

Original Investigation

Knowledge of and Attitudes Toward
Evidence-Based Guidelines for and Against
Clinical Preventive Services: Results from a
National Survey

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Policy Points:

- Both the underuse and overuse of clinical preventive services relative to evidence-based guidelines are a public health concern.
- Informed consumers are an important foundation of many components of the Affordable Care Act, including coverage mandates for proven clinical preventive services recommended by the US Preventive Services Task Force. Across sociodemographic groups, however, knowledge of and positive attitudes toward evidence-based guidelines for preventive care are extremely low.
- Given the demonstrated low levels of consumers' knowledge of and trust in guidelines, coupled with their strong preference for involvement in preventive care decisions, better education and decision-making support for evidence-based preventive services are greatly needed.

Context: Both the underuse and overuse of clinical preventive services are a serious public health problem. The goal of our study was to produce population-based national data that could assist in the design of communication strategies to increase knowledge of and positive attitudes toward evidence-based guidelines for clinical preventive services (including the US Preventive Services Task Force,

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USPSTF) and to reduce uncertainty among patients when guidelines change or are controversial.

Methods: In late 2013 we implemented an Internet-based survey of a nationally representative sample of 2,529 adults via KnowledgePanel, a probability-based survey panel of approximately 60,000 adults, statistically representative of the US noninstitutionalized population. African Americans, Hispanics, and those with less than a high school education were oversampled. We then conducted descriptive statistics and multivariable logistic regression analysis to identify the prevalence of and sociodemographic characteristics associated with key knowledge and attitudinal variables.

Findings: While 36.4% of adults reported knowing that the Affordable Care Act requires insurance companies to cover proven preventive services without cost sharing, only 7.7% had heard of the USPSTF. Approximately 1 in 3 (32.6%) reported trusting that a government task force would make fair guidelines for preventive services, and 38.2% believed that the government uses guidelines to ration health care. Most of the respondents endorsed the notion that research/scientific evidence and expert medical opinion are important for the creation of guidelines and that clinicians should follow guidelines based on evidence. But when presented with patient vignettes in which a physician made a guideline-based recommendation against a cancer-screening test, less than 10% believed that this recommendation alone, without further dialogue and/or the patient's own research, was sufficient to make such a decision.

Conclusions: Given these demonstrated low levels of knowledge and mistrust regarding guidelines, coupled with a strong preference for shared decision making, better consumer education and decision supports for evidence-based guidelines for clinical preventive services are greatly needed.

Keywords: clinical preventive services, patient engagement, evidence-based guidelines, survey research.

CLINICAL PREVENTIVE SERVICES ARE A TYPE OF “PREFERENCE-sensitive care,” meaning that patients have valid options and thus their preferences and perspectives should play an important role in care decisions.¹ The Patient Protection and Affordable Care Act (ACA) requires that most health insurance plans cover specified clinical preventive services without cost sharing, including those that receive an A or B rating from the US Preventive Services Task Force (USPSTF).² Because the USPSTF's recommendations have a greater role in insurance benefit design, it is now even more important that patients/consumers

understand how these evidence-based recommendations are developed and that patients and providers be able to communicate effectively about them in order to make informed decisions about clinical preventive services.

Previous research shows that consumers generally are not well informed about evidence-based care and that they hold beliefs and values that interfere with optimal decisions; this includes the belief that more care is almost always better.^{3,4} In addition, attempts to inform consumers about treatments and tests that are overused and often unnecessary (such as the Choosing Wisely campaign) face the difficult challenge of telling people “what not to do.”⁵ Many of the clinical preventive services that the USPSTF reviews do not result in a recommendation for routine use (eg, ovarian cancer screening), and the rating for others has changed over time to a C grade or lower.⁶ When preventive service guidelines no longer support routine use, criticism and controversy often ensue. This is evident in the USPSTF’s recent recommendations against prostate-specific antigen (PSA) screening, mammography for women in their forties, and annual Pap test screening.⁷⁻¹⁰ Reactions from the public, providers, professional associations, advocacy groups, and the media included charges of “bad science” and “health care rationing.”¹¹⁻¹⁵

Numerous studies have found that changes in the USPSTF’s recommendations regarding cancer screening, albeit controversial, do affect the use of screening.¹⁶⁻¹⁸ Even so, both patients and providers have low levels of awareness and compliance regarding the USPSTF.^{10,19-21} For example, a national survey of obstetricians/gynecologists in late 2009 revealed low levels of knowledge of the USPSTF and how it operates, and a high level of concern that cost influences guideline development.²²

The goal of our study was to produce population-based national data that could assist in the development of communication strategies to increase knowledge of evidence-based guidelines for clinical preventive services and to reduce uncertainty among patients when these guidelines are contested or controversial. In this study, we addressed 4 research questions: (1) How well do US health care consumers understand clinical preventive services and their guidelines? (2) What are the prevalent attitudes toward guidelines for clinical preventive services generally and the USPSTF specifically? (3) How do consumers view the use of guidelines in informed decision making regarding preventive care? and (4) Are there specific beliefs and attitudes that may represent barriers to following evidence-based guidelines?

Uncertainty and confusion about evidence-based guidelines and the processes that create them are likely related to both the underuse and overuse of clinical preventive services.^{10,23,24} The results of this national survey, therefore, should be useful in developing effective educational messages, materials, and decision aids informing consumers about evidence-based guidelines regarding clinical preventive services, particularly those that the guidelines do not recommend for routine use.

