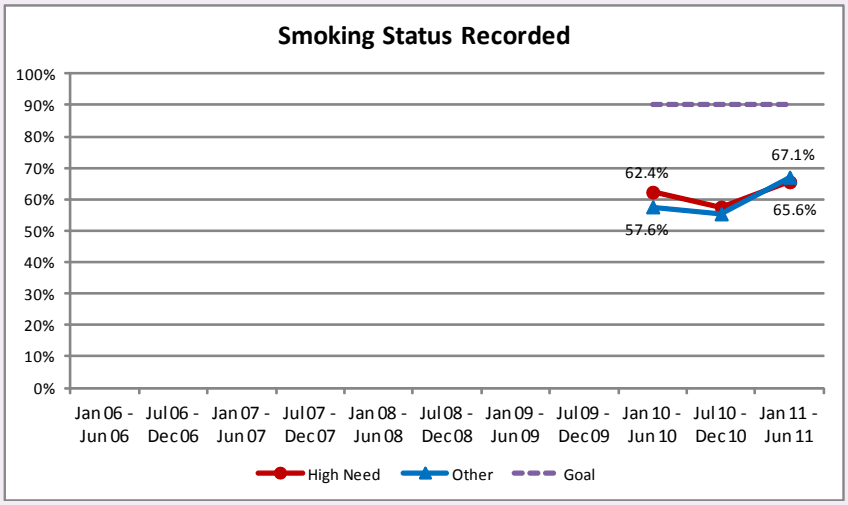
The Programme also funds educational material for primary care including contributing to the funding of Best Practice Journal and other bpac^{nz} material.

Development plans

The Programme has been successful in establishing robust data flows for the recording of activity for health priority areas. Further work is now required to evolve the indicators in these areas to focus more on health outcomes and the benefits to patients and the community.

Some important areas of primary care activity need to be added to the Programme to provide a more diverse range of measures. For example, work is currently underway to consider suitable indicators to measure and promote good primary mental health care.

Figure 10: Percentage of people, aged 15 to 74 years, enrolled in general practice in New Zealand, who have had their smoking status recorded



One of the criticisms of the Programme has been that the information provided is produced far too late and too remote from primary care providers to be useful in changing behaviours and assisting effective management. This is currently a major focus for the Programme team and reports are now being produced more promptly. Monthly reports are being created for indicators, where the report can be produced without adding to the collection burden of PHOs and providers. This allows progress to be tracked and actions taken within each reporting period.

The feasibility of providing prospective target lists, available at practice level for screening and immunisation activity, is being considered. This would enable individual practices to readily identify the work they need to do to achieve targets.

Data quality remains a concern and recent validation work undertaken by the Programme has revealed a small number of issues with PMS vendor implementations of the data extracts used by the Programme. Local variations in the means of delivering or coding a service also continue to present problems for the Programme and these will continue to be addressed on a case-by-case basis as the Programme becomes aware of them.

The merger of PHOs has created a number of challenges for the Programme with some of the new, larger organisations wishing to report performance at a locality level. This is relatively simple for indicators reported from national collections, such as immunisation and screening activity, that are available at patient level. However, the task is far more difficult for indicators derived from practice management systems since the Programme has traditionally only received PHO level aggregates to meet the concerns around patient privacy. Local arrangements are being made with these PHOs to receive more detailed information that can then be reported at a locality level. The Programme is proposing to strengthen its processes to ensure that this can be achieved without compromising patient privacy.

Patient level information has also proved useful in the past, in helping to improve the quality of the data received by the Programme. This provides a useful audit trail that is currently absent from the PHO aggregate data received by the Programme.

The other big challenge to the Programme will be to embrace the multidisciplinary team approach to patient care and ensure that it does not create new blind spots in the collection of data. Perhaps General Practitioners, as co-ordinators of care for their patients, will continue to remain the best place to seek this information, but the Programme will need to remain alert.

Final thoughts

The Programme has developed, and maintains, a rich source of data describing primary care activity and the health of the enrolled population. This is useful to policy makers, planners and funders and provides comparative data that can be used by PHOs and providers to identify opportunities for quality improvement. Overall, progress in recorded performance has been made across all currently funded indicators since they were first introduced to the Programme, although some indicators create significant challenges if the Programme Goals are to be achieved. Perhaps most importantly the Programme has raised the visibility of the activities of primary care in helping to keep New Zealanders healthy and narrowing the gap between high need populations and the rest of the country.

For further information about the PHO Performance Programme, including membership of the Advisory and Governance groups, visit: **www.dhbnz.org.nz/Site/SIG/pho/Default.aspx**

ACKNOWLEDGEMENT Thank you to **Stewart Pye**, Senior Analyst, National Services and Primary Health Performance, DHB Shared Services and **colleagues** for contributing this article.

Updated data sheet for dabigatran

Dabigatran is a new oral anticoagulant that has been available fully subsidised on the Pharmaceutical Schedule since 1 July 2011.

