

PSA screening of healthy men leads to the detection of prostate cancer in many men who would not have been troubled by the disease during their lifetime (overdiagnosis). Testing may lead to unnecessary treatment and a diminished quality of life (overtreatment)

Overuse of PSA testing in healthy men

PSA testing of healthy men is widespread. Some believe that the test saved their lives, others feel that their PSA level was measured too late for the disease to be cured. Yet others received an unnecessary cancer diagnosis that impacted their quality of life. This is the background doctors have to bear in mind in their encounters with the individual patient who wants a PSA test, a prostate biopsy or therapy. The test poses major challenges for doctors – partly because many healthy men request them, partly because we lack reliable criteria for who needs treatment once prostate cancer has been detected. On the basis of mathematical models, it has been estimated that PSA screening contributes to 45–70 % of the observed reduction in deaths specifically attributable to prostate cancer, but that 23–42 % of the cases of prostate cancer detected by PSA testing represent overdiagnosis (1). So far, PSA screening has not been shown to bring about a reduction in total mortality.

Breidablik et al. describe developments by county in the number of PSA tests in the period 1999–2011 and relate them to the incidence of prostate cancer and rates of prostate cancer surgery (2). Primary doctors' attitudes and own practice with respect to PSA screening have also been surveyed. The conclusion is that there has been a sharp increase in the number of PSA tests performed in Norway that has not, however, affected mortality due to prostate cancer. Breidablik et al. recommend more restraint with respect to both PSA testing and treatment of prostate cancer.

PSA testing has a number of weaknesses, including low specificity. Given that the normal threshold value is defined as a PSA level of < 3.0 ng/ml, the positive predictive value of screening is approximately 25 %. In other words, three of four men with s-PSA > 3 ng/ml risk being unnecessarily concerned about having prostate cancer. What is the effect of PSA screening on men in the age group 50–64 who are assumed to have a life expectancy of more than ten years? The results after 14 years of follow-up in the Gothenburg arm, the longest monitored patient cohort in the main study of the European Randomized Study of Screening for Prostate Cancer (ERSPC), showed that PSA screening results in an absolute risk reduction of 0.4 % for death due to prostate cancer. In order to prevent one death due to prostate cancer, 293 men had to undergo PSA screening and 12 to receive treatment (3). So far, however, no reduction has been found in total mortality after PSA screening. Add this to the poorer quality of life of those who receive unnecessary treatment, and PSA screening of healthy men is not recommended by either the international specialist community (urologists and oncologists) or by the health authorities. Many men know that the test can reveal prostate cancer at an early stage. However, there is a strong probability that far fewer are aware that increased testing leads to more men receiving a cancer diagnosis – and treatment – without this implying a lower mortality.

Evidence-based information on the possibilities and limitations of modern diagnostics and therapy presents challenges. A review article to survey the effect of systematic information on the benefits and drawbacks of PSA testing found that only 12 % chose not to take the test subsequently (4). About half of all Swedish men in the age group 50–70 have taken a PSA test (5), which is comparable with the findings of Breidablik et al. The contents and presentation are crucial to the effect achieved by the information provided. If prostate cancer is suspected on the basis of symptoms or a family history of the disease, a PSA test naturally forms part of the assess-

ment. When it comes to a general medical check-up of healthy men in the age group 40–75, there is national and international consensus in the medical community that the test can be offered on an individual basis. However, one definite prerequisite is that these men must be fully informed of the benefits and drawbacks testing implies.

Overtreatment of prostate cancer can be reduced. Patients with a low risk of disease progression, defined as a PSA level of < 10 ng/ml, Gleason score of ≤ 6, clinical tumour stage ≤ T2b (all criteria must be met), must be informed of the possibility of «active surveillance», as an alternative to radical prostatectomy or radiotherapy. Active surveillance includes regular PSA measurement and repeated prostate biopsies in the post-diagnosis monitoring. In the event of disease progression, according to defined criteria, patients must be offered active treatment (surgery or radiotherapy). Of the 968 men aged 50–64 in the Gothenburg arm of the ERSPC study who were diagnosed after PSA screening as having prostate cancer, 78 % met the criteria for low-risk prostate cancer. 442 (46 %) were «treated» with active surveillance (6). Including multi-parametric MRI examination of the prostate could reassure both patient and doctor about the follow-up, prompting more men with low-risk prostate cancer to choose active surveillance.

Prostate cancer is the second most frequent cause of cancer death among Norwegian men, and this fact is contributing to opportunistic PSA screening in Norway (2). In the *National action programme with guidelines for diagnosis, treatment and follow-up of prostate cancer* (7) organised PSA screening of healthy men is not recommended unless there is a family history of the disease. A strong emphasis on the provision of sober, evidence-based information on the diagnosis and treatment of prostate cancer is a key means of reducing overuse of PSA testing on healthy men.

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References

1. Draisma G, Etzioni R, Tsodikov A et al. Lead time and overdiagnosis in prostate-specific antigen screening: importance of methods and context. *J Natl Cancer Inst* 2009; 101: 374–83.
2. Breidablik HJ, Meland E, Aakre KM et al. PSA-måling og prostatakraft – overdiagnostisering og overbehandling? *Tidsskr Nor Legeforen* 2013; 133: 1711–6.
3. Hugosson J, Carlsson S, Aus G et al. Mortality results from the Göteborg randomised population-based prostate-cancer screening trial. *Lancet Oncol* 2010; 11: 725–32.
4. Volk RJ, Hawley ST, Kneuper S et al. Trials of decision aids for prostate cancer screening: a systematic review. *Am J Prev Med* 2007; 33: 428–34.
5. Bratt O, Lundgren R, Ahlgren G. Systematisk PSA-screening har prövats i region Skåne. Balanserad information ger chans till jämlik vård, visar pilotprojekt. *Läkartidningen* 2012; 109: 1610–2.
6. Godtman RA, Holmberg E, Khatami A et al. Outcome following active surveillance of men with screen-detected prostate cancer. Results from the Göteborg randomised population-based prostate cancer screening trial. *Eur Urol* 2013; 63: 101–7.
7. Nasjonalt handlingsprogram med retningslinjer for diagnostikk, behandling og oppfølging av prostatakraft. Oslo: Helsedirektoratet, 2012. www.helsebiblioteket.no/retningslinjer/prostatakraft/forord;jsessionid=2D30B9A30EC10A685F0E44353699DC43 [7.8.2013].