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The Impact of Medicaid Coverage and Reimbursement on Access to Diagnostic Mammography

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Abstract

BACKGROUND—Women of low socioeconomic status are at risk for delayed evaluation of abnormal mammograms and later stage presentations of breast cancer. Medicaid reimbursement for clinical services is lower than Medicare reimbursement, yet it is unclear whether low Medicaid reimbursement is a barrier to accessing mammography. The objective of the current study was to determine the association between reported insurance type (Medicaid vs Medicare), Medicaid reimbursement rate, and access to diagnostic mammography (DM).

METHODS—Standardized patients (SPs) called 521 mammography facilities in defined geographic regions of 11 states in 2005. Facilities were divided between high, middle, and low reimbursing states based on the state's relative Medicaid-to-Medicare reimbursement rate for DM.

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Dr. Forman was a paid consultant to Wellpoint until April 2008, advising it on medical policy at medical policy meetings. He was a paid consultant to L.E.K. Consulting at various times throughout the past 3 years on issues not relating to the article. He was a paid expert for Zarco Einhorn on healthcare litigation in 2006 that was unrelated to mammography or reimbursement. Dr. Forman is treasurer of the American Roentgen Ray Society and chair of the Human Resources Committee of the American College of Radiology. Neither organization had any role in any aspect of the study.

SPs contacted each facility twice to schedule a DM using the same clinical vignette but switching insurance status (Medicaid vs Medicare). The authors measured the proportion of SPs who were offered 1) any appointment and 2) a timely appointment, defined as a third available appointment within 20 business days.

RESULTS—SPs with Medicaid were less likely to receive an appointment than SPs with Medicare (91% vs 99.1%; difference, 8.1%; 95% confidence interval, 5.3%–10.9% [$P < .001$]). Among facilities that offered appointments to both callers, the proportion of timely appointments did not differ between Medicaid (93.7%) and Medicare (92.9%; $P = .51$). States' Medicaid reimbursement rates for DM were not associated with the percentage of SPs with Medicaid who were offered any appointment ($P = .50$) or a timely appointment ($P = .69$).

CONCLUSIONS—Callers with Medicaid were offered appointments for DM less frequently than callers with Medicare, although both were widely accepted. State Medicaid reimbursement rates did not affect access to mammography.

Keywords

mammography; access to healthcare; health policy; Medicaid; Medicare; health insurance reimbursement

Access to mammography services is a public health goal, because mammography is the most effective tool for early detection^{1,2} and may reduce breast cancer-related mortality.³ Access is particularly important for women who need a diagnostic mammogram, a test that is used to evaluate abnormal screening mammograms or high-risk symptoms. For such women, the anxiety caused by a possible breast cancer diagnosis can last up to 3 years after a routine evaluation⁴ and can be reduced by a rapid workup.⁵ Even among patients who are able to access mammography, delays in completing the breast cancer workup may be clinically relevant, and 1 study suggests that lengthier diagnostic delays are associated with increased mortality.⁶

Despite recognition that timely access to mammography is important, disparities exist. Use of mammography services is below recommended levels, especially among women of low socioeconomic status,⁷ underinsured or uninsured women, or women who are on Medicaid.^{8,9} Factors that have demonstrated an association with delayed follow-up after abnormal screening mammography include nonwhite race,^{10–13} Hispanic ethnicity,^{10,12} lower socioeconomic status, and having public insurance, such as Medicaid.¹⁴ Furthermore, compared with women who have Medicare or private insurance, women who have Medicaid have a higher likelihood of having late-stage disease at the time of diagnosis (odds ratio, 1.9–3.0),^{15–17} and their cancer is more likely to be fatal (hazard ratio, 3.0).^{18,19} Yet it remains unclear whether Medicaid is a direct barrier to accessing mammography services or is a proxy for patient sociodemographics or other characteristics.^{20,21}

