POLICY

Physician Response to Patient Request for Unnecessary Care

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Currently, 30% of annual healthcare expenditures in the United States are believed to be unnecessary,[1,2] including, but not limited to, avoidable hospitalizations, unnecessary procedures and testing, and poor prescribing practices.[3] Patients influence some of this spending by asking physicians for unnecessary medical services. Recent research shows that almost half of physicians report at least 1 patient request per week for an unnecessary test or procedure.[4] Also, US specialty referral rates have more than doubled in the last decade,[5] raising questions about the drivers of this pattern.

Physicians are increasingly expected to consider healthcare costs when making medical decisions.[6,7] The Physician Charter on Medical Professionalism, authored by the American Board of Internal Medicine (ABIM) in 2002, requires physicians to be good stewards of scarce medical resources.[8] The ABIM's Choosing Wisely initiative encourages physicians, patients, and other stakeholders to discuss the need for common tests and procedures that can often be wasteful. This led to the creation of a coalition of several professional societies and consumer groups dedicated solely to addressing unnecessary care.[7,9] Although these are important initiatives, we know little about how physicians balance cost-control expectations in the face of patient requests for unnecessary care, which contributes to the provision of low-value care.

A strong primary care workforce is essential for an effective healthcare system.[10,11] New payment models, such as the CMS Pioneer Accountable Care Organization (ACO) model, seek to reorient fee-for-service incentives,[12] which may once again result in primary care providers serving as gatekeepers to effectively manage the care their patients receive. These newer models aim to balance control of healthcare utilization with improvements in quality and patient satisfaction. Therefore, the challenge for primary care physicians (PCPs) will be to achieve efficient utilization decisions without compromising patient satisfaction.[13-15] This challenge is heightened by the short supply of PCPs, which result in high patient loads and

ABSTRACT

Objectives: Evaluating unnecessary US medical practices, and the strategies that reduce them, are increasingly recognized as crucial to healthcare financing sustainability. Provider factors are known to affect unnecessary medical practices, yet little is known about how physician responses to patient requests for unnecessary care affect these practices. Among primary care physicians (PCPs), we investigated 2 types of unnecessary medical practices triggered by patient requests: a) unnecessary specialty referrals and b) prescriptions for brand-name drugs when generic alternatives are available.

Study Design: We used data from a survey of a nationally representative sample of 840 US PCPs in 2009. Response rates for family practice (n = 274), internal medicine (n = 257), and pediatrics (n = 309) were 67.5%, 60.8%, and 72.7%, respectively.

Results: In response to patient requests, 51.9% of PCPs reported making unnecessary specialty referrals and 38.7% prescribed brand-name drugs. Family physicians (odds ratio [OR], 2.77; 95% CI, 1.77-4.34) and internal medicine physicians (OR, 4.51; 95% CI, 2.87-7.06) were more likely than pediatricians to prescribe brand-name drugs. PCP specialty was similarly associated with unnecessary referrals. Other predictors of acquiescence to patient requests included interactions with drug/device representatives, more years of clinical experience, seeing fewer safety net patients, and solo/2-person practice organizations. Area-level Medicare spending was not associated with the 2 unnecessary practices.

Conclusions: Many PCPs reported acquiescing to patient requests for unnecessary care. Provider and organizational factors predicted this behavior. Policies aimed at reducing such practice could improve care quality and lower cost. Patient and physician incentives that can potentially reduce unnecessary medical practices warrant exploration.

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Take-Away Points

Data on 840 US primary care physicians (PCPs) in 2009 were used to investigate 2 types of unnecessary medical practices in response to patient requests: a) unnecessary specialty referrals and b) brand-name drug prescriptions when generics were available.

■ Little is known about how PCPs balance cost-control expectations in the face of patient requests for unnecessary care that contribute to the provision of low-value care.

■ About 52% of PCPs reported making unnecessary referrals; 38.7% yielded to patient requests for brand-name drugs when generic equivalents were available. Provider and organizational factors predicted these behaviors.

■ Efforts should focus on identifying and evaluating patient and physician incentives that can potentially reduce unnecessary medical practices in the United States.

inefficient work environments, and subsequently lead to insufficient time to manage patient requests.[16]

To understand how these potentially conflicting incentives affect physicians, we used data from a national survey of physician professionalism[17-20] to examine the association of physician characteristics and area-level factors with 2 types of unnecessary medical practices among PCPs inspired by patient requests: a) the provision of unnecessary referrals to specialists and b) prescription of brand-name drugs when generic alternatives were available. Identifying factors associated with unnecessary specialty referrals and brand-name drug prescriptions may help inform strategies to reduce avoidable spending that results from patient requests for unnecessary care.

