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Comparison of Low-Value Care in Medicaid vs Commercially Insured Populations

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Abstract

IMPORTANCE—Reducing unnecessary tests and treatments is a potentially promising approach for improving the value of health care. However, relatively little is known about whether insurance type or local practice patterns are associated with delivery of low-value care.

OBJECTIVES—To compare low-value care in the Medicaid and commercially insured populations, test whether provision of low-value care is associated with insurance type, and assess whether local practice patterns are associated with the provision of low-value care.

DESIGN, SETTING, AND PARTICIPANTS—This cross-sectional study of claims data from the Oregon Division of Medical Assistance Programs and the Oregon All-Payer All-Claims database included Medicaid and commercially insured adults aged 18 to 64 years. The study period was January 1, 2013, through December 31, 2013.

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MAIN OUTCOMES AND MEASURES—Low-value care was assessed using 16 claims-based measures. Logistic regression was used to test the association between Medicaid vs commercial insurance coverage and low-value care and the association between Medicaid and commercial low-value care rates within primary care service areas (PCSAs).

RESULTS—This study included 286 769 Medicaid and 1 376 308 commercial enrollees in 2013. Medicaid enrollees were younger (167 847 [58.5%] of Medicaid enrollees were aged 18–34 years vs 505 628 [36.7%] of those with commercial insurance) but generally had worse health status compared with those with commercial insurance. Medicaid enrollees were also more likely to be female (180 363 [62.9%] vs 702 165 [51.0%]) and live in a rural area (120 232 [41.9%] vs 389 964 [28.3%]). A total of 10 304 of 69 338 qualifying Medicaid patients (14.9%; 95% CI, 14.6%–15.1%) received at least 1 low-value service during 2013; the corresponding rate for commercially insured patients was 35 739 of 314 023 (11.4%; 95% CI, 11.3%–11.5%). No consistent association was found between insurance type and low-value care. Compared with commercial patients, Medicaid patients were more likely to receive low-value care for 10 measures and less likely to receive low-value care for 5 others. For 7 of 11 low-value care measures, Medicaid patients were significantly more likely to receive low-value care if they resided in a PCSA with a higher rate of low-value care for commercial patients.

CONCLUSIONS AND RELEVANCE—Oregon Medicaid and commercially insured patients received moderate amounts of low-value care in 2013. No consistent association was found between insurance type and low-value care. However, Medicaid and commercial rates of low-value care were associated with one another within PCSAs. Low-value care may be more closely related to local practice patterns than to reimbursement generosity or insurance benefit structures.

Low-value care is an increasingly salient issue for the medical community, policymakers, and patients. These services provide little clinical benefit to patients and may even cause harm. Reducing low-value services could benefit patients and constrain health care expenditures; some research suggests that more than 20% of US health care spending is inefficient or wasteful, with low-value care accounting for a substantial portion of this unnecessary excess cost.[1]

The American Board of Internal Medicine Foundation has led a physician response to this issue through its Choosing Wisely initiative.[2] This initiative aims to benefit patients and improve value in health care by focusing attention on lists of tests and procedures that may not be needed. These lists are based on evidence-based practices and guidelines and are intended to support patient-physician conversations about low-value care.

An emerging body of research has begun to quantify the prevalence and implications of low-value services. Most of this work has focused on the Medicare population,[3–5] although research has begun to assess the pervasiveness of these services in other payer groups.[6,7] The present study uses comprehensive data from Medicaid and commercially insured populations in Oregon to advance the literature on low-value care on several fronts.

First, we explore the pervasiveness of low-value care in a state Medicaid population. Medicaid is now the largest public health insurance program in the United States, covering approximately 66 million people.[8] Expenditures for the program accounted for almost one-

quarter of total state government budgets before the 2014 Medicaid expansion[9] and are anticipated to increase. Policies targeting low-value services in Medicaid offer the potential to improve patient care while supporting the program's long-term financial viability. To our knowledge, the present study is the first to provide broad estimates of low-value care in this important population.

