



Screening for prostate cancer: a survey of New Zealand general practitioners

John Durham, Melissa Low and Deborah McLeod

Abstract

Aim To determine the views of general practitioners (GPs) in relation to screening for prostate cancer.

Methods A questionnaire was sent to a random, national sample of 575 New Zealand general practitioners, stratified to include equal numbers of rural and urban GPs.

Results The response rate to the questionnaire was 66.3%. A 55-year-old man presenting for an annual checkup or requesting advice about screening for prostate cancer would be given a prostate specific antigen (PSA) test by 74% of GPs. If the same man had a family history of prostate or breast cancer, 93% of GPs would carry out a PSA test. Most GPs overestimated the effectiveness of screening tests for prostate cancer and were uncertain about the importance of associated risk factors. Some form of screening for prostate cancer is performed by 97.5% of GPs, and 50% of GPs support a national population-screening programme. 'Watchful waiting' is considered to be a reasonable treatment option for a man with localised prostate cancer and less than 10 years' life expectancy by 40% of GPs compared with 2% for a man with more than 10 years' life expectancy.

Conclusion Most GPs undertake screening for prostate cancer, even though there is no evidence that screening improves life expectancy and quality of life.

Prostate cancer is an important health issue for New Zealand men. In 1999, the latest year for which complete figures are available, the age-standardized rate for prostate cancer registrations was 98.2 per 100 000 population.¹ It is the third most common cause of cancer deaths in males, following lung and colorectal cancer, and accounted for 14% of all male cancer deaths and 3.85% of all male deaths in 1999, with an age-standardized mortality rate per 100 000 population of 18.5.²

There has been a rapid increase in the rate of new registrations for prostate cancer since about 1991. New registrations increased by 63% between 1993 and 1994, and 23% between 1994 and 1995. From 1995 to 1997 there was a 6.2% decrease in the annual rate of new registrations but the rate increased again in 1999.¹ The great majority of new registrations in 1999 were based on a histological diagnosis. It is likely that the specimens provided for most of these patients were taken from needle biopsies of the prostate gland performed because of abnormal findings on digital rectal examination (DRE) or prostate specific antigen (PSA) testing. More than 58% of all new registrations were in men aged more than 70 years. Prostate cancer had a fatality/case ratio of 0.21, with nearly five times more registrations than deaths. In 1999 there were a total of 552 deaths from prostate cancer; 81.9% of these deaths were in men older than 70 years and 38.9% in men older than 80 years.²

It is possible that this sudden and rapid increase in the incidence of prostate cancer is a result of screening using the PSA test. 'Screening' refers to the application of a test to people who are as yet asymptomatic for the purpose of classifying them with respect to their likelihood of having a particular disease.³ In 1996, the New Zealand National Health Committee (NHC) sponsored a review by an independent Prostate Cancer Screening Working Party of the potential risks and benefits that might arise from prostate cancer screening. The Working Party reported that there were significant potential risks associated with confirmatory tests and treatment, and that these risks outweighed the as yet unproven benefits of earlier intervention that would be achieved by screening asymptomatic men for prostate cancer. A joint policy statement advising against routine prostate screening for men without symptoms was issued publicly by the NHC in New Zealand and the Minister for Human Sciences and Health in Australia on 12 August 1996. The NHC recommended that:

'Because screening has not been demonstrated to improve the quality and length of men's life through early diagnosis, a systematic prostate cancer screening programme for men without symptoms should not be introduced. The matter should be kept under review.'⁴

At about the same time as the 1996 NHC recommendations, a survey of 500 New Zealand general practitioners (GPs) reported the views and practices of GPs in relation to screening for prostate cancer.⁵ This study found that approximately one third of GPs believed that no one should be screened using either the PSA test or DRE and 40% of GPs felt that all men over 50 years in age should be screened with one or other test. These results were similar to surveys in other countries where primary care physicians had high and increasing rates of PSA testing, with PSA tests forming part of the routine examination of men more than fifty years of age.^{6,7}

The aim of the current study was to determine whether the rapid increase in the incidence of prostate cancer was consistent with GPs continuing to undertake PSA screening, and to identify current practice with respect to prostate cancer screening.