METHODS

Survey Design Overview

This study uses data collected as part of the 2009 National Survey on Medical Professionalism (NSMP).[17,18] The NSMP surveyed actively practicing board-certified physicians in the United States with 110 questions related to many aspects of physicians' professional and social background, professional opinions, and activities. Details on survey development and testing have been published previously.[19,20] The survey was approved by the Institutional Review Board of Massachusetts General Hospital.

Survey Participants and Administration

The American Medical Association's 2008 Masterfile was used to identify eligible US physicians for our study. The Masterfile includes information on all doctors of medicine in the United States.[21] We excluded all osteopathic physicians, resident physicians, physicians practicing in federally owned hospitals, as well as all who had no listed address, had requested not to be contacted, or had retired. From the remaining physicians in the Masterfile, we randomly selected 500 within each of the 3 primary care specialties (ie, family practice, internal medicine, and pediatrics) and 4 nonprimary care specialties (ie, anesthesiology, cardiology, general

surgery, and psychiatry), resulting in a total of 3500 sampled physicians. Of these, 562 physicians were ineligible because they were deceased, out of the country, practicing a nonsampled specialty, on leave, or not practicing. Therefore, the final sample consisted of 2938 eligible physicians.

In May 2009, priority mail services were used to send initial survey packets containing a cover letter, fact sheet, and questionnaire with the random participant identification number, postage-paid return envelope, and a $20 incentive. To solicit participation, all nonrespondents were telephoned and were mailed up to 2 additional survey packets.

Study Sample

Overall, 64.4% of the 2938 eligible physicians completed the survey. Because of our interest in primary care, we limited our analyses to the 840 PCPs who responded. Response rates for family practice (n = 274), internal medicine (n = 257), and pediatrics (n = 309) were 67.5%, 60.8%, and 72.7%, respectively.

Statistical Analyses

We examined 2 survey items—unnecessary referrals and prescriptions—that reflected unnecessary care resulting from patient requests. The survey asked, "In the last year, how often have you given a patient a referral to a specialist because the patient wanted it when you believed it was not indicated?" Physicians were also asked, "In the last year, how often have you prescribed a brand-name drug when an equivalent generic was available because the patient asked for the brand-name drug specifically?" Responses to these questions were: "Never," "Rarely," "Sometimes," or "Often." For statistical analyses, the "Sometimes" or "Often" responses were coded as "1" and "Never" or "Rarely" responses were coded as "0." The frequency of extreme responses (eg, "Often" and "Never") were fairly small and could prevent meaningful statistical modeling of individual response categories.

The independent variables represented physicians' personal characteristics, professional characteristics, and a geographic indicator for healthcare spending. Personal characteristics included sex (female vs male) and race (white/Asian vs others [African-American, Hispanic, Native American, Pacific Islander, and other]). Professional characteristics included medical specialty (pediatrics, family practice, or internal medicine), years of clinical experience (<10, 10 to 30, or >30), solo/2-person practice ("Yes" if physicians indicated they practiced in solo/2-person organizations, and "No" otherwise), working in a practice with

easy access to specialists ("Yes" if physicians indicated that they practiced in a hospital, multi-specialty hospital, or medical school, and "No" otherwise); and percent of patients uninsured or Medicaid-insured (categorized into quartiles). We also asked, "How often do you meet with representatives from drug or device companies to stay up-to-date with the latest developments in your field?" We coded the "Sometimes" or "Often" responses as "1" and "Never" or "Rarely" responses as "0" for this variable.

We included a geographic indicator for healthcare spending, as regional differences exist in healthcare utilization among physicians. Using the physician-reported practice area zip code, we assigned each respondent to 1 of 3436 Hospital Service Areas (HSAs) as defined by the Dartmouth Atlas of Health Care.[22] Of the total 840 PCPs, 16 did not report zip codes and 5 reported zip codes that could not be mapped. For the remaining 819 PCPs, we assigned area-level spending using the 2009 HSA-level claims-based, adjusted total Medicare Parts A and B reimbursements per enrollee from the Dartmouth Atlas of Health Care. We examined different categorizations for reimbursements, including deciles, tertiles, and quartiles.

