

## Title Page

### **Scholarly Report submitted in partial fulfillment of the MD Degree at Harvard Medical School**

**Date:** March 1, 2017

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**Scholarly Report Title:** Patient and Physician Attitudes Toward Low-Value Diagnostic Tests and Discussions of Health Care Costs

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## **Abstract**

**Title:** Patient and Physician Attitudes Toward Low-Value Diagnostic Tests.

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**Background:** Optimizing patient outcomes while containing costs is a societal priority. To meet this goal patients and physicians need a shared understanding of high value care.

**Methods:** To assess perceptions of the value of care we conducted a cross-sectional survey of primary care patients and physicians at three medical centers. Participants were given two vignettes. One described a patient with a headache requesting a Computed Tomography (CT) scan, and the second described a patient with upper respiratory infection (URI) symptoms requesting antibiotics. Respondents rated the care provided in vignettes and were queried about attitudes toward discussing healthcare costs in clinical encounters.

**Results:** The response rate was 69% (218/318) for patients and 53% (151/283) for physicians. Physicians were more likely than patients to rate not ordering the CT scan (81% vs. 36%,  $P<0.001$ ) and not prescribing antibiotics (95% vs. 66%,  $P<0.001$ ) as high value. Patients' rating of vignettes as high value increased 15% after disclosure of the harms of radiation (36% to 51%,  $P<0.001$ ) and guidelines discouraging antibiotics for URIs (65% to 79%,  $P<0.001$ ). Physicians were more likely than patients to be comfortable considering individual patient costs (90% vs. 48%,  $P<0.001$ ) and national healthcare costs (76% vs. 34%,  $P<0.001$ ) during clinical encounters.

**Conclusions:** Although there is significant disagreement between physicians' and patients' perceptions of high value care, this gap narrows with education. Sharing guidelines and the reasons for not providing low value interventions is critical to achieving greater concordance between patients' and physicians' understanding of high value care.

### **Description of my contribution to the work**

I was responsible for all aspects of this study from start to finish and served as the principal investigator for the study, which is not part of any of my mentors' ongoing research projects. I developed the initial idea for the study with Dr. Shah. I obtained my own funding to execute this study from the Harvard Medical School Center for Primary Care. I was in charge of the IRB documentation and submissions to the Harvard, BIDMC and Partners IRBs. I was responsible for the survey design, with input from my three mentors. Zoe Moyer and Eliyahu Lehmann helped me administer the surveys to patients in two clinic locations. I was responsible for all data entry and raw data prep. I received support for the statistical analysis portion of our manuscript from Rie Maurer and Harvard Catalyst. I drafted the manuscript that was accepted by JAMA-IM with assistance from Dr. Lehmann. All three of my mentors, Drs. Lehmann, Shah and Morse helped with draft revision.

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## Patient and Physician Attitudes on Low Value Diagnostic Tests

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Author Contributions: Ana Sofia Warner and Lisa Lehmann had full access to all the data in the study and take responsibility for the integrity of the data and the accuracy of the data analysis.

Study concept and design: Warner, Shah, Morse, L. Lehmann

Acquisition of data: Warner, E. Lehmann, Moyer

Analysis and interpretation of data: Warner, Shah, Morse, L. Lehmann

Drafting of the manuscript: Warner

Critical revision of the manuscript for important intellectual content: Warner, Shah, Morse, L. Lehmann

Statistical analysis: Warner, Maurer

Obtained funding: Warner

Administrative, technical or material support: Warner, E. Lehmann, Shah, Morse, L. Lehmann

Study supervision: L. Lehmann, Shah, Morse

## **To the Editor**

Many American physicians think unnecessary tests and procedures are a significant problem facing our health care system, but 53% order unnecessary tests if requested by patients.<sup>1</sup> This discrepancy between appropriate and actual care suggests that patients' perceptions of good care are not aligned with physicians' commitment to care that optimizes quality while reducing unnecessary interventions. We assessed patients' and physicians' perceptions of high value care.

## **Methods**

We conducted a cross-sectional survey of patients and physicians from three academic primary care clinics in the Northeastern United States. Eligible patients had a clinic appointment, could read English and complete a survey independently. Patients received a self-administered paper survey and were given a \$5 gift card or parking validation. Physicians completed an electronic survey and could enter a \$50 gift card lottery. This study was approved by Partners HealthCare Human Research Committee.

Our surveys contained novel questions asking physicians and patients to rate the care provided in two clinical vignettes based on the Choosing Wisely Initiative<sup>2</sup>. Questions were pilot tested for face validity and reliable interpretation. Respondents rated the care in each part of the vignette on a five-point scale from 'poor' to 'excellent'.<sup>2,3</sup>

The first vignette described a man with a headache who is worried about a brain tumor and requests a CT scan. Initially, he is diagnosed with a tension headache by his primary care physician (PCP) and told that imaging is not warranted. In part 2, the PCP informs him of the risks of CT scans. In part 3, the patient seeks a second opinion from another doctor who orders a CT scan.