Second, we compare the prevalence of low-value care in a Medicaid population to commercially insured enrollees, evaluating the association between insurance type and low-value care within a single state. These analyses contribute information regarding the role of reimbursement generosity in the provision of low-value care.

Third, we assess the association between Medicaid and commercial low-value care delivery within local practice areas, providing information about the extent to which local practice patterns may explain low-value care delivery. Together, these analyses advance knowledge on the pervasiveness of low-value care and provide policy-relevant information about insurance type and local practice patterns as potential drivers of these services.

Methods

Study Population and Data

We used 2012 and 2013 Medicaid claims from Oregon's Division of Medical Assistance Programs and commercial claims from the Oregon All-Payer All-Claims (APAC) database. Analyses were conducted on data from January 1, 2013, through December 31, 2013. Data from January 1, 2012, through Dec 31, 2012, were also used to assess relevant medical history information. The Division of Medical Assistance Programs data include all managed care and fee-for-service claims. Approximately 90% of Oregon Medicaid beneficiaries in 2013 were enrolled in coordinated care organizations, similar to managed care organizations.[10,11] The APAC database contains claims submitted by multiple commercial carriers, excluding those with fewer than 5000 enrollees, and the Federal Employee Health Benefits Program. Together, APAC data cover an estimated 87% of commercially insured Oregonians; most have fee-for-service or preferred provider organization– type plans, and approximately 30% have a health maintenance organization–type plan. We excluded enrollees who were pregnant, younger than 18 years or older than 64 years, or dually eligible for Medicare and Medicaid. All claims data were deidentified.

Key Points

Question

What patterns of low-value care are present across Medicaid and commercially insured populations?

Findings

In this cross-sectional study of Medicaid and commercial insurance claims in Oregon, no consistent association was found between insurance type and low-value care, with Medicaid patients more likely to receive some low-value services but less likely to receive others. For 7 of 11 low-value care measures, Medicaid patients were significantly

more likely to receive low-value care if they resided in an area with a higher rate of low-value care for commercial patients.

Meaning

Low-value care may be more closely related to local practice patterns than to reimbursement generosity or insurance benefit structures.

Variables

Low-Value Care Measures—The outcome of interest for this study was receipt of low-value care. Several groups have developed tools to detect low-value services in claims data.[3–5,7,8] For the present study, we used 13 measures from work by Schwartz and colleagues,[3,5] selected for relevance to Medicaid and commercial populations. The selected measures represent evidence-based recommendations from the American Board of Internal Medicine Foundation's Choosing Wisely initiative and the United Kingdom's National Institute for Health and Care Excellence. We also used 3 Quality Net measures from the Center for Medicaid & Medicare Services. Choosing Wisely, the National Institute for Health and Care Excellence, and Quality Net all aim to provide resources that promote effective, high-value medical care; additional information is in eTable 1 in the Supplement. When necessary, we made minor adaptations to apply measures to the Medicaid population (eg, allowing for short gaps in enrollment). We also chose measure definitions with relatively higher specificity and lower sensitivity when available to reduce the potential for misclassifying appropriate care as low value.[3]

For each of the 16 low-value care measures, we first identified visits at which patients were eligible to receive low-value services based on qualifying diagnoses and exclusions. The resulting set of qualifying visits represented visits at which the patient was potentially at risk of receiving the service in question. From that denominator, we then identified visits that included the low-value service of interest. For example, we constructed the electroencephalogram for headache measure by first identifying unique 2013 visits with a diagnosis of headache but no current diagnosis or 1-year medical history of epilepsy. From that denominator of qualifying visits, we then constructed the numerator by identifying which visits included an electroencephalogram service. Details of each measure are presented in eTable 1 in the Supplement.