All analyses included sampling weights that were computed as inverse probability of sampling, and response rates by physician specialty. Univariate distributions of independent variables and Pearson's correlation coefficient between our 2 dependent variables were examined. Bivariate analyses were conducted using χ^2 tests to investigate the associations of dependent and independent variables. Multivariate logistic regression models were estimated to predict independent variables (defined above) that were significantly associated with our markers of unnecessary care. Analyses were performed using Stata version 13.0 (Stata Corp, College Station, Texas). All reported P values are 2-sided and were considered significant at α = .05.

■ **Table 1.** Primary Care Physicians' Characteristics

Characteristics	N	Weighted %
Personal		
Sex		
Female	351	39.2
Male	487	60.8
Race		
White/Asian	706	84.8
Others	127	15.3
Professional		
Specialty		
Pediatrics	309	23.5
Family practice	274	32.8
Internal medicine	257	43.7
Years of clinical experience		
<10	141	16.5
10-30	504	60.9
>30	190	22.6
Solo/2-person practice[a]		
Yes	197	24.0
No	640	76.0
Easy access to specialists[b]		
Yes	323	40.5
No	517	59.5
Percent of patients uninsured or covered by Medicaid		
0-9	189	25.8
10-21	204	26.7
22-49	185	23.6
50-100	214	24.0
Meet representatives[c]		
Yes	443	52.6
No	391	47.5

(continued)

RESULTS

Characteristics of Respondents

Respondent characteristics are summarized in Table 1. Of the PCPs, 39.2% were female, 84.8% were white or Asian, 23.5% were general pediatricians, 32.8% practiced family medicine, and 43.7% practiced internal medicine. The majority of PCPs (60.9%) had 10 to 30 years of clinical experience and 22.6% had over 30 years. Only 24% of PCPs reported practicing in solo/2-person practice groupings. Less than 25% reported that more than half of their patients were either uninsured or Medicaid-insured, and 52.6% reported that they sometimes/often met with representatives

■ Table 1. Primary Care Physicians' Characteristics *(continued)*

Geographical Indicator for Healthcare Spending	Mean	SD
Hospital Service Area Medicare reimbursements, in deciles ($)[d]		
4797-7600	7070.3	515.1
7620-8134	7891.9	153.1
8139-8559	8383.9	135.7
8568-8994	8798.0	124.9
9005-9295	9126.9	76.2
9314-9684	9525.1	107.2
9696-9964	9841.9	72.1
9967-10,472	10,217.5	158.8
10,482-11,216	10,904.3	219.7
11,237-20,599	12,391.4	1636.4

[a]Physicians were asked to best characterize the organization of their medical practice (eg, solo or 2-person, single specialty group, multispecialty group, staff/group model health maintenance organization, hospital or medical school practice) and mark all that applied. If they selected solo or 2-person practice, response to "Practice Type Solo/2-Person" was coded as "Yes" or otherwise was "No."
[b]Easy access to specialists was coded as "Yes" if the physician indicated that they practiced in a hospital, multi-specialty hospital, or medical school; "No" otherwise.
[c]Physicians were asked, "How often do you meet with representatives from drug or device companies to stay up-to-date with the latest developments in their fields?" The "Never" or "Rarely" responses to this question were coded as "No" for the variable "Meet Representatives from Drug/Device Companies," and "Sometimes" and "Often" responses were coded as "Yes."
[d]Hospital Service Area (HSA) reimbursements are categorized based on the 2009 claims-based, price-, age-, sex-, and race-adjusted total HSA Medicare reimbursements (part A and B) per enrollee data, which were obtained from the Dartmouth Atlas of Health Care.[22]

from drug/device companies. The per-enrollee age-, sex-, and race-adjusted HSA-level Medicare reimbursements for respondents' area of practice ranged from $4797 to $20,599. Our results were consistent among different categorizations for reimbursements. For brevity, we present results with reimbursements categorized into deciles.

Univariate Analyses

The **Figure** shows more than half (51.9%) of PCPs reported they sometimes or often gave a patient a referral to a specialist because the patient wanted it, even when they believed it was not indicated. Only 10.6% reported they never gave such a referral in the last year. At the same time, more than one-third of PCPs (38.7%) sometimes or often prescribed a brand-name drug because the patient asked for it although an equivalent generic was available. The Pearson's correlation coefficient for these 2 unnecessary practice questions was 0.34 (P <.001), indicating these measures are significantly, positively related to each other.