Methods

In October and November 2013, we fielded an Internet-based survey of a nationally representative sample of adults aged 18 years and older via KnowledgePanel, a probability-based survey panel of approximately 60,000 people designed to be statistically representative of the US noninstitutionalized population.^{25,26} KnowledgePanel uses the Postal Service Delivery Sequence File (a 97% complete list of all residential households) to randomly select participants to answer some survey questions each week. Households that do not already have Internet connectivity and/or a computer are given these resources at no cost for as long as they are part of the panel.²⁷ Because the KnowledgePanel is nationally representative, a growing number of studies using this population-based sample have been published in leading health journals.^{28,29}

A random sample of adult panelists was invited to participate in our survey, with a purposive oversample of African Americans, Hispanics, and adults with less than a high school education. The survey was offered in English or Spanish, with a goal of 2,500 respondents. As is common in Internet-based survey panels, we invited a sample of potential respondents ($n = 4,160$) to participate and stopped collecting data after 31 days when we had reached the desired sample size based on power calculations ($n = 2,529$). In this approach, the concept of a response rate does not apply. Because we already had sociodemographic and other information about all the panel members, including both the responders and the nonresponders, we created survey weights to adjust for any observed differences in survey participation. We also created weights to adjust for the panel's participation and for the purposive oversampling. A total of 2,529 people completed the survey (91.2% in English and 8.8% in Spanish), and the weighted data created a sample ($n = 1,794$) representative of the noninstitutionalized US adult population.²⁵

Variables

The survey included a number of questions designed to measure knowledge and awareness of clinical preventive services, guidelines for preventive services, the USPSTF, and whether the ACA (or Obamacare) requires coverage without cost sharing for services recommended by the USPSTF. After preliminary knowledge questions, the survey listed definitions and information/examples of clinical preventive services, guidelines, and the USPSTF.

The survey contained a number of Likert-scale attitudinal questions designed to measure respondents' opinions about what types of professionals or groups participate in developing guidelines for clinical preventive services, and what professionals/groups they would most trust to do this. This included doctors, nurses, researchers/medical scientists, government health agencies, government health experts, disease advocacy groups, pharmaceutical companies, insurance plans, and patients/health care consumers. Examples of groups/organizations were "government agencies" such as the Centers for Disease Control and Prevention and the Food and Drug Administration; "professional groups/organizations" like the American Medical Association; and "disease advocacy groups" such as the American Cancer Society and the American Heart Association.

In addition, the survey asked a series of questions designed to obtain attitudinal information about how patients should make decisions in the face of guidelines that recommend against getting a clinical preventive service. These questions asked about the conditions in which guidelines should recommend against a particular service (eg, research shows that getting the service does not make a difference; it is for a disease that is very rare; it will cost the patient too much money; experts do not agree on whether the service is effective).

The survey instrument also contained 2 clinically realistic and appropriate vignettes (based on formative research with 175 providers) concerning patients asking a physician for a cancer-screening test that the USPSTF currently does not recommend. The patient's race (white/black/no race) was randomly assigned to see whether race was associated with the respondents' attitudes toward how the physician should respond to each request:

Vignette 1: A 55-year-old (white/black/no race) man goes to his doctor because he is having problems urinating. He tells his doctor that he

wants to get the PSA blood test for prostate cancer. His doctor tells him that he has a very common problem and that he will do an examination. He also tells the man that routine PSA tests are no longer recommended by a government task force and that he doesn't think it is necessary at this time.

Vignette 2: A 45-year-old (white/black/no race) woman just found out that her best friend was diagnosed with breast cancer. She immediately calls her doctor to get a referral for a mammogram. Her doctor tells her that based on her personal history, she is not at high risk for breast cancer, and that a government task force no longer routinely recommends mammograms for women in their 40's. She can wait until she is 50 years old to get her first mammogram.

The response options included trust the doctor and not get the test; tell the doctor that the patient wants to do her or his own research/reading and decide for herself or himself; tell the doctor that she or he still wants the test and insists on it; or have a discussion with the doctor and reach a joint decision.

Data Analysis

We investigated the prevalence and sociodemographic covariates associated with knowledge and attitudinal variables regarding (1) clinical preventive services in general; (2) what the guidelines are and how they are created; (3) the USPSTF and its processes; and (4) controversial guidelines that recommend against PSA tests and mammography screening for persons aged 40 to 49.

We used weighted data in all the analyses and ran descriptive statistics for all the survey questions to understand the distribution of responses. We conducted logistic multivariable regression analysis on a selected set of knowledge and attitudinal variables to identify sociodemographic characteristics associated with knowledge and positive attitudes. In addition, we conducted multivariable logistic regression analyses to identify sociodemographic and attitudinal characteristics associated with the 2 responses of most interest in the patient cancer-screening vignettes: (1) trust the recommendation and not get the screening test and (2) have a discussion with the doctor and reach a joint decision.

The control variables in multivariable logistic regression analysis included age group (18 to 29, 30 to 44, 45 to 59, 60 and older); gender (male, female); education level (less than high school, high school, some

college, college grad or more); household annual income (\$0–\$24,999; \$25,000–\$59,999; \$60,000–\$99,999; \$100,000 or more); race (white, black, other); Hispanic ethnicity (yes or no); health insurance (yes or no); and Internet at home (yes or no).

Results

The descriptive results revealed a low level of knowledge (Table 1). Only 19.6% of respondents reported having heard of “clinical preventive services” as a kind of health care and only 7.7% had heard of the USPSTF. The respondents’ self-reported understanding improved after they read a brief definition (with explanations) of clinical preventive services. Approximately 1 in 3 adults (36.4%) reported knowing that the ACA requires most insurance companies to cover proven preventive services without copays or other cost sharing for patients.

General Knowledge of and Attitudes Toward Guidelines

Approximately one-half of respondents strongly agreed or agreed that it is important for providers to follow guidelines when they are advising patients (53.4%) and that research should be the most important factor when crafting guidelines for preventive services (50.6%) (see Table 1). But 38.2% of the respondents also believed that the government uses guidelines to ration health care in Medicaid and Medicare, and only 32.6% reported trusting that a government task force would make good and fair guidelines for preventive services.

