PSA Pitfalls

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The prevalence of prostate cancer increases steadily with age. About 30% of men at age 50 have occult prostate cancer. At age 80, 80% of men have some cancer in their prostate. However, men in this age group are more likely to die from another condition rather than from the prostate cancer.

At this age, a prostate biopsy is very likely to be positive; however, treating asymptomatic prostate cancer is unlikely to improve the patient's life span or quality of life. If a man's life expectancy is judged to be less than 10 years, he is unlikely to benefit from the detection of occult prostate cancer.

Prostate-specific antigen (PSA) screening is not appropriate for men over age 75. Abnormal PSA results in this population result in unwarranted anxiety, unnecessary referral and morbidity from further testing.

What is PSA?

PSA is a glycoprotein secreted by the prostate into the semen. Some PSA can be measured in the blood. An important distinction is that PSA is *prostate* specific and not *prostate cancer* specific. Elevated serum levels occur for several reasons.

What makes PSA rise?

PSA can rise because of benign prostatic hypertrophy, prostate cancer, urinary tract infection/prostatitis or urethral/prostatic instrumentation/surgery.

Frederick's False Alarm

- Frederick, 62, develops dysuria and frequency.
- Urinalysis shows pyuria and is nitrite-positive.
- Urine culture grows *E. coli*.
- A course of oral antibiotics clears his infection.
- A prostate-specific antigen (PSA) (drawn at the time of presentation with a urinary tract infection [UTI]) returns elevated at 47.2 ng/ml.

What does all this mean?

PSA levels rise above normal cut-off values because of benign prostate enlargement, prostate cancer, urinary infection or urethral/prostatic instrumentation or surgery. Measuring PSA during the time of acute UTI is contraindicated as elevated levels are often spurious and lead to unnecessary worry and urologic referral.

Because of PSA's long serum half-life and the potential persistence of prostatic inflammation after the acute episode, repeat PSA measurement should be delayed for eight weeks and may take up to six months to return to baseline.[1]

Remember: Don't measure serum PSA during an acute UTI or soon after urethral instrumentation or catheterization.

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Cover photograph: Prostate (Firstlight Images®)

Dean's Domino Effect

- Dean, 58, had annual PSA tests with these results:
  - 2002: 4.6 ng/ml
  - 2003: 5.3 ng/ml
  - 2004: 5.8 ng/ml
- As a result of the 2004 level, he is referred to a urologist who arranges a trans rectal ultrasound-guided biopsy) of the prostate.
- The biopsy shows adenocarcinoma.

What does this mean?

Dean's PSA levels were abnormal for two years before he was referred for further evaluation (Table 1). If a man's screening PSA level is elevated and he is not referred for consideration of a prostate biopsy, the primary-care physician must ask himself, "Why did I do the PSA in the first place?"

Prostate cancer screening is a series of steps rather than a single test (PSA and/or digital rectal exam). Each step, if abnormal, should reflexively trigger the next, like a row of dominoes falling. In the case of prostate cancer, the first domino is the initial test (PSA) and the last domino is the therapeutic goal (reduced prostate cancer morbidity and mortality). The second domino is the prostate biopsy. As an abnormal PSA level is rarely adequate to definitely diagnose prostate cancer, a biopsy will be necessary to confirm (or rule out) the diagnosis.

Some men with abnormal PSA levels are not candidates for radical therapy (usually because of advanced age or poor health), even if they do have prostate cancer. In these cases, biopsy may not be recommended because a positive result will not affect management. For this reason, men should be assessed by a urologist before a decision is made to do a prostate biopsy.

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Table 1

Age-specific PSA levels

Age	Level
50-59	0 ng/ml-3.5 ng/ml
60-69	0 ng/ml-4.5 ng/ml
70-70	0 ng/ml-6.5 ng/ml

PSA: Prostate-specific antigen

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References

1. Zackrisson B: Evolution of free, complexed, and total serum prostate-specific antigen and their ratios during one year of followup of men with febrile urinary tract infection. Urology 2003; 62(2):278-81.