The early detection of prostate cancer in general practice:

Supporting patient choice

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Background

Prostate cancer is the most commonly diagnosed cancer in men in New Zealand and the third most common cause of male cancer deaths, accounting for 3.8% of deaths.[1] The incidence of prostate cancer has risen rapidly over the past 15–20 years but this is likely to be the result of increased numbers of asymptomatic men undergoing prostate specific antigen (PSA) testing.[2]

Prostate cancer is very rare in men below the age of 50. About 90% of all new cases are in men aged 60 or older, and two-thirds of the men who die from the disease are over age 75.[1] The registration rate for new prostate cancers in Maori is lower than for non-Maori (71.3 per 100 000 population compared with 96.2 per 100 000 population), but these rates are based on relatively small numbers, and there has been variable recording of ethnic data, so the estimates for Maori men are less robust.[2]

Risk of diagnosis of, and deaths from, prostate cancer are very much age-related – the risk of diagnosis in men aged 70–79 being nearly seven times greater than that in men aged 50–59, and the risk of death being 21 times greater (Table 1). However, premature death from prostate cancer is more likely for men diagnosed in their 50s compared to men in their 70s (Table 2). Family history increases the risk of developing prostate cancer – a man with a father or brother diagnosed has at least twice the risk of diagnosis,[4] and this increases with decreasing age of the affected relative. There is also wide international variability in incidence rates of prostate cancer, with high rates in those of African American background and low rates in Japanese.[5]

Current recommendations

Population-based screening of asymptomatic men for prostate cancer in New Zealand is not recommended by the National Health Committee because of its lack of proven benefit and the potential harm arising from unnecessary radiotherapy, surgery or other treatment.[6] This position is also supported by the Cancer Council Australia, the Urological Society of Australasia, the Australian Prostate Cancer Collaboration, the Royal Australian College of General Practitioners and the Australian Government Department of Health and Ageing. On the matter of opportunistic testing, these organisations and most clinical practice guidelines recommend that patients be fully informed of the risks, and limitations of the test benefits before making their own choice.[7-11] The positive predictive value of combined abnormal PSA and digital rectal examination (DRE) is about 38–50%.[13-14] For every hundred men who actually have prostate cancer, between 10% and 30% will have a normal PSA test result (up to 4.0ng/ml).[15-16] DRE detects cancer in some men with PSA levels below 4.0ng/ml.[9] A graphic representation of what would happen to 1000 men who had a PSA test is shown in Figure 1. A man with a PSA level between 4.0 and 10.0ng/ml has an approximately 1-in-4 chance of having prostate cancer. Non-cancer contributors to increased PSA include:[17]

- benign prostatic hypertrophy
- ejaculation in preceding 48 hours
- urinary tract infection

To make a fully informed choice about PSA testing men should also be aware that active treatments for prostate cancer such as surgery and radiotherapy… have significant potential for adverse outcomes

- urinary retention
- prostatitis
- prostatic massage but probably not routine DRE
- prostate needle biopsy.

To make a fully informed choice about PSA testing men should also be aware that active treatments for prostate cancer such as surgery and radiotherapy (external beam and brachytherapy) have significant potential for adverse outcomes which may include impotence, less commonly urinary incontinence, bowel problems and, although rarely, even death. The range of possible adverse outcomes following radical prostatectomy is shown in the text box in Figure 1.

However, these recommendations are controversial.[18] The American Cancer Society and the American Urological Association recommend PSA and DRE screening beginning at age 50 in normal-risk men; in contrast, the American Medical Association and the American College of Physicians–American Society of Internal Medicine do not specifically recommend screening.[19] Recently, the United States Preventive Services Task Force concluded that the net benefit of prostate cancer screening with PSA and DRE could not be determined and advise that screening for prostate cancer could not yet be either supported nor discounted.[9] There is some emerging weak evidence for a benefit from screening[20-21] but definitive evidence will not be available until the completion of current randomised controlled trials in the USA and Europe.

