ORIGINAL ARTICLES

Are Physicians Discussing Prostate Cancer Screening with Their Patients and Why or Why Not? A Pilot Study

Carmen E. Guerra, MD, MSCE¹, Samantha E. Jacobs, BA², John H. Holmes, PhD³, and Judy A. Shea, PhD¹

¹Division of General Internal Medicine, University of Pennsylvania School of Medicine, 1221 Blockley Hall, 423 Guardian Drive, Philadelphia, PA 19104, USA; ²University of Pennsylvania School of Medicine, Philadelphia, PA, USA; ³Center for Clinical Epidemiology and Biostatistics, University of Pennsylvania School of Medicine, Philadelphia, PA, USA.

BACKGROUND: Prostate cancer screening (PCS) is controversial. Ideally, patients should understand the risks and benefits of screening before undergoing PSA testing. This study assessed whether primary care physicians routinely discuss PCS and explored the barriers to and facilitators of these discussions.

METHODS: Qualitative pilot study involving in-depth, semistructured interviews with 18 purposively sampled, academic and community-based primary care physicians. Barriers and facilitators of PCS discussions were ascertained using both interviews and chart-stimulated recall—a technique utilizing patient charts to probe recall and provide context to physician decision-making during clinic encounters. Analysis was performed using consensus conferences based on grounded theory techniques.

RESULTS: All 18 participating physicians reported that they generally discussed PCS with patients, though 6 reported sometimes ordering PSA tests without discussion. A PCS discussion occurred in only 16 (36%) of the 44 patient-physician encounters when patients were due for PCS that also met criteria for chart-stimulated recall. Barriers to PCS discussion were patient comorbidity, limited education/health literacy, prior refusal of care, physician forgetfulness, acute-care visits, and lack of time. Facilitators of PCS discussion included patient-requested screening, highly educated patients, family history of prostate cancer, African-American race, visits for routine physicals, review of previous PSA results, extra time during encounters, and reminder systems.

CONCLUSIONS: PCS discussions sometimes do not occur. Important barriers to discussion are inadequate time for health maintenance, physician forgetfulness, and patient characteristics. Future research should explore using educational and decision support interventions to involve more patients in PCS decisions.

KEY WORDS: prostate-specific antigen; prostate cancer screening; mass screening; physician practice patterns; physician-patient relations; communication barriers; informed decision making.

DOI: 10.1007/s11606-007-0142-3

© 2007 Society of General Internal Medicine 2007;22:901–907

BACKGROUND

The American Cancer Society estimates that in 2007 there will be 218,890 new cases of and 27,050 deaths from prostate cancer in the United States.¹ Screening for prostate cancer with a Prostate-Specific Antigen (PSA) test, however, is controversial. To date, there are no randomized clinical trial data demonstrating that screening decreases mortality. Consequently, current prostate cancer screening (PCS) guidelines^{2–6} recommend informed decision making. Informed decision making is defined as occurring when an individual understands the disease or condition being addressed and comprehends what the clinical service involves, including its benefits, risks, limitations, alternatives, and uncertainties; has considered his or her preferences and makes a decision consistent with them; and believes he or she has participated in decision making at the level desired.⁷ However, discussing PCS requires time to explain the controversy surrounding the use of PSA^{8,9} as well as physician skill in translating complex medical information so that patients understand the risks and benefits of screening. Furthermore, physician-counseling time is not reimbursed by third party payers. Given the challenges to achieving informed decision making in PCS, it is not surprising that several studies show that discussion sometimes does not occur. In a cross-sectional analysis of data from the 2000 National Health Interview Survey, approximately one-third of men reported their physician did not discuss advantages and disadvantages of PCS before offering testing.¹⁰ Two additional studies have shown that more than one-fourth of men who underwent PSA testing were unaware they had been tested.^{11,12} These findings raise the concern that a significant proportion of men is not making an informed decision about PCS.

Overall, little is known about the physician barriers and facilitators for discussing PCS. Accordingly, this pilot study was conducted to examine the situations in which primary care physicians discuss PCS with their patients and to assess primary care physicians' perceptions of factors that facilitate or preclude such a discussion.