Conventional wisdom holds that low Medicaid reimbursement rates for mammography services hinder access.^{22–24} Physicians have warned that, to combat increasing costs, mammography facilities may not accept patients who have poorly reimbursing insurance policies or may limit the number of slots for such patients.²⁵ In response to these concerns, Medicare rates for mammography increased significantly in 2000, but no such change occurred in Medicaid.²⁵ In a 2005 report on mammography, the Institute of Medicine (IOM) concluded that disparities in reimbursement (such as lower Medicaid rates) undoubtedly influence the accessibility of mammography for low-income women and influence the geographic accessibility of mammography for all women in communities that have significant low-income populations.^{26,27} However, the IOM's conclusion was based largely on a single report from Florida.^{22,26} Although studies that use standardized patients (SPs)

have documented a link between Medicaid insurance and decreased access to services other than mammography,^{28–32} to our knowledge, the link between Medicaid insurance, reimbursement rates, and mammography access has not been investigated directly.

To increase access and use of timely mammography services, it is critical to determine why women with Medicaid are less likely to obtain mammograms. If Medicaid insurance is a direct barrier to accessing diagnostic mammography, then policies to modify reimbursement and encourage provider acceptance of Medicaid may improve mammography use and timeliness. If Medicaid is merely a proxy for other factors, then, despite the IOM recommendation, policies should focus directly on at-risk beneficiaries and communities. Therefore, we set out to determine whether, for diagnostic mammography, 1) fewer mammography facilities accept Medicaid compared with Medicare, 2) patients with Medicaid wait longer than patients with Medicare for an appointment, and 3) Medicaid reimbursement varies across states affecting access to diagnostic mammography. We hypothesized that fewer mammography facilities would accept Medicaid compared with Medicare, that patients with Medicaid would wait longer for a diagnostic mammography appointment, and that such differences would be greater in states with lower Medicaid reimbursement rates.

MATERIALS AND METHODS

Design

We used a randomized crossover design to assess the effect of insurance status on access to diagnostic mammography. Trained SPs called mammography facilities and requested an appointment for a diagnostic mammogram. Our sample was comprised of 3 groups of mammography facilities located in states with different Medicaid reimbursement levels (high, middle, and low) to assess the effect of reimbursement on access to diagnostic mammography. The Yale University School of Medicine Institutional Review Board approved the protocol.

Survey Sample

Our primary comparison was between mammography facilities, and our secondary comparison was between states, because Medicaid reimbursement levels are set state by state. Within each state, we sampled all mammography facilities within 1 or 2 Hospital Referral Regions (HRR), as defined in the *Dartmouth Atlas of Health Care*.³³ We obtained Medicaid reimbursement rates for unilateral diagnostic mammography (Current Procedural Terminology [CPT] code 76090) from every state except Tennessee by contacting state Medicaid offices. We obtained reimbursement rates for all 87 Medicare carrier districts from the Centers for Medicare and Medicaid Services.³⁴ We calculated state-level Medicare reimbursement rates by collapsing all carrier districts within a state and weighting reimbursement rates by the 2005 Census population within each district (Table 1). To standardize Medicaid rates, we calculated the ratio of Medicaid to Medicare reimbursement for diagnostic mammography for each state.³⁵

We selected 5 states with a high Medicaid reimbursement ratio (median, 100% of Medicare reimbursement; New York, Nebraska, Oklahoma, Arkansas, and Virginia); the 5 states with the lowest Medicaid reimbursement ratio (median, 31% of Medicare reimbursement; Missouri, New Jersey, New Hampshire, Utah, and Colorado); and 1 state with a medium Medicaid reimbursement ratio (51% of Medicare reimbursement; Connecticut). The fourth and sixth highest reimbursing states (Wyoming and Maine) were not included, because their borders did not correlate well with HRR boundaries.

On the basis of the only published average waiting time for diagnostic mammography we could find (mean $\pm$ standard deviation, 4.3 ± 4.2 days),³⁶ we calculated that 190 facilities would allow us to detect a 3-day difference in wait times between Medicaid and Medicare with $\alpha = .05$ and 80% power. We generated lists of mammography facilities in each selected state from the Food and Drug Administration Online Database of Mammography Quality and Safety Act-certified facilities.³⁷ In the 5 high reimbursing states and the 5 low reimbursing states, we chose the HRR that had closest to 30 unique mammography facilities. If there were no HRRs with at least 30 facilities, then we selected 2 HRRs for a combined total of at least 30 facilities within that state. In Connecticut, which contains 2 HRRs, we decided a priori to survey all mammography facilities to describe local practice patterns.