The dabigatran data sheet[1] was updated in early November 2011 to highlight the importance of an assessment of renal function in people who may be suitable for treatment with dabigatran, and also for those already on treatment. Moderate renal impairment in people taking dabigatran is associated with an increased risk of bleeding and in addition, dabigatran is contraindicated if the creatinine clearance is < 30 mL/min. There have been no changes to the recommended doses.

The key changes to the data sheet are:

- Renal function must be assessed in all patients prior to the initiation of dabigatran
- For patients taking dabigatran, renal function should be rechecked in any clinical situation where a decline in renal function is suspected, e.g. dehydration, hypovolaemia and with some medicines such as diuretics
- Renal function should be assessed at least annually in patients taking dabigatran aged over 75 years or with moderate renal impairment (creatinine clearance 30–50 mL/min)

Although eGFR provides an estimate of renal function it may not be accurate enough in older people or people with a BMI <18.5 kg/m^2 or > 30 kg/m^2. Therefore it is safer to calculate creatinine clearance for the majority of people. Creatinine clearance can be calculated with the Cockcroft-Gault equation or determined using a hand held or electronic (online or PMS) calculating tool.

The formula for calculating creatinine clearance is:

$$\text{Creatinine clearance (mL/min)} = \frac{(140 - \text{age}) \times \text{weight (kg)} \times \text{constant}^*}{\text{serum creatinine (µmol/L)}}.$$

* The constant = 1.23 for men, 1.04 for women

Dabigatran dosing regimen

Check creatinine clearance.

When a patient is changing from warfarin to dabigatran, discontinue warfarin and do not initiate dabigatran until the INR is <2.0.

The recommended dose of dabigatran for the prevention of stroke in people with non-valvular atrial fibrillation is:

- 150 mg, twice daily, if creatinine clearance >30 mL/min
- 110 mg, twice daily, if age ≥80 years

The updated data sheet also states that the lower 110 mg dose, twice daily, may be considered in patients aged 75 to 80 years if the patient's thromboembolic risk is low and their bleeding risk is high.

The recommended dose of dabigatran for the prophylaxis of VTE following major orthopaedic surgery is 110 mg, one tablet on the day of surgery then:

- 220 mg (110 mg x 2), once daily, if creatinine clearance >50 mL/min
- 150 mg (75 mg x 2), once daily, if creatinine clearance 30-50 mL/min

N.B. The length of the treatment course after surgery varies with the type of surgery. Prophylaxis post knee replacement is for ten days while for hip replacement it is 35 days.

The main adverse risk of dabigatran is bleeding. Although the manufacturer states that so far, reports of patients with serious or fatal bleeding are no different to expected rates, care must be taken when using dabigatran in patients at increased risk of bleeding. Risk factors for bleeding include:

- Age ≥75 years
- Moderate renal impairment (creatinine clearance 30–50 mL/min)
- Recent gastrointestinal bleeding
- Concomitant use of medicines such as aspirin, clopidogrel, NSAIDs, SSRIs

Any bleeding events in people taking dabigatran should be reported to the Centre for Adverse Reactions Monitoring (CARM). Reports can be made via bestpractice Decision Support ("Adverse drug reaction reporting" module), or directly with CARM; using a CARM reporting card, online at: **https://nzphvc-01.otago.ac.nz/carm**, phone: 03 479-7247, fax: 03 479-7150 or email: carmnz@otago.ac.nz

The approved indications for dabigatran use in New Zealand have been more specifically defined and are:

- The prevention of stroke in patients with non-valvular atrial fibrillation and at least one other risk factor for stroke (e.g. previous transient ischaemic attack or stroke, left ventricular ejection fraction < 40%, symptomatic heart failure, age ≥75 years, age ≥65 years plus diabetes or hypertension or coronary artery disease)
- For prophylaxis of venous thromboembolic events after major orthopaedic surgery

For further information see: "The use of dabigatran in general practice", BPJ 38 (Sep, 2011).

Reference:

1. Boehringer Ingelheim (NZ) Ltd. Dabigatran etexilate (Pradaxa). Medicine data sheet. Available from: www.medsafe.govt.nz (Accessed Nov, 2011).

Erratum: clozapine no longer on IMMP

In "Prescribing atypical antipsychotics in general practice", BPJ 40 (Nov, 2011), Page 18, it was stated that clozapine is currently monitored on the Intensive Medicines Monitoring programme (IMMP). Clozapine is no longer monitored on this programme.

Prochlorperazine for nausea and vomiting in pregnancy

Dear Editor,

On reading your article on nausea and vomiting in pregnancy (BPJ 40, Nov 2011), I was alarmed to see that prochlorperazine was listed as a second-line antiemetic. I have worked in gynaecology wards and know that its use was commonplace. However, before prescribing it to a patient recently, I discovered that prochlorperazine is a category C medication. I am not sure if this category was changed recently. I also note that promethazine is a C category. Could you please clarify why prochlorperazine (a category C medication) would be recommended before cyclizine (category A) or why it is recommended at all?