Bivariate Analyses

Table 2 displays the bivariate associations between our independent variables and the 2 types of unnecessary medical practices. Responses varied significantly across specialty with 43.3% of pediatricians having sometimes/often referred to a specialist compared with 56.2% of family prac-

tice and 53.3% of internal medicine physicians (P = .02). Responses varied according to the composition of the PCP's practice panel: PCPs who had more uninsured/Medicaid-insured patients were significantly less likely to provide unnecessary referrals compared with those with fewer uninsured/Medicaid-insured patients (P = .02). Slightly more than half (58.9%) of PCPs who met with representatives from drug/device companies sometimes or often referred to a specialist compared with 44.3% of those who did not (P <.001).
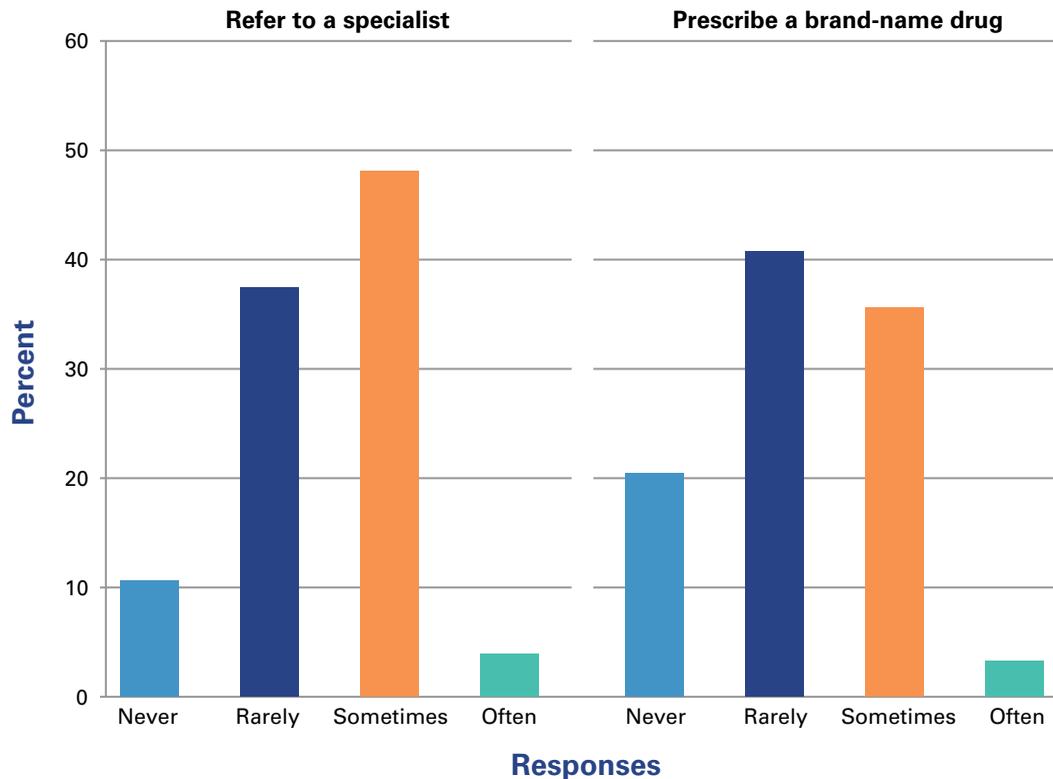
We found that 18% of pediatricians (vs 38.7% of family practitioners and 49.8% of general internists; P <.001) reported prescribing brand-name drugs in response to a request. Physicians with higher concentrations of uninsured/Medicaid-insured patients were similarly less likely to report prescribing brand-name drugs (P <.001). Nearly half (46.9%) of physicians with over 30 years of clinical experience versus 38.5% of those with 10 to 30 years and 27.4% of those with less than 10 years, reported prescribing brand-name drugs sometimes/often due to patient requests (P = .003). PCPs who practiced in solo/2-person organizations reported acquiescing to brand-name drug requests more often than those in larger practices (52% vs 34.3%; P <.001). Physicians who met with representatives from drug/device companies were more likely to sometimes/often prescribe brand-name drugs in response to patient requests (46.7% vs 29.6%; P <.001).

