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Screening for Prostate Cancer: Informing Men About Their Options

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The aging of the population and recent availability of screening tests have greatly changed the presentation and diagnosis of prostate cancer. Prostate cancer remains a significant public health problem, and controversy about screening recommendations is ongoing.

An estimated 232,090 men will be diagnosed with prostate cancer in 2005, and 30,350 men will die from the disease in 2005 (American Cancer Society [ACS], 2005). Prostate cancer accounts for 33% of new cancer cases in men, but current estimates suggest that 90% of the cases are diagnosed with only local or regional spread, for which the five-year relative survival rate approaches 100%. Minority men continue to be diagnosed with more advanced disease compared with non-Hispanic white men (ACS).

All men older than age 50 are at risk for developing prostate cancer. About 70% of all prostate cancer cases are diagnosed in men older than age 65 (ACS, 2005). Other known risk factors include being of African American descent, having a family history of prostate cancer, and having a long history of consuming a diet high in saturated fat.

The symptoms of prostate cancer are vague. Early prostate cancer usually is asymptomatic. Signs of more advanced malignancy include a weak or interrupted urine flow, difficulty urinating, more frequent urination, blood in the urine, or pain with urination. Continual pain in the lower back, pelvis, or upper thighs often is indicative of metastatic disease. Relying on symptoms is an ineffective means to detect prostate cancer early because the symptoms often are similar to the symptoms of prostatic hypertrophy and other benign processes.

The majority of cases of prostate cancer are discovered through combination screening with digital rectal examination (DRE) and serum prostate-specific antigen (PSA) testing. The decision to screen for clinically localized prostate cancer, particularly in older adults, is controversial. Screening is based on the hypothesis that early detection allows treatment of the cancer while it is localized, thereby reducing mortality. However, the hypothesis that early treatment reduces mortality is unproven in prostate cancer, especially in older adults (Pienta, Sandler, Hollenbeck, & Sandra, 2004). Screening cannot discern whether a cancer is indolent. Also, many older adults die from other medical complications before the spread of prostate cancer becomes symptomatic or difficult to manage.

The improved earlier detection of prostate cancer at an earlier stage is thanks in part to the widespread availability of screening using a combination of PSA testing and DRE. Much of the controversy involves the age at which men should start and stop screening as well as whether to screen. A comparison of guidelines is shown in Table 1.

Digital Rectal Examination

DRE is considered a standard screening tool for the early detection of prostate cancer. Research has examined the sensitivity and specificity of DRE and its role in the early detection of prostate cancer. Most experts concur that it is more difficult to detect prostate cancer when using DRE alone (Harris & Lohr, 2002).

The overall sensitivity of DRE is estimated to be about 59% (Harris & Lohr, 2002). The biggest benefit of DRE is that it may detect cancer in some men with normal PSA levels. In most cases, the tumors are small and well differentiated. The positive predictive value of DRE has been reported to range from 4%–11% in men with PSA levels of 0–2.9 ng/ml and from 33%–83% in men with PSA levels of 3.0–9.9 ng/ml or more (Basler & Thompson, 1998).

The main limitations of DRE are that the majority of palpable cancers are not early cancers and that many clinically important cancers are located in regions of the prostate gland that are inaccessible to digital palpation. Only the posterior and lateral aspects of the gland can be palpated. Although it has poor sensitivity, DRE often is recommended as one component of prostate cancer screening because it may detect cancers missed by other tests. Other commonly cited benefits are that it is a low-cost procedure, is generally well tolerated, and has value in evaluating other prostate abnormalities such as benign prostatic hyperplasia.

Prostate-Specific Antigen Testing

PSA testing became widely used for the screening and diagnosis of prostate cancer after its commercial introduction as a test to monitor recurrence in patients with cancer. The use of PSA testing initially resulted in a marked increase in prostate cancer incidence rates in the United States in the late 1980s. The trend peaked in 1992, and the pattern of rise and decline in incidence is consistent with the concept that upon introduction, PSA testing uncovered a large number of prevalent cancers that had accumulated as a result of previous years' incidence. Once the cases were detected, incidence rates returned to the rate of newly occurring disease (Smith et al., 2001).

Measurement of serum PSA level is one of the primary means for detecting prostate cancer. PSA is a serum kinase produced by benign and malignant prostatic epithelial cells. The sensitivity of PSA testing has been reported to be 73%, with a greater

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