BRIEF REPORT: Physicians and Their Personal Prostate Cancer-screening Practices with Prostate-specific Antigen

A National Survey

Evelyn C.Y. Chan, MD, MS,¹ Michael J. Barry, MD,² Sally W. Vernon, PhD,³ Chul Ahn, PhD,⁴

¹Biomedical Ethics, Division of General Internal Medicine, Department of Medicine, The University of Texas-Houston Medical School, Houston, TX, USA; ²General Medicine Unit, Massachusetts General Hospital, Boston, MA, USA; ³Division of Health Promotion and Behavioral Sciences, Center for Health Promotion and Prevention Research, The University of Texas-Houston School of Public Health, Houston, TX, USA; ⁴Biometry, Division of General Internal Medicine, The University of Texas-Houston Medical School, Houston, TX, USA.

BACKGROUND: There is inconclusive evidence that prostate cancer screening with prostate-specific antigen (PSA) reduces mortality. Although PSA testing is widespread, it is unknown how many physicians have taken the PSA test themselves.

OBJECTIVE: To determine the prevalence of PSA testing among physicians.

DESIGN: Cross-sectional survey.

SUBJECTS: A nationwide stratified random sample of urologists (response rate 61%, $n=247$), Internists (response rate 51%, $n=273$), and family physicians (response rate 64%, $n=249$) were surveyed by mail in 2000. After excluding female respondents and men who either reported a positive history of prostate cancer or did not respond to that query, there were 146 urologists, 96 Internists, and 118 family physicians.

MEASUREMENTS: Whether physicians had undergone prostate cancer screening with PSA.

RESULTS: Eighty-seven percent (155/178) of male physicians aged 50 and older and 21% (31/150) of white male physicians under age 50 reported having had a PSA test. More urologists than nonurologists in both age groups reported having had a screening PSA test.

CONCLUSION: Most physicians aged 50 and older report undergoing PSA testing. This may reflect a belief in its efficacy and contribute to its widespread use.

KEY WORDS: prostate specific antigen; informed decision making; prostate cancer screening; physician practice.

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Screening for prostate cancer with prostate-specific antigen (PSA) is controversial because there is inconclusive evidence that regular testing reduces mortality.¹⁻³ Until clinical trials^{4,5} determine whether there is a net benefit, professional organizations recommend that physicians inform men of the potential risks and benefits of testing through informed or shared decision making.⁶⁻¹⁰ These risks include potential harms, such as false-positive results and unnecessary anxiety, biopsies, and potential treatment complications for some

cancers whose natural course may not lead to morbidity and mortality.¹⁰

Despite its uncertain efficacy, PSA testing has become widespread.¹¹⁻¹⁶ It has become even more prevalent than colorectal cancer screening, an intervention with proven efficacy and unanimous support among professional organizations.^{14,16}

Although physicians have contributed to the widespread uptake of PSA testing among men,¹¹⁻¹⁶ it is unknown just how many U.S. physicians have taken the PSA test themselves. One study in Victoria, Australia, found evidence to support high levels of PSA testing (45%) among physicians there.¹⁷ In this study, we determined the prevalence of personal PSA testing among a national sample of urologists, family physicians and Internists.

METHODS

We obtained institutional board review approval from the University of Texas-Houston Health Sciences Center to draw a nationwide random sample of physicians. The sample was stratified by specialty from the *Official ABMS Directory of Board-Certified Medical Specialists 2000*, 32nd edn, Vols. 1-4. We determined physician eligibility and mailed surveys and postcard reminders as described previously.¹⁸ Eligible physicians practiced medicine at least 20 hours/week, cared for men aged 40 and older, and were not in residency training. In 2000, we surveyed 273 eligible internists, 249 family physicians, and 247 urologists. We received completed surveys from 139 internists, 160 family physicians, and 151 urologists (overall response rate: 59%). For our analysis, we dropped 84 women, 2 men who reported a personal history of prostate cancer, and 4 men who did not respond to that question, leaving 96 Internists, 118 family physicians, and 146 urologists. Because family physicians and internists had similar demographic characteristics and responses, we combined them as "nonurologists" and compared them with urologists.

We asked physicians: "Have you ever undergone prostate cancer screening with prostate specific antigen?" We also ascertained respondents' age, years with a medical degree, race/ethnicity, and marital status.

For men at average risk for prostate cancer, professional organizations recommend offering PSA testing beginning at age 50⁶⁻¹⁰; therefore, the primary focus of our analysis was on male physicians aged 50 and older since they would be potential candidates for PSA testing. As a secondary focus, we

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Address correspondence and requests for reprints to Dr. Chan: Biomedical Ethics, Division of General Internal Medicine, Department of Medicine, The University of Texas-Houston Medical School, 6431 Fannin, 1.122 MSB, Houston, TX 77030 (e-mail: Evelyn.C.Chan@uth.tmc.edu).