Survey Methods

Four research assistants posed as SPs and made all calls. We trained the SPs using a script that we developed with input from several mammography practice managers and receptionists (Table 2). The SP was a woman aged 45 years who stated that she recently had moved to the area and needed a diagnostic mammogram to assess a recent abnormal screening mammogram, which revealed a “density.” The SP stated her insurance before requesting an appointment and negotiated the third next available appointment time, which reliably measures outpatient availability, because it accounts for random variation, such as same-day cancellations.³⁸ Callers verified that their insurance type was accepted before they negotiated appointments. Each facility was called twice separated by at least 1 week (median, 7 business days) between calls. Insurance type (Medicaid or Medicare) and the SP name were randomized between calls. This technique eliminates social desirability bias—the tendency to avoid saying what is socially unacceptable.³⁹ Calls were made from a deidentified telephone line in November and December 2005.

The callers were 4 graduate students (women) who were selected based on telephone interviews, in which 2 investigators assessed whether their voices were clear and sounded appropriate for the SP’s stated age of 45 years. The callers were trained in several sessions using practice calls. During the first session, the callers read through the standardized script and faced several likely scenarios that required them to provide further answers (eg, what is your address?). During the second session, calls to 1 investigator were observed and critiqued: The objectives of this session were to make sure the callers did not express anxiety, to make their situation seem unique, to pressure the scheduler, or to make an actual appointment once a date and time were offered. Two of the investigators (J.D.S. and A.S.) monitored a subset of study calls to ensure standardization.

The SPs recorded their results on paper data-collection forms. Data were entered into a spreadsheet (Microsoft, Redmond, Wash) by 1 investigator (A.S.), and all data were double-checked by a second investigator (J.D.S.) before analysis.

There were 576 facilities on our initial call list, and 55 of those facilities were ineligible because of incorrect telephone numbers or central scheduling services (Fig. 1). When facilities shared a scheduling service despite having different telephone numbers, only the first facility called in the first round was called in the second round and was included in analysis. Of the 521 facilities on the final call list, 441 facilities were eligible for inclusion. We excluded 72 facilities that did not perform diagnostic mammography and 8 military facilities that did not accept nonmilitary patients. We analyzed data on 420 of 441 eligible facilities after excluding 21 facilities for which we could not complete our second call on 3 attempts. There was no difference in the proportion of incomplete calls by insurance status or between callers. Callers noted reasons for failing to obtain appointment dates, and the most common was lack of a referring physician or prescription for a diagnostic mammogram.

Outcome Measures

The primary study outcomes were acceptance and timeliness. We defined insurance acceptance as a facility willing to schedule at least 1 appointment date with an SP for a given insurance type (Medicaid vs Medicare). We used 2 measures of timeliness. First, we compared the difference between the waiting time for Medicaid appointments and Medicare appointments. Second, we compared the proportion of scheduled appointments that were timely, which we defined a priori as within 20 business days. We selected 20 business days, a published standard for diagnostic mammography follow-up,⁴⁰ based on the literature ascribing stress to abnormal mammograms and the clinical consensus among the study team that waiting longer than 20 business days for further evaluation places an undue burden on women with abnormal mammograms.^{4,5} Timeliness measures were based on the third next available appointment, which is the standard measure of access to appointments and has been adopted by organizations such as the Institute for Healthcare Improvement to minimize the influence of random variation in the scheduling process.^{38,41}

Data Analysis

The unit of analysis was the facility. To calculate insurance acceptance, we included the 420 facilities where an SP spoke to a receptionist during both rounds of calls. We evaluated timeliness in the 378 facilities where an SP was given a third available appointment date during both calls. To test whether fewer mammography facilities would accept Medicaid compared with Medicare, we used the McNemar test of paired proportions. We compared the proportion of SPs who were able to schedule appointments or timely appointments according to insurance status. To test whether patients with Medicaid would have to wait longer for a diagnostic mammography appointment, we compared the wait in business days using the Wilcoxon signed-rank test, because wait time was right-skewed. A post hoc analysis of the proportion of accepted appointments at 5 business days and at 10 business days did not differ materially from 20 business days, so we do not present those results here. To test whether the differences in acceptance or appointment timeliness were greater in states with lower Medicaid reimbursement rates, we used the chi-square test for trend to analyze Medicaid acceptance and timeliness across the 3 reimbursement groups.