When asked about what circumstances might lead to guidelines that recommend *against* a specific preventive service, those with the highest levels of support included when research shows that getting the service does not make a difference (63.9%), when research shows that the potential harms are greater than the benefits (65.2%), and when experts do not agree on whether the service is effective (47.1%). Also, about 1 in 3 respondents agreed that insurance plans should not pay for services that have not been shown to be effective. Overall, the univariate results suggest that US adults have low levels of knowledge about clinical preventive services and their guidelines, and while many seem to value

Table 1. Knowledge of and Attitudes Toward Clinical Preventive Services and Guidelines, US Adults, 2013 ($n = 1,794$)

Self-Reported Knowledge	Percentage Yes (n)
Heard of type of health care services called clinical preventive services	
Yes	19.6% (350)
No	58.1% (1,043)
Not sure	22.0% (401)
Would rate current understanding of clinical preventive services as	
Excellent	1.2% (22)
Very good	4.1% (73)
Good	9.9% (178)
Fair	11.6% (207)
Poor	13.7% (245)
Had not heard of before	59.5% (1,068)
Heard of the US Preventive Services Task Force	7.7% (139)
Knew that Affordable Care Act requires most insurance companies to cover many preventive services without copay or other cost sharing	36.4% (653)
Attitudes After Reading a Description of USPSTF	
It is important for health care providers to follow guidelines when they are advising patients about clinical preventive services.	53.4% (958)
Research should be the most important thing in making guidelines for clinical preventive services.	50.6% (908)
The government uses guidelines to ration health care in public programs like Medicare and Medicaid.	38.2% (685)

Continued

Table 1. *Continued*

Attitudes After Reading a Description of USPSTF	Percentage Strongly Agree/Agree (n)
I trust that a government task force will make good and fair guidelines for clinical preventive services.	32.6% (585)
Insurance plans should not pay for health care services that have not been shown to be effective through research.	28.7% (516)
Insurance plans should only cover clinical preventive services that are recommended by guidelines.	21.3% (383)
Attitudes Regarding When Guidelines Should Recommend Against Getting a Type of Clinical Preventive Service	Percentage Strongly Agree/Agree (n)
Research shows that getting the service does not make a difference.	63.9% (1,146)
Research shows that potential harms are greater than benefits.	65.2% (1,179)
Experts do not agree on whether or not it is effective.	47.1% (553)
Getting the test causes many people to have to get more tests.	35.3% (633)
The preventive service will cost the patient too much money.	29.9% (536)
The preventive service is for a disease that is very rare.	27.8% (499)
Many people find the test or service unpleasant or painful.	12.2% (219)
The preventive service will cost the insurance company too much.	10.7% (192)

the role of research/scientific evidence in preventive services guidelines, the majority of respondents do not trust the government to make fair guidelines or believe that insurance coverage should be tied to research effectiveness or guideline recommendations.

Sociodemographic Characteristics Associated with Knowledge and Beliefs About Guidelines. Regression analyses revealed that knowledge of and attitudes toward clinical preventive services and the USPSTF are determined somewhat by sociodemographic characteristics (Table 2). For example, compared with those aged 18 to 29, those aged 60 and older are more likely to report knowing that the ACA mandates insurance coverage for preventive services without cost sharing (O.R. = 1.50) and believe that it is important for health care providers to follow guidelines (O.R. = 1.67). The respondents in this age group, however, were also more likely to believe that the government uses guidelines to ration health care (O.R. = 1.84).

Education was also associated with several of the knowledge and belief variables (see Table 2). For example, those with at least a college degree were significantly more likely to know that the ACA mandates preventive service coverage (O.R. = 2.56), to believe that research should be the most important factor in making guidelines (O.R. = 1.98), and to believe that insurance should not pay for services not shown to be effective (O.R. = 2.20). Those with home Internet services were less likely have heard of the USPSTF (O.R. = 0.63) and more likely to believe that research should be the most important factor in making guidelines (O.R. = 1.54). Differences in knowledge and attitudes by gender, income, race, ethnicity, and insurance status were minimal and without discernible patterns.

Beliefs About Who Should Participate in Guideline Development

At least 50% of respondents believed that each of the following groups or organizations are involved with making guidelines for clinical preventive services (Table 3): doctors (76.1%), researchers/medical scientists (62.7%), government health agencies (54.4%), and government health experts/leaders (51.8%). At least 50% of respondents reported that they strongly or somewhat trusted each of the following groups/organizations to help make guidelines for clinical preventive

Table 2. Logistic Regression Results (Odds Ratios and 95% Confidence Intervals) for Selected Survey Items Regarding Clinical Preventive Services and Guidelines, US Adults, 2013

Independent Variables (n)	Heard of Clinical Preventive Services	Heard of US Preventive Services Task Force	Know ACA Mandates Preventive Service Coverage	Research Should Be Most Important for Making Guidelines	Important for Health Care Providers to Follow Guidelines	Insurance	
						Should Not Pay for Services Not Shown to Be Effective	Government Uses Guidelines to Ration Health Care
Age							
18-29	1.00	1.00	1.00	1.00	1.00	1.00	1.00
30-44	0.68 (0.49, 0.96)	0.63 (0.38, 1.05)	1.70 (1.25, 2.30)	1.13 (0.85, 1.51)	1.11 (0.84, 1.48)	1.69 (1.22, 2.34)	1.30 (0.96, 1.74)
45-59	0.60 (0.41, 0.82)	0.54 (0.32, 0.90)	1.61 (1.19, 2.18)	1.24 (0.93, 1.64)	1.42 (1.07, 1.88)	1.77 (1.28, 2.45)	1.79 (1.33, 2.40)
60+	0.54 (0.37, 0.77)	0.66 (0.40, 1.10)	1.50 (1.09, 2.05)	1.30 (0.97, 1.74)	1.67 (1.24, 2.25)	1.64 (1.17, 2.30)	1.84 (1.36, 2.49)
Gender							
Female	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Male	0.84 (0.66, 1.08)	1.32 (0.93, 1.89)	1.26 (1.03, 1.54)	1.20 (0.99, 1.46)	1.02 (0.84, 1.24)	1.20 (0.97, 1.48)	0.87 (0.71, 1.06)

