New Zealand should introduce population screening for prostate cancer using PSA testing

NO

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'Life is a sexually transmitted disease with an inevitably fatal outcome,'[1] and that fatal outcome may well not be associated with the disease being tested for. One therefore must apply a pragmatic realism when considering screening for any disease, and particularly when lobby groups start championing a 'cause'.

The criteria for any population-based screening programme are well-defined and are paraphrased as follows:

1. The disease must present a significant impact on health and well-being of the population screened.
2. There must be a sensitive and specific test that will detect that disease.
3. There must be a suitable treatment for the disease (not necessarily a cure).

So can we demonstrate that we fulfil these criteria?

Firstly, there is an estimated lifetime risk of developing prostate cancer of 16% and a 3.4% lifetime risk of dying of prostate cancer. Does that constitute an answer to the first question of sufficient robustness?

Secondly, prostate-specific antigen (PSA) has never satisfied the second question in a screening setting. Indeed the positive predictive value of a single PSA between 4 and 10ng/ml attesting to the presence of a prostate cancer in the absence of palpable abnormality is 39%. One would actually be more accurate in tossing a coin for tests in that range!

Thirdly, there are indeed treatments that will arrest, ameliorate and even possibly cure this disease, but at what cost to quality of life?

With the philosophy of the first line of this article and with the criteria on screening for anything one has to question the usefulness of PSA screening.

True population-based screening is still the subject of randomised controlled trials (RCTs) which have yet to report. Therefore without this definitive evidence, the creeping introduction of PSA testing is, in my view, unjustified, unhelpful and on occasions downright dangerous.

There are, however, some interesting early reports from these RCTs which will provide some evidence for both camps of protagonists.

The European Randomized Study on Screening of Prostate Cancer (ERSPC), based in Rotterdam, has calculated that it would take 1981 patients in the PSA group <3ng/ml to be biopsied to prevent one prostate cancer death.[2] Bearing in mind that there is an estimated 1:5000 risk of death from septicaemia after biopsy (regardless of histology), then in 5000 biopsies, this will save 2.7 lives from prostate cancer and kill one patient from the biopsy.

The risk of prostate cancer being present in men with a PSA between 4 and 10ng/ml is approximately 40%, but in men with a PSA of less that 3ng/ml it is probably as high as 15%, so where would we set our parameters of biopsy? Where do we start the process with regard to age? Do we

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target particular groups? Bearing in mind that in African American men the risk of cancer is much higher, and that in men of true Asian origin the risk is much lower (especially if they maintain an Asian diet), the complexities of stratification are mind-numbingly scary.

For a preposterous moment, let us assume that we have resolved these dilemmas and that screening is in progress.

We now have detected a significantly large number of positive biopsies. How do we decide which ones to treat, which ones to observe and which ones to condemn to no intervention whatsoever?

As a profession we are notoriously bad at predicting life outcomes in any individual case. Actuarial tables may well be more useful! Let us take two extreme examples. In an unregulated PSA screening scenario one might be presented with a 55-year-old in a wheelchair due to amputation from smoking-related peripheral vascular disease following his second MI, versus a 75-year-old who has just returned (with both parents) from a tramping holiday in the Hindu Kush. Given finite resources, whom do we offer to treat with interventions that have significant morbidity and indeed a very small but measurable mortality?

The best results from intervention from radical prostatectomy have a 3% risk of serious incontinence and the worst results 15%. The same range of risks for permanent impotence range from 30 to 70%. If one remembers the lifetime risk of dying of prostate cancer is 3.4%, have we got our priorities right? If the patient opts for radiotherapy (perfectly justifiable) on our current lack of comparable evidence, then although there is a very low risk of incontinence there is still a 50% risk of impotence at two years post-treatment.

So am I a complete nihilist?

Not at all; I am an ardent, aggressive interventionalist in the correct situation. The difficulty is in assessing when this is appropriate. I do not feel that population-based screening will add anything to the daily ongoing assessment of those who have problems from this disease. It will, however, muddy the water of what is already a hugely complex topic.

This is particularly true in the context of the Warrant of Fitness–type visit to a GP, where men frequently have a PSA taken, and very often with absolutely no idea of what it is, what it might mean, and what the downstream impact of an elevated level might involve. If this were to be extrapolated to a true population-based screening programme then the ramifications are just too scary to contemplate. That is not to say that if an appropriate test were to be developed that truly allowed us to work out who might really benefit from intervention, then I would not reconsider the merits of screening... that would demonstrate a completely closed mind.

Let us spend our limited health dollars on research to define the population that might benefit from intervention by high quality studies rather than squandering it on populist-driven screening with as yet unproven benefit.

I would remind the readership that the following organisations do NOT recommend routine population-based screening, but advocate full discussion between the patient and his primary care physician as to the benefits, risks, complications of starting down the path of 'random' PSA testing:

American Cancer Society
American Urological Association
US Preventative Services Task Force
American Society of Clinical Oncology
American College of Physicians
National Cancer Institute (US)
American College of Family Physicians
American College of Preventative Medicine
British Association of Urological Surgeons

I rest my case.

References

1 à la R D Laing
2 Postma R, Schroder FH, van Leenders GJ, Hoedemaeker RF, Vis AN, Roobol MJ, et al. Cancer detection and cancer characteristics in the European Randomized Study of Screening for Prostate Cancer (ERSPC)-Section Rotterdam. Eur Urol. 2007;52(1):89–97.