To adjust for state-level Medicaid characteristics, such as reimbursement rate and Medicaid penetration, we performed multivariate analysis. To account for clustering of mammography facilities within states, we constructed a multilevel model.⁴² There were 2 calls (Medicaid or Medicare; first level of clustering) for each facility (second level) that were nested within states (third level). For insurance acceptance, we constructed a 3-level, random intercept logistic regression model of the acceptance of each insurance type. For waiting time, we constructed a 3-level, random intercept linear regression model that modeled the waiting time (in business days) to the third available appointment. In both models, the primary independent variable was insurance type. To assess whether the relation between Medicaid and access to mammography was mediated by reimbursement rates, we adjusted for the amount Medicaid reimbursed for mammography in each facility's state as a covariate. We explored 2 measures of Medicaid reimbursement in our analysis: the specific rate for diagnostic mammography and a composite index of Medicaid reimbursement. This index quantifies Medicaid reimbursement for all clinical services relative to Medicare reimbursement.³⁵ We also analyzed the percentage of a state's population enrolled in Medicaid in 2005⁴³ and the interaction between reimbursement rate and enrollment.

A 2-sided *P* value <.05 was considered significant. We conducted bivariate analyses using SAS statistical software (version 9.1; SAS Institute Inc, Cary, NC) and multivariate analyses using GLAMM⁴⁴ on STATA 8.2 (StataCorp LP, College Station, Tex).

RESULTS

Variation in Medicaid Reimbursement

Medicaid and Medicare reimbursement rates for a unilateral diagnostic mammogram (CPT code 76090) and the ratio of Medicaid to Medicare for diagnostic mammography and for general physician services³⁵ for the study states are listed in Table 1. Among the 49 states that were included, the average reimbursement rate for a unilateral diagnostic mammogram was significantly lower for Medicaid at \$53 (range, \$20–\$117) than for Medicare (\$77; range, \$69–\$131; $P < .001$) (Table 1). Among the 5 high reimbursement states, the median Medicaid reimbursement of \$71 was 100% of the Medicare reimbursement. The Connecticut Medicaid reimbursement of \$44 was 51% of Medicare reimbursement, and the median among the 5 low Medicaid reimbursement states of \$25 was 31% of the Medicare reimbursement. There was significant variation in relative reimbursement rates (the Medicaid-to-Medicare ratio), as we hypothesized.

Insurance Acceptance

Mammography facilities' acceptance of each insurance type (Medicaid vs Medicare) is listed by state in Table 3. The SPs completed both calls to 420 of 441 eligible facilities (95.2%). Overall, the SPs scheduled an appointment on 798 of 840 of eligible calls (95%). Comparing insurance acceptance, 91% of Medicaid SPs and 99.1% of Medicare SPs scheduled an appointment (Table 3). Facilities were less likely to schedule appointments for Medicaid SPs than for Medicare SPs (difference, 8.1%; 95% confidence interval [95% CI], 5.3%–10.9% [$P < .001$]), which held true for all 3 reimbursement groups.

Among the Medicaid SPs, there was no significant association between the Medicaid insurance acceptance rate in a state and that state's Medicaid reimbursement level (low reimbursement group, 89.9%; middle reimbursement group, 91%; and high reimbursement group, 92% [$P = .50$]). In the final multivariate logistic regression model, which accounted for the clustering of facilities within states, the adjusted likelihood of scheduling an appointment remained lower for Medicaid SPs than for Medicare SPs (odds ratio, 0.081; 95% CI, 0.025–0.26 [$P < .001$]). No state-level variables were significant in the final model at $P < .05$; although, as a state's overall Medicaid reimbursement index increased, it trended toward an association with the increased likelihood of Medicaid SP acceptance ($P = .069$). Fewer mammography facilities accepted Medicaid compared with Medicare, as hypothesized, although such differences were not greater in states with lower Medicaid reimbursement rates.

