Prostate-Specific Antigen (PSA)–based population screening for prostate cancer: an evidence-based analysis

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Record Status
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Citation

Authors’ conclusions
None of the systematic reviews of the randomized controlled screening trials for PC found a statistically significant reduction in relative risk of PC mortality or overall mortality with PSA-based population screening programs. The evidence from the primary trials on the benefit of PSA screening programs for PC mortality was conflicting. Prostate cancer mortality reductions were found to vary by country, by screening program, and by age of men at study entry. PSA screening programs in some but not all of the European countries participating in the ERSPC trial found a statistically significant reduction in relative risk for PC mortality, for some age groups, although the absolute risk difference was small. The American PLCO screening trial found a non-statistically significant increase in relative risk for PC mortality. Both trials had methodological limitations potentially influencing their results—differential treatment of participants in the ERSPC trial arms and high rates of PSA screening in the usual-care or control arm in the PLCO trial. The PSA screening trials were consistent in that none demonstrated a relative risk reduction in all-cause mortality and all found a statistically significant increase in the detection of PCs in the screening arms, with the majority of detected cancers being low risk and organ confined. The detection of high-risk PCs at initial diagnosis was reduced in screening groups, but the much higher rate of intermediate-risk tumours was similar in the study arms. In addition, although the detection of metastatic PCs at diagnosis declined with subsequent screening, the progression of low-grade PC to metastasis during follow-up did not decline, a finding that potentially limits the effectiveness of screening programs. Overall, although the probability of having a PC detected through screening for men was significantly increased, their risk of dying from PC was low and their risk of dying from other causes was much higher—notably from other cancers and cardiovascular events. Both the American and the European screening trials compared the effectiveness of PSA-based population screening programs for PC against usual local practice, and major differences in screening, diagnosis, and treatment practices therefore limit the generalizability of these screening trials. There was no evidence of a PC mortality benefit in the American PLCO trial, which investigated a PSA-based screening program in a setting where, unlike the European trials, opportunistic screening was already common practice. Given that opportunistic PSA screening practices in Ontario, Canada, are similar to those in the United States, it is unlikely that the introduction of a formal PSA-based screening program in Ontario would result in PC mortality reductions. The high prevalence of PSA testing in Ontario and the positive attitudes of men and their physicians about the value of the test suggest that Ontario may, in essence, already have an informal PSA screening program. However, because of the uncertain benefits and known harms of PSA screening, many professional societies are recommending (as outlined in the following section) that a shared decision-making approach be adopted for men who seek PSA testing and that this process include adequate discussion of the benefits and harms of PSA screening.

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