Multivariate Regression Results

Table 3 presents results of multivariate logistic regressions that predict unnecessary brand-name prescriptions and referrals by physician characteristics. Although not statistically significant at P <.05, both family practice (odds ratio [OR], 1.41; 95% CI, 0.97-2.06; P = .07) and internal medicine physicians (OR, 1.40; 95% CI, 0.95-2.06; P = .09) were more likely to sometimes/often make unwarranted specialist referrals compared with pediatricians. Physicians who met with drug/device company representatives in the preceding year were almost twice as likely to sometimes/often honor a patient request for a referral to a specialist (OR, 1.90; 95% CI, 1.36-2.64; P <.001) compared

■ **Figure.** Distribution of Primary Care Physicians' Reponses to Patient Requests to Refer to Specialists and Prescribe Brand-Name Drugs

with those reporting no industry interactions. No other variables were significantly associated with the likelihood to acquiesce to patient request for specialist referral.

For prescribing brand-name drugs, compared with pediatricians, internal medicine (OR, 4.51; 95% CI, 2.87-7.06; *P* <.001) and family medicine (OR, 2.77; 95% CI, 1.77-4.34; *P* <.001) physicians were more likely to indicate they sometimes/often acquiesced to patient requests for brand-name drugs when generic equivalents were available. Physicians with over 30 years of clinical experience (vs <10 years of experience; OR, 1.82; 95% CI, 1.00-3.32; *P* = .05), physicians who practiced in solo/2-person organizations (vs those who did not; OR, 1.68; 95% CI, 1.11-2.55; *P* = .01), and physicians who met with representatives from drug/device companies (vs those who did not; OR, 1.85; 95% CI, 1.28-2.67; *P* = .001) were more likely to engage in this behavior. PCPs with higher concentrations of uninsured/Medicaid-insured patients were less likely to sometimes/often acquiesce to requests for brand-name drugs (*P* value test for this trend = .001). PCPs with more than 50% uninsured/Medicaid-insured patients (OR, 0.51; 95% CI, 0.31-0.85; *P* = .01) were significantly less likely to sometimes/often prescribe a requested brand-name drug compared with those who had

fewer than 10% uninsured and Medicaid-covered patients. No other variables significantly affected brand-name drug prescriptions in compliance with patient requests.

DISCUSSION

In this national survey, we found that PCPs reported commonly acquiescing to patient requests for unnecessary medical services. Over half of PCPs sometimes/often provided specialty referrals due to patient requests and more than one-third reported prescribing brand-name drugs in response to patient requests. These frequencies likely underestimate the actual frequency of such practices due to social desirability bias. Nonetheless, ours is one of the first studies to provide estimates of the prevalence of service provision in response to patient requests for care that has been deemed unnecessary.

Prescribing behavior differed significantly by primary care specialty. Compared with internal and family medicine physicians, pediatricians were less likely to prescribe brand-name drugs upon patient request—an outcome potentially attributable to the patient populations cared for by these specialties and/or to the relatively standardized drugs/regi-

■ **Table 2.** Bivariate χ²Tests of Associations Between 2 Unnecessary Medical Practices and Physicians' Characteristics[a]

Characteristics	"In the last year, how often have you given a patient a referral to a specialist because the patient wanted it when you believed it was not indicated?"[a] (N = 836)			"In the last year, how often have you prescribed a brand-name drug when an equivalent generic was available because the patient asked for the brand-name drug specifically?"[a] (N = 835)		
	% "Sometimes" or "Often"			% "Sometimes" or "Often"		
	N	Weighted %	P[b]	N	Weighted %	P[b]
Sex						
Female	171	50.8	.58	102	33.4	.02
Male	252	52.8		185	42.0	
Race						
White/Asian	363	53.1	.16	238	38.0	.35
Others	57	45.9		48	42.7	
Specialty						
Pediatrics	133	43.3	.02	55	18.0	<.001
Family practice	154	56.2		106	38.7	
Internal medicine	136	53.3		127	49.8	
Years of clinical experience						
<10	65	48.3	.66	35	27.4	.003
10-30	258	52.6		172	38.5	
>30	98	53.2		78	46.9	
Solo/2-person practice						
Yes	105	54.5	.41	90	52.0	<.001
No	316	51.0		196	34.3	
Easy access to specialists						
Yes	166	54.1	.32	101	35.7	.18
No	257	50.4		187	40.7	
Percent of patients uninsured or Medicaid-insured						
0-9	91	50.3	.02	81	47.8	<.001
10-21	122	59.7		87	46.4	
22-49	98	54.2		61	36.5	
50-100	92	44.0		47	25.0	
Meet representatives						
Yes	248	58.9	<.001	180	46.7	<.001
No	173	44.3		106	29.6	
Hospital Service Area Medicare reimbursements, in deciles ($)[c]						
4797-7600	40	50.4	.95	24	29.9	.28
7620-8134	40	50.4		24	32.2	
8139-8559	42	56.2		30	43.8	
8568-8994	43	55.2		29	41.0	
9005-9295	46	56.8		31	41.5	
9314-9684	42	50.9		24	33.9	
9696-9964	36	45.9		34	47.7	
9967-10,472	43	52.1		27	35.8	
10,482-11,216	39	48.3		25	33.3	
11,237-20,599	43	54.5		32	46.3	