Continued

Table 2. *Continued*

Independent Variables (<i>n</i>)	Heard of Clinical Preventive Services	Heard of US Preventive Services Task Force	Know ACA Mandates Preventive Service Coverage	Research Should Be Most Important for Making Guidelines	Important for Health Care Providers to Follow Guidelines	Insurance Should Not Pay for Services Not Shown to Be Effective	Government Uses Guidelines to Ration Health Care
Education <High school	1.00	1.00	1.00	1.00	1.00	1.00	1.00
High school	1.26 (0.74, 2.15)	2.48 (1.16, 5.33)	1.20 (0.82, 1.76)	1.12 (0.79, 1.59)	1.40 (0.99, 1.99)	1.50 (1.01, 2.26)	0.74 (0.52, 1.05)
Some college	2.07 (1.21, 3.52)	1.92 (0.86, 4.28)	1.41 (0.95, 2.09)	1.74 (1.21, 2.51)	1.66 (1.15, 2.39)	1.62 (1.06, 2.47)	0.88 (0.61, 1.27)
College+	2.66 (1.54, 4.58)	2.15 (0.94, 4.89)	2.56 (1.71, 3.85)	1.98 (1.35, 2.91)	2.14 (0.64, 1.20)	2.20 (1.42, 3.40)	1.03 (0.70, 1.39)
Income							
Group 1	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Group 2	0.66 (0.43, 1.01)	1.04 (0.59, 1.47)	0.94 (0.67, 1.31)	0.80 (0.59, 1.09)	0.88 (0.64, 1.20)	0.73 (0.52, 1.03)	0.92 (0.67, 1.27)
Group 3	0.88 (0.58, 1.35)	0.79 (0.43, 1.47)	0.97 (0.69, 1.36)	0.83 (0.60, 1.14)	0.81 (0.60, 1.12)	0.70 (0.49, 0.99)	0.94 (0.68, 1.30)
Group 4	1.04 (0.68, 1.59)	1.31 (0.71, 2.41)	1.24 (0.87, 1.76)	0.97 (0.69, 1.36)	1.19 (0.85, 1.67)	0.69 (0.57, 1.13)	0.99 (0.70, 1.39)

Continued

Table 2. Continued

Independent Variables (n)	Heard of Clinical Preventive Services	Heard of US Preventive Services Task Force	Know ACA Mandates Preventive Service Coverage	Research Should Be Most Important for Making Guidelines	Important for Health Care Providers to Follow Guidelines	Insurance	
						Should Pay for Services Not Shown to Be Effective	Should Not Pay for Services
Race							
White	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Black	0.88 (0.57, 1.36)	1.70 (1.03, 2.82)	1.50 (1.08, 2.08)	0.85 (0.62, 1.17)	1.28 (0.93, 1.75)	0.79 (0.47, 1.00)	0.96 (0.69, 1.33)
Other	0.71 (0.43, 1.15)	1.07 (0.55, 2.10)	1.33 (0.91, 1.94)	1.31 (0.89, 1.91)	1.52 (1.03, 2.25)	1.06 (0.71, 1.57)	1.42 (0.98, 2.06)
Hispanic							
No	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Yes	1.66 (1.17, 2.35)	0.69 (0.37, 1.28)	1.46 (1.08, 1.97)	1.16 (0.87, 1.55)	1.32 (0.98, 1.76)	1.44 (1.06, 1.95)	1.29 (0.96, 1.73)
Insurance							
No	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Yes	1.36 (0.92, 2.01)	1.11 (0.66, 1.87)	1.27 (0.94, 1.73)	1.16 (0.87, 1.54)	1.40 (1.06, 1.86)	0.94 (0.69, 1.28)	0.87 (0.66, 1.17)
Home Internet							
No	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Yes	1.38 (0.96, 1.99)	0.63 (0.40, 0.99)	0.98 (0.74, 1.28)	1.54 (1.19, 1.99)	1.04 (0.80, 1.34)	0.77 (0.79, 1.38)	1.11 (0.86, 1.45)

Results in bold significant at $p < .05$ level.

Table 3. Beliefs and Attitudes Regarding Who Makes Guidelines for Clinical Preventive Services, US Adults, 2013

Type of Organization or Group (Weighted <i>n</i>)	Percentage Believe Involved in Making Guidelines for Clinical Preventive Services (<i>n</i> = 1,794)	Percentage Strongly or Somewhat Trust to Be Involved in Making Guidelines (<i>n</i> = 1,794)
Doctors	76.1%	84.5%
Researchers/medical scientists	62.7%	71.7%
Government health agencies	54.4%	60.1%
Government health experts/leaders	51.8%	53.8%
Professional associations (eg, AMA)	43.5%	58.0%
Insurance plans	42.6%	19.1%
Disease advocacy groups	41.5%	63.3%
Nurses/nurse practitioners	35.8%	77.1%
Pharmaceutical companies	26.9%	19.8%
Patient advocates/social workers	20.0%	44.5%
University professors	19.5%	43.7%
Medical schools	15.5%	45.7%
Patients/health care consumers	15.0%	40.9%
Legislators	12.1%	10.7%
Lawyers	8.5%	8.1%
Economists	5.5%	12.4%

services: doctors (84.5%), nurses/nurse practitioners (77.1%), researchers/medical scientists (71.7%), disease advocacy groups (63.3%), government health agencies (60.1%), professional associations (58.0%), and government health experts/leaders (53.8%).

