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Impact of the 2008 US Preventive Services Task Force Recommendation to Discontinue Prostate Cancer Screening Among Male Medicare Beneficiaries

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For clinical evidence to have an impact on the health of populations, guideline recommendations must be rapidly and widely disseminated and physicians and other health care professionals must act responsively. Recommendations to discontinue care may be even more challenging. Recently, the US Preventive Services Task Force (USPSTF) recommended that no man receives prostate-specific antigen (PSA)-based screening for prostate cancer.[1] While the impact of this recommendation will not be immediately understood in practice, the impact of the USPSTF's August 2008 recommendation to discontinue PSA-based prostate cancer screening for men 75 years and older may inform expectations.[2]

Methods

We used 2007–2009 data from the linked Surveillance, Epidemiology, and End Results (SEER)–Medicare database,[3] cancer incidence, and survival from patients in geographic areas representing 28% of the US population, cross-matched with the Medicare enrollment master file, along with a 5% sample of noncancer Medicare beneficiaries residing in SEER program areas.

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Using a quasiexperimental design, we compared longitudinal changes in PSA-based prostate cancer screening among men 75 years and older with concurrent screening trends among men aged 66 to 74 years as a control group, a difference-in-differences approach. By using a multiple time series with a comparison group, the approach reduces bias from unmeasured variables and from secular trends. Our prerecommendation and postrecommendation periods were 15 months from April 2007 through June 2008 and October 2008 through December 2009, respectively, which allowed a brief "washout" period for dissemination of the August 2008 USPSTF recommendation. Consistent with prior research,[4] PSA-based prostate cancer screening was determined using Healthcare Common Procedure Coding System codes. Men screened multiple times during a period were only counted once.

Because wide regional variation in prostate cancer screening and treatment has been demonstrated,[5] we subsequently examined whether there was a differential impact of the 2008 USPSTF recommendation among hospital referral regions (HRRs) that varied in prerecommendation PSA-based screening rates among men 75 years or older and urologist density.[6] For analytical purposes, HRRs were categorized as having low (first quartile), medium (second and third quartiles combined), and high (fourth quartile) prerecommendation screening rates and urologist density.

We used a generalized linear model that included observation period (prerecommendation vs postrecommendation), age (66–74 years vs ≥75 years), and an interaction between these 2 variables, along with race and Elixhauser comorbidity score, to estimate the differential impact of the 2008 USPSTF recommendation. These analyses were then repeated to examine whether the differential impact of the recommendation varied across HRRs stratified by both prerecommendation PSA-based prostate cancer screening rates and urologist density. All analyses were conducted using SAS version 9.2 (SAS Institute Inc).

Results

Before and after the 2008 USPSTF recommendation, men aged 66 to 74 years received PSA-based prostate cancer screening at significantly higher rates compared with men 75 years or older (prerecommendation, 33.9% vs 29.4%; postrecommendation, 34.4% vs 27.8% [$P < .001$]).

After accounting for race and clinical comorbidities, PSA-based prostate cancer screening differentially declined among older men by 2.0 percentage points (95% CI, −3.1 to −1.0 [$P < .001$]; Table) after the 2008 USPSTF recommendation, from 29.4% (prerecommendation) to 27.8% (postrecommendation) among men 75 years or older, 33.9% to 34.4% among men aged 66 to 74 years. However, the recommendation did not have a differential impact across HRRs stratified by either prerecommendation PSA-based prostate cancer screening rates or urologist density.

Comment

Using a quasiexperimental design, we found that the 2008 USPSTF recommendation to discontinue PSA-based prostate cancer screening for men 75 years and older had a small but significant impact on prostate cancer screening among older male Medicare beneficiaries and was consistent across geographic areas with both high and low prerecommendation prostate cancer screening rates and densities of urologists.

A previous study of Pacific Northwest Veterans Health Administration hospitals similarly identified an impact of the 2008 USPSTF recommendation on older men,[7] although our study was focused on Medicare beneficiaries, few of whom receive care in hospitals with strong clinical reminder systems to promote guideline recommended care. In contrast, our

findings differ slightly with 2 recent studies that found no impact of the 2008 USPSTF recommendation on older men.[8,9] However, neither of these studies used contemporaneous controls to account for secular trends in PSA screening and both used self-reported population survey data, which have been associated with significant overestimation of prostate cancer screening rates. Instead, we used a conservative claims-based algorithm based on prior research[4] to identify PSA testing for prostate cancer screening.