Received June 20, 2006

Revised November 15, 2006

Accepted January 19, 2007

Published online February 13, 2007

METHODS

This study was approved by the Institutional Review Board at the University of Pennsylvania. Subjects were recruited from the University of Pennsylvania Health System (UPHS) network of primary care physicians. This sample was drawn from a larger sample of physicians belonging to the University of Pennsylvania Health System (UPHS) Network of Affiliated Practices. The UPHS network was formed in June 1993 and consists of 212 primary care physicians practicing in 17 counties across southeastern Pennsylvania, southern New Jersey, and Delaware. This system consists of 5 academic primary care practices at the University of Pennsylvania, the Clinical Practices of the University of Pennsylvania (CPUP) and the Clinical Care Associates (CCA), 53 University-owned primary care community practices. Among the 212 primary care physicians, 67% are male, 30% practice at CPUP and the remainder at CCA practices, 78% practice internal medicine, and 22% are in family practice. There are 1.16 million annual outpatient visits to the UPHS network among 341,487 patients residing predominantly in the Delaware Valley region.

Approximately half (99) of the 212 primary care physicians in the UPHS Network were contacted to participate in this study. Physicians were purposively sampled, a qualitative sampling strategy whereby subjects were selected because they possessed a particular characteristic, such as female gender, to better diversify the study population. Investigators invited physicians by letter to participate in a research interview about preventive health care. The physicians were not specifically informed they would be asked to discuss PCS until the beginning of the interview. Physicians were excluded if they were retired or in training. All interviews were conducted by a trained medical student between September and December 2004 and were audiotaped and transcribed. Interviews lasted approximately 30–45 minutes. For their participation, physicians received \$50.

The interview instrument regarding barriers and facilitators of physician discussion of PCS was designed using the Walsh and McPhee Systems Model of Clinical Preventive Care as a conceptual framework.¹³ The framework was adapted to reflect our interest in the barriers and facilitators of discussion of PCS rather than actual screening. This framework proposes that a primary care physician's approach to performing a preventive activity or test is determined by patient and physician predisposing, enabling, and reinforcing factors; reminders; and health care delivery system factors. Table 1 demonstrates the primary interview questions (I-1 to I-13) used to explore the patient, physician, and health system factors that prevent and facilitate discussion about PCS. Unstructured probes were utilized to obtain further depth and completeness of responses to the primary questions. The interview guide was pilot-tested with internal medicine faculty and trainees at the University of Pennsylvania.

In addition to physician interviews, we used chart-stimulated recall to elicit barriers and facilitators of discussion of PCS during actual patient-physician encounters.¹⁴ In chart-stimulated recall, a physician uses documentation of actual patient encounters within the previous 2 weeks to stimulate recall of his or her decision-making processes while an evaluator probes the reasoning behind the medical decision making. Three to 6 chart-stimulated recalls are sufficient to provide reliable and valid assessment of physician perfor-

Table 1. Interview and Chart-stimulated Recall Guide

Interview
I-1. Do you discuss prostate cancer screening with your asymptomatic male patients?
I-2. What aspects of prostate cancer screening do you discuss with them?
I-3. Do you sometimes undertake prostate cancer screening without discussing it with the patient?
If yes:
I-3a. What percent of your patients would you say receive screening without discussing screening with you?
I-3b. What prostate cancer screening test(s) do they receive?
I-3c. What are the characteristics of the patients for whom you conduct screening without discussion?
I-4. When you discuss screening, what tests do you discuss?
I-5. At what age do you begin to offer (each of the mentioned prostate cancer screening tests) in asymptomatic patients?
I-6. At what interval do you suggest patients have (each of the mentioned prostate cancer screening tests)?
I-7. What are the barriers to discussing prostate cancer screening with patients?
I-8. Are there specific types of patients with whom you do not discuss prostate cancer screening?
I-9. What are the things in the health care delivery system in which you practice that lead you not to discuss prostate cancer screening tests?
I-10. What are some factors that facilitate a discussion about prostate cancer screening with patients? Any others?
I-11. Are there any specific types of patients for whom you do discuss (each of the mentioned prostate cancer screening tests)?
I-12. What are the things in the health care delivery system in which you practice that help you to discuss prostate cancer screening tests?
I-13. Can you name some positive or negative characteristics or aspects of the actual prostate cancer screening tests that influence whether you offer it or do not offer it during your discussion?
Chart-stimulated recall (CSR)
CSR-1. At this recent visit, did you discuss prostate cancer screening with your patient?
If yes:
CSR-2. What factors facilitated your discussion of screening?
CSR-3. Did the patient undergo screening?
CSR-3a. If yes: What tests were performed? When?
If no:
CSR-4. What factors prevented you from discussing screening?
CSR-5. Was there a discussion of prostate cancer screening at any previous visit?
CSR-5a. If yes: When was that visit? What was the type of visit?
CSR-6. Did the patient undergo screening?
CSR-6a. If yes: What tests were performed? When?