[a]The "Never" or "Rarely" responses to this questions were coded as "0" and the "Sometimes" or "Often" responses were coded as "1."
[b]The P value is based on Pearson's χ² test and indicates whether the row-proportions for each characteristic are statistically significant. Bolding indicates significance.
[c]Hospital Service Area (HSA) reimbursements are categorized based on the 2009 claims-based, price-, age-, sex-, and race-adjusted total HSA Medicare reimbursements (part A and B) per enrollee data, which were obtained from the Dartmouth Atlas of Health Care.[22]

■ **Table 3.** Multivariate Logistic Regression Models of Associations Between 2 Unnecessary Medical Practices and Physicians' Characteristics[a]

	% "Sometimes" or "Often"					
	"In the last year, how often have you given a patient a referral to a specialist because the patient wanted it when you believed it was not indicated?" (N = 722)[b]			"In the last year, how often have you prescribed a brand-name drug when an equivalent generic was available because the patient asked for the brand-name drug specifically?" (N = 721)[b]		
Characteristics	Odds Ratio	95% CI	P[c]	Odds Ratio	95% CI	P[c]
Sex						
Female	ref			ref		
Male	0.91	(0.65-1.28)	.59	1.03	(0.71-1.50)	.88
Race						
White/Asian	ref			ref		
Others	0.76	(0.49-1.20)	.24	1.20	(0.74-1.93)	.47
Specialty						
Pediatrics	ref			ref		
Family practice	1.41	(0.97-2.06)	.07	2.77	(1.77-4.34)	<.001
Internal medicine	1.40	(0.95-2.06)	.09	4.51	(2.87-7.06)	<.001
Years of clinical experience						
<10	ref			ref		
10-30	0.95	(0.61-1.47)	.98	1.35	(0.80-2.27)	.26
>30	0.94	(0.55-1.60)	.93	1.82	(1.00-3.32)	.05
Solo/2-person practice						
No	ref			ref		
Yes	1.12	(0.75-1.67)	.64	1.68	(1.11-2.55)	.01
Easy access to specialists						
No	ref			ref		
Yes	1.26	(0.88-1.81)	.20	1.01	(0.68-1.50)	.95

(continued)

men used in pediatrics. The typical pediatric patient likely needs fewer prescriptions overall than an adult patient, which may also explain this divergence. We found similar (although not statistically significant) results for referrals to specialty providers. The volume of specialty visits in the pediatric population is much smaller than that of adults.[23] As a consequence, requesting and prescribing specialty care by patients and clinicians, respectively, will be less common in pediatrics. Future research should explore factors about the training and/or practice of pediatricians that make them less responsive to unnecessary medical requests by patients.

Meeting with representatives from drug/device companies to stay up-to-date with developments in the field was significantly associated with acquiescing to patient requests for unnecessary care.[24,25] Although there is a strong association between these behaviors, the mechanisms by which drug representatives influence unnecessary referrals is not clear. Physicians who meet with drug representatives may be less concerned with managing healthcare costs, and thus more likely to give into patient requests for unnecessary medical services. Physicians who meet with industry representatives to "keep current" may be, in relative terms, less confident in their knowledgebase, and thus more inclined than others to seek specialty input whether clearly indicated or not. Also, drug representatives may emphasize the value of specialist referrals to PCPs as a mechanism to market their drugs via specialists. Future research should explore other unobserved factors that affect the association between physician–representative interaction and unnecessary care, and whether this relationship is causal in nature.

