About Benefits and Costs

Edited by Leon Gordis

Prostate Cancer Screening

Blood levels of prostate-specific antigen in conjunction with digital rectal exam may detect up to 85% of prostate cancers. PSA improves the chances of diagnosing disease when it is localized to the prostate rather than diagnosing disease only at the time symptoms have developed. However, before screening becomes widespread, whether through mass screening programs or in the clinical setting, the question to which men should demand an answer is, "Will I be better off having routine periodic screening with PSA and DRE for detecting prostate cancer?" So far, the answer is not at all clear.

Prostate cancer is a significant cause of morbidity and mortality. In the course of a lifetime, 1 in 12 men will be diagnosed with prostate cancer. The annual incidence of prostate cancer has been increasing since the 1970's; from 1989 to 1990 the incidence of prostate cancer jumped an unprecedented 16%, probably as a result of marked recent increases in screening rates. In 1993 an estimated 135,000 U.S. men were diagnosed with prostate cancer, and 37,000 died of the disease. Incidence rates are approximately one third higher in African-American men than in white American men, and at age 50 to 54 they are twice as high. Though primarily a disease of older men (median age at diagnosis is 72 years), on average nine years of life are lost per case of prostate cancer.

Given the high incidence of prostate cancer, the fact that survival rates are better when disease is localized, and our ability to detect localized disease with safe and reasonably acceptable tests (PSA and digital rectal exam), one might ask how there can be anything but a benefit from screening using PSA?

The problem is that no diagnostic or screening test is perfect. Combined use of PSA and DRE improves the sensitivity over using either test alone. However, approximately 15% of men with prostate cancer will still falsely test negative. Another important consideration is that as many as 25 to 30% of men without prostate cancer will have either an abnormal PSA test or an abnormal DRE. These men will be referred for further testing such as transrectal ultrasound or prostate biopsy. Above and beyond the added cost, they will suffer the discomfort and anxiety associated with additional testing.

An even more serious issue is the uncertainty of whether treating patients with localized prostate cancer can make a significant impact on their death rates. It is difficult to demonstrate such an effect because of several problems. The first is lead-time bias: even if there is no benefit from early detection and death is not delayed, survival may appear to be better after screening only because the diagnosis has been made earlier than usual so that the interval from diagnosis to death is lengthened.

A second problem is length bias. Screening generally tends to detect cancers that are slow-growing and less aggressive even without treatment. Even if in reality the outcome from prostate cancers detected by screening does not differ from the outcome from prostate cancers diagnosed at the time the patients have developed symptoms, these problems may give a false impression that early diagnosis improves survival.

A follow-up of prostate cancer patients with untreated localized disease showed an excellent 10-year survival rate of 87%. Since treatment of prostate cancer with either radical prostatectomy or radiation therapy is associated with risk of death and significant morbidity, currently available treatments for minimal prostate cancer may not significantly improve mortality and may in fact be associated with significant morbidity.

We are ethically bound to provide men with the necessary information to answer the question of whether they will be better off being screened for prostate cancer using PSA rather than waiting for clinical symptoms to occur. However, at present we do not have the data needed to answer this important question. The danger with PSA is that the technology may be too widely applied too soon, without clear evidence of benefit and before the possibility is explored that using the test might do more harm than good.

If we are to be able to say to asymptomatic men that combined screening for prostate cancer using PSA and DRE can save lives and is clearly the best option for them, then we must proceed rapidly with randomized clinical trials of PSA screening in order to obtain this critical information. Until this information becomes available, the decision regarding PSA screening will require open discussion by the physician and the patient of the uncertainties involved regarding both the costs and benefits of PSA screening.

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