Methods

Medimedia, who have a commercially available database of 2684 New Zealand GPs, provided a computer-generated, random, national sample of 600 GPs. The sample was stratified on the basis of postcodes to include equal numbers of rural and urban GPs. The full Medimedia database consisted of 1603 GPs with an urban postcode and 1081 GPs with a rural postcode. Twenty five GPs from the initial sample were ineligible for the study, leaving a final sample of 290 urban and 285 rural GPs. The reasons for exclusion of GPs from the sample were that 10 had left general practice, four were on long-term leave and 11 were no longer at the address provided.

The questionnaire used was developed specifically for this study and was piloted on a different sample of 10 GPs to ensure that it was understandable and had face validity. Screening behaviour was measured using closed questions about practice screening programmes, a series of case vignettes of typical screening situations, the performance of screening tests, risk factors for prostate cancer, and treatment options. The questionnaire defined 'population screening' as offering a test to all men of a certain age, 'opportunistic screening' as offering a test to men presenting with an unrelated problem, and 'selective screening' as testing men with specific symptoms or risks.³ Distribution of the questionnaire was initially by post. Non-responders received two reminder questionnaires; the first of these was posted and the second was sent by fax.

The following are examples of the case vignettes used when asking GPs to indicate which screening tests, if any, they would use for some of the different possible presentations of men who might have prostate cancer:

1. Mr. Smith (aged 55 years) is fit and well and presents to you for his annual checkup. He has no significant medical or family history.

2. Mr Jones (aged 55 years) is well but is concerned that he is at risk of getting cancer. His brother was diagnosed with cancer of the prostate this week and his aunt died in her forties of breast cancer.
3. Mr Green (aged 55 years) is fit and well and has reluctantly arrived to see you at your surgery. His wife has persuaded him to attend after she saw a documentary on television about prostate cancer. He has come to ask your advice about whether he should have a test done.

The full questionnaire is available on request from the authors.

The responses to all quantitative questions were coded and entered directly into a database. The results are presented as a frequency analysis of responses to each question. Where appropriate, statistical tests of independence of the categories in the frequency tables used were the chi-square test and the generalised Fisher exact (Fisher-Freeman-Halton) test. In order to account for the different proportions of urban and rural GPs, the response frequencies in each sample were weighted using the respective sampling fractions, and 95% confidence intervals (CI) were calculated when making inferences about the responses of all GPs.

Results

Response rate Responses were received from 381 (66.3%) of the eligible GPs. The demographic information for the responding population is shown in Table 1.

Table 1. Demographics of the responding population

	Rural n = 180 (%)	Urban n = 201 (%)
Gender		
Male	123 (68.3)	152 (75.6)
Female	57 (31.7)	46 (22.9)
Missing response	0	3 (1.5)
Age		
<30 years	1 (0.6)	2 (1.0)
30–39 years	42 (23.3)	46 (22.9)
40–49 years	79 (43.9)	89 (44.3)
50+ years	58 (32.2)	60 (29.9)
Missing response	0	4 (2.0)
Years practising as GP		
<10 years	43 (23.9)	46 (22.9)
10–19 years	70 (38.9)	85 (42.3)
20–29 years	51 (28.3)	49 (24.4)
30+ years	16 (8.9)	19 (9.5)
Missing response	0	2 (1.0)
GPs in the practice		
1	36 (20.0)	52 (25.9)
2 or 3	70 (38.9)	89 (44.3)
4 or more	74 (41.1)	58 (28.9)
Missing response	0	2 (1.0)
Sessions consulted weekly		
<5	17 (9.4)	14 (7.0)
5+	163 (90.6)	185 (92.0)
Missing response	0	2 (1.0)

The responders and non-responders were compared for gender and year of registration. There were no significant differences in these parameters between the responders and the non-responders.

Rural GPs were significantly more likely to work in a group practice of four or more doctors compared with urban GPs ($p = 0.0455$). Otherwise, there was no statistically significant difference between rural and urban GPs for gender, age, years in practice or number of sessions worked per week. Female GPs were significantly more likely than male GPs to be younger ($p < 0.0001$), and to have worked in general practice for a shorter period ($p < 0.0001$), with fewer GPs in the same practice ($p = 0.0008$) and for fewer sessions per week ($p < 0.0001$).

All responses were analysed for differences between urban and rural GPs, and between male and female GPs. No statistically significant differences were found except in the response to the question about the value of the NHC guidelines. In the responses to this question female GPs were significantly more likely not to have seen the guidelines ($p = 0.0088$).