Although only 15.0% of respondents believed that patients/health care consumers were involved with making guidelines, 40.9% reported

that they would strongly or somewhat trust their involvement. Conversely, whereas 42.6% of respondents believed that insurance plans helped create preventive services guidelines, only 19.1% strongly or somewhat trusted them in this role. There were also low levels of trust for pharmaceutical companies (19.8%), economists (12.4%), legislators (10.7%), and lawyers (8.1%) to be involved in creating guidelines (see Table 3).

When asked about the degree of importance that a number of factors should have in influencing guidelines for clinical preventive services, the respondents indicated strong support for scientific evidence/research and the opinions of medical experts (Table 4). For example, 86.4% of respondents thought it was very important or somewhat important that scientific evidence/research results influence preventive services guidelines. Similarly, 87.7% of respondents thought it was very important or somewhat important that the opinion of medical experts influence preventive services guidelines.

Results of the Vignette Analysis

As just described, the responses to attitudinal survey questions demonstrated a high degree of support for scientific evidence and medical expertise in crafting consumer guidelines for the use of clinical preventive services. The results from the patient vignettes about cancer-screening tests not currently recommended by the USPSTF provide additional valuable information in understanding patients' responses to evidence-based guidelines. The results reveal that very few respondents believed that the vignette patients should simply accept their physician's recommendation to not have the test, which was based on the USPSTF's current guidelines. For the vignette about a 55-year-old man requesting a PSA test, the respondents indicated that the man should (1) trust his doctor and not get the test (6.6%); (2) tell his doctor he wants to do further research or reading and decide for himself (11.7%); (3) insist on getting the test (27.6%); and (4) have a discussion and reach a joint decision (48.0%). For the vignette about a 45-year-old woman requesting a screening mammogram, the responses were as follows: (1) trust the doctor and not get the test (9.4%); (2) tell the doctor she wants to do further research or reading and decide for herself (13.1%); (3) insist on getting the test (27.8%); and (4) have a discussion and reach a joint

Table 4. Attitudes Toward Degree of Importance of Factors That Might Influence Guidelines for Clinical Preventive Services, US Adults, 2013 (Weighted $n = 1,794$)

Factor	Very Important (%)	Somewhat Important (%)	Not Important (%)	Don't Know/Refused (%)
Scientific evidence	64.1	22.3	2.6	11.0
Opinions of medical experts	59.3	28.4	2.1	10.1
Patient characteristics (eg, age, race)	51.1	34.0	4.6	11.4
If costs are worth benefits	37.8	39.1	11.2	10.9
Professional association's recommendations	37.6	43.6	6.3	12.4
Professional standards of care	31.9	43.7	10.5	13.8
Opinions of government health experts	30.7	43.8	14.5	11.0
Costs to patients	27.8	35.7	25.5	11.1
Insurance plan recommendations	15.7	35.5	35.5	13.3
Political motivations	3.5	10.7	71.9	13.8
Opinions of lawyers	2.9	11.5	70.8	14.8

decision (43.6%). The small number of remaining respondents for both vignettes either did not respond or stated that they did not know.

The results did not vary by the race (white, black, not identified) of the patient in either vignette. Some sociodemographic and attitudinal factors were associated with the response of recommending that the vignette patient talk with his or her doctor and reach a decision

together and the response that the patient trust the doctor and follow the recommendation not to be screened (Table 5). Regression analysis for the PSA vignette revealed that respondent characteristics positively associated with the recommendation that the patient engage in a joint decision were being age 60 years or older, having more than a high school education, and believing that research should be the most important factor in creating guidelines. Respondents who were black and Hispanic were significantly less likely to recommend a joint decision in this vignette. The respondent characteristics positively associated with the response that the patient trust his doctor and not get the PSA test were being male, agreeing that insurance plans should not cover services without research showing effectiveness, and trusting in a government task force creating evidence-based guidelines. Those with some college or more were significantly *less* likely to believe that the vignette patient should accept the provider's recommendation to not get a PSA test.

In regard to the mammography vignette, regression analysis revealed that respondent characteristics positively associated with the response that the patient and doctor engage in a joint decision were being age 30 years or older, having more than a high school education, having home Internet access, and believing that research should be the most important factor in creating guidelines (see Table 5). Respondents who were black or Hispanic were significantly less likely to recommend a joint decision. The respondent characteristics significantly associated with the recommendation that the vignette patient trust her doctor and not get the mammogram included believing that insurance plans should not cover services without research showing effectiveness.

Discussion

The movements toward both evidence-based medicine and patient engagement in health care are growing.^{1,13,15} Informed health care consumers are also an important foundation of many components of the ACA, including coverage mandates for evidence-based clinical preventive services.² Accordingly, it is important that patients understand what "evidence-based" means, how research is used to create guidelines, and how to interpret guidelines developed for populations in personal health care options and decisions. This is especially important in health care

Table 5. Logistic Regression Results (Odds Ratios and 95% Confidence Intervals) for Responses to Patient Vignettes About Physicians' Recommendation Against Cancer Screening

Independent Variables (Models Also Controlled for Income and Health Insurance Status)	PSA Vignette (Engage in Joint Decision)	PSA Vignette (Trust Recommendation Against Test)	Mammography Vignette (Engage in Joint Decision)	Mammography Vignette (Trust Recommendation Against Test)
Age				
18-29	1.00	1.00	1.00	1.00
30-44	0.84 (0.63, 1.13)	1.17 (0.68, 2.02)	1.47 (1.09, 1.98)	1.22 (0.76, 1.98)
45-59	1.38 (1.04, 1.84)	0.79 (0.49, 1.40)	2.28 (1.70, 3.05)	0.99 (0.61, 1.62)
60+	1.53 (1.13, 2.07)	0.57 (0.30, 1.08)	3.01 (2.23, 4.06)	0.88 (0.53, 1.55)
Gender				
Female	1.00	1.00	1.00	1.00
Male	0.80 (0.66, 1.08)	2.84 (1.40, 5.05)	0.83 (0.61, 1.29)	1.30 (0.94, 1.80)
Education				
<High school	1.00	1.00	1.00	1.00
High school	1.50 (1.05, 2.16)	0.65 (0.37, 1.13)	1.17 (1.19, 2.52)	0.91 (0.54, 1.54)
Some college	1.97 (1.36, 2.87)	0.40 (0.21, 0.76)	1.73 (1.19, 2.52)	0.52 (0.29, 0.93)
College+	2.36 (1.61, 3.46)	0.29 (0.15, 0.56)	2.01 (1.37, 2.95)	0.66 (0.37, 1.18)