Covariates—Patient characteristics included age (18–34, 35–49, 50–64 years), sex, rural vs urban residence, type of insurance coverage (Medicaid or commercial), and a modified version of the Charlson comorbidity index.[12] Our modified comorbidity index excluded human immunodeficiency virus and AIDS because these claims are excluded from APAC data. Each beneficiary was also assigned a primary care service area (PCSA) based on the zip code of residence. National PCSAs were developed by the Dartmouth Atlas of Health Care as groups of zip codes that represent natural markets of primary care for Medicare patients.[13,14] We used 130 PCSAs that were developed using similar criteria to Dartmouth PCSAs, as well as additional contextual and topographical information.[15]

Statistical Analysis

We assessed total visit-level instances of each low-value service in 2013. We then calculated the corresponding proportion of affected patients, defined as the number of beneficiaries with at least 1 visit for the service of interest in 2013, divided by the number with at least 1 qualifying visit for the service during 2013.

To examine the influence of insurance type, we assessed the association between receipt of low-value care and Medicaid vs commercial insurance coverage using patient-level logistic regressions for each of the 16 measures. In each model, patients were restricted to those with qualifying visits for the measure in question. The outcome was a binary variable that indicated receipt of low-value care in 2013. The primary independent variable was an indicator of insurance type. Additional covariates included patient demographics, rural or urban residence, and the Charlson comorbidity index. Risk differences associated with insurance type were calculated from resulting models as the difference in marginal effects for the average qualifying patient. Sensitivity analyses included models that added the total number of qualifying visits for each beneficiary and patients' PCSA of residence to models. We also examined the influence of insurance on receiving any type of low-value care and whether the influence of insurance varied for subgroups of services: higher vs lower remuneration and more vs less likely to occur in the emergency department (ED) (eAppendix and eTable 2 in the Supplement).

To examine the influence of local practice patterns, we assessed the association between receipt of low-value care among Medicaid patients and the rate of low-value care among commercially insured patients residing in the same PCSA. A positive association may indicate that local practice patterns for low-value care persist across distinct populations of patients. For this analysis, we first selected measures with 150 or more total instances of low-value care observed in Medicaid during 2013. We then generated smoothed commercial low-value care rates for each PCSA. Smoothed estimators reduce error that may arise because of small sample sizes.[16] Next, we conducted patient- level logistic regressions for the Medicaid population, where the dependent variable was the receipt of low value care and the independent variables included patient demographics, rural or urban residence, the Charlson comorbidity index, and the smoothed rate of commercial low-value care in the patient's PCSA of residence. We estimated marginal effects to assess the change in predicted probability of receiving low-value care for an average Medicaid patient when commercial low-value care rates in their PCSA of residence increased by 1%. The SEs were clustered at the PCSA level. Additional details are provided in the eAppendix in the Supplement. Data management and analyses were conducted using R statistical software, version 3.1.2.[17]

Results

Our study included 286 769 Medicaid and 1 376 308 commercial enrollees in 2013. Medicaid enrollees were younger but generally had worse health status compared with those with commercial insurance (Table 1). Medicaid enrollees were also more likely to be female (180 363 [62.9%] vs 702 165 [51.0%]) and live in a rural area (120 232 [41.9%] vs 389 964 [28.3%]). In 2013, a total of 10 304 of 69 338 qualifying Medicaid patients (14.9%) (95% CI, 14.6%–15.1%) received at least 1 of 16 low-value services compared with 35 739 of 314

023 commercially insured patients (11.4%) (95% CI, 11.3%–11.5%) (Table 2). We observed substantial variability in the prevalence of different types of low-value care. For example, 4273 of 18 871 Medicaid patients (22.6%) (95% CI, 22.1%–23.2%) presenting with nonspecific low-back pain during 2013 received a non indicated image, and 4323 of 23 211 Medicaid patients (18.6%) (95% CI, 17.7%–18.7%) presenting with uncomplicated headache received low-value head imaging. However, only 343 of 11 992 Medicaid patients (2.9%) (95% CI, 2.6%–3.2%) presenting with acute rhinosinusitis underwent inappropriate sinus computed tomography.