Timeliness of Appointments

The median wait time for Medicaid SPs was 7.5 days (interquartile range, 5–12 days) compared with a median of 8 days (interquartile range, 5–12 days) for Medicare SPs ($P = .77$). The proportion of SPs able to schedule appointments within 20 business days was 93.7% (354 of 378 SPs) for Medicaid compared with 92.9% (351 of 378 SPs) for Medicare ($P = .51$) (Fig. 2). When the analysis was restricted to Medicaid SPs, there was no significant difference in the proportion of timely appointments by reimbursement group (low reimbursement group, 93.9% [139 of 148 SPs]; middle reimbursement group, 90.1% [64 of 71 SPs]; and high reimbursement group, 95% [151 of 159 SPs] [$P = .69$]). In the final multivariate model, there was no significant difference in adjusted wait times for a third appointment between Medicaid and Medicare. No state-level variable was significant in the final model ($P < .05$). Contrary to our hypothesis, SPs with Medicaid did not wait longer for a diagnostic mammography appointment than SPs with Medicare.

DISCUSSION

It is important to know whether women with Medicaid are less likely to obtain mammograms because of the type and reimbursement rates for their insurance. We studied whether, for diagnostic mammography, SPs with Medicaid were less likely to get an appointment than similar SPs with Medicare and whether lower state Medicaid reimbursement rates were associated with reduced access. We hypothesized that fewer mammography facilities would offer appointments (and timely appointments) to SPs with Medicaid compared with similar SPs with Medicare and that such differences would be greater in states with lower Medicaid reimbursement rates. We observed that SPs who reported having Medicaid were less likely to obtain an appointment for a diagnostic mammogram than SPs who reported that they had Medicare. However, the differences were unlikely to markedly reduce access to mammography for Medicaid patients, because >90% of assessed facilities offered appointments regardless of insurance type. In addition, among facilities that offered the SP an appointment, Medicaid insurance did not decrease access to timely appointments. Finally, there was no association between the state Medicaid mammography reimbursement rate and either measure of access.

These data have direct implications for health policy and system approaches to improve mammography screening rates. Physicians,^{45,46} politicians,^{24,47} and the IOM²⁶ have argued that Medicaid insurance is a major barrier to accessing mammography, largely because of its low reimbursement rates. However, data from the current study suggest that Medicaid itself is not the major barrier. The lack of an association between a state's Medicaid reimbursement rate for diagnostic mammography and insurance acceptance for this service can be somewhat reassuring for Medicaid patients, because they do not have to add low Medicaid reimbursement to the list of barriers between them and mammography. Rather than adjusting reimbursement rates, policymakers should identify and address the nonmonetary barriers to Medicaid acceptance, such as onerous paperwork requirements. In addition, clinicians and policymakers should focus on strategies proven to increase mammography use, such as campaigns to raise awareness in underserved communities, patient and provider education, and outreach and case management with at-risk patients.^{48–50} Finally, efforts to shorten the time between screening and diagnostic mammography should focus on programs that hasten follow-up of abnormal results⁵¹ and real-time interpretation of screening mammography, which demonstrably decreases anxiety.⁵

When considered in the context of other studies, our results underscore the subtleties involved in the relation between Medicaid insurance and access to care. Large studies of state Medicaid reimbursement levels demonstrate either a weak link^{35,52} or no link overall between the Medicaid reimbursement level and physician participation.^{53,54} Five recent studies used SPs to compare access between Medicaid and other insurance types. Four of those studies reported that fewer facilities accepted Medicaid in pediatric otolaryngology,²⁹ pediatric orthopedics,²⁸ dermatology,³⁰ and urgent primary care.³¹ Three of those studies reported longer waiting times for Medicaid patients.^{28,30,31} Only Galbraith et al reported results similar to ours; callers seeking newborn follow-up said that fewer clinics accepted Medicaid than private insurance, but waiting times were equal.³² Other than reimbursement, how can the bias against Medicaid reported in prior calling studies be explained? Many factors affect whether a physician or a practice accepts Medicaid: the type of practice, physician demographic characteristics, characteristics of the community, and other aspects of Medicaid policy (eg, level of bureaucracy).⁵³ Providers may be more willing to see Medicaid patients for mammography and newborn follow-up than for other services because of specific policies for these conditions. The National Breast and Cervical Cancer Early Detection Program awards grants to states for breast and cervical cancer screening of