Continued

Table 5. Continued

Independent Variables (Models Also Controlled for Income and Health Insurance Status)	PSA Vignette (Engage in Joint Decision)	PSA Vignette (Trust Recommendation Against Test)	Mammography Vignette (Engage in Joint Decision)	Mammography Vignette (Trust Recommendation Against Test)
Race				
White	1.00	1.00	1.00	1.00
Black	0.55 (0.40, 0.76)	1.21 (0.73, 2.13)	0.64 (0.46, 0.88)	0.95 (0.56, 1.61)
Other	0.82 (0.57, 1.20)	2.65 (1.40, 5.05)	0.88 (0.61, 1.29)	1.47 (0.84, 2.55)
Hispanic				
No	1.00	1.00	1.00	1.00
Yes	0.62 (0.50, 0.84)	1.25 (0.73, 2.13)	0.69 (0.51, 0.94)	0.75 (0.45, 1.25)
Home Internet				
No	1.00	1.00	1.00	1.00
Yes	0.95 (0.74, 1.22)	0.74 (0.47, 1.18)	1.43 (1.12, 1.84)	0.77 (0.53, 1.14)
Attitudinal variables—agreement				
Research most important factor in creating guidelines	1.31 (1.04, 1.64)	0.73 (0.45, 1.18)	1.34 (1.07, 1.69)	1.00 (0.68, 1.48)
Providers should follow guidelines	1.20 (0.95, 1.52)	0.91 (0.55, 1.48)	1.09 (0.87, 1.37)	1.08 (0.73, 1.61)
Insurance plans should not pay for services not shown effective	0.90 (0.71, 1.13)	1.95 (1.25, 3.04)	0.81 (0.54, 1.02)	1.95 (1.36, 2.80)
Government uses guidelines to ration health care	1.09 (0.88, 1.35)	1.03 (0.66, 1.60)	0.99 (0.80, 1.23)	1.01 (0.71, 1.43)
I trust a government task force will make good and fair guidelines	1.10 (0.87, 1.38)	1.65 (1.03, 2.59)	1.23 (0.98, 1.55)	1.12 (0.77, 1.64)

Results in bold significant at $p < .05$ level.

situations in which patients have legitimate options, including whether or not to receive a clinical preventive service.¹

Although there are multiple and often discordant sets of guidelines for clinical preventive services, our research focused on the USPSTF's guidelines because they are produced through a putatively objective, evidence-based process and because of their current role in health insurance benefit design through the ACA. Our national population-based survey results reveal that knowledge of clinical preventive services, their guidelines, and the USPSTF is very low in the general population, across gender, age, socioeconomic, race, and ethnic groups. Our results also suggest that US adults generally endorse the notion that research evidence and expert medical opinion are important for the creation of guidelines and that clinicians should follow guidelines based on evidence.³⁰ Only one-third of adults, however, trust that a government-sponsored task force that focuses on scientific evidence would make sound and fair recommendations for preventive services.

Given the demonstrated low levels of knowledge coupled with a strong preference for involvement in preventive care decisions, better consumer education on evidence-based guidelines for preventive services and better decision-making support are greatly needed. Our results suggest that appeals to medical experts and scientific evidence resonate with a significant portion of the US adult population. Theoretical and empirical concerns about information overload and management of uncertainty often lead to public communication about science that has removed the uncertainty, but at the cost of oversimplification.^{3,11,13} In an analysis of the USPSTF's 2009 recommendation against mammography screening under age 50, Jensen and colleagues concluded that removing any uncertainty about the underlying scientific evidence from early communications actually fueled conflict, confusion, and backlash "at the expense of long-term consistency and trust in science."³¹ Improving public knowledge and correcting factual misperceptions about political issues and policies—including health policies—is very difficult from a communications perspective.^{32,33}

Earlier research clearly established that patients' use of clinical preventive services is influenced by individual patient factors, provider factors, and exposure to external information and communication.³⁴ One of the strongest predictors of the use of all preventive services is having a recommendation from a provider.^{34,35} Our national survey results revealed that when presented with vignettes about actual patients being

told that current recommendations do not support a requested screening test, fewer than 1 out of 10 adults believed that this recommendation alone was sufficient for a patient to make a decision. Instead, the respondents endorsed more discussion and/or the opportunity for patients to gather their own information before making a decision.

Effective discussions between the patients and providers and shared decision making could increase patients' acceptance of guidelines both for and against clinical preventive services.³⁶ Patients are increasingly demanding a more active role in making their own health care decisions at the same time they are being bombarded with competing information and messages that are challenging to interpret and act upon.³⁷ A systematic review of the published research concluded that physicians generally do have positive attitudes toward shared decision making but also that additional empirical evidence is needed that shared decisions will bring positive outcomes for both patients and providers in order to increase physician support.³⁸ An analysis of the association between patients' ratings of their providers' communication skills and the receipt of 6 clinical preventive services found that in multivariable analysis, only mammography screening was positively associated.³⁹ This suggests that the content of the communication, rather than simply a positive attitude toward the provider's communication skills, is important to patients' behavioral outcomes.