mance.¹⁵ Several studies support the validity of this method for assessing physician performance.^{16–18}

Two to 4 days before the interview, physicians who used paper charts were asked to pull 10 charts of male patients seen in the previous 2 weeks. Electronic charts obviated the need for pulling charts before the interview. The goal was to discuss 3 to 5 encounters with physicians. Charts for discussion were chosen by the physician in reverse chronologic order to maximize physician recall of the encounter. Physicians rated their recall of the encounter on a scale 0–10, 0 indicating no recall and 10 indicating perfect recall. Neither the investigators nor the interviewer had access to the names or any other identifying information contained within the medical records, and participating physicians were instructed not to disclose any patient identifying information during any portion of the study. Criteria for chart inclusion specified that the patient be a male aged 41 years or older based on evidence that shows

34% of men in the US aged 40–49 have undergone PSA screening.¹⁹ The exclusion criteria (applied at the beginning of an interview) included a personal history of prostate cancer; a visit for symptoms or signs of prostate cancer, benign prostatic hyperplasia, or prostatitis; and physician recall of the encounter rated as zero.

Using chart-stimulated recall, physicians provided a 1- to 2-line summary of each encounter that included patient age, reason for visit, and comorbidities to frame the context in which discussion of PCS did or did not occur. Physicians were then asked “At this recent visit, did you discuss PCS with your patient?” As shown in Table 1, if PCS discussion occurred at the index encounter (CSR 1), physicians were asked to identify factors that facilitated the discussion (CSR 2) and the outcome (CSR 3–3a). If no discussion occurred, then physicians were asked to identify factors that prevented them from discussing it (CSR 4), and whether there had been a discussion at a previous encounter (CSR 5–5a) and the outcome of the previous discussion (CSR 6–6a).

Analysis

After the discussion, all interviews were transcribed verbatim. Transcribed interviews were imported into NVivo 2.0 (QSR International Ltd.). Interviews were analyzed using grounded theory techniques of analysis.²⁰ Interviews were read and coded independently by 2 investigators (CEG & SEJ) and then coded jointly using consensus conferences. For the chart-stimulated recall, all barriers and facilitators that were provided were accepted and coded. Descriptive statistics were used to report the demographic characteristics of the samples

RESULTS

Ninety-nine UPHS primary care physicians were offered participation in this study; 21 declined participation, 59 did not respond, and 19 agreed to participate. Eighteen interviews were conducted and analyzed; 1 additional interview was excluded due to poor quality of the audiotape. The characteristics of final sample of the 18 physicians agreeing to participate in the study are shown in Table 2. The mean age of the participants was 41.5 years (range 33–53), 9 were female, 14 practiced internal medicine and 4 were family practitioners, 11 practiced in urban settings and 7 in suburban settings, and 12 used electronic medical records while 6 used paper charts. All 18 physicians spent at least 60% of their time seeing patients.

Using chart-stimulated recall, 117 encounters of male patients aged 41 years or older were reviewed with physicians. Of these, 73 (62%) encounters were excluded: 31 because the patients presented with conditions where a diagnostic PSA was indicated [history or symptoms of prostate cancer ($n=14$), BPH ($n=9$), prostatitis ($n=2$), other ($n=6$)]; 2 because physician recall was rated zero; 7 because PCS discussion status could not be determined; and 33 because there was documentation of PCS within the previous year before the encounter reviewed by chart-stimulated recall. Of the remaining 44 encounters, the median patient age was 55 (range 41–85) and 11 (25%) of these encounters were for a health maintenance visit or new patient physical. Per physician report, in 28 of the 44 encounters

Table 2. Physician and Practice Characteristics

	Study participants ($n=18$)
Male sex (%)	9 (50)
Race, n (%)	
Caucasian	15 (83)
African American	1 (6)
Asian	1 (6)
Other	1 (6)
Ethnicity, n (%)	
Non-Latino	18 (100)
Latino	0 (0)
Age, median (range)	39 (33–53)
Specialty, n (%)	
Internal medicine	14 (78)
Family medicine	4 (22)
Years in practice, median (range)	8 (2–25)
Practice location, n (%)	
Urban	11 (61)
Suburban	7 (39)
Practice type, n (%)	
Solo	3 (17)
Group—single specialty	4 (22)
Group—multi specialty	4 (22)
Academic	7 (39)
Type of medical records, n (%)	
Electronic	12 (67)
Paper	6 (33)
Income type, n (%)	
Salaried	12 (94)
Fee-for-service	1 (6)
Patient population race/ethnicity mean % (range)	
Caucasian	56 (3–90)
African American	37 (5–95)
Asian	6 (0–20)
Other	1 (0–5)
Non-Latino	95 (90–99)
Latino	5 (1–10)

(64%) there was a discussion about PCS, and in 16 (36%) a discussion was due but did not occur.

