Recommendations for clinical practice. Many of the risk factors identified in this study were found in previous studies. Each of the risk factors was of moderate value alone; however, the more risk factors in one woman, the greater the risk of hip fracture. Therefore, patients who have risk factors they cannot change (eg, decreased bone density, history of maternal hip fracture, history of hyperthyroidism) should be counseled to minimize the risk of hip fracture, specifically by increasing physical activity and avoiding use of tobacco and long-acting sedatives. Other risk factors for hip fracture, such as problems with impaired vision and increased pulse rate, also should be addressed.

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PROSTATE CANCER SCREENING

TITLE: Prostate cancer screening: a decision analysis
AUTHORS: Cantor SB, Spann SJ, Volk RJ, Cardenas MP, Warren MM
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Clinical question. Is it beneficial to screen men age 50 and older for prostate cancer with digital rectal examination (DRE), transrectal ultrasound (TRUS), and prostate-specific antigen (PSA)?

Background. Screening asymptomatic men for prostate cancer is a controversial practice. Screening advocates cite better survival rates in men with early stage prostate cancer, and doubters point to the lack of either convincing epidemiological data or a controlled trial showing improvement in morbidity or mortality. A definitive controlled trial would take years to complete and may never be done. In the face of imperfect information, decision analysis is a quantitative analytic method used to determine the optimal clinical strategy. The decision process is modeled using probabilities of health states and outcomes gleaned from existing scientific literature, combined with preferences for outcomes, commonly called *utilities.*[1,2] In this review, I have used the critique format proposed by the Evidence-Based Medicine Working Group to evaluate this prostate cancer screening decision analysis.[3]

Study design and validity. **Were all important strategies and outcomes included?** No. The authors confine their model to a single screening strategy: digital rectal examination and PSA, followed by biopsy for a suspected nodule or positive PSA (10 ng/mL or greater). If the DRE is negative and the PSA is indeterminate (4 to 10 ng/mL), transrectal ultrasound and the predicted PSA (PSA level divided by estimated prostate volume, or PSA density) would be performed to determine if a biopsy is indicated. This analysis is superior to previous analyses in that an annual screening strategy is examined. However, a newer screening strategy based on yearly rate of change of age-specific PSA, called *PSA velocity*, is not included.

Was an explicit and sensible process used to identify, select, and combine the evidence into probabilities? Yes. Extensive documentation of the probabilities of disease states and outcomes are given. A strength of this analysis was the use of prostate cancer prevalence of *clinically detectable lesions* rather than detection of microscopic disease, which is probably of little biologic consequence. Because 5-year survival rates for treated prostate cancer are based on National Cancer Institute data from 1973–1986, these estimates may not be accurate for 1995.

Were the utilities obtained in an explicit and sensible way from credible sources? Yes. Ten male patients who were in their 50s and free of prostate disease and their spouses were interviewed using a time-trade-off method to determine quality-adjusted life years for living with the complications of treatment: incontinence, impotence, urethral stricture, rectal injury, and gynecomastia. A previous prostate cancer screening decision analysis has been criticized for using physicians' preferences to determine utilities.[4] Using patients is an improvement, but 10 is still a small number, and men in their 60s and 70s were not included.

Was the potential impact of any uncertainty in the evidence determined? Yes. Sensitivity analyses were performed to determine if varying the probability and utility parameters in the model affected the preferred strategy.

Results. **In the baseline analysis, does one strategy result in a clinically important gain for patients? If not, is the result a toss-up?** The preferred strategy favored no screening by a slim margin—about 6 quality-adjusted months. When adverse outcomes of treatment were ignored, screening was the favored strategy, yielding an advantage of 6 unadjusted months. This sounds like a toss-up to me, though patient preference clearly plays a role. Varying the probabilities of disease states and outcomes in the sensitivity analyses did not change the preferred strategy.

How strong is the evidence used in the analysis? In general, the analysis is based on fairly good data. The sensitivities and specificities of PSA, DRE, TRUS, and

biopsy are estimated from published studies, but PSA and TRUS are relatively new tests, and their performance characteristics in population-based screening are not well-established. Outcomes of surgical, radiation, and hormonal treatment of prostate have been described, but, as noted above, current 5-year survival rates may be better than those used in the analysis.

Could the uncertainty in the evidence change the result? Yes. If newer methods of treatment result in much improved survival and decreased complication rates, screening might gain a significant advantage. If a new prostate cancer screening test with higher sensitivity and specificity for aggressive prostate cancer is developed, screening may be beneficial. For example, PSA velocity may be superior to the tested strategy.

Recommendations for clinical practice. **Will the results help me in caring for my patients?** Yes. Despite the current popularity and promotion of PSA screening for prostate cancer, this is the third decision analysis published in the past 3 years showing no clear benefit of screening.[4,5] This analysis confirms my belief that mass screening for prostate cancer is not appropriate at this time. The decision for or against screening for prostate cancer should take place only within the context of a thorough doctor-patient discussion of the risks and benefits of screening and an exploration of patient preferences. *Primum, non nocere.*

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