Figure 1 displays risk differences associated with Medicaid vs commercial insurance coverage. No consistent association was found between insurance type and low-value care. Medicaid insurance was associated with an increased probability of receiving 10 types of low-value care, whereas commercial insurance was associated with an increased probability of receiving 5 types of low-value care, with no statistically significant difference for 1 measure (additional details are in eTable 3 in the Supplement). Adjustment for the total number of qualifying visits or the patient's PCSA of residence did not substantially change model estimates for the effect of insurance type on low-value care; although these factors may be related to low-value care, they did not confound the association between low-value care and insurance type in this study. Analyses that separated low-value services into higher vs lower remuneration suggested that price category did not modify the association between insurance type and low-value care (*P* for interaction = .64) (eTable 4 in the Supplement). In analyses that separated low-value services by ED category, we found that Medicaid patients were more likely than commercially insured patients to receive low-value care for measures likely to occur in the ED but not for other measures (*P* for interaction <.001) (eTable 5 in the Supplement).

Eleven low-value services had sufficient volume for inclusion in geographic analyses. Rates for these services varied across insurance types and PCSAs (eFigure and eTable 6 in the Supplement). In Figure 2, we display low-value care risk differences, which represent the change in predicted probability of receiving low-value care for the average Medicaid patient, when commercial low-value care rates in their PCSA of residence increase by 1%. For 7 measures, Medicaid patients were significantly more likely to receive low-value care if they resided in a PCSA with a higher rate of commercial low-value care. For example, the predicted probability of the average Medicaid patient receiving imaging for low-back pain increased by 0.8% (95% CI, 0.5%–1.2%) for each 1% increase in the commercial rate in their PCSA of residence (additional details in eTable 7 in the Supplement).

Discussion

In this statewide study of selected low-value services, moderate proportions of Medicaid and commercially insured patients received care that was likely to provide relatively little clinical benefit. Among qualifying Medicaid patients, 14.9% received a low-value service during 2013 compared with 11.4% of qualifying patients with commercial insurance. No consistent association was found between insurance type and low-value care. However, commercial and Medicaid low-value care rates were associated within PCSAs, suggesting local practice patterns may play a role in delivery of low-value care.

In general, rates of low-value care observed in this study are comparable to those described in other studies. For example, a national survey of ambulatory care practices found that 22.8% of visits by adults for acute low-back pain resulted in inappropriate imaging in 2009.[6] Another study[4] reported that 22.5% of Medicare beneficiaries with low-back pain received non indicated imaging between 2007 and 2011. These estimates fall within similar ranges to those found in our study (15.7% and 22.6% of qualifying commercial and Medicaid beneficiaries, respectively). In contrast, a national study[7] of Anthem- affiliated commercial health plans reported that 53.7% of members with low-back pain received non indicated imaging. This difference may be attributable to lower use rates in Oregon relative to the rest of the country.[18]

Our study did not find a consistent association between insurance type and low-value care. There are a variety of reasons why the rate of low-value services might be higher among 1 insurance group vs another. One hypothesis was that higher reimbursement may cause physicians to provide more low-value care to commercial patients, particularly for high-cost services. However, our data did not support this hypothesis, suggesting that remuneration may play a limited role in low-value care delivery. Rates of particular low-value services may also differ by insurance type if commercial and Medicaid insurers use different methods of oversight, utilization review, or preauthorization for different services. In addition, there may be more barriers to care for Medicaid patients, discouraging physicians from ordering certain unnecessary services, which add logistical complication to care plans. Finally, post hoc analyses revealed that Medicaid patients were more likely than commercial patients to receive low-value care for measures classified as more likely to occur in the ED but not for other measures. This finding may be because Medicaid patients are more likely than their commercially insured counterparts to seek care and therefore qualify for measures in the ED. For example, a commercially insured patient with an uncomplicated head achemay seek care with a primary care physician with whom he or she has the benefit of an established relationship and continuity of care. In contrast, a Medicaid patient may be more likely to seek care in the ED. This example reflects the fact that services were classified at the measure level only, so patients who qualified for services likely to occur in the ED are therefore a mix of patients who actually received services in the ED and those who received services in other settings.