We found older physicians more likely to report engaging in unnecessary medical practices by prescribing brand-name drugs upon patient request.[26] Physicians working in solo/2-person organizations were more likely to prescribe brand-name drugs compared with those in larger practices. Experienced physicians and those working in small practices who have established rapport with patients and are devoted to customer satisfaction may seek to avoid

■ **Table 3.** Multivariate Logistic Regression Models of Associations Between 2 Unnecessary Medical Practices and Physicians' Characteristics[a] *(continued)*

| | % "Sometimes" or "Often" | | | | | |
| | "In the last year, how often have you given a patient a referral to a specialist because the patient wanted it when you believed it was not indicated?" (N = 722)[b] | | | "In the last year, how often have you prescribed a brand-name drug when an equivalent generic was available because the patient asked for the brand-name drug specifically?" (N = 721)[b] | | |
Characteristics	**Odds Ratio**	**95% CI**	**P**[c]	**Odds Ratio**	**95% CI**	**P**[c]
Percent of patients uninsured or Medicaid-insured						
0-9	ref			ref		
10-21	1.42	(0.91-2.22)	.11	0.94	(0.59-1.49)	.80
22-49	1.06	(0.68-1.67)	.79	0.63	(0.39-1.04)	.07
50-100	0.87	(0.55-1.37)	.54	0.51	(0.31-0.85)	.01
Meet representatives						
No	ref			ref		
Yes	1.90	(1.36-2.64)	<.001	1.85	(1.28-2.67)	.001
Hospital Service Area Medicare reimbursements, in deciles ($)[d]						
4797-7600	ref			ref		
7620-8134	1.00	(0.49-2.04)	.99	1.15	(0.51-2.60)	.73
8139-8559	1.09	(0.53-2.24)	.81	1.70	(0.76-3.77)	.19
8568-8994	1.08	(0.53-2.19)	.83	1.75	(0.78-3.96)	.18
9005-9295	1.15	(0.57-2.35)	.69	1.80	(0.80-4.05)	.15
9314-9684	0.91	(0.45-1.86)	.81	1.17	(0.52-2.63)	.70
9696-9964	0.74	(0.36-1.55)	.43	2.35	(1.06-5.24)	.04
9967-10,472	0.91	(0.44-1.87)	.80	1.25	(0.55-2.86)	.59
10,482-11,216	0.83	(0.40-1.72)	.62	1.07	(0.46-2.48)	.88
11,237-20,599	1.05	(0.50-2.19)	.90	2.08	(0.93-4.67)	.08

ref indicates reference category.
[a]Logistic regression was used to fit the models: $Prob(y = "yes") = F(X'B)$, where y is the dependent variable, X is the matrix of independent variable including the intercept, B is the vector of coefficients and F (.) is cumulative logistic distribution. Data were adjusted using survey sampling weights.
[b]Sample size reduced due to missing observations.
[c]The P value reflects the significance of independent variables based on the t test. Bolding indicates significance.
[d]Hospital Service Area (HSA) reimbursements are categorized based on the 2009 claims-based, price-, age-, sex-, and race-adjusted total HSA Medicare Reimbursements (part A and B) per enrollee data, which were obtained from the Dartmouth Atlas of Health Care.[22]

conflict with patients, thus potentially making them more receptive to patient requests. It may also be that older physicians and those who work in small practices do not view their role in avoiding unnecessary medical care in the same ways as other physicians, which should be an area for future research. Since physicians in these situations may feel that their incomes are tightly linked to productivity, these physicians may feel strongly limited by time constraints in the exam room and large patient panel size, factors that could deter lengthy educational efforts.

Safety net PCPs who provide services to a greater percentage of financially needy patients (ie, uninsured or Medicaid patients) prescribe brand-name drugs in response to patient requests significantly less often. Uninsured and Medicaid patients are exposed to different healthcare incentives (eg, out-of-pocket costs) and may

behave distinctly. Existing evidence shows that poorer patients are less likely to prefer brand-name drugs compared with wealthier patients.[27] Uninsured and Medicaid patients are also more likely to be prescribed generic drugs relative to privately insured patients, which may explain our finding.[28] Also, we found no statistical differences in specialty referrals across safety net provider categories.

We found no evidence to suggest that physicians in higher spending areas are more likely to acquiesce to patient requests for unnecessary care. Our spending variable was based on Medicare, accounting for less than a quarter of total healthcare spending,[29] and may not be a sensitive indicator of individual physician decisions. Spending statistics that combine data from multiple sources such as Medicare, Medicaid, and private payers may better inform efforts to correlate spending with acquiescence to patient requests.