Do Physicians Discuss Prostate Cancer Screening with Their Patients?

Initially, when asked about their general PCS screening patterns, all 18 physicians reported they generally discussed PCS with their patients. However, when asked if they ever undertook PCS without a discussion, 6 physicians explained that they sometimes conduct PSA testing without discussion.

Three physicians stated that if they are unable to have a discussion with a patient, then they will default to ordering a PSA due to medical-legal concerns. According to 1 physician:

It used to be that I would not get the PSA if I couldn't have the discussion, and now I have defaulted more towards I get the PSA if I can't have the discussion...It sort of becomes standard care out in the community despite a complete lack of evidence for it...and...it's essentially a liability issue.

Furthermore, two-thirds of the physicians reported they will discuss screening at age 40 if patients are African American or have a family history of prostate cancer which is consistent with current National Comprehensive Cancer Network's recent prostate cancer screening guidelines for this population.²¹

Lack of Indication

Old age, defined as an age between 75–80, was cited by physicians as a situation where screening risks outweighed the benefits and thus was not indicated. Similarly, several physicians stated that it is not appropriate to discuss PCS screening in the setting of a reduced life expectancy, defined as less than 5–10 years. In the encounters reviewed by chart stimulated recall, the patients who had reduced life expectancy had severe comorbidity or a terminal condition.

Barriers to Prostate Cancer Screening Discussion

Table 3 shows the physician-reported barriers to discussion of PCS revealed during the interview. Parenthetically, we note the number of times the barrier was cited to have prevented PCS discussion during chart-stimulated recall. Barriers without an adjacent parenthesis indicate barriers stated by the physician during the interview but not during the chart-stimulated recall session. Consistent with our conceptual framework, the barriers were related to patient, physician, and system variables.

Patient Barriers

Comorbidity. Comorbidity was the most commonly cited patient barrier during both interviews and chart-stimulated recall. Comorbidity often removes the focus of the visit from preventive care to more acute issues. As a result, screening assumes less priority.

Limited Education/Health Literacy. Physicians reported that discussing PCS requires an understanding of complex medical information and thus can be more challenging with patients with limited education or health literacy. As a result, physicians

may elect instead not to initiate the discussion. According to 1 physician:

[It is] really hard to explain to people that don't have the sophisticated understanding of medical issues... It's easier to just not even start the discussion a lot of times.

Presuming Patients Would Refuse Screening. Physicians reported that when they have cared for a patient for a long time, they develop an appreciation for that patient's preferences. If a patient has refused medical treatment or screening in the past, then a physician may choose not to offer PCS.

They say, you know, 'I don't want any treatment, I don't want any surgery, I just want to be... If it's my time, it's my time. I don't want to be screened for that.'

Other Patient Barriers. Other patient reasons elicited by interview only that prevented physicians from discussing PCS with their patients included competing preventative health discussions, cognitive dysfunction, mental illness, and patients who have already decided that they want to undergo PCS.

Physician Barriers

Forgetfulness. Physicians cited their own forgetfulness as a significant barrier to PCS discussion but generally did so when reviewing their documentation of actual encounters and not during the interview. One physician, reviewing the chart of a patient whose most recent PCS discussion was 2 years prior, stated:

I probably just had forgotten about it.

Negative Attitudes About PCS. In addition, physicians questioned the utility of PCS, in particular when practicing under severe time constraints and when there are other preventive tests that they view as more valuable. One physician said:

If you have a 15-minute visit, there are other things that I may value as more important, like managing cholesterol or exercise or diet, weight loss, other things that may benefit [the patient].

Another physician concurred:

There are prioritizations... and sometimes I come out of a visit where I think I spent too much time on PCS to the detriment of things that I actually believe in more.

System Barriers

Visits for Reasons Other than Annual Physicals. The most common system barrier to discussion of PCS cited during both interviews and chart-stimulated recall was visits for reasons other than annual physicals. Physicians explained that acute, problem-focused visits have an associated agenda that must be addressed within a short visit length leaving less or no time to address preventive health.