Dr Cassie Granek, GPEP2, Auckland

Antiemetics may be considered for managing nausea and vomiting during pregnancy, when symptoms persist despite dietary and lifestyle interventions. Metoclopramide, prochlorperazine, cyclizine, promethazine and ondansetron have all been used

during pregnancy and are considered effective and safe, although limited data is available in some cases. In the article a suggested order of preference was given, but it was noted that this was variable based on individual patient factors and potential adverse effects. Guidelines differ on recommendations about which order to try these medicines. Metoclopramide is a suitable first choice for many women given the lack of minor side effects associated with it (although it is rarely associated with extrapyramidal symptoms). Prochlorperazine, cyclizine and promethazine are all suitable and effective alternatives, but are also all associated with causing sedation, therefore may be less desirable for some women. Ondansetron is usually reserved for women with severe symptoms (e.g. hyperemesis gravidarum). It is commonly associated with constipation.

The Australian Therapeutic Goods Administration (TGA) has assigned a pregnancy category "C" to both promethazine and prochlorperazine. This category means that the medicine has been associated with (or suspected of) causing harmful effects to the foetus. However, for both promethazine and prochlorperazine, the rating is in relation to giving these medicines in high doses during late pregnancy.[1] There is no association with teratogenicity when these medicines are used at low doses, as an antiemetic during early pregnancy[2, 3, 4]

References:

1. The Australian Therapeutic Goods Administration (TGA). Prescribing medicines in pregnancy database. TGA, 2011. Available from: www.tga.gov.au/hp/medicines-pregnancy.htm (Accessed Nov, 2011).
2. Mazzotta P, Magee L. A risk-benefit assessment of pharmacological and non-pharmacological treatments for nausea and vomiting of pregnancy. Drugs 2000;59(4):781-800.
3. National Institute for Health and Clinical Excellence (NICE). Antenatal care: routine care for the healthy pregnant woman. 2008. Available from: www.nice.org.uk (Accessed Nov, 2011).
4. Australian Medicines Handbook (AMH). Adelaide; AMH Pty Ltd, 2011.

Lipid testing in people with stable angina

Dear Editor,

I note in my latest Personalised Report, "The medical management of stable angina", that you monitor the frequency of my lipid testing.

It has been my custom not to continue annual (or more frequent) testing, on patients who have been established on statins with good therapeutic response, in the belief that once the lipids were stable on a particular dose of statin, the blood profile would not change significantly, that is, unless a patient were to go on a fish-and-chips binge!

Blood pressure tends to drift up with age and warrants intermittent testing, even for those patients well controlled on antihypertensives. This I understand. Will lipids drift upwards too, even if once successfully controlled on statins? That is: is frequent re-testing (yearly or more frequent) necessary for this group of patients, as you seem to imply in your report?

Incidentally, in patients with initially good lipid profiles, I don't retest frequently in the belief that, similarly, unless their dietary habits changed drastically, their lipid profile would be unlikely to change in the short term. I tend to retest such patients after the passage of 4-5 years.

Am I out of step with recommended practice on these points? On the one hand, I don't want to neglect my patients. On the other, I see no point in frequently re-testing a stable lipid profile if it is unlikely to change in the short to medium term.

Dr Alan Kenny, General Practitioner
Tokoroa

It is appreciated that the clinical judgement of the General Practitioner and the patient's preference are likely to guide the need for re-testing on an individual basis, however, when developing a guideline, report or article, advice must apply to populations.

Current New Zealand guidelines recommend annual risk assessment for patients on lipid modification.[1] An annual fasting lipid test may be used to monitor the success of statin treatment and to check and enhance compliance.[2] It may also be used to trigger a discussion with the patient about their ongoing commitment to a low cholesterol diet, weight management and a regular exercise programme. Although these lifestyle factors can be incorporated into any consultation, some patients may be more inclined to listen and act on preventative health care advice if there is a target to achieve or a "bad" result to contemplate.

If a patient has achieved a "good therapeutic response" with statin treatment, annual lipid monitoring may not necessarily help to reduce their cardiovascular risk. However, this relies on several factors - the patient must:

- Remain compliant with statin treatment
- Continue to exercise regularly
- Make no major detrimental changes to their diet (i.e. avoid the fish and chips)
- Stay at a stable body weight
- Not develop any additional health problems that may influence exercise, diet and weight (such as osteoarthritis, depression or a respiratory condition)

If statins are used for primary prevention (rather than secondary prevention such as in a patient with stable angina), annual lipid testing is unnecessary.[3]

There is no evidence that lipid levels increase with age. However, it may help to consider the following points from an Australian study which assessed patients at high risk of cardiovascular events on their knowledge and attitudes about cholesterol and lipid lowering treatment. The study found that:[4]

- 67% of patients knew their most recent cholesterol level
- Of these patients, 69% had a total cholesterol level > 4.0 mmol/L
- 25% of patients were non-compliant with their lipid lowering medicine and 9% of this group thought they did not have to take their medicine because their cholesterol was "under control"
- Although the majority of patients were aware of the importance of a healthy lifestyle, 85% found lifestyle changes, such as a healthier diet and exercise, challenging
- Only 16% correctly identified high cholesterol as an important modifiable risk factor for cardiovascular disease

References:

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