Screening for prostate cancer GPs were asked which tests they would perform for: a man presenting for a general checkup with no significant family or medical history; a man concerned about his risk of prostate cancer who has a brother with prostate cancer and an aunt who had died of breast cancer in her forties; and a man presenting for advice about prostate screening. Respondents could choose to do more than one test and also had the option to do no tests. Answers to these questions are shown in Table 2. The responses suggest that 73.7% (95% CI 69.3–78.2%) of GPs would do a PSA test as part of a health checkup and 74.5% (95% CI 70.1–78.9%) would do a PSA for a man asking about prostate screening. This figure increased to 93.2% (95% CI 90.6–95.8%) of GPs who would do a PSA test for the same man with a family history of prostate and breast cancer.

Table 2. Use of screening tests indicated by responders

Screening test	Annual checkup n = 381 (%)	Family history of cancer n = 381 (%)	Request for advice n = 381 (%)
DRE only	38 (10.0)	9 (2.4)	35 (9.2)
PSA only	49 (12.9)	12 (3.1)	46 (12.1)
DRE and PSA	232 (60.9)	345 (90.6)	238 (62.5)
None	48 (12.6)	2 (0.5)	25 (6.6)
Other	14 (3.6)	13 (3.4)	37 (9.6)

In order to estimate how effective GPs felt that the screening tests were in identifying asymptomatic prostate cancer, the questionnaire asked respondents to provide an approximate estimate of the positive predictive value (PPV) of these tests. Of respondents who replied, 27% provided an estimate of the PPV for the PSA and DRE tests that agreed with the levels reported in the literature.⁸ A majority of the respondents (56.2%) overestimated the PPV for DRE, and more than one third (36.0%) overestimated the PPV of the PSA test.

Screening programmes in general practice The questionnaire asked GPs to indicate which, if any, groups of patients they currently screened for prostate cancer and which types of screening programmes they thought should be performed in New Zealand (Table 3).

Table 3. Screening programmes used and preferred in general practice

Screening programme	Programme used* n = 381 (%)	Programme preferred* n = 381 (%)
Population screening	83 (21.8)	192 (50.4)
Opportunistic screening	234 (61.4)	100 (26.2)
Selective screening	264 (69.3)	146 (38.3)
None	10 (2.6)	14 (3.7)

*respondents were able to select more than one option

This suggests that some form of screening programme is offered by 97.5% (95% CI 96.0–99.0%) of all GPs and 50.0% (95% CI 45.0–55.2%) support a population-screening programme for prostate cancer. Twenty six GPs claimed that they used all three types of screening in their practice and only 25 GPs mentioned that there was no demonstrated benefit of population screening for prostate cancer. Thirty six GPs said that their practice offered screening for prostate cancer by the practice nurse, but only nine of these GPs said that this involved a specific protocol for the use of prostate cancer screening tests.

There was a range of opinion about which age groups should be screened for prostate cancer in New Zealand. Most GPs thought it appropriate to include men between 50 and 70 years, and relatively few GPs wanted to screen men under 40 years or over 80 years (Table 4).

Table 4. Age groups felt to be appropriate for screening by GPs

Age group	No of GPs who feel screening appropriate (%)
Under 40 years	2 (0.5%)
40–49 years	83 (21.8%)
50–59 years	316 (82.9%)
60–69 years	295 (77.4%)
70–79 years	161 (42.3%)
80+ years	47 (12.3%)
Don't know	15 (3.9%)

Fifty six per cent of the respondents thought that the screening interval should be two years and only 6% greater than two years.

GPs were also asked how useful they had found the NHC guidelines on prostate screening. The guidelines were thought to be of some use or better by 35% of the GPs who replied to the questionnaire, but 36% reported not having seen the guidelines.

Risk factors for prostate cancer Selective screening programmes depend on being able to identify asymptomatic individuals who may be at risk of developing the target disorder. The questionnaire asked GPs to identify a range of factors as either being of no risk, low risk, or high risk in the development of prostate cancer. Most respondents correctly identified increasing age (86.9%) and a first-degree relative with prostate cancer (82.9%) as being associated with an increased incidence of prostate cancer, but only 29.7% recognised the association with breast cancer. High dietary fat intake was thought to be a risk factor by 45.9% of respondents but smoking (62.9%) and benign prostatic hyperplasia (63.6%) were incorrectly identified as risk factors by many GPs.

The majority of respondents were not sure about the significance of Maori (52.5%) and Asian (63.5%) ethnicity as risk factors.