We found an association between commercial and Medicaid low-value care rates within PCSAs. For most measures, Medicaid patients were more likely to receive low-value care if they resided in a PCSA with a higher rate of commercial low-value care. These findings align with previous work that has also suggested that small area variations span payer types.[19] A variety of local factors, such as physician practice norms, may underlie similar care patterns for patients with different insurance types. Studies presenting identical clinical vignettes to physicians in different geographic areas found that responses about treatment choices were associated with regional health care use,[20–22] underscoring the link between physician behavior and small area variations. In addition, studies[23–27] from the spillover literature support the idea that physicians may have a single-practice style that they apply to similar types of patients, regardless of insurance status.

One strength of this study is the use of data covering most Medicaid and commercially insured patients in a single state. These data allowed for comparisons across insurance types and for analyses of a broad set of low-value services within granular PCSAs. Examining these smaller service areas may allow detection of distinct practice patterns that could be lost if heterogeneous PCSAs were grouped into larger regions.

Our study also has limitations. Administrative claims data are not collected specifically for research purposes and may not capture all information needed to definitively determine whether a service is low value. To mitigate this concern, we used relatively less sensitive, more specific versions of claims based algorithms.[3] In addition, overall rates of low-value care reported here underestimate true rates because it is not possible to construct a comprehensive set of claims-based measures for all types of low-value care. Measures of low-value care may also be biased toward those that represent a relatively small portion of a typical physician's revenue.[28] Our data are cross-sectional, revealing associations but not causal effects. In particular, a variety of other factors may be associated with concordance in practice patterns across payers. For example, low imaging rates may reflect difficulty in accessing those services within PCSAs rather than differences in preferences or treatment styles of local physicians.

Conclusions

Low-value care is a concerning source of avoidable harm for patients and represents potentially inefficient use of finite medical resources. Although additional research is needed, our results suggest local practice styles may influence the provision of low-value care. Policies that incorporate this information may have more broad success in reducing low-value care than those that limit their approach to reducing payment rates or increasing cost sharing for specific services.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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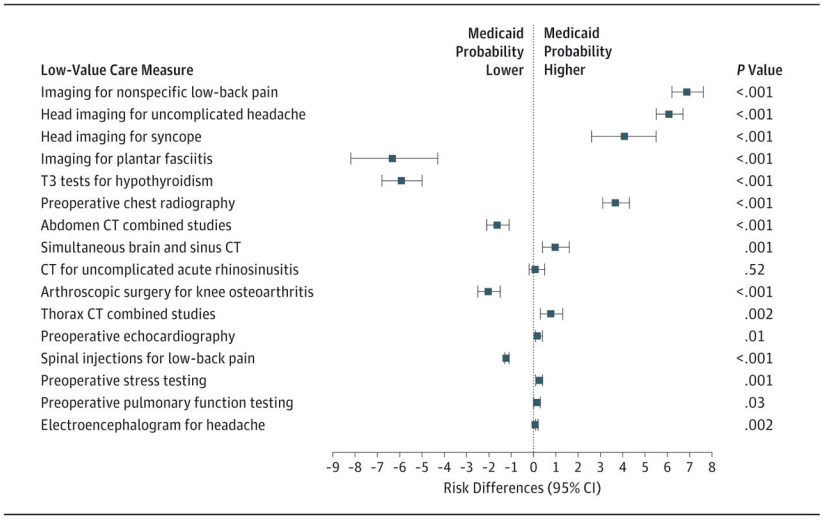

Figure 1. Low-Value Care Risk Differences Associated With Medicaid vs Commercial Insurance Coverage

Risk differences were calculated as the predicted probability of receiving low-value care with Medicaid insurance minus the predicted probability of receiving low-value care with commercial insurance for the average qualifying patient. Models were adjusted for patient age, sex, rural or urban residence, and Charlson comorbidity index. Dots indicate calculated risk differences; error bars, 95% CIs. The *P* values test for a significant difference between insurance types. CT indicates computed tomography.

