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**SCREENING FOR PROSTATE CANCER**

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Despite recent advances in both the survival and cure rates for many forms of cancer, unfortunately the same has not been true for prostate cancer. In fact, the age-adjusted death rate from prostate cancer has not significantly improved since 1949, and prostate cancer remains the most common cancer in American men, causing the second highest cancer mortality rate.

Scientific studies have found no consistent correlation of prostate cancer with diet, venereal disease, sexual habits, smoking, or occupational exposure. However, there does seem to be correlation with higher serum testosterone levels. It also appears that there may be a familial tendency for the development of prostate cancer, although no chromosomal abnormalities have been discovered that can predict whether or not an individual will develop prostate cancer.

Approximately 100,000 cases of prostate cancer are diagnosed annually, and 28,000 men die each year from this disease. But the good news is that prostate cancer is a relatively slow growing tumor that also metastasizes (or spreads to other parts of the body) slowly. It is not uncommon for a man to be diagnosed with prostate cancer, live for many years, and die of something else completely unrelated to the prostate cancer.

The chance of a man developing clinically evident prostate cancer anytime during his lifetime is only 6 to 8 percent. Autopsies that were performed on men who died from causes other than prostate cancer have demonstrated that the chance of their being microscopic evidence of prostate cancer greatly increases as men get older. About 10 percent of all men in their 50's will have microscopic evidence of prostate cancer. By the time a man is in his 80's, the chances of his having microscopic evidence of prostate cancer jumps to 70 percent. But nine out of ten prostate cancers are never detected and are clinically unimportant because they either do not cause symptoms or do not spread fast enough.

To date, there has not been a good screening test that detects the presence of prostate cancer in men who are without symptoms. In order for a screening test to be good it should be inexpensive, non-invasive, easy to do, and accurate.

The oldest and most widely used screening test has been the digital rectal examination. While this test is inexpensive, relatively non-invasive (although some may argue differently), and easy to do, it is not very accurate. Even given the best situations and longest fingers, a physician can only feel about 9 percent of the entire surface of the prostate gland.

In April 1991, the *New England Journal of Medicine* published an article that suggested using a blood test that measures the level of prostate-specific antigen (PSA) as a screening test for prostate cancer. PSA is a protein that is only made in certain prostate cells called epithelial cells. The level of this protein is elevated in between 25 and 92 percent of patients with prostate cancer, but it is also elevated in 30 to 50 percent of patients with an enlarged prostate gland (a condition called benign prostate hypertrophy which affects practically every man over the age of 30 to varying degrees), and in patients with an infection of the prostate gland.

The PSA test is not a new test, but has been available for several years. It has been an extremely useful test to help monitor the progression of prostate cancer in a patient who is known to have prostate cancer. But its usefulness as a screening test is debatable. Reviewing the four criteria of a good screening test, the PSA test is not particularly inexpensive. The average price of the PSA test is about \$100.00 (prices may vary depending on which laboratory does the test). The test is fairly non-invasive (only requiring a needlestick to obtain the blood), and is easy to do, although you must send the blood to a specialized laboratory which may not always be accessible. However, the biggest controversy over the PSA test is with its accuracy.

Physicians and epidemiologists measure a test's accuracy by virtue of its "sensitivity" and "specificity." Simply defined, "sensitivity" is the measurement of the ability of a test to be positive when the disease is actually present, whereas "specificity" is a measurement of the ability of a test to be negative when the disease is not present. Because of the relatively high rate of both false positive and false negative tests, the PSA test is neither very sensitive or specific. The published sensitivity rates for the PSA test are around 80 percent, with specificity rates between 38 and 56 percent. In other words,

when an individual has prostate cancer the PSA will be positive only 80 percent of the time, thereby missing 20 percent of the cases of prostate cancer (a false negative test). Similarly, if an individual does not have prostate cancer, then the PSA will be negative only 38 to 56 percent of the time, thereby yielding a false positive test 44 to 62 percent of the time. Given the PSA test's high false positive and false negative rates, the accuracy of the test in diagnosing either the presence or absence of prostate cancer in asymptomatic men is greatly diminished.

Because of the PSA test's inaccuracy and relatively high cost, it does not fulfill the criteria of a good screening test. However, the PSA test can be very useful in many circumstances. If a prostate nodule is detected on rectal exam, the PSA test can help determine whether or not the nodule is malignant. As previously stated, the PSA test is excellent at following the course of a patient who is known to have prostate cancer. And the PSA test is excellent at diagnosing prostate cancer that has metastasized (or spread) beyond the prostate gland when the primary tumor is so small that it cannot be felt. I also recommend the PSA test for men with certain risk factors for prostate cancer, specifically if they are over the age of 50, have a strong family history of prostate cancer (especially if the family members with prostate cancer were diagnosed at a relatively young age), or if a patient has symptoms of urinary obstruction.

Currently, the Occupational Medicine Services (OMS) at Lewis encourages all male employees over the age of 40 to get at least an annual rectal exam, which is available to all government employees during their annual health screening physical offered through OMS. The American Cancer Society and the National Cancer Institute recommend the annual rectal exam for men over the age of 40, but the U.S. Preventive Services Task Force states there is insufficient evidence to recommend either for or against the annual rectal exam. Currently, none of these groups advocate the PSA test as a screening tool for prostate cancer in men without symptoms. However, if you feel that you should have a PSA test, please talk with your personal physician for further information.

