patients relating to their use. In addition, including CAM physicians in groups such as accountable care organizations can improve communication between physicians and streamline patient records. Clinical and organizational incentives that encourage patient disclosure of CAM use may facilitate better coordination of care, reduce the risk of adverse interactions between conventional medications and CAM products, and lead to better patient outcomes.

Judy Jou, MA
Pamela Jo Johnson, MPH, PhD

Author Affiliations: Division of Health Policy & Management, University of Minnesota, Minneapolis (Jou); Center for Spirituality & Healing, University of Minnesota, Minneapolis (Johnson).

Corresponding Author: Judy Jou, MA, Division of Health Policy & Management, University of Minnesota, 420 Delaware St SE, MMC 729, Minneapolis, MN 55455 (jouxy008@umn.edu).

Published Online: March 21, 2016. doi:10.1001/jamainternalmed.2015.8593.

Author Contributions: Ms Jou had full access to all the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis.

Study concept and design: Both authors.

Acquisition, analysis, or interpretation of data: Both authors.

Drafting of the manuscript: Jou.

Critical revision of the manuscript for important intellectual content: Both authors.

Statistical analysis: Both authors.

Obtained funding: Johnson.

Study supervision: Johnson.

Conflict of Interest Disclosures: None reported.

Funding/Support: This study was supported in part by the Integrative Health & Wellbeing Research Program at the Center for Spirituality & Healing, University of Minnesota.

Role of the Funder/Sponsor: The funding source had no role in the design and conduct of the study; collection, management, analysis, and interpretation of the data; preparation, review, or approval of the manuscript; and decision to submit the manuscript for publication.


Differences in Prostate-Specific Antigen Testing Among Urologists and Primary Care Physicians Following the 2012 USPSTF Recommendations

The use of prostate-specific antigen (PSA) testing for early detection of prostate cancer remains controversial. In October 2011, the US Preventive Services Task Force (USPSTF) issued a recommendation against PSA screening for all men. This change was associated with a decline in rates of PSA testing among men aged 50 to 74 years and a decline in cases of incident prostate cancer. Given the evidence for heterogeneity in screening practices, we sought to compare the use of PSA testing among urologists vs primary care physicians (PCPs) before and after the latest USPSTF guidelines, hypothesizing that the adoption of these recommendations would vary according to physician specialty.

Methods | We used the National Ambulatory Medical Care Survey to examine the use of PSA testing in 2010 (conducted between December 28, 2009, and December 26, 2010) and 2012 (conducted between December 28, 2011, and December 26, 2012). The National Ambulatory Medical Care Survey is an annual, nationally representative survey of ambulatory care in the United States that collects information about outpatient physician visits, patient demographics, diagnoses, medications, and indications for consultation. Specialty of health care professionals was dichotomized as urologist and PCP (general and family practice and internal medicine). We examined the frequency of PSA testing according to specialty and year to evaluate the association between the 2012 USPSTF recommendations and changes in PSA testing among men aged 50 to 74 years. Heterogeneity in testing practices between physicians was modeled by assessing the interaction term of physician specialty × survey year within a logistic regression model estimating probability of PSA testing. Results were weighted to reflect the US population based on the complex survey design. A 2-tailed level of significance was set at P < .05. The Brigham and Women’s Hospital Institutional Review Board waived approval for the study. Data analysis was conducted from July 21 to November 16, 2015.

Results | We included all visits for men aged 50 to 74 years (n = 1222) who presented to urologists (113 [9.2%]) or PCPs (1109 [90.8%]) for a preventive care visit. Men with a diagnosis of prostate cancer (n = 18), elevated PSA level (n = 1), benign prostatic hyperplasia (n = 31), prostatitis (n = 5), or other unspecified disorders of the prostate (n = 3) were excluded. This exclusion resulted in a weighted sample of 27 million eligible visits (unweighted n = 1164) in 2010 and 2012, of which 800000 (un-
whtened n = 64) were provided by urologists and 26.2 million (unweighted n = 1100) by PCPs. The use of PSA testing decreased from 36.5% to 16.4% among PCP visits (odds ratio, 0.43; 95% CI, 0.10-0.81; P = .009), whereas it decreased from 38.7% to 34.5% among urologist visits (odds ratio, 0.34; 95% CI, 0.10-1.20; P = .09). The difference between physician-specific testing practices during the study years was statistically significant (P < .001) (Figure).