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Table 1. Demographic Characteristics of Male Physician Respondents*

	Age 50 and Older [†]			Under Age 50 [‡]		
	Urologists (n=98)	Nonurologists (n=80)	P Value	Urologists (n=48)	Nonurologists (n=134)	P Value
Mean age, y ± SD	58.9 ± 6.1	58.3 ± 6.4	.555	44.4 ± 4.2	42.3 ± 5.2	.013
Mean years with medical degree ± SD	32.5 ± 7.1	30.5 ± 8.6	.110	19.0 ± 7.4	15.6 ± 6.1	.003
Ethnic origin (%)			.826			.430
White	84.7	88.6		89.6	81.1	
Black	2.0	1.3		2.1	1.5	
Hispanic	1.0	1.3		0.0	6.1	
Asian	8.2	7.6		8.3	10.6	
Other	4.1	1.3		0.0	0.8	
Marital status (%)			.345			.436
Married	89.8	93.8		89.6	85.1	
Not currently married	10.2	6.3		10.4	14.9	

*Two sample t-tests were used to compare the mean values of continuous variables between physicians in each specialty. χ^2 tests for independence were used between categorical variables and physician specialty.

[†]Missing data ranged from 0% of respondents (age) to 5.6% (years since having medical degree).

[‡]Missing data ranged from 1.1% of respondents (age, race, marital status) to 4.4% (years since having medical degree).

examined white male physicians under the age of 50. Men under age 50 are not candidates for PSA testing unless they are at a higher than average risk for prostate cancer (e.g., African Americans). Therefore, urologists and nonurologists under the age of 50 who are white would not be expected to have undergone PSA screening themselves. We used χ^2 tests to compare the frequency distributions.

RESULTS

The demographic characteristics of survey respondents are shown in Table 1. Of male physicians aged 50 and older, 87% (95% confidence interval: 81.2% to 91.6%) (155/178) reported having had a screening PSA test. Among physicians aged 50 and older, more urologists (95%) than nonurologists (78%) reported a PSA test (Table 2). Among white male physicians under the age of 50, 21% (95% confidence interval: 14.5% to 28.0%) (31/150) reported a PSA screening test, and more urologists (40%) than nonurologists (13%) reported being screened (Table 2).

DISCUSSION

The 2000 U.S. National Health Interview Survey (NHIS) found that 57% of men aged 50 and older with no history of prostate cancer reported ever having had a PSA test.¹⁶ Although NHIS

data are weighted to provide estimates representative of men in the general population¹⁶ and our data are not (and therefore may have been skewed by incomplete survey participation), our results suggest that PSA screening may be more widespread among physicians than in the general population.

Despite professional guidelines against offering the PSA test to men under the age of 50 in the absence of risk factors for prostate cancer, we found a high percentage of physicians under the age of 50 who had undergone screening. The 2001 Behavioral Risk Factor Surveillance System (BRFSS) survey¹⁴ found that 34% of the men in the general population aged 40 to 49 years reported having had a PSA test. The prevalence of PSA screening that we found for white urologists under the age of 50 is higher than would be expected if they were testing based on a family history of prostate cancer, which is found in only 10% of men in the general population.¹⁹

Our findings suggest that physicians may be requesting and, at the least, are not refusing PSA screening when offered, which in turn suggests that physicians believe that the potential harms of PSA testing do not outweigh the potential benefits. It is possible that they may be adhering to perceived standards of care,^{14,15} believe that PSA screening is beneficial,¹⁵ or appreciate the psychological reassurance of a negative PSA screening test result.²⁰

Compared with nonurologists, more urologists reported undergoing PSA screening, regardless of age. We previously found that urologists are less likely to consider that the un-

Table 2. Experience with Prostate-Specific Antigen (PSA) Screening Among Male Physicians

	Urologists (%) (95% Confidence Interval), n=98	Nonurologists (%) (95% Confidence Interval), n=80	P Value*
Aged 50 and older			
Had PSA screening	93/98 (95%) (88.5% to 98.3%)	62/80 (78%) (66.8% to 86.1%)	.0006
	Urologists (%) (95% Confidence Interval), n=43	Nonurologists (%) (95% Confidence Interval), n=107	P Value*
Under age 50 (whites only)			
Had PSA screening	17/43 (40%) (25.0% to 55.6%)	14/107 (13%) (7.3% to 21.0%)	.0003

*P value based on χ^2 test.

certainties associated with PSA testing are important for men to know.¹⁸ Although attitudes do not necessarily predict behavior, urologists may hold a more favorable attitude toward screening with PSA.

Our results also have implications for the implementation of informed decision making. Although professional organizations recommend informed decision making for PSA testing,⁶⁻¹⁰ having had the PSA test, or harboring implicit beliefs that the risk/benefit ratio of PSA testing is more favorable than evidence indicates may make physicians biased in their discussions of PSA testing with patients.

Early detection of cancer may save lives; however, it also has the potential to disrupt lives and cause unnecessary harm. Even without the completion of randomized trials to assess efficacy, physicians are already undergoing PSA testing. Efforts to implement informed decision making for screening with PSA may need to take into account presumptions not only among patients, but also among physicians about the perceived benefits of screening with PSA.