Table 3. Barriers of Physician Discussion of Prostate Cancer Screening

Category	Barrier identified by interview (no. encounters barrier identified by chart-stimulated recall)*
Lack of indication	Reduced life expectancy (3)
Patient	Old age (1)
	Comorbidity (5)
	Limited education/health literacy (1)
	Presume patient would refuse screening (1)
	Competing preventative health discussion
	Cognitive dysfunction/mental illness
	Patients who already made up their mind they want PSA testing
Physician	Forgetfulness (4)
	Negative attitudes about value of PCS
System	Visit for other reasons than physicals (5)
	Lack of time (2)
	Lack of consensus within the medical profession/inconsistent clinical practice guidelines
	Lack of support for screening stated by specific professional guidelines (US Preventive Services Task Force and American Academy of Family Practice)
	Structure of US legal system supports screening
	Increased workload incurred by electronic medical record charting

*A lack of parenthesis adjacent to a barrier indicates that the barrier was offered during the interview segment but was not observed during chart-stimulated recall.

Lack of Time. Physicians reported that a properly conducted discussion of PCS takes a considerable amount of time. This is particularly problematic given the constraints on time during most office visits. One physician reported:

The time it takes to get...to properly educate the patient...leads most doctors to either not ask about it or to just get it. Because if you do it properly as the ACP recommends, it takes too long.

Other System Barriers. Other system barriers to PCS discussion cited by physicians included lack of consensus within the medical profession/inconsistent clinical practice guidelines, lack of support for screening stated by the U.S. Preventive Services Task Force and American Academy of Family Practice, and the sentiment that the current structure of the US legal system encourages screening. In addition, some physicians noted that electronic medical record charting incurs a greater documentation burden on physicians, and therefore, decreases the amount of time available for counseling.

Facilitators of Prostate Cancer Screening Discussion

Table 4 shows the results of the interviews and parenthetically the results of the 28 chart-stimulated recall encounters where PCS was discussed. As with barriers, most of the cited facilitators were related to patient and system factors.

Patient Facilitators

Patient Request. Patient request for screening, either because they knew someone who had recently been diagnosed with prostate cancer or because they heard about prostate cancer screening in the popular media, was the most commonly cited patient facilitator for PCS discussions during both interviews and chart-stimulated recall.

High Education/Health Literacy. Physicians reported that it is easier to discuss PCS with patients with high education

because they quickly and accurately grasp the controversy surrounding the PSA test. One physician noted:

In general, patients who are not at least college educated just have problems with that.

Family History. Physicians reported that a family history of prostate cancer will trigger the physician to discuss PCS.

African-American Race. Physicians reported that they are more likely to discuss PCS with and screen more African Americans for prostate cancer and do so at an earlier age because African Americans have a higher mortality rate from prostate cancer. One physician reported:

It's especially a problem in African Americans, so it's one of the things that is more of a topic for us to talk about.

Other Patient Facilitators. Other patient facilitators identified by interview included age of 40–50 years, presence of genitourinary symptoms, greater expectations for discussion among patients of high socioeconomic status, a smoking history, and patients with long-life expectancies. Facilitators identified only during chart-stimulated recall were physician monitoring for cancer susceptibility risk of medications (immunosuppressive therapy status post organ transplant) and patients with a history of an elevated PSA that had since returned to normal.

Physician Facilitators

Favorable Attitudes About PCS. A physician facilitator is favorable attitudes about screening which helps to prioritize the discussion about PCS. One such physician simply said, "I am a believer in screening." Favorable attitudes about PCS seemed to lead physicians to become "routine screeners." One such physician said that even when patients do not schedule routine physicals, she allows time to discuss health maintenance which includes PCS.

System Facilitators

Annual Physicals. Physicians reported that annual physicals or well visits both allowed more time to conduct a discussion about PCS and stimulated a screening frame-of-mind in the physician.

Review of Labs. Physicians reported that review of laboratory work facilitated discussion of PCS in that seeing a prior PSA in the chart functions as a reminder to physicians to initiate the discussion.

Extra Time. Having extra time will facilitate physician initiation of discussion of PCS and facilitates a more thorough discussion.

If you have more time, it makes it easier to have a longer conversation about it.

Reminders. During the interviews, physicians stated that reminders, including electronic medical record sections for

Table 4. Facilitators of Physician Discussion of Prostate Cancer Screening

Facilitator	Facilitator identified by interview (no. encounters facilitator identified by chart-stimulated recall)*
Patient	Patient request (6) High education/health literacy (3) Family history (2) High African-American race (1) Age Symptoms High socioeconomic status Smoking history Long life expectancy
Physician	Favorable attitudes about PCS
System	Annual physicals (10) Review of labs (8) Extra time during encounter (5) Reminders (1)

*A lack of parenthesis adjacent to a facilitator indicates that the facilitator was offered during the interview segment but was not observed during chart-stimulated recall.

preventive health, a section in the note devoted to health maintenance, and questionnaires filled out by patients asking them about their last PSA test, all help physicians initiate a discussion about PCS.