Supporting patient choice

Currently 25–43% of Australian men express interest in PSA testing and many undergo it.[23-26] This may well reflect a greater recognition of patients' autonomy and a move away from a 'paternalistic' model of patient care.[27] It may also reflect increasing public awareness of prostate cancer and PSA testing – the Prostate Cancer Foundation of Australia (a patient support/advocacy group) has recently run a media campaign *'Be a man, see your doctor about prostate cancer'*. The general practitioner (GP) has the task of responding to consumer demands for information in the face of conflicting viewpoints and uncertain medico-legal requirements.[27,28]

Table 1. Risk of diagnosis of, and death from, prostate cancer by age in Australia (per 1,000 men).

Age group	Of 1000 men at this age, number with a diagnosis of prostate cancer	Of 1000 men at this age, number who die from prostate cancer
0–49	1	<0.1
50–59	12	1
60–69	45	5
70–79	79	21
80–89	105	61
50–79	136	27

Data source: ABS and AIHW, based on 1997-2001 data[3]

Table 2. Premature death from prostate cancer

Of 1000 men diagnosed with prostate cancer, how many will die prematurely (before 80 years of age) from the disease?	
Age group (at diagnosis)	**Number**
50–59	600
60–69	500
70–79	380

Data source: Queensland Health, based on 1982–2000 data, with minimum two years follow-up[3]

Most patients' assessment of risk is primarily determined not by facts, but by emotions.[29] Decisions about health are strongly influenced by non-systematic thinking and involve such factors as framing effects, categorical thinking, low aversion, lay beliefs and memories of past experiences.[30,31]

Because the evidence base is not clear-cut, a shared decision-making approach offers a way forward. This involves a two-way process and includes both medical and personal information. A framework for the competencies that medical practitioners need for shared decision making has been described:[32]

1. Develop a partnership with the patient;
2. Establish or review the patient's preferences for information (such as amount or format);
3. Establish or review the patient's preferences for their role in decision-making (such as degree of involvement of self) and the existence and nature of any uncertainty about the course of action to take;
4. Ascertain and respond to the patient's ideas, concerns and expectations;
5. Identify choices (including ideas and information that the patient may have) and evaluate the research evidence in relation to the individual patient;
6. Present (or direct the patient to) evidence, taking into account competencies (2) and (3) and framing effects (how presentation of information may influence decision-making). Help the patient to reflect on, and assess, the impact of alternative decisions with regard to his or her lifestyle and values;

7. Make or negotiate a decision in partnership with the patient and resolve conflict;
8. Agree on an action plan and complete arrangements for follow-up.

GP education programme

Since GPs are the most likely source of information for PSA testing and subsequent referral, it is essential that they fully understand screening and treatment issues so that men in their care can make informed choices. With this in mind the Australian Prostate Cancer Collaboration partnered with the Queensland Cancer Fund, the Northern Section of the Urological Society of Australasia, the National Cancer Control Initiative (NCCI) and other groups to develop an educational programme and practice resource for GPs.

Based on materials produced by the Centers for Disease Control and Prevention in the United States,[33] resources were developed with input from GPs, public health practitioners, and academics, specialist urologists, consumer groups, psychologists, epidemiologists, a medicolegal expert and educationalists. The materials and workshops were piloted in Queensland and Victoria.

The education programme was designed to cover two main areas:

1. The medical context of screening, which includes risk and natural history of prostate cancer, potential benefits, and risks of screening for and treating prostate cancer, use and interpretation of PSA tests, and referral pathways for further investigation.
2. Shared decision-making, which covers medicolegal issues and informed consent responsibilities for opportunistic preventative health screening, understanding how men make health decisions, lay health beliefs, risk communication, and using a patient-centred approach for informed choice that elicits patients' values and priorities.

The education programme was designed as a 2.5 hour interactive

Figure 1. Outcome of PSA testing in 1000 men (From NZ Guidelines Group Booklet)