uninsured women and aims to fund universal screening.⁵⁵ Similarly, Medicaid's categorical eligibility requirements create a similar mandate for newborn follow-up.⁵⁶ In both cases, Medicaid patients do not appear to have significantly less access to important clinical services than non-Medicaid patients, although we cannot determine why from the current study.

Several factors affect radiologists' decision to accept Medicaid for mammography. Since passage of the Mammography Quality and Safety Act in 1992, many mammography facilities have closed.²³ These facilities either could not meet the Act's quality standards or determined that the cost of compliance was too high.²⁶ In light of such cost pressures, mammography facilities must consider reimbursement and profitability. Because physicians must choose whether to accept Medicaid for all services or none, those who perform a spectrum of diagnostic imaging studies for Medicaid patients also must accept Medicaid for mammography. Because mammography is a low-margin service for general radiology practices,²⁵ facilities can offset mammography-associated losses with other high-margin services for Medicaid patients. Practices that do not have a mix of higher margin services or procedures, such as breast imaging centers, may face more financial risk from low reimbursement rates associated with Medicaid patients. Further research is needed to determine whether facilities that specialize in breast imaging face disproportionate financial burdens from the low margins of mammography and whether they are at risk of closure.

The current study has several limitations. First, access is more than making an appointment. There are multiple factors that likely explain documented differences in follow-up after abnormal mammograms. The National Cancer Institute's President's Cancer Panel Report for 2000 and 2001 presented 4 categories of barriers: 1) physician-level and patient-level information and education barriers, 2) physical barriers, 3) financial barriers, and 4) healthcare system barriers.⁵⁷ Women with Medicaid are more likely than other women to encounter obstacles at all 4 levels because of the circumstances that make them eligible for Medicaid. An available appointment is a first step, but other factors can reduce access, such as lack of available transportation and difficulty getting time off from work. Second, our callers were graduate students whose health literacy and ability to advocate on their own behalf may differ from those of typical Medicaid beneficiaries. Although they closely followed a standardized script, through practice, our SPs may have found more acceptance than an actual Medicaid beneficiary. Future research should address this by evaluating governmental data collected on Medicaid patients or by conducting similar SP studies with actual Medicaid patients making the calls. States or clinics may wish to conduct such research to assess the impact of their Medicaid policies, which Florida has done.²² Third, although our survey of over 400 facilities in 11 states is the largest such study of access to mammography, access in other regions may be different. Fourth, some mammography facilities offer real-time screening interpretation with immediate diagnostic mammography, and our scenario would not apply. Because this service is offered at few practices, we believe that the study is representative of most women's experiences. Fifth, we cannot comment on the experience of patients in Medicaid Managed Care (MC). We only obtained rates for fee-for-service Medicaid, because the rates for Medicaid MC plans generally are proprietary. The proportion of the Medicaid population in Medicaid MC varied across our 11 states from 2% in New Hampshire to a high of 95% in Colorado. Finally, although states' relative Medicaid reimbursement rates are similar for screening mammography and diagnostic mammography (Table 4), caution is advised in extrapolating our results to screening mammography.

Women with Medicaid are less likely to undergo screening mammography^{8,9} and are more likely to have later stage breast cancer at the time of diagnosis than the population at large.^{15,16} However, our current findings suggest that Medicaid insurance is unlikely to be a

substantial barrier to mammography. Policy makers who are interested in increasing access to and use of mammography will need to use alternate strategies to increasing reimbursement, such as campaigns to raise awareness in underserved communities, patient and provider education, and outreach and case management with at-risk patients.^{48–50}

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FIGURE 1.