Discussion | Our findings suggest a differential effect of the 2012 USPSTF recommendations on PSA testing among PCPs vs urologists. Such findings likely reflect opposing perceptions among physicians on the benefit of PSA screening, conflicting guidelines (eg, the American Urological Association recommends joint decision making for men aged 55-69 years), and perhaps differences in patient demographics or expectations. Moving forward, this finding emphasizes the need to continue interdisciplinary dialogue to achieve a broader consensus on prostate cancer screening.

Certain limitations to our study must be considered. As our study relied on records of outpatient clinic visits, our findings may differ from those of other studies using self-reports of PSA testing. Second, we do not account for PSA testing outside of physician outpatient visits. Third, our findings reflect orders for PSA testing, which may differ from actual testing performed. Owing to the lack of numeric PSA values, we could not account for the definition of elevated PSA levels. Fourth, we are not able to account for PSA testing performed on a separate visit (including those by another type of physician). Finally, our findings are based on a sample of incident visits rather than a longitudinal follow-up over time.

Michael E. Zavaski, MD  
Christian P. Meyer, MD  
Jesse D. Sammon, DO  
Julian Hanske, MD  
Soham Gupta  
Maxine Sun, MPH  
Quoc-Dien Trinh, MD

Author Affiliations: Center for Surgery and Public Health, Brigham and Women’s Hospital, Boston, Massachusetts (Zavaski, Meyer, Sammon, Hanske, Gupta, Sun, Trinh); Division of Urological Surgery, Brigham and Women’s Hospital, Boston, Massachusetts (Zavaski, Meyer, Sammon, Hanske, Gupta, Sun, Trinh).

Corresponding Author: Quoc-Dien Trinh, MD, Division of Urological Surgery, Brigham and Women’s Hospital, 45 Francis St, Boston, MA 02115 (qtrinh@bwh.harvard.edu).

Published Online: February 8, 2016. doi:10.1001/jamainternmed.2015.7901.

Author Contributions: Dr Trinh had full access to all the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis. Drs Meyer and Zavaski contributed equally to the study.

Study concept and design: Zavaski, Meyer, Sammon, Hanske, Sun, Trinh.

Acquisition, analysis, or interpretation of data: Zavaski, Meyer, Sammon, Gupta, Trinh.

Drafting of the manuscript: Zavaski, Trinh.

Critical revision of the manuscript for important intellectual content: All authors.

Statistical analysis: Zavaski, Meyer, Hanske, Gupta.

Administrative, technical, or material support: Meyer.

Study supervision: Meyer, Sammon, Sun, Trinh.

Conflict of Interest Disclosures: None reported.

Funding/Support: This study was supported by an unrestricted educational grant from the Vattikuti Urology Institute and the Professor Walter Morris-Hale Distinguished Chair in Urologic Oncology at Brigham and Women’s Hospital (Dr Trinh).

Role of the Funder/Sponsor: The funding sources had no role in the design and conduct of the study; collection, management, analysis, and interpretation of the data; preparation, review, or approval of the manuscript; and decision to submit the manuscript for publication.


Editor’s Note

Use of Prostate-Specific Antigen Testing Is in the Eye of the Beholder

The use of prostate-specific antigen (PSA) screening for prostate cancer is controversial. Various organizations have released conflicting messages regarding the use of the PSA...
screening test. In 2012, the US Preventive Services Task Force recommended against routine PSA screening, citing a lack of evidence regarding its benefits and known harms from prostate biopsy and overtreatment of indolent prostate cancer.\(^1\)