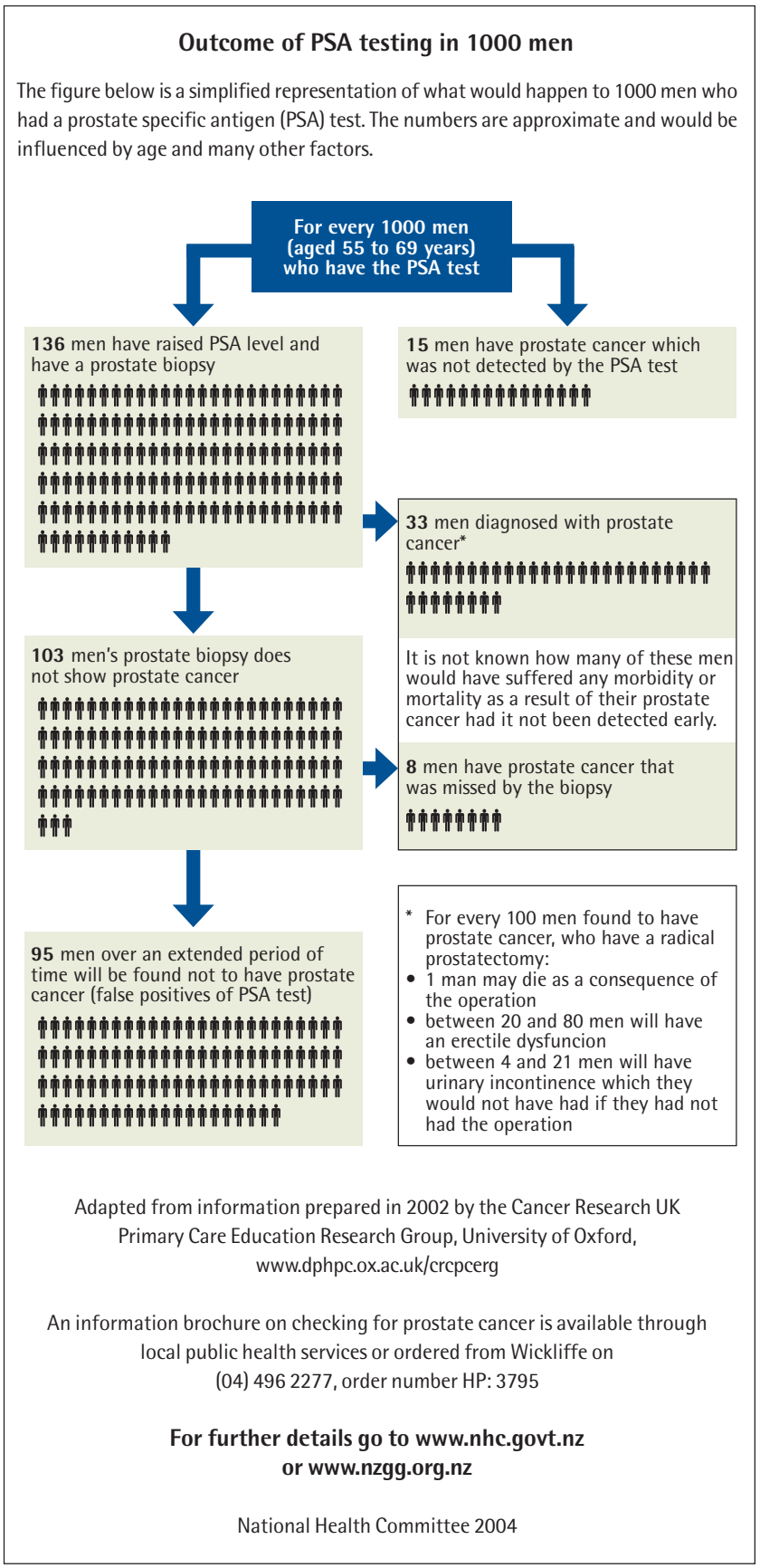


Figure 2. GP/patient show card

GP / Patient Show Card

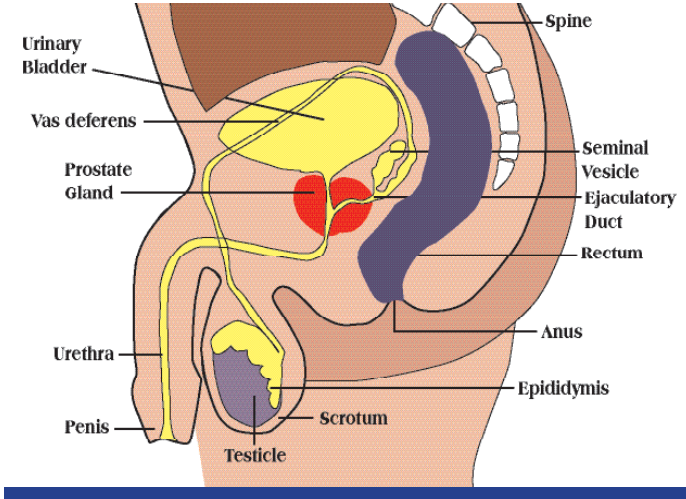
Queensland Cancer Fund · APCC Australian Prostate Cancer Collaboration · The Cancer Council Australia · The Northern Section of The Urological Society of Australasia · National Cancer Control Initiative · Prostate Cancer Foundation of Australia · National Seniors Foundation