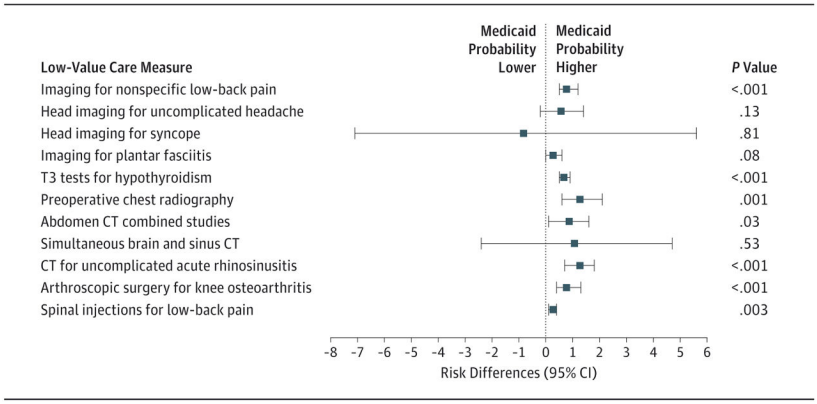

Figure 2. Low-Value Care Risk Differences Associated With the Average Medicaid Patient Moving to a Primary Care Service Area (PCSA) With a 1%Higher Commercial Low-Value Care Rate

Risk differences were calculated from logistic regression models, as the change in predicted probability of receiving low-value care for the average qualifying Medicaid patient, when the commercial rate of low-value care in their PCSA of residence increases by 1%. Models were adjusted for patient age, sex, rural or urban residence, and Charlson comorbidity index. Dots indicate calculated risk differences; error bars, 95%CIs. The *P* values test for a significant difference between residing in one PCSA compared with another PCSA with 1% higher commercial low-value care rates.

Table 1

Characteristics of the Study Population in 2013 by Insurance Type[a]

Characteristic	Insurance Type[b]		*P* Value[c]
	Commercial (n = 1 376 308)	Medicaid (n = 286 769)	
Age, y			
18–34	505 628 (36.7)	167 847 (58.5)	
35–49	433 689 (31.5)	70 173 (24.5)	<.001
50–64	436 991 (31.8)	48 749 (17.0)	
Female sex	702 165 (51.0)	180 363 (62.9)	<.001
Rural residence	389 964 (28.3)	120 232 (41.9)	<.001
Charlson comorbidity index, mean (SD)	0.29 (0.89)	0.56 (1.32)	<.001
Charlson comorbidities[d]			
Myocardial infarction	5597 (0.4)	2482 (0.9)	<.001
Congestive heart failure	7539 (0.6)	4760 (1.7)	<.001
Peripheral vascular disease	8032 (0.6)	3756 (1.1)	<.001
Cerebrovascular disease	12 586 (0.9)	5634 (2.0)	<.001
Dementia	210 (0)	228 (0.1)	<.001
Chronic pulmonary disease	11 467 (0.8)	3301 (1.1)	<.001
Rheumatic disease	3779 (0.3)	2006 (0.7)	<.001
Peptic ulcer disease	24 317 (1.8)	14 242 (5.0)	<.001
Mild liver disease	69 201 (5.0)	22 394 (7.8)	<.001
Diabetes mellitus			
Without chronic complications	104 807 (7.6)	47 400 (16.5)	<.001
With chronic complications	15 857 (1.2)	6515 (2.3)	<.001
Hemiplegia or paraplegia	2586 (0.2)	2955 (1.0)	<.001
Renal disease	11 455 (0.8)	4247 (1.5)	<.001
Any malignant tumor[e]	31 820 (2.3)	6621 (2.3)	.92
Moderate or severe liver disease	1251 (0.1)	1553 (0.5)	<.001
Metastatic solid tumor	4989 (0.4)	1652 (0.6)	<.001

[a] The study sample includes nonpregnant, nondual eligible adults aged 18 to 64 years.