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Contributions of Authors: Dr. Chan and Dr. Barry participated in the conceptualization of the study, and with Dr. Vernon and Dr. Ahn designed the study and analyzed the data. All authors had access to all data in the study and held final responsibility for the decision to submit this work for publication. All authors approved of the final version.

Conflict of Interest Statement for Authors: The authors declare that they had no financial or personal conflicts of interest that could have inappropriately biased this study. Dr. Chan had full access to all data in the study and had final responsibility for the decision to submit this manuscript for publication.

Ethics Approval: The authors obtained institutional board review approval from the Committee for the Protection of Human Subjects at the University of Texas-Houston Health Sciences Center, Houston, TX, U.S.A., to conduct the study.

REFERENCES

1. **Coley CM, Barry MJ, Fleming C, Mulley AG.** Early detection of prostate cancer, Part I: prior probability and effectiveness of tests. The American College of Physicians. *Ann Intern Med.* 1997;126:394-406.
2. **Woolf SH.** Screening for prostate cancer with prostate-specific antigen: an examination of the evidence. *N Engl J Med.* 1995;333:1401-5.
3. **Stamey TA, Caldwell M, McNeal JE, Nolley R, Hemenez M, Downs J.** The prostate specific antigen era in the United States is over for prostate cancer: what happened in the last 20 years? *J Urol.* 2004;172:1297-301.
4. **Gohagan JK, Prorok PC, Kramer BS, Cornett JE.** Prostate cancer screening in the prostate, lung, colorectal, and ovarian cancer screening trial of the National Cancer Institute. *J Urol.* 1994;152:1905-9.
5. **Schroder FH, Kranse R, Rietbergen J, Hoedemaekere R, Kirkels W.** The European Randomized Study of Screening for Prostate Cancer. (ERSPC): an update. Members of the ERSPC, Section Rotterdam. *Eur Urol.* 1999;35:539-43.
6. **American College of Physicians.** Screening for prostate cancer. *Ann Intern Med.* 1997;126:480-4.
7. **American Cancer Society.** Summary of American Cancer Society recommendations for the early detection of cancer in asymptomatic people. In: *Cancer Facts and Figures 2001.* Atlanta, GA: National Home Office, American Cancer Society Inc.; 2001:35.
8. **American Academy of Family Physicians.** Introduction to AAFP summary of policy recommendations for periodic health examination. Available at: http://www.aafp.org/policy/camp/apndx_fc.html. Accessed July 10, 2001.
9. **American Urological Association.** Prostate-specific antigen (PSA) best practice policy. *Oncology.* 2000;14:267-72; 277-80.
10. **U.S. Preventive Services Task Force.** Screening for prostate cancer: recommendation and rationale. *Ann Intern Med.* 2002;137:915-6.
11. **Moran WP, Cohen SJ, Preisser JS, Wofford JL, Shelton BJ, McClatchey MW.** Factors influencing use of the prostate-specific antigen screening test in primary care. *Am J Manag Care.* 2000;6:315-24.
12. **McKnight JT, Tietze PH, Adcock BB, Maxwell AJ, Smith WO, Nagy MC.** Screening for prostate cancer: a comparison of urologists and primary care physicians. *South Med J.* 1996;89:885-8.
13. **Fowler FJ Jr., Bin L, Collins MM, et al.** Prostate cancer screening and beliefs about treatment efficacy: a national survey of primary care physicians and urologists. *Am J Med.* 1998;104:526-32.
14. **Sirovich BE, Schwartz LM, Woloshin S.** Screening men for prostate and colorectal cancer in the United States. Does practice reflect the evidence? *JAMA.* 2003;289:1414-20.
15. **Voss JD, Schnectman JM.** Prostate cancer screening practices and beliefs. A longitudinal physician survey. *J Gen Intern Med.* 2001;16:831-7.
16. **Ross LE, Coates RJ, Breen N, Uhler RJ, Potosky AL, Blackman D.** Prostate-specific antigen test use reported in the 2000 National Health Interview Survey. *Prev Med.* 2004;38:732-44.
17. **Livingston P, Cohen P, Frydenberg M, et al.** Knowledge, attitudes and experience associated with testing for prostate cancer: a comparison between male doctors and men in the community. *Intern Med J.* 2002;32:215-23.
18. **Chan ECY, Vernon SW, Haynes MC, O'Donnell FT, Ahn C.** Physician perspectives on the importance of facts men ought to know about prostate-specific antigen testing. *J Gen Intern Med.* 2003;18:350-6.
19. **Kalish LA, McDougal WS, McKinlay JB.** Family history and the risk of prostate cancer. *Urology.* 2000;56:803-6.
20. **Cantor SB, Volk RJ, Cass AR, Gilani J, Spann SJ.** Psychological benefits of prostate cancer screening: the role of reassurance. *Health Expectations.* 2002;5:104-13.