The Early Detection of Prostate Cancer in General Practice: Supporting Patient Choice

These resource cards aim to support the general practitioner assisting a patient making a choice about prostate cancer testing. This decision ideally is both informed and consistent with the patient's personal preferences [1-4]. Page 1 is a show card to use with your patients, giving suggestions for a discussion of pros and cons. Page 2 provides more detail for this and is intended for your use. Page 3 overviews PSA value ranges.

SIX DECISION STEPS – TALK TO YOUR PATIENT ABOUT:

1. What is your main concern?
2. What is prostate cancer and what tests are there?
3. What is your risk?
4. What are the pros and cons of early detection?
5. What is most important to you?
6. Your decision.



What is your risk? [5-6]

- Of 1000 men who are aged 50 years, 136 will be diagnosed with prostate cancer before the age of 80.
- Younger men have a smaller chance of a diagnosis than older men. But if they are diagnosed with prostate cancer, younger men are more likely to die prematurely from it. This is because there is more time for the cancer to progress and younger men are less likely to die of other causes.

What is the chance of a diagnosis of prostate cancer:

For a man in his 40s	1 in 1000
For a man in his 50s	12 in 1000
For a man in his 60s	45 in 1000
For a man in his 70s	79 in 1000

- Family history increases risk eg. a man with a father or brother diagnosed has at least twice the risk of a diagnosis. The risk increase is highest in relatives of men diagnosed before age 60 years, and decreases with increasing age of the affected relative.

WHAT IS MOST IMPORTANT TO YOU?

For: Is this like you?

- ✓ I'm concerned that I might get prostate cancer.
- ✓ I want the best chance of finding it early, if I do get it.
- ✓ I'm not interested in waiting for all the proof to be in.
- ✓ I want to do everything possible to reduce my risk of dying from prostate cancer.

Against: Is this like you?

- ✓ I think my chance of getting prostate cancer is low.
- ✓ I am not convinced about the effectiveness of testing.
- ✓ I am more concerned about avoiding treatment side effects, if there's no guarantee I'd be reducing my risk of dying from prostate cancer.

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The authors do not specifically recommend any treatment in this publication. Information on prostate disease is constantly being updated. We have made reasonable effort to ensure that information was current at the time of production (07/04/2005).

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SIX DECISION STEPS – TALK TO YOUR PATIENT ABOUT:

These steps apply to a patient concerned about or requesting a test for prostate cancer.

1. Clarify the patient's main concern

- General concern and/or:
- Lower urinary tract symptoms (LUTS) – reassurance that this does not make him more at risk. Refer to current NHMRC guidelines (2000) for LUTS management[7]
- Family history, confirm 1 or more 1st degree relatives diagnosed before 60 years.

2. Provide basic information on prostate cancer and tests available

- What the prostate is, where it is, that it grows bigger with age and can cause urinary symptoms over the age of 50 years.
- What prostate cancer is, how it is controlled by the male hormone, how in most men it grows quite slowly although rapidly in some.
- For early detection a blood test (PSA) and digital rectal exam (DRE) are needed. These are screening not diagnostic tests. If either or both of these are suspicious that does not necessarily indicate cancer. To find this out a prostate biopsy would then be needed.
- Chance of cancer given positive PSA test is 1 in 3. Chance of cancer given both abnormal PSA and DRE tests is 1 in 2. Cancer can still be present with a normal PSA.