Even though it may be challenging, the effective "framing" of messages in health communications can have a positive impact on knowledge and behavior change.⁴⁰⁻⁴² Recent framing research also suggests that in health promotion and disease prevention communications, health messages framed as a "gain" or "benefit" may be more effective in changing the behavior recommended in the message.^{43,44} The "Choosing Wisely" campaign, in partnership with *Consumer Reports*, is based on the premise that when telling consumers that "more is not better," the messages need to come from trusted sources, be communicated in plain language, and use both individual and mass media communication strategies.⁵ Additional research that tests different message frames about the USPSTF and its recommendations are needed to design effective communication tools that make use of the attitudes and beliefs currently prevalent in the population.^{3,15,21,30,36,42}

Several tools and decision aids for clinical and community preventive services have been developed.⁴⁵ For example, Nundy and colleagues have created a web-based tool that helps communicate prevention guidelines

to community members.⁴⁶ Krist, Woolf, and colleagues have designed an interactive preventive health record.⁴⁷ Additional research is needed to improve both mass media campaigns and clinician-patient communication regarding the use of evidence-based guidelines in making informed choices about whether or not to receive a clinical preventive service.

Our research was limited because we have no information on the relationship between the knowledge/attitudinal variables explored and the actual behaviors regarding clinical preventive services. But a strength of our work is that the sample was nationally representative and large enough to explore sociodemographic differences in knowledge and attitudes. That the results did not show strong patterning by sociodemographic characteristics reflects the fact that much of the US adult population has little knowledge of, and negatives attitudes toward, clinical preventive services, their guidelines, and the USPSTF.

Both the underuse and the overuse of clinical preventive services relative to the USPSTF's recommendations are a serious public health problem. For example, during the 2012/2013 influenza season, only 41.5% of US adults received a vaccination, and the use of mammography by women aged 40 to 49 has continued to rise even after the USPSTF withdrew its recommendation for screening in that age group in 2009.^{48,49} The results of this population-based survey, therefore, should be used in the further development and framing of effective communication messages, tools, and decision aids to promote the optimal use of clinical preventive services.

References

1. Wennberg JE. Unwarranted variations in healthcare delivery: implications for academic medical centres. *BMJ*. 2002a;325:961-964.
2. Koh HK, Sebelius KG. Promising prevention through the Affordable Care Act. *N Engl J Med*. 2010; 363:1296-1299.
3. Carman KL, Mauer M, Yegian JM, et al. Evidence that consumers are skeptical about evidence-based health care. *Health Aff*. 2010;29(7):1400-1406.
4. Bensing J. Bridging the gap: the separate worlds of evidence-based medicine and patient-centered medicine. *Patient Educ Counseling*. 2000;39(1):17-25.
5. Santa JS. Communicating information about "what not to do" to consumers. *BMC Med Inform Decis Making*. 2013;13(Suppl. 3):S2.

6. Harris RP, Helfand M, Woolf SH, et al. for the Methods Work Group, third US Preventive Services Task Force. Current methods of the U.S. Preventive Services Task Force: a review of the process. *Am J Prev Med.* 2001;20(Suppl. 3):21-35.
7. US Preventive Services Task Force. Screening for breast cancer: U.S. Preventive Services Task Force recommendation statement. *Ann Intern Med.* 2009;151:716-726.
8. Schroder FH. Stratifying risk—the U.S. Preventive Services Task Force and prostate-cancer screening. *N Engl J Med.* 2011;online. doi:10.1056/NEJMp1112140.
9. Wang AT, Fan J, Van Houten HK, et al. Impact of the 2009 US Preventive Services Task Force guidelines on screening mammography rates on women in their 40's. *PLoS One.* 2014;9(3):e1399.
10. Meissner HI, Klabunde CN, Han PK, et al. Breast cancer screening beliefs, recommendations and practices: primary care physicians in the United States. *Cancer.* 2011;117(14):3101-3111.
11. Harmon K. Does science need more compelling stories to foster public trust? *Scientific American Blog.* November 8, 2011. <http://blogs.scientificamerican.com/observations/2011/11/08/does-science-need-more-compelling-stories-to-foster-public-trust>. Accessed December 16, 2015.
12. Barker KK, Galardi TR. Dead by 50: lay expertise and breast cancer screening. *Soc Sci Med.* 2011;72(8):1351-1358.
13. Timmermans S. Evidence-based medicine: sociological explorations. In: Bird C, Conrad P, Fremont A, Timmermans S, eds. *The Handbook of Medical Sociology.* 6th ed. Upper Saddle River, NJ: Prentice Hall, 2010.
14. Stevens E. Penny-pinching health: recommendation against routine PSA screening in U.S. Earl's View Blog. October 8, 2011. <http://earlsvie.com/2011/10/08/penny-pinching-health-recommendation-against-routine-psa-screening-in-us/>. Accessed December 16, 2015.
15. Woolf SH, Atkins D. The evolving role of prevention in health care: contributions of the U.S. Preventive Services Task Force. *Am J Prev Med.* 2001;20(Suppl. 3):13-20.
16. Li J, Berkowitz Z, Hall IJ. Decrease in prostate cancer testing following the US Preventive Services Task Force (USPSTF) recommendations. *J Am Board Fam Med.* 2015;28(4):491-493.
17. Sprague BL, Bolton KC, Mace JL, et al. Registry-based study of trends in breast cancer screening mammography before and after the 2009 U.S. Preventive Services Task Force recommendations. *Radiology.* 2014;270(2):354-361.