Follow up of abnormal tests or after diagnosis of prostate cancer Two vignettes asked GPs which tests they would use in men returning for follow up. The first of these was a man returning one year after radiotherapy for prostate cancer, and the second was a man returning after an abnormal PSA result of 6 ng/ml and a free PSA of 28%. In the latter scenario, the PSA test would be repeated by 64% of the GPs, and the other GPs would investigate the abnormal test by some combination of DRE, transrectal ultrasound (TRUS) examination or specialist referral. More than 90% of the respondents would order a PSA test as part of the follow up one year after radiotherapy. A TRUS would be ordered by 27% of the GPs as part of the investigation of the abnormal PSA.

Management of prostate cancer An important part of any screening programme is the information given to participants about their treatment options if they are found to have the target disorder. The GPs were asked to suggest the most appropriate treatment for men who had been found to have localised prostate cancer and were thought to have either more or less than 10 years' life expectancy (Table 5). 'Other therapy combinations' all included radical prostatectomy and/or radiotherapy and hormone treatment.

Table 5. Suggested treatment of a man with localised prostate cancer and less or more than 10 years' life expectancy

Treatment	Less than 10 years' life expectancy n = 381 (%)	More than 10 years' life expectancy n = 381 (%)
Watchful waiting	173 (45.4)	11 (2.9)
Prostatectomy	29 (7.6)	200 (52.5)
Radiotherapy	50 (13.1)	54 (14.2)
Hormone therapy	87 (22.8)	32 (8.4)
Other therapy combinations	22 (5.8)	65 (17.1)
Missing responses	20 (5.2)	19 (5.0)

For a man with less than 10 years' life expectancy and localised prostate cancer 68.5% (95% CI 63.8–73.2%) of GPs thought that non-curative treatment (watchful waiting or hormone therapy) would be appropriate. For the same man with more than 10 years' life expectancy only 11.1% (95% CI 7.9–14.3%) thought that this would be appropriate management.

Discussion

This survey found that 74% of GPs in New Zealand say that they will do a PSA screening test for prostate cancer when a 55-year-old man either asks about prostate cancer screening or has a routine, annual health check. Ninety three per cent of GPs would do a PSA test if this same man had a family history of prostate cancer. The survey also found that nearly all GPs offer some form of prostate cancer screening and 50% supported a national screening programme for prostate cancer. This increase in the number of GPs who believe in the value of prostate cancer screening, since the

earlier survey by Morris,⁵ is consistent with the observed sustained increase in the rate of new registrations for prostate cancer.

Between 1993 and 2002 there have been at least 19 published, systematic reviews of prostate cancer screening.⁹ These reviews have consistently concluded that there is no evidence that screening for prostate cancer will reduce mortality, and that radical treatment of prostate cancer has a risk of significant increased morbidity. It appears that the majority of New Zealand GPs support a screening programme with no proven benefit and the potential to cause considerable harm.

Pressure from groups outside general practice may be one reason for this high level of screening. In responding to the questionnaire, some GPs commented that the Prostate Awareness Society, the media and urologists encouraged men to actively seek screening for prostate cancer. Another possible explanation for the increased level of screening is that GPs feel that they would be exposed to an increased risk of medical litigation if they discouraged patients from having screening tests and these patients were subsequently found to have prostate cancer. A study in Australia found that 61% of GPs thought that they would be at risk if they did not screen an asymptomatic man requesting a PSA test and that national evidence-based guidelines against prostate cancer screening provided only limited medicolegal protection.¹⁰

The best available estimates for disease-specific survival for localised prostate cancer are in the region of 90% after 10 years.⁹ In the only reported randomized controlled trial comparing radical prostatectomy with watchful waiting in early prostate cancer there was no statistically significant difference in overall mortality between the two groups after eight years of follow up.¹¹ This survey found that 42% of GPs would recommend screening for men aged 70–79 years and only 2.9% of GPs would consider watchful waiting for men with prostate cancer and more than 10 years' life expectancy. These figures suggest that the information about disease-specific survival for localised prostate cancer may not be well known or understood by many GPs. However, there was a strong trend towards watchful waiting in those men with a short life expectancy, and a more active approach of prostatectomy and radiotherapy in those men with a greater life expectancy. GPs may find it difficult to diagnose a condition and not treat it actively unless there was a likelihood that the disease was not going to be the ultimate cause of mortality.