CONCLUSION

In a cross-sectional analysis of data from the 2000 National Health Interview Survey of 2,676 men, one-third reported their physician did not discuss the advantages and disadvantages of PSA screening before offering testing.¹⁰ Given the challenge to physicians to conduct informed decision making in the context of PCS, this study aimed to identify factors that facilitate or prevent PCS discussion. To our knowledge, this is the first qualitative study to report the barriers and facilitators for discussing PCS from the physician's perspective.

When screening is indicated, we were able to classify the barrier and facilitators of PCS discussion into patient, physician, and system categories. A patient request facilitates a PCS discussion whereas comorbidities and a physician's perception that the patient had limited ability to understand the issues surrounding testing may prevent the discussion. Comorbidities are not a surprising barrier because 75% of the encounters reviewed using chart-stimulated recall were for reasons other than health maintenance visits. Physicians' attitudes may also influence the outcome though perhaps not as much as forgetfulness. A clear system driver of whether discussion occurs is time, especially when the extra time is provided in the context of an annual physical. Visits for other reasons prevent the discussion.

It is interesting to note that physicians were more likely to identify their own forgetfulness when reviewing their actual encounters with patients than when being interviewed. This may indicate either recall bias or that physicians may not be fully aware of the extent to which forgetfulness prevents them from offering PCS to their patients. For physicians, forgetting to order a test can be considered a malpractice error of omission in the US legal courts.²² Errors of omission are common. A recent study found that 96% of all the medical errors and 96% of the highly serious errors in inpatient and outpatient VA settings were errors of omission.²³ The Institute of Medicine report, *To Err is Human*, discourages finding people to blame because most errors are latent errors and thus not active errors freely caused by people acting with justified beliefs.²⁴ Instead, the report encourages the medical community to focus on the reduction of latent errors, as this is "likely to have a greater effect on building safer systems than efforts to minimize active errors." Accordingly, systems that build physician reminders^{25,26} and checklists^{27,28} related to preventive care and counseling are needed to avoid denying patients from participating in screening decision making.

Our findings are consistent with prior literature. For example, a physician survey of 8 different barriers predetermined by the investigators showed that 50% of physicians indicated that lack of time and complexity of topic were barriers to discussing PCS, and nearly one-third agreed that language barriers affected initiation or quality of PCS discussion.²⁹ The open-ended interview and the chart-stimulated recall technique in the present study allowed for the identification of many other important barriers to PCS discussion including patient comorbidity and physician forgetfulness. Furthermore, our finding that physicians perceive annual physicals as an important facilitator to discussing PCS is

supported by 2 previous studies which demonstrate that health maintenance visits are a significant predictor of screening for cancer in community-based primary care practices.^{30,31}

Notably, many of the reported barriers and facilitators are modifiable at the individual and/or system level, and therefore, should be considered when designing interventions to increase informed decision making in PCS. In particular physician reminder systems have been shown to increase physician preventive practices,^{25,26} and paramedical personnel can be trained to discuss the risk and benefits of and conduct cancer-screening tests.³²

Another important finding of this study is that one-third of the physicians report that they sometimes conduct PCS without discussion. Physicians offer a variety of reasons for this practice, most commonly lack of time and competing demands, forgetfulness, limited patient health literacy, and fear of liability. This finding is concerning because many leading healthcare institutions such as the Institute of Medicine and most clinical practice guidelines have advised physicians, pending the results of 2 ongoing large randomized screening trials,³¹⁻³³ to discuss the risks and benefits of PCS before performing any testing.

Finally, this study demonstrates that chart-stimulated recall is a feasible, acceptable method to study physician behavior. It is an innovative method by which to achieve triangulation in qualitative research when conducting physician interviews and increases the validity of data obtained by physician interview. Moreover, it helps address the well-described discrepancy between physicians' perceived and actual behavior related to recommending cancer screening tests³³⁻³⁵ as well as recording bias inherent in methods based on chart abstraction.³⁶⁻³⁸