[b] Data are presented as number (percentage) of patients unless otherwise indicated.

[c] *P* values for differences between insurance types were calculated using χ^2 tests for categorical variables and *t* tests for numeric variables.

[d] Health conditions are Charlson comorbidity index conditions, created using the enhanced *International Classification of Diseases, Ninth Revision (ICD-9)* algorithm for administrative data. Variables indicate whether conditions were present at any time during 2012 or 2013.

[e] Including lymphoma and leukemia and excluding malignant neoplasm of skin.

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Table 2

Low-Value Care Among Adults With Medicaid or Commercial Insurance During 2013[a]

		Commercial			Medicaid		
		No. of Patients			No. of Patients		
Low-Value Care Service	Source	Affected	Qualifying	Qualifying Patients Affected (95% CI), %	Affected	Qualifying	Qualifying Patients Affected (95% CI), %
Any	All	35 739	314 023	11.4 (11.3–11.5)	10 304	69 338	14.9 (14.6–15.1)
Imaging for nonspecific low-back pain	CW	13 005	82 659	15.7 (15.5–16.0)	4273	18 871	22.6 (22.1–23.2)
Head imaging for uncomplicated headache	CW	7285	65 931	11.0 (10.8–11.3)	4323	23 211	18.6 (17.7–18.7)
Head imaging for syncope	CW	673	7466	9.0 (8.4–9.7)	449	3174	14.1 (12.9–15.4)
Imaging for plantar fasciitis	CW	2002	10 986	18.2 (17.5–19.0)	180	1450	12.4 (10.8–14.1)
T3 tests for hypothyroidism	CW	5098	31 228	16.3 (15.9–16.7)	619	5891	10.5 (9.7–11.3)
Preoperative chest radiography	CW	1694	39 169	4.3 (4.1–4.5)	755	7848	9.6 (9.0–10.3)
Abdomen CT combined studies	CMS	2097	28 075	7.5 (7.2–7.8)	664	13 416	4.9 (4.6–5.3)
Simultaneous brain and sinus CT	CMS	356	9742	3.7 (3.3–4.0)	357	7761	4.6 (4.1–5.1)
CT for uncomplicated acute rhinosinusitis	CW	1799	59 961	3.0 (2.9–3.1)	343	11 992	2.9 (2.6–3.2)
Arthroscopic surgery for knee osteoarthritis	NICE	1127	23 190	4.9 (4.6–5.1)	164	6143	2.7 (2.3–3.1)
Thorax CT combined studies	CMS	113	9287	1.2 (1.0–1.4)	76	3822	2.0 (1.6–2.4)
Preoperative echocardiography	CW	227	39 169	0.6 (0.5–0.7)	88	7848	1.1 (0.9–1.4)
Spinal injections for low-back pain	Literature	2720	130 587	2.1 (2.0–2.2)	290	37 299	0.8 (0.7.0.9)
Preoperative stress testing	CW	115	39 169	0.3 (0.24–0.35)	46	7848	0.6 (0.4–0.8)
Preoperative pulmonary function testing	CW	96	38 380	0.25 (0.20–0.30)	42	7693	0.5 (0.4–0.7)
Electroencephalogram for headache	CW	72	59 936	0.1 (0.09–0.15)	60	20 091	0.3 (0.2–0.4)

Abbreviations: CMS, Center for Medicare & Medicaid Services Quality Net; CT, computed tomography; CW, American Board of Internal Medicine Choosing Wisely Initiative; NICE, United Kingdom National Institute for Health and Care Excellence.

[a]Columns report patient-level measures of low-value care. For example, 3174 Medicaid patients had at least 1 visit during 2013 that placed them at risk for receiving head imaging for syncope (qualifying patients). Of these at-risk patients, 449 received low-value head imaging at least once during 2013 (affected patients). The study sample includes nonpregnant, nondual eligible adults aged 18 to 64 years.