Other results from this survey also suggest that GPs need more information about the effectiveness of population screening for prostate cancer. A few GPs expressed concerns about the accuracy of the available screening tests, but only 27% were able to give a reasonable estimate of the positive predictive value of the PSA test and DRE, and most overestimated the accuracy of these tests. Age and a positive family history of prostate cancer were correctly identified as risk factors by most GPs, but the majority were uncertain about the relevance of other potential risk factors. The variation in the responses to a PSA result of 6 ng/ml with a free-to-total PSA of 28% implies some lack of understanding of the significance of the free-to-total PSA result and the 'normal' range of the PSA test when used in a screening programme.¹² This result implies a reduction in the probability of having prostate cancer from 1-in-5 with the PSA result alone, to 1-in-12 with the additional free-to-total PSA result. It is doubtful if this reduction in risk would persuade many men not to have a prostate biopsy. The spontaneous variation in the PSA level between consecutive measurements within a 90-day period can be as much as 1 ng/ml.¹³ Repeating the

screening test would still produce a result above the generally accepted cut-off point of 4 ng/ml and no change in the risk of prostate cancer indicated by the original test.

In general, this survey suggests that there is a clear need for good, easily accessible information for both GPs and their patients about the value of screening for prostate cancer and the interpretation of the results of the available screening tests.

Author information: John Durham, Senior Lecturer; Melissa Low, Medical Student; Deborah McLeod, Research Manager, General Practice Department, Wellington School of Medicine and Health Sciences, University of Otago, Wellington

Acknowledgements: This survey was carried out as a summer studentship by Melissa Low, funded by the New Zealand Guidelines Group. We are grateful to all GPs who completed the questionnaire.

Correspondence: Dr John Durham, Ora Toa Medical Centre, 227 Bedford Street, Cannons Creek, Porirua. Fax: (04) 237 5925; email: john.durham@oratoa.co.nz

References:

1. New Zealand Health Information Service. Cancer: new registrations and deaths 1999. Wellington: New Zealand Health Information Service; 2003. URL: <http://www.nzhis.govt.nz/publications/Cancer.html> Accessed June 2003.
2. New Zealand Health Information Service. Mortality and demographic data 1999. Wellington: New Zealand Health Information Service; 2003. URL: <http://www.nzhis.govt.nz/publications/Mortality.html> Accessed June 2003.
3. Beaglehole R, Bonita R, Kjellstrom T. Basic Epidemiology. Geneva: The World Health Organization; 1993.
4. National Health Committee. Screening for prostate cancer. Fifth Annual Report, Personal Health Services. Wellington: National Health Committee; 1996. URL: <http://www.nhc.govt.nz/publications/annual5/prostate.html> Accessed June 2003.
5. Morris J, McNoe B. Screening for prostate cancer: what do general practitioners think? NZ Med J 1997;110:178–82.
6. Voss JD, Schectman JM. Prostate cancer screening practices and beliefs. J Gen Intern Med 2001;16:831–7.
7. Fowler FJ Jr, Bin L, Collins MM, et al. Prostate cancer screening and beliefs about treatment efficacy: a national survey of primary care physicians and urologists. Am J Med 1998;104:526–32.
8. US Preventive Service Task Force. Guide to clinical preventive services. 2nd edition. Washington, DC: US Department of Health and Human Services; 1996.
9. Durham J. Population screening for prostate cancer. A systematic review. Wellington: New Zealand Guideline Group; 2002. URL: http://www.nzgg.org.nz/development/documents/Prostate_Cancer_review.pdf Accessed June 2003.
10. Girgis S, Ward JE, Thomson CJH. General practitioners' perceptions of medicolegal risk. Using case scenarios to assess the potential impact of prostate cancer screening guidelines. Med J Aust 1999;171:362–6.
11. Holmberg L, Bill-Axelsson A, Helgesen F, et al. A randomized trial comparing radical prostatectomy with watchful waiting in early prostate cancer. N Engl J Med 2002;347:781–9.
12. Hoffman RM, Clanon DL, Littenberg B, et al. Using the free-to-total prostate-specific antigen ratio to detect prostate cancer in men with nonspecific elevations of prostate-specific antigen levels. J Gen Intern Med 2000;15:739–48.

13. Pickens GJ, Roehrborn CG. Variability of repeated prostate specific antigen measurements within less than 90 days in a well-defined patient population. Proc Am Urol Assoc 1995;153:936A.