In this issue of *JAMA Internal Medicine*, Zavaski et al\(^2\) report that since the release of the US Preventive Services Task Force statement, the rate of PSA testing has declined overall but still is performed more frequently for patients receiving PSA testing for preventive health reasons through their urologist rather than through their primary care physician. The vast majority of PSA testing is still performed by primary care physicians, but there seems to be a continued perception, more firmly held by urologists than by primary care physicians, that the screening is beneficial. Urologists may hold this belief because they have referred more men who request PSA testing or because they have seen more poor outcomes from metastatic prostate cancer. Regardless, recent data show some decline in the detection of early-stage prostate cancer, which likely reflects decreased ordering of PSA tests, and hopefully indicates avoidance of harms of cancer treatment, such as erectile dysfunction and urinary incontinence.\(^3\) We will need to await data on rates of metastatic disease and prostate cancer deaths to understand the full effect of less PSA testing. To our knowledge, such data were not available 30 years ago when the PSA blood test became available. The American Urologic Association Quality Registry was developed in 2014 to better track prostate cancer care and should produce the type of information our patients deserve.\(^4\)

In the meantime, recommendations to reduce PSA screening will only strengthen with release of a Healthcare Effectiveness Data and Information Set measure\(^5\) targeting the elimination of PSA screening in men older than 70 years. It is essential that, along with improved collection of outcomes data, we also have outcomes data on the myriad novel diagnostic and risk stratification tools rapidly becoming available, such as magnetic resonance imaging or ultrasound fused-guided prostate biopsy and genomic testing. Without such evidence, we can be sure that differing entrenched beliefs between urologists and primary care physicians will only become more expensive. Meanwhile, the widespread use of the PSA test should serve as a cautionary tale of the importance of first establishing that benefit exceeds harms before recommending new cancer screening tests.

David S. Aaronson, MD
Rita F. Redberg, MD, MSc

**Conflict of Interest Disclosures:** None reported.


**LESS IS MORE**

**Variations in Peripherally Inserted Central Catheter Use and Outcomes in Michigan Hospitals**

Use of peripherally inserted central catheters (PICCs) has grown substantially in hospitalized medical patients.\(^1,2\) However, data regarding PICC placement largely originate from single-center experiences or studies of highly select populations and outcomes.\(^3\) Consequently, little is known about variation in PICC use or outcomes across hospitals. To examine this, we conducted a prospective study at 10 hospitals through the Michigan Hospital Medicine Safety (HMS) Consortium, a quality-improvement initiative dedicated to preventing adverse events in hospitalized medical patients.

**Methods** | The design and sampling strategy of HMS have been previously described.\(^4,5\) Between December 1, 2013, and January 30, 2015, trained data abstractors at 1 of 10 participating HMS hospitals collected information including history and laboratory and medication data from patients who received PICCs in intensive care unit (ICU) and non-ICU settings. Information related to PICCs (eg, indication, gauge, number of lumens) was obtained from vascular nursing or interventional radiology insertion records. All patients were followed until PICC removal or 60 days after PICC insertion, whichever occurred first. Major PICC complications were defined as central line–associated bloodstream infection and symptomatic venous thromboembolism, whereas minor complications included mechanical problems (migration, kinking), catheter occlusion, exit-site infection, and thrombophlebitis. All outcomes were ascertained by medical record review, telephone follow-up, or both, which occurred at 14, 30, and 60 days after PICC placement. Indication for PICC insertion, dwell time, device characteristics, and complications were tabulated using descriptive statistics. PICC use rates for each hospital were estimated by expressing the proportion of PICCs placed in adult nonsurgical patients to the total number of nonsurgical adult discharges during the study period. Multilevel mixed-effects and logit models were then fitted to examine hospital-level differences in PICC use and complications. The study was classified as having a “not regulated” status from the institutional review boards at all of the participating hospitals. Therefore, patient consent was not required, and all data were deidentified.

**Results** | Data on 3378 PICCs placed in 3201 patients were available. Most PICCs (2406 [71.2%]) were placed by vascular access nurses and were double-lumen devices (1784 [52.8%]). Although the median dwell time for PICCs across hospitals was 10 days (range, 1 to >60 days), 817 PICCs (24.2%) were removed within 5 days of insertion. The most common indications for PICC insertion were difficult venous access (1387 [41.1%]) and home antibiotics (971 [28.7%]) (Figure).