In this case, a recommendation to discontinue care had a significant impact, since we found differently lower PSA-based prostate cancer screening among older men. However, for a screening test where the harms have been shown to outweigh the benefits,[2] rates of PSA-based prostate cancer screening still neared 30%, suggesting that greater efforts are needed to change practice.

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References

1. Moyer VA. US Preventive Services Task Force. Screening for Prostate Cancer: US Preventive Services Task Force Recommendation Statement [published online May 21, 2012]. Ann Intern Med. 10.7326/0003-4819-157-2-201207170-00464
2. US Preventive Services Task Force. Screening for prostate cancer: US Preventive Services Task Force recommendation statement. Ann Intern Med. 2008; 149(3):185–191. [PubMed: 18678845]
3. National Cancer Institute. [Accessed December 28, 2011] Surveillance Epidemiology and End Results. http://seer.cancer.gov/
4. Walter LC, Bertenthal D, Lindquist K, Konety BR. PSA screening among elderly men with limited life expectancies. JAMA. 2006; 296(19):2336–2342. [PubMed: 17105796]
5. Bynum J, Song Y, Fisher E. Variation in prostate-specific antigen screening in men aged 80 and older in fee-for-service Medicare. J Am Geriatr Soc. 2010; 58(4):674–680. [PubMed: 20345867]
6. Dartmouth Atlas of Health Care. [Accessed February 6, 2012] Atlas Downloads. http://www.dartmouthatlas.org/tools/downloads.aspx
7. Zeliadt SB, Hoffman RM, Etzioni R, Gore JL, Kessler LG, Lin DW. Influence of publication of US and European prostate cancer screening trials on PSA testing practices. J Natl Cancer Inst. 2011; 103(6):520–523. [PubMed: 21357307]
8. Prasad SM, Drazer MW, Huo D, Hu JC, Eggener SE. 2008 US Preventive Services Task Force recommendations and prostate cancer screening rates. JAMA. 2012; 307(16):1692–1694. [PubMed: 22535850]
9. Scosyrev E, Wu G, Golijanin D, Messing E. Prostate-specific antigen testing in older men in the USA: data from the behavioral risk factor surveillance system [published online March 27, 2012]. BJU Int. 10.1111/j.1464-410X.2012.11013.x

Table

Use of Prostate Specific Antigen–Based Prostate Cancer Screening[a]

	Men Aged 66–74 y			Men Aged ≥75 y			
	Before, % (Apr 2007– June 2008)	After, % (Oct 2008– Dec 2009)	Before-After Percentage Point Difference	Before, % (Apr 2007– June 2008)	After, % (Oct 2008– Dec 2009)	Before-After Percentage Point Difference	Difference in Differences, Percentage Point Change (95% CI)[b]
Overall	33.9	34.4	0.5	29.4	27.8	−1.6	−2.0 (−3.1 to −1.0)
Pre–USPSTF Recommendation Prostate Cancer Screening Rate Among Men Aged ≥75 y in HRR of Residence							
Highest quartile	37.4	37.0	−0.4	35.4	32.4	−3.0	−2.7 (−4.8 to −0.5)
Middle quartiles	33.6	33.8	0.2	29.0	27.5	−1.5	−1.6 (−3.0 to −0.1)
Lowest quartile	31.1	32.9	1.8	24.4	24.1	−0.3	−2.0 (−4.0 to −0.1)
Urologist Density in HRR of Residence							
Highest quartile	35.1	35.5	0.4	30.6	28.3	−2.3	−2.7 (−4.7 to −0.6)
Middle quartiles	34.4	34.2	−0.2	29.9	28.6	−1.3	−1.0 (−2.5 to 0.5)
Lowest quartile	31.7	33.5	1.8	27.2	25.7	−1.5	−3.3 (−5.3 to −1.3)

Abbreviations: HRR, hospital referral region; USPSTF, US Preventive Services Task Force.

[a]The Table presents use of prostate specific antigen–based screening among cancer-free men aged 66 to 74 years and 75 years and older residing in Surveillance, Epidemiology, and End Results program areas before and after the August 2008 USPSTF recommendation to discontinue prostate cancer screening among men 75 years and older and gives the differential changes in these outcomes, stratified by HRR-level prerecommendation screening rates and urologist density. The prerecommendation period was April 2007 to June 2008; the postrecommendation period was October 2008 to December 2009.

[b]The difference-in-differences estimates were adjusted for patient race and Elixhauser comorbidity score.

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