This study is limited because the small number of physicians and patient encounters may have prevented us from reaching thematic saturation, the point at which no new themes emerged from the data. Furthermore, the study was conducted in 1 large health system with a predominantly urban and suburban sample of physicians. The results, therefore, are not generalizable to rural physicians or to those who are not affiliated with large health systems. Despite these limitations, this is the first study to directly assess the circumstances that prevent or facilitate physician-patient discussion about PCS. Involving the patient in the PCS discussion is the first step towards the ideal goal of informed decision making. Greater involvement of patients in clinical decision making is consistent with recent Institute of Medicine recommendations to improve health care quality, in particular, the recommendations to make health care more patient-centered—that is, health care which is respectful of and responsive to patient preferences, needs, and values.³⁹

The findings that there are multiple modifiable barriers and facilitators of PCS discussion should guide investigators in designing patient- and physician-targeted educational and decision support interventions that involve more patients in PCS decisions. Further exploration is warranted, for example, to evaluate how the physician-reported facilitators presented here affect the quality of PCS discussions.

Acknowledgement: The authors gratefully acknowledge the grant support from the National Institutes of Health Center for Population Health and Health Disparities at the University of Pennsylvania (Public

Health Service Grant P50-CA105641) as well as the participating physicians for sharing their valuable perspectives. Dr. Guerra also acknowledges the National Cancer Institute (Public Health Service Grant K01 CA97925) and the Robert Wood Johnson Foundation (fund number 051895) for their additional grant support. The results of this paper were previously presented at the 28th Annual Meeting of the Society of General Internal Medicine, May 12, 2005, New Orleans, LA, USA.

Conflict of Interest: None disclosed.

Corresponding Author: Carmen E. Guerra, MD, MSCE; Division of General Internal Medicine, University of Pennsylvania School of Medicine, 1221 Blockley Hall, 423 Guardian Drive, Philadelphia, PA 19104, USA (e-mail: carmen.guerra@uphs.upenn.edu).