The second vignette described a woman with Upper Respiratory Infection (URI) symptoms requesting antibiotics. Initially, her PCP does not prescribe antibiotics, diagnosing her with a viral infection. In part 2, the PCP refers to guidelines that recommend against antibiotics for viral infections.<sup>4</sup>

We assessed differences in responses between physicians and patients using the Pearson  $\chi^2$  test and Fisher's exact test.<sup>2</sup> We used SAS (version 9.3, SAS Institute) and considered  $P < 0.05$  statistically significant.

## RESULTS

The response rate was 69% (218/318) among patients and 53% (151/283) among physicians (Table 1).<sup>5</sup> In both vignettes, physicians were significantly more likely than patients to rate the care in a manner consistent with national guidelines ( $P < 0.05$ ). However, providing information about the risks associated with CT scans and URI treatment guidelines increased the proportion of patients who gave a high rating to the appropriate care by 15% (Table 2).

## DISCUSSION

We found a significant discrepancy between what PCPs and patients view as high value care for headaches and URIs. Importantly, this gap significantly narrowed when physicians expressed concern for patients' well-being by referencing the harms of radiation and national guidelines that base care on evidence.

While most physicians agreed with national guidelines, 19% in the headache vignette and 5% in the URI vignette disagreed that unwarranted interventions were low value. Physicians over-order tests due to malpractice concern and "just to be safe."<sup>1</sup> Fear of missing an important diagnosis may explain why fewer physicians (81%) felt that denying the CT scan, as compared with denying antibiotics (95%), represented high value care. Malpractice reform may be essential to helping physicians feel more comfortable practicing high value medicine. The academic setting and social desirability bias may limit generalization of our results.

Even though some providers may perceive benefits to ordering diagnostic tests to alleviate patients' concern, evidence suggests that these tests do not alleviate patient

anxiety.<sup>6</sup> However, patient satisfaction is correlated with physicians ordering tests patients ask for.<sup>7</sup> Aligning doctors and patients views of high value care is an important way to push back against the perception that more testing is better care.



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**Disclaimer:** The content is solely the responsibility of the authors and does not represent the official views of the Veterans Health Administration, the National Center for Ethics in Health Care, the U.S. Government, Harvard Catalyst, Harvard University and its affiliated academic healthcare centers or the National Institutes of Health.

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**Previous Presentations:** Preliminary findings from this study were presented at the SGIM Annual Meeting in San Diego, CA in April 2014.

**Other disclosures:** None

<b>Table 1. Patient and Physician Characteristics.</b>			
<b>Patients<sup>a</sup></b>			
<b>Characteristic</b>	<b>Respondents (N =203)<sup>d</sup></b>	<b>Non-respondents (N=17)<sup>e</sup></b>	<b>P value</b>
	<i>number (percent)</i>		
Male sex	76 (37)	5 (29)	0.79
White race <sup>b</sup>	125 (63)	10 (59)	0.76
Age ≥ 55 years	102 (50)	12 (70)	0.13
Education ≥ college degree	118 (58)	6 (35)	0.06
Primary language: English	183 (91)	16 (94)	0.67
Rating of own health as 'very good' or 'excellent' <sup>c</sup>	87 (43)	7 (41)	0.87
<b>Physicians</b>			
<b>Characteristic</b>	<b>Respondents (N = 151)</b>		
Male Sex	80 (53)		
Graduated from medical school in 2000 or later	35 (29)		
20 or more hours per week spent in a clinical setting	52 (42)		

<sup>a</sup>All the patients who responded to the survey were at a primary care clinic at the time of a visit.

<sup>b</sup>Race or ethnic group was self-reported on the survey. Respondents could choose more than one category.

<sup>c</sup>Patients were asked to rate their own health on a 5-item scale from 'poor' to 'excellent.'

<sup>d</sup>The number of respondents varied between 199 and 203 as some respondents did not answer all questions.

<sup>e</sup>Of the 100 non-respondents, 17 agreed to answer only the demographics questions contained in the survey.

**Table 2.** Patient and Physician Ratings of ‘Very Good’ or ‘Excellent’ Care in Vignettes.<sup>a</sup>

<b>Vignette</b>	<b>Patients (N = 203)<sup>b</sup></b>	<b>Physicians (N= 151)</b>	<b>P value</b>
	<i>number (percent)</i>		
<b>Headache:</b> Patient A has a headache and is worried about brain cancer, asks PCP for CT scan			
Part 1: PCP does not recommend or order a CT	72 (36)	123 (81)	<0.001
Part 2: PCP explains potential harms of CT radiation exposure	103 (51)	96 (64)	0.01
Part 3: Patient A seeks a second opinion from a different doctor who orders a CT scan	60 (30)	8 (5)	<0.001
<b>Upper Respiratory Infection:</b> Patient B has a runny nose, headaches, no fever and asks PCP for antibiotics			
Part 1: PCP does not prescribe antibiotics	132 (66)	143 (95)	<0.001
Part 2: PCP explains American Academy of Family Physician guidelines, which do not recommend antibiotics for sinus infections	161 (81)	143 (95)	<0.001

<sup>a</sup>Respondents were asked to rate care provided by the doctor in each vignette on a 5-item scale from ‘poor’ to ‘excellent’. Values reported are number and percentage rating care as ‘very good’ or ‘excellent’, except part 3 of the headache vignette, which we dichotomized into ‘good/very good/excellent’.

<sup>b</sup>The number of respondents varied between 199 and 203 as some respondents did not answer all questions.

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