

The prostate-specific antigen (PSA) test to screen men for prostate cancer

Probabilities of benefits and harms

Patient's values and preferences



This document prepares the clinician to discuss scientific data with the patient so they can make an informed decision together.

Presenting the PSA test to patients

What is this test for?

- The PSA blood test estimates the risk of having prostate cancer. If the test shows the risk to be high, the physician offers to do a biopsy of the prostate to verify if the man has prostate cancer.

What is considered a high risk of prostate cancer?
The cutoff PSA level chosen to define a positive result (high risk) and distinguish it from a negative result is usually 4 ng/mL.

Who might consider being tested?

- Men between 50 and 75 years of age with at least a 10-year life expectancy.
- Men at higher risk (with one or more affected first-degree relatives -brother, father- or African American men) may consider screening at an earlier age (40 years old).

Why do patient preferences matter when making this decision?

- There are pros and cons to taking this test:

PROS: The test prevents 1 death from prostate cancer for each 1000 men screened on average 2 times every 4 years during 11 years.^{1,2}

CONS: The test could detect a slow-growing cancer that may never cause a health problem, leading to unnecessary treatments (autopsies show that a significant proportion of prostate cancers never become clinically significant).^{1,2} Overall mortality is not reduced.

- There is a lack of evidence on screening outcomes:

- After 11 to 13 years of follow-up, the 2 best available studies showed either a small reduction or no reduction in mortality in men invited to screening every year during ten years compared to men not invited to screening.^{1,4}
- One small study suggests that screening over 14 years might improve survival.⁵

- Both doing or not doing the test are acceptable options:

Major guidelines (USPSTF, AUA, ACP, CUA*) disagree on whether to be screened or not. However, all recommend informed decision-making. We propose that:

- the decision takes into account patient's values and preferences
- the clinician shares this decision with the patient

* USPSTF: United States Preventive Services Task Force; AUA: American Urologic Association; ACP: American College of Physicians; CUA: Canadian Urological Association.



State of knowledge – April 2012 Selection of best available studies

Unless referenced otherwise, results from the ERSPC study^{1,2} were used to calculate benefits and harms of the PSA test. ERSPC study^{1,2}: randomized controlled trial including 162,000 men from 7 European countries, between 55 and 69 years old, followed during 11 years, screened on average 2 times every 4 years (PSA cut-off level of 3-4 ng/mL).

Benefits of screening

Increased survival*

- For each 1000 men screened during 10 years, 1 (0.1%) death from prostate cancer will be prevented.

Number of deaths from prostate cancer prevented for each 1000 men screened during 10 years³

Screening started at:	Familial risk		
	None	1 member	2 members
40 years old	0.004	0.01	0.03
50 years old	0.1	0.2	0.6
60 years old	1	2	3

- As many as 4 deaths from prostate cancer (0.4%) might be prevented for each 1000 men screened if men were followed for 14 years.⁵

Reassurance

- For each 1000 men screened, 830 (83%) will be identified as being at low risk of having prostate cancer. These men will be reassured.

Harms of screening

False reassurance

Of the 830 men identified as being at low risk, 30 will actually have prostate cancer. These men will have been falsely reassured.

False alarm

For each 1000 men screened, 170 (17%) will be identified as being at high risk of having prostate cancer. Of these, 110 will be found not to have prostate cancer at the "confirmatory" biopsy.

A few men will have complications from the biopsy. Among the men who have a biopsy:⁷

- 1% will be hospitalized
- 3% will have an infection requiring antibiotics.

Overdiagnosis

For each 1000 men screened, 60 (6%) will be treated for prostate cancer (50 more than in the non-screened group). For half of these treated men, cancer would not have progressed to cause illness or death.⁸

Complications from treatment:^{9,10}

- 50% experience sexual dysfunction
- 10% experience urinary incontinence

*How much confidence can we have in these results?

Low Results for prostate cancer mortality are inconsistent among trials. All available studies present high risks of bias. Numbers presented are founded on results from the best available study.^{1,2}

Less false alarms:

Using the digital rectal exam with the PSA test helps identify other causes of PSA elevation (e.g. prostatitis). It can also help detect a cancer undetected by the PSA test.¹¹

Questions to identify the patient's decision making needs:

- Do you have any questions about the benefits and harms of each option?
- Which benefits and harms matter most to you?
- Do you feel sure about the best choice for you?
- Who will support and advise you in making a choice?

References: 1. Schroeder et al. N Eng J Med 2009;360:1320-28. 2. Schroeder et al. N Eng J Med 2012;366:981-90. 3. Andriole et al. N Eng J Med 2009;360:1310-19. 4. Andriole et al. J Natl Cancer Inst. 2012;104:125-32. 5. Hugosson et al. Lancet Oncol 2010;11:725-32. 6. Howard et al. Arch Intern Med 2009;169:1603-10. 7. Raaijmakers et al. Urology 2002;60:826-30. 8. Welch et al. J Natl Cancer Inst 2010;102:605-13. 9. Stanford et al. JAMA 2000; 283: 354-60. 10. Hu et al. JAMA 2009; 302:1557-64. 11. Catalona et al. J Urol 1994;151:1283-90.543