18. Howard DH, Tangka FK, Guy GP, Ekwueme DU, Lipscomb J. Prostate cancer screening in men ages 75 and older fell by 8 percentage points after task force recommendation. *Health Aff.* 2013;32(3):596-602.
19. Cortbeli J, Borrero S, Bonnema R, et al. Physician adherence to U.S. Preventive Services Task Force mammography guidelines. *Women's Health Issues.* 2014;24(3):e313-e319. doi:10.1016/j.whi.2014.03.003.
20. Kiviniemi MT, Hay JL. Awareness of the 2009 US Preventive Services Task Force recommend changes in mammography screening guidelines in women ages 40-49 and 50+. *BMC Public Health.* 2012;12:899.
21. Allen SV, Solberg Nes L, Marnach ML, et al. Patient understanding of the revised USPSTF screening mammogram guidelines: need for development and patient decision aids. *BMC Women's Health.* 2012;12:36.
22. Lafata JE, Cooper G, Divine G, Ojo-Tebbe N, Flocke SA. Patient-physician colorectal cancer screening discussion content and patients' use of colorectal cancer screening. *Patient Educ Counseling.* 2014;94(1):76-82.
23. DiMatteo MR. Variation in patients' adherence to medical recommendations: a quantitative review of 50 years of research. *Med Care.* 2004;42(3):200-209.
24. Squiers LB, Holden DJ, Dolina SE, Kim AE, Bann CM, Renauld JM. The public's response to the U.S. Preventive Services Task Force's 2009 recommendations on mammography screening. *Am J Prev Med.* 2011;40(5):497-504.
25. Dennis JM. Knowledge Panel design summary. 2012. [http://www.knowledgenetworks.com/ganp/docs/KnowledgePanel\(R\)-Design-Summary.pdf](http://www.knowledgenetworks.com/ganp/docs/KnowledgePanel(R)-Design-Summary.pdf). Accessed December 16, 2015.
26. Dennis JM. Knowledge Panel: processes & procedures contributing to sample representativeness & tests for self-selection bias. 2010. <http://www.knowledgenetworks.com/ganp/docs/knowledge-panelr-statistical-methods-note.pdf>. Accessed December 16, 2015.
27. DiSogra C, Callegaro M. Computing response rates for probability-based web panels. 2009. http://www.knowledgenetworks.com/ganp/docs/jsm2009/RR_JSM_2009_submitted.pdf. Accessed December 16, 2015.
28. Fowler FJ, Gerstein BS, Barry MJ. How patient centered are medical decisions? Results of a national survey. *JAMA Intern Med.* 2013;173(13):1215-1221.

29. Freed GL, Dunham KM, Clark SJ, Davis MM. Perspectives and preferences among the general public regarding physician selection and board certification. *J Pediatr*. 2010;156(5):841-845.
30. Kramer BS, Crosswell JM. Cancer screening: the clash of science and intuition. *Annu Rev Med*. 2009;60:125-137.
31. Jensen JD, Krakow M, John KK, Liu M. Against conventional wisdom: when the public, the media, and medical practice collide. *BMC Med Inform Decis Making*. 2013;13(Suppl. 3):S4.
32. Nyhan B. Why the “death panel” myth wouldn’t die: misinformation in the health care reform debate. *The Forum*. 2010;8(1):art. 5.
33. Nyhan B, Reifler J. When corrections fail: the persistence of political misperceptions. *Polit Behav*. 2010;32(2):303-330.
34. Task Force on Community Preventive Services. Recommendations for client- and provider-directed interventions to increase breast, cervical, and colorectal cancer screening. *Am J Prev Med*. 2008;35:S21-S25.
35. Community Preventive Services Task Force. Updated recommendations for client- and provider-oriented interventions to increase breast, cervical, and colorectal cancer screening. *Am J Prev Med*. 2012;43(1):92-96.
36. Tudiver F, Brown JB, Medved W, et al. Making decisions about cancer screening when the guidelines are unclear or conflicting. *J Fam Pract*. 2001;50(8):682-687.
37. Lafata JE, Shay LA. Where is the evidence? A systematic review of shared decision making and patient outcomes. *Med Decis Making*. 2014;October 28 [epub ahead of print].
38. Pollard S, Bansback N, Bryan S. Physician attitudes towards shared decision making: a systematic review. *Patient Educ Counseling*. 2015; [epub ahead of print]:S0738-3991(15)00225-6. doi:10.1016/j.pec.2015.05.004.
39. Villani J, Mortensen K. Patient-provider communication and timely receipt of preventive services. *Prev Med*. 2013;57(5):658-663.
40. Evans WD, McCormack L. Applying social marketing in health care: communicating evidence to change consumer behavior. *Med Decis Making*. 2008;28(5):781-792.
41. Scheufele D. Framing as a theory of media effects. *J Commun*. 2009;49(1):103-122.
42. Smith RA, Cokkinides V, Brooks D, Saslow D, Brawley OW. Cancer screening in the United States, 2010: a review of current American Cancer Society guidelines and issues in cancer screening. *CA: A Cancer Journal for Clinicians*. 2011;60(2):99-119.

43. Rothman AJ, Bartels RD, Wlaschin J, Salovey P. The strategic use of gain- and loss-framed messages to promote healthy behavior: how theory can inform practice. *J Commun.* 2006;56:S202-S220.
44. O'Keefe DJ, Jensen JD. The relative persuasiveness of gain-framed loss-framed messages for encouraging disease prevention behaviors: a meta-analytic review. *J Health Commun Int Perspect.* 2007;12(7):623-644.
45. Hoffman RM, Elmore JG, Fairfield KM, et al. Lack of shared decision making in cancer screening discussion: results from a national survey. *Am J Prev Med.* 2014;47(3):251-259.
46. Nundy S, Surati M, Nwadei I, Singal G, Peek ME. A web-based patient tool for preventive health: preliminary report. *J Primary Care Commun Health.* 2012;3(4):289-294.
47. Krist AH, Woolf SH, Rothemich SF, et al. Interactive preventive health record to enhance delivery of recommended care: a randomized trial. *Ann Fam Med.* 2012;10(4):2312-2319.
48. Centers for Disease Control and Prevention. Flu vaccination coverage, United States, 2012–13 influenza season. <http://www.cdc.gov/flu/fluview/coverage-1213estimates.htm>. Accessed November 20, 2014.
49. Pace LE, He Y, Keating NL. Trends in mammography screening rates after publication of the 2009 US Preventive Services Task Force recommendations. *Cancer.* 2013;119(14):2518-2523.

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