Population-wide PSA screening: no reduction in deaths

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Prostate cancer is exceedingly common, especially with age. It estimated from autopsy studies that one-third of men in their forties have prostate cancer, and by age 85, that figure increases to as high as 75%.1,2 However, most of these cases of prostate cancer are not actually life-threatening. U.S. The lifetime risk of a diagnosis is 15.9%, but the lifetime risk of death from prostate cancer is only 2.8%. Even without treatment, most prostate cancers are not deadly.2 Most men with prostate cancer die from other causes, not from prostate cancer.

Because of the low risk of death from prostate cancer, there is controversy regarding population-wide PSA screening of men without symptoms suggesting prostate cancer. There is no distinction by the PSA between disease that is likely or unlikely to progress to a life-threatening disease. So should all men be screened?

The most important question is this: Does screening reduce the risk of dying from prostate cancer?
The U.S. Preventive Services Task Force, an impartial agency that assesses scientific evidence on prevention and primary care, issued a statement in 2008 saying that they had found "insufficient evidence that screening for prostate cancer improved health outcomes" in men younger than 75. In men 75 or older, the USPSTF found that "the harms of screening and treatment outweigh any potential benefits."3

New evidence that screening does not reduce death rates

A long-term study published in January 2012 has not found any decrease in prostate cancer deaths in men undergoing annual screening compared to a control group. The Prostate, Lung, Colorectal, and Ovarian cancer screening trial (PLCO trial) of over 76,000 men had published intermediate results after 10 years of follow up, and were not updating that study, extending to 13 years of follow up. The results were similar after 13 years: about 12% more cancers were diagnosed in the screening group, but death rates were not different between the two groups, suggesting that population-wide screening does not reduce the number of prostate cancer deaths.4
This report comes on the heels of a meta-analysis of PSA screening trials performed for the USPSTF in October 2011, which reported information from 5 trials (including the 10-year data from the PLCO trial). Collectively analyzing data from these trials, the authors concluded that PSA screening "results in small or no reduction in prostate cancer-specific mortality."5

Could PSA screening be harmful?

Despite the above evidence, the idea of screening is still attractive – if you had prostate cancer, wouldn't it be better to know it? Maybe not.
PSA screening is known to produce many false-positive results - about 70% of men who have elevated PSA levels do not actually have cancer.6 Certainly, psychological harms are inherent in false-positive results, although there is insufficient research to estimate the extent of this harm.5
Healthy men who undergo annual screening may expose themselves to unnecessary and potentially harmful treatments:

- Prostate biopsy complications include fever, infection, bleeding, pain, and urinary difficulty in some men.
- If an abnormal PSA followed by prostate biopsy does indeed detect cancer, 90% of men will be treated with surgery, radiation, or androgen deprivation therapy.

    - Up to 0.5% of men die within 1 month of prostate cancer surgery, and 0.6-3% have cardiovascular events. One to seven percent will have serious complications. Radiation and surgery have adverse effects including urinary continence and erectile dysfunction in 20-30% of men. Radiation is also associated with bowel dysfunction.2, 3
    - Androgen deprivation therapy for localized prostate cancer is associated with erectile dysfunction in about 40% of men. Additional serious harms have been reported in patients receiving androgen deprivation therapy for advanced prostate cancers, including increased risk of heart disease, diabetes and bone fractures.2,3,7

Since most cases of prostate cancer are not life-threatening, these procedures are often unnecessary.