

Ability of community-based prostate cancer screening to target an appropriate and underserved population

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Abstract

Screening is not universally beneficial due to over- and under-diagnosis, and false positives that beget additional

testing and associated adverse events and expense. We examined data from all men who participated in a mass community prostate cancer screening between May 2009 and September 2010. The data contained information regarding patient demographics, family history of prostate cancer, lower urinary tract symptoms, prior history of prostate cancer, most recent digital rectal examination, and the presence of an established relationship with a physician. Current American Urological Association screening recommendations were then applied to determine the appropriateness of our outreach effort. A total of 438 men (mean age 66.5 years) underwent screening. A total of 106 (24.2%) patients in our study met contemporary criteria for screening. Of these men, the vast majority was well educated, well insured, and well informed about the need for prostate cancer screening. Based on these data, mass community-based prostate cancer screening does not appear to identify and screen at-risk men. Future efforts at mass screening should more carefully target men most likely to benefit.

Key words: Prostate cancer; Screening; Outcomes; Prostate specific antigen; Community health

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Core tip: Mass prostate specific antigen-based prostate screening is used throughout the world as a means of reducing prostate cancer morbidity and mortality. However, a large proportion of men who underwent mass screening in our region were, in hindsight, not appropriate candidates for screening. Given the recent warnings of the United States Preventative Services Task Force and American Urological Association regarding the over-diagnosis of prostate cancer, it is incumbent on urologists, hospitals, and public health agencies to critically examine the role of screening practices, recognizing both the potential for community benefit

and of harm from inappropriate screening.

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INTRODUCTION

Prostate cancer is the second most common malignancy diagnosed in American men with an annual estimated incidence of approximately 240000^[1]. The introduction of prostate specific antigen (PSA) screening has effected a stage migration that has led to earlier diagnoses and the perception of improved survival^[2]. Recently, the United States Preventative Services Task Force suggested that PSA-based screening is unnecessary and potentially harmful in some groups of men^[3]. Consistent with the Task Force, the American Urological Association (AUA) currently discourages the common practice of "mass" screening^[4].

OUR EXPERIENCE WITH MASS PROSTATE CANCER SCREENING

Our institution has previously offered PSA-based prostate screening to our community without adherence to any specific guidelines. Therefore, we retrospectively examined the nature of our prior screenings to determine if our outreach efforts were targeting appropriate screening candidates and/or an underserved population.

Prostate cancer screening was offered to all men in the Knoxville, Tennessee metropolitan area. Through mass mailings, social media, and traditional media formats, men were invited to one of nearly 10 geographically distributed screening locations. All participants provided information regarding demographics, baseline prostate health, family history of prostate cancer, prior screening, and access to either an urologist or primary care physician. Participants then underwent PSA testing and a digital rectal examination (DRE) by a board certified urologist. Results of the DRE were categorized as normal, abnormal concerning or highly suspicious for cancer, or enlarged consistent with benign prostatic hyperplasia. PSA values were forwarded to the screening provider and compared to examination results, and the patient was either (1) advised to undergo routine screening once a year; or (2) encouraged to follow-up on his "abnormal results" for additional confirmatory testing.

We retrospectively examined demographic data from these patient-reported forms, called patients individually to confirm accuracy of these results, and

applied current best practice screening guidelines based on AUA recommendations^[4]. Men aged 55-69 years were considered appropriate screening candidates, whereas men outside of this age range and/or those who had undergone prior screening within one year and/or men with a prior diagnosis of prostate cancer were considered poor screening candidates. African-American men and/or men with a family history of prostate cancer within a first-degree relative were considered appropriate candidates for screening. The Statistical Package for the Social Sciences version 21 (Armonk, NY: IBM Corp) was used to calculate frequency and cross-tabulation statistics to assess characteristics of the dataset. The University of Tennessee Graduate School of Medicine Institutional Review Board approved the study.

Between May 1, 2009 and September 30, 2010, 438 men underwent PSA-based prostate cancer screening. The mean age of the cohort was 66.5 years (age range 37-91). In this cohort, 98% were Caucasian, 16% reported family history of prostate cancer, and 27.1% reported attendance at a similar screening event within the past 12 mo. In addition, 97.6% and 95.3% reported an understanding of the need for annual PSA and DRE, respectively. Two-thirds of screened individuals had completed some form of higher education (greater than a high school degree, reflecting a better-educated population than the more general regional population. Approximately 95% of the cohort maintained health insurance at the time of screening. In all, 87.3% of the total cohort reported an established relationship with a primary care physician. Finally, nearly 97% were educated about the need for an annual PSA and DRE, and at least 80% of patients had attended mass screening at some point in the past. Taken as a whole, men participating in our mass prostate cancer screening represent a well educated, insured population; relatively few of those men were deemed to be appropriate for screening.

DISCUSSION

We found that a large proportion of men who underwent screening in our cohort were not appropriate candidates for screening. Further, most of the men who "met criteria" for screening based on age, ethnicity, and/or family history, were well educated, well insured, and well informed; hence, men most in need of screening were largely absent from our mass screening effort.

Screening is not universally beneficial due to the overdiagnosis of potentially indolent disease, false positives that beget additional testing and associated adverse events and expense, and poor sensitivity that may lead to underdiagnosis and a false sense of security. Given the criticism centered on PSA-based screening and "mass screening" in particular, it is incumbent on urologists, hospitals, and public health agencies to critically examine the role of screening

practices, recognizing both the potential for community benefit and of harm from inappropriate screening.

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