3. Provide an estimate of this patient's risk of a diagnosis based on age and family history (assumes no previous PSA result available)

- Risk of getting prostate cancer increases with age. However given a diagnosis, older men are less likely to die prematurely from it - there is less time for the cancer to progress and more competing causes of death. Testing is not normally recommended in men with life expectancy <10 years.
- Of 1,000 50 year old men, about 136 will be diagnosed with prostate cancer, and 27 will die from prostate cancer, before the age of 80 years[5]. These risks increase with age. Less than one man in 1,000 will be diagnosed with prostate cancer in their 40s.
- These risks are population estimates, and assume that everyone is the same. Although we don't know what causes prostate cancer, international comparisons tell us that some men are at greater risk than others, possibly related to lifestyle and diet.
- Family history increases risk eg. a man with a father or brother diagnosed has at least twice the risk of a diagnosis[6].
- Men who are between the ages of 50-75 years and men older than 45 years at increased risk (eg. family history)[8] are most likely to benefit from the early detection of prostate cancer.

4. Explain pros and cons of early detection

Pros

- Early prostate cancer has no symptoms - PSA testing can lead to the detection of prostate cancer before it causes symptoms and/or when it is still confined within the prostate gland (localised).
- Treatment for localised prostate cancer can potentially cure the disease.
- Prostate cancer that is still confined to the gland may progress over time.
- Prostate cancer that has spread beyond the prostate gland is usually no longer curable and treatment for advanced cancer has significant quality of life effects.

Cons

- Some prostate cancers grow slowly and don't threaten life, but detection and treatment for prostate cancer can affect quality of life.
- A PSA test can be abnormal when cancer is not present (happens 2/3 times for a positive test), however a biopsy is needed to find out. Explain what a biopsy involves.
- There is no clinical trial evidence yet that PSA testing programs save lives and whether men who are monitored by testing (screened) live longer. Because of this lack of evidence of effectiveness, medical authorities do not currently recommend population screening for prostate cancer, although this may change in the future.

Treatment Side Effects

- Potentially curative treatments for localised prostate cancer include surgery and radiation therapy (external beam and brachytherapy). These treatments are associated with significant risk of impotence, and less commonly urinary incontinence and bowel problems. Prevalence and profile of side effects vary for different treatment types [9-11].
- Advanced prostate cancer is treated primarily by hormonal manipulation and is associated with side effects such as impotence, loss of libido, fatigue, osteoporosis, and cognitive changes [12-13].

5. Help the patient clarify their values

- Give examples of reasons men have given who have had or not had the test.
- Use table of "What is most important to you?" Ask the man to consider if any of these points seem like his feelings or views.

6. Confirm Decision

- Ask what questions he has. Check understanding.
- Does he want to decide now or take the written patient information and think about it?
- If the man chooses to be tested, discuss a prostate cancer risk management plan (see page 3).

For information about prostate cancer contact the Cancer Helpline on 13 11 20.

Useful Websites

• www.prostatehealth.org.au • www.urosoc.org.au • www.andrologyaustralia.org • www.prostate.org.au

The authors do not specifically recommend any treatment in this publication. Information on prostate disease is constantly being updated. We have made reasonable effort to ensure that information was current at the time of production (07/04/2005).

Figure 3. GP reference card

The Early Detection of Prostate Cancer in General Practice: Referral Guide for Prostate Testing

This information is provided with the view that if a man chooses to be tested, he hopes to have the cancer detected at an early stage, so that treatment options have the chance for cure. Testing of men with life expectancy less than 10 years is not normally recommended [14-15]. If PSA testing is performed a DRE is also recommended.

Normal ranges for PSA

Standard PSA normal range cut off: 4.0 ng/ml
Age-based normal ranges for PSA (ng/ml) Oesterling 1995 [16]

Age range	50th percentile (median)	95th Percentile (upper limit of normal)
40-49	0.65	2.0
50-59	0.85	3.0
60-69	1.39	4.0
70-79	1.64	5.5

Differences in type of PSA assay can cause differences in age-based ranges

Men whose PSA is above the 50th (median) but below the 95th percentile have been shown to be at higher long term risk of prostate cancer compared with those below the median [17,18].

Normal rate of change PSA has been reported to increase by about 3.3% per year (0.04 ng/ml at 60 yrs) [16]. A rate of change is observed from at least 3 PSA measurements over 12-18 months with a higher rate suggestive of increased cancer risk [19].