From a policy perspective, we recommend that efforts to reduce unnecessary practices generated in response to patient requests should include educating and training PCPs about the direct (cost-saving) and indirect (time-saving and minimizing physical/mental harm to patients) benefits that can result from avoidance of overuse/underuse of medical services.[30] However, this responsibility cannot be fixed solely by physician education—it requires systems-level improvements to meet patient needs.

PCPs may lack the time needed to effectively manage patient requests. Therefore, providing physicians with real-time support to effectively manage unnecessary requests can cause desirable outcomes. The Choosing Wisely initiative has developed lists of practices and procedures that should be questioned by physicians, and patient education materials disseminated through *Consumer Reports*, which may help patients understand physicians' reluctance to provide specific treatments (eg, electroencephalograms for headaches).[31] Certain PCPs (ie, family and internal medicine physicians) may require additional support to change their response to patient requests for unnecessary medical services. More experienced physicians in solo practices could benefit from guidance on how to appropriately incorporate patient preferences into patient-centered care, without engaging in unnecessary care.

Our findings suggest gatekeeping of referrals by PCPs may not be an effective strategy for controlling unnecessary practices within the current payment structure and systems organization. Existing healthcare policies, such as encouraging the formation of ACOs under the Affordable Care Act (ACA), may help in providing well-coordinated, high-value, patient-centered primary care, but the tension between patient satisfaction and cost-saving incentives may make the impact on unnecessary care uncertain. Similarly, the Physician Quality Reporting System incentivizes physicians to report specific patient quality measures, receive feedback on their comparative performance, and improve the quality of care.[32] Healthcare transparency (ie, public reporting of patient satisfaction and quality measures) may also be sufficient to drive quality-related behavior changes.[33] Future research should investigate empirical effectiveness of these policies and alternatives (eg, compensation models for holding physicians accountable for unnecessary care) to limit wastage of medical resources.

Health policy makers also need to explore and implement patient-level incentives to effectively manage requests for unnecessary care. Consumer-directed competition can increase price sensitivity, create a system of value-seeking patients, and contain rising unnecessary spending. For example, competition-oriented Medicare Part D plans have led to lower negotiated prices for Medicare recipients.[34] Consumer-directed health plans with high deductibles may also help promote cost awareness, although these plans may adversely affect the use of necessary healthcare services.[35] Similarly, tiered provider networks may incentivize consumers to seek out physicians who provide high-value care and also encourage physicians to provide better quality and cost-effective care.[36]

Limitations

Certain aspects of physician practice may have changed since 2009. Although we had high response rates and we corrected for bias using sampling weights, there may be response bias. The NSMP had only 2 specific items related to unnecessary medical practices, and patient requests may affect other forms of unnecessary care, such as diagnostic testing. Due to the nature of our survey, we could not estimate the dollar amount of unnecessary medical care that may have accrued due to the 2 practices considered in our analyses. Our results are based on physicians' self-reports that may not be completely accurate. We did not have information on patient factors (eg, demographics, attitudes, medical needs and relationships with physicians) that may influence unnecessary care. Since a majority of PCPs indulged in unnecessary referrals, our question on unnecessary care may be limited in its ability to explain differences in this behavior across PCPs.

We may be limited in explaining variation in unnecessary referrals. Items included in our analyses may not fully capture other important factors for specialty referrals, like the market structure (eg, competitive or not), availability/number of specialists in an area, physician's knowledge gap, defensive medicine practices, and patient preferences.[5,37] Furthermore, we had no information on PCPs' financial incentives in their practices which can influence referral patterns and use of brand-name products.[38]

CONCLUSIONS

Overall, we found that PCPs commonly acquiesce to patient requests for unnecessary referrals to specialists and for brand-name drug prescriptions, and several physician characteristics predicted this behavior. Ideally, the enormous natural experiment underway in the United States involving combinations of physician- and patient-level incentives will illuminate the solutions to the unnecessary medical practices our study reveals. Future studies should examine how differences in patient-physician relationships (eg, paternal vs autonomous, longitudinal, or acute), supply sensitivity (eg, availability of specialists), consumer incentives, and the new care models (eg, ACOs via ACA and other shared-decision models) impact these behaviors.

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