REFERENCES

- Jemal A, Siegel R, Ward E, Murray T, Xu J, Thun MJ. Cancer statistics, 2007. *CA Cancer J Clin*. 2007;57(1):43-66.
- AAFP. Summary of Recommendations for Periodic Health Examination. American Academy of Family Physicians; 2005.
- American Urological Association. Executive Committee Report: Early Detection of Prostate Cancer. Baltimore: American Urological Association; 1997.
- Smith RA, Cokkinides V, Eyre HJ. American Cancer Society guidelines for the early detection of cancer. *CA Cancer J Clin*. 2003;53(1):27-43.
- US Preventive Services Task Force. Screening for prostate cancer: recommendations and rationale. *Am Fam Physician*. 2003;67(4):787-92.
- American College of Physicians. Clinical guideline, Part III: screening for prostate cancer. *Ann Intern Med*. 1997;126(6):480-4.
- Rimer BK, Briss PA, Zeller PK, Chan EC, Woolf SH. Informed decision making: what is its role in cancer screening? *Cancer*. 2004;214-28 Sep 1.
- Coley CM, Barry MJ, Fleming C, Fahs MC, Mulley AG. Early detection of prostate cancer, II: estimating the risks, benefits and costs. *Ann Intern Med*. 1997;126:468-79.
- Coley CM, Barry MJ, Fleming C, Mulley AG. Early detection of prostate cancer, I: prior probability and effectiveness of tests. *Ann Intern Med*. 1997;126:394-406.
- Han PK, Coates RJ, Uhler RJ, Breen N. Decision making in prostate-specific antigen screening National Health Interview Survey, 2000. *Am J Prev Med*. 2006;30(5):394-404.
- Chan EC, Vernon SW, Ahn C, Greisinger A. Do men know that they have had a prostate-specific antigen test? Accuracy of self-reports of testing at 2 sites. *Am J Publ Health*. 2005;94(8):1336-8.
- Jordan TR, Price JH, King KA, Masyk T, Bedell AW. The validity of male patients' self-reports regarding prostate cancer screening. *Prev Med*. 1999;28(3):297-303.
- Walsh JM, McPhee SJ. A systems model of clinical preventive care: an analysis of factors influencing patient and physician. *Health Educ Q*. 1992;19:157-75.
- Maatsch JL. Predictive Validity of Medical Specialty Examinations. Final report to NCHSR Grant No.: HS02039-04; 1983.
- Jannett PA, Affleck L. Chart audit and chart stimulated recall as methods of needs assessment in continuing professional health education. *J Contin Educ Health Prof*. 1998;18:163-71.
- Bridgham RG, Munger B, Reinhart MA, Keefe C, Maatsch JL. The impact of communication between physician and evaluator on assessments of clinical performance. In: *Proceedings of the 27th Annual Conference of Research in Medical Education*, 1988. Washington DC: American Association of Medical Colleges; 1988.
- Huang RR, Maatsch JL, Downing SM, Barker D. Reliability and validity of ratings of physician performance. In: *Proceedings of the 23rd Annual Conference of Research in Medical Education*, 1984. Washington, D.C.: American Association of Medical Colleges; 1984.
- Munger BS, Reinhart MA. Field trial of multiple recertification methods. In: Lloyd JS, Langsley DG, eds. *Recertification for Medical Specialists*. Evanston, IL: American Board of Medical Specialties; 1987:71-88.
- Sirovich BE, Schwartz L, Woloshin S. Screening men for prostate and colorectal cancer in the United States. *JAMA*. 2003;289:1414-20.
- Strauss A, Corbin J. *Basics of Qualitative Research: Grounded Theory Procedures and Techniques*. 2nd ed. Newbury Park, CA: Sage; 1990.
- National Comprehensive Cancer Network. NCCN Clinical Practice Guidelines in Oncology. Prostate Cancer Early Detection. V.1.2006. http://www.nccn.org/professionals/physician_gls/PDF/prostate_detection.pdf. Accessed January 6, 2007. In: 2006.
- Kravitz R, Rolph J, Petersen L. Omission-related malpractice claims and the limits of defensive medicine. *Med Care Res Rev*. 1997;54(4):456-71.
- Hayward R, Asch S, Hogan M, Hofer T, Kerr E. Sins of omission: getting too little medical care may be the greatest threat to patient safety. *J Gen Intern Med*. 2005;20(8):686-91.
- Kohn LT, Corrigan J, Donaldson M. *To Err Is Human: Building A Safer Health System*. Washington, DC; 2000.
- Austin S, Balas E, Mitchell J, Ewigman B. Effect of physician reminders on preventive care: meta-analysis of randomized clinical trials. In: Ozbolt JG, ed. *Proceedings for 18th Annual Symposium on Computer Applications in Medical Care*, 1994. Washington, DC. Philadelphia: Hanley & Belfus; 1994:121-24.
- Shea S, DuMouchel W, Bahsmonde L. A meta-analysis of 16 randomized controlled trials to evaluate computer-based clinical reminder systems for preventive care in the ambulatory setting. *J Am Med Inform Assoc*. 1996;3:399-409.
- Hales B, Pronovost P. The checklist—a tool for error management and performance improvement. *J Crit Care*. 2006;21(3):231-5.
- Charlton J. Checklists and patient safety. *Anaesthesia*. 1990;45(6):425-6.
- Dunn AS, Shridharani KV, Lou W, Bernstein J, Horowitz CR. Physician-patient discussions of controversial cancer screening tests. *Am J Prev Med*. 2001;20(2):130-4.
- Purvis Cooper C, Merritt TL, Ross LE, John LV, Jorgensen CM. To screen or not to screen, when clinical guidelines disagree: primary care physicians' use of the PSA test. *Prev Med*. 2004;38(2):182-91.
- Ruffin MT, Gorenflo DW, Woodman B. Predictors of screening for breast, cervical, colorectal, and prostatic cancer among community-based primary care practices. *J Am Board Fam Pract*. 2000;13(1):1-10.
- Schoenfeld P. Flexible sigmoidoscopy by paramedical personnel. *J Clin Gastroenterol*. 1999;28(2):110-6.
- McPhee SJ, Richard RJ, Solkowitz SN. Performance of cancer screening in a university general internal medicine practice: comparison with the 1980 American Cancer Society Guidelines. *J Gen Intern Med*. 1986;1:275-81.
- Romm FJ, Hulka BS, Kelly LW Jr. Internists' perceptions and performance in office practice. *South Med J*. 1980;73(4):405-14.
- Wu L, Ashton CM. Chart review. A need for reappraisal. *Eval Health Prof*. 1997;20:146-63.
- Rethans JJ, Martin E, Metsemakers J. To what extent do clinical notes by general practitioners reflect actual medical performance? A study using simulated patients. *Br J Gen Pract*. 1994;44:153-6.
- Dresselhaus TR, Peabody JW, Lee M, Wang MM, Luck J. Measuring compliance with preventive care guidelines: standardized patients, clinical vignettes and the medical record. *J Gen Intern Med*. 2000;12:782-88.
- Kogan JR, Reynolds EE, Shea JA. Resident and faculty adherence to common guidelines. *Acad Med*. 2001:S27-9.
- Institute of Medicine. *Crossing the Quality Chasm. A New Health Care System for the 21st Century*. Washington, DC: National Academy of Press; 2001.