Percentage free PSA (Free to Total Percentage or FTP) is lower when cancer is present and may be helpful to distinguish cancer from benign prostatic enlargement in men with intermediate total PSA ranges (2.0-10.0 ng/ml) [16]. Cancer is likely if FTP is below 10% and a low risk if FTP is over 25%.

Accuracy of test
The positive predictive value (chance of cancer given abnormal result) is about 30% [15,20]. The positive predictive value of combined abnormal PSA and DRE is about 38-50% [21,22]. For every hundred men who actually have prostate cancer, between 10% and 30% will have a normal PSA test result (up to 4.0 ng/ml) [23,24]. DRE detects cancer in some men with PSA levels below 4.0 ng/ml [15].

Non cancer contributors to increases in PSA [25]

1. Benign prostate enlargement – accounted for to some extent by using age-based reference ranges and percentage free-PSA (see left).
2. Ejaculation: both total PSA and % free PSA increase (can remain altered for 6-48 hours).
3. Urinary infection.
4. Urinary retention (48 hours after resolution, PSA decreased by 50%).
5. Prostatitis or sub-clinical prostate inflammation (can remain higher for at least 6 weeks following resolution).
6. Prostatic massage but probably not routine DRE (prudent to take blood prior to DRE).
7. Prostate needle biopsy.
8. Bicycle riding has been reported not to change the PSA level [26,27].
9. Different manufacturer assays may cause variation (up to 10%).

* *Other investigations to consider: MSU, Electrolytes, Creatinine*

Consider referral if:
- PSA exceeds 4ng/ml or upper limit of normal for age range (95th percentile-see table)
- PSA rate of change from a normal base is high
- DRE indicates nodularity or hard prostate

Consider follow-up if:
- PSA is in upper ranges of normal for age (exceeds median)
- Patient has a family history of prostate cancer
- Patient requests testing for the purpose of early detection

Recommended follow-up intervals for the detection of early stage cancer may vary depending on the result of the PSA test [20,28,29]. Medicare Benefits Schedule for PSA as of November 2004 one patient episode in a 12 month period: refer to www.health.gov.au/pubs/mbs.

The Early Detection of Prostate Cancer in General Practice: Referral Guide for Prostate Testing

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workshop and has been accredited for continuing professional development points under the Royal Australian College of General Practitioners' Quality Assurance and Continuing Professional Development Program and the Australian College of Rural and Remote Medicine's Professional Development Program. The workshop involves presentations by a urologist, a general practitioner and a communication/decision support expert. Workshop materials developed include a set of PowerPoint slides and notes for the presenters and three case studies for small group discussion.

In addition, practice resources were developed that included an interactive decision aid and brief evidence-based summary card for use in the consultation. The interactive decision aid is a GP/patient show card (Figure 2) with an anatomical diagram of the male pelvis, six decision steps, current age based risk estimates for prostate cancer and a values clarification exercise. The summary card also contains more detail for the informed choice discussion and a GP reference card (Figure 3) with a referral guide covering age-based PSA reference ranges and non-cancer causes of elevated PSA readings. The resources were designed so as to be easily scanned visually and suitable for use in a brief consultation. With financial support from The Cancer Council Australia and the National Seniors Foundation, these materials have been distributed to all GPs in Australia with a recent edition of the *Australian Family Physician*. They are also downloadable as a pdf on the NCCI's website – www.ncci.org.au.

Evaluation of the education programme using a single arm pre-post test design has shown high satisfaction with the workshop and resource materials. Participants have shown significantly increased knowledge, level of understanding and confidence in discussing testing with asymptomatic men and initiating discussions about testing with patients.[32]

Since completion of the pilot workshops, over 450 GPs in Queensland alone and 121 in Victoria have attended the programme with further workshops scheduled in other states. A 'train-the-trainer' programme has been developed by the NCCI, and is due to commence in New South Wales in 2006.

Conclusion

In a health topic characterised by divergent viewpoints, this educational programme provides evidence of the benefits of taking a collaborative and consultative approach, and closely linking programme development to GPs' expressed needs. Focusing the educational programme on shared decision-making appears to be effective in improving GPs' knowledge, level of understanding and confidence.

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New Zealand GPs interested in piloting a local version of the workshop should contact:

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Competing interests

None declared

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