This survey sample illustrates the sampling strategy for the 576 mammography centers that were included in the sampling frame for the current study. Clinics were deemed ineligible if study staff could not find accurate telephone numbers or when staff stated that the clinic either did not perform diagnostic mammography or was a military facility that did not treat civilians, or did not complete both rounds of calls. Clinics that did not schedule third appointments in both rounds were excluded from the timeliness analysis.

FIGURE 2.

Appointment timeliness (timely appointments were defined as those that occurred within 20 business days) did not appear to differ by insurance type or state Medicaid reimbursement level. Among facilities that offered appointments to both callers, the proportion of appointments that were timely did not differ between Medicaid callers (93.7%; 354 of 378 appointments) and Medicare callers (92.9%; 351 of 378 appointments) ($P = .51$). When the analysis was restricted to Medicaid callers, there was no correlation noted between a state's Medicaid reimbursement rate for diagnostic mammography and the percentage of callers able to schedule a timely appointment (low reimbursement rate, 93.9% [139 of 148 callers]; middle reimbursement rate, 90.1% [64 of 71 callers]; and high reimbursement rate, 95% [151 of 159 callers]) ($P = .69$).

Table 1

Relative Reimbursement for Unilateral Diagnostic Mammography (Current Procedural Terminology 76090) and General Clinical Services

State	Diagnostic Mammogram, Unilateral (CPT 76090)*			General Physician Services
	Medicaid Rate, \$	Medicare Rate, \$	Medicaid-to-Medicare Ratio, %	Medicaid-to-Medicare Ratio, % [†]
High reimbursement				
Neb	85	71	120.4	141
NY	90	89	101.1	31
Okla	70	70	100.3	73
Ark	67	69	97.5	115
Va	71	74	95.9	77
Middle-range reimbursement				
Conn	44	87	50.6	62
Low reimbursement				
Colo	27	78	34.6	75
Utah	24	74	32.3	75
NH	25	80	31.4	54
NJ	26	89	29.2	43
Mo	20	73	27.4	56
Mean (range)	53 (20–117) [‡]	77 (69–131) [‡]	50.6 (52.1–89.3)	77 (69–100)

CPT indicates Current Procedural Terminology.

*For Year 2005.

[†]This index is a composite of all physician service fee levels in 2003 (taken from Zuckerman 2004³⁵).

[‡]For all 49 states (excluding Tennessee) there was a statistically significant difference ($P < .001$).

Table 2**Standardized Interview Script****Interview Text**

- “Hello, I would like to schedule a mammogram. (PAUSE)
- “I moved here recently and before I moved I had my annual mammogram. I just got the results and they told me that they saw ‘a density’ on it and that I need something called a diagnostic mammogram. Is it possible to schedule one of those?” (PAUSE)
- “Oh, for my insurance, I have Medicaid/Medicare. Do you take Medicaid/Medicare?”

If given an appointment, the first 2 slots given by the scheduler will be answered:

- “Let me check my calendar. (PAUSE) I am busy at (given time), what is the next available appointment?”

If no appointment times given

- “Can you recommend someplace where I can get a diagnostic mammogram with Medicaid/Medicare?”

After being given a time for the third next available appointment, the caller will state

- “I’ll call back to let you know if I am available for any of those times. Thank you.”

Responses to Frequently Asked Questions**Mammogram abnormality**

- “I was told there is a density in the left breast, and they say I need to schedule a diagnostic mammogram.”

Date of last mammogram

- “My last mammogram was a month ago. Before that it was about a year and a half.”

Films from last mammogram

- “I have the mammogram x-rays and can bring them with me to the office.”

Do you need an ultrasound (as part of diagnostic mammogram)?

- No

Do you have a doctor referral?

- “I have a prescription from the radiologist who did my screening mammogram.”
- “I don’t remember his name—it is at home with the x-rays.”

Who is your primary doctor?

- “I don’t have a doctor yet. I am working on it and can bring their name to my appointment.”

Personal breast disease history: none

- “I haven’t had any problems. Never been told I have cancer...never had a lump. Just this “density” on my mammogram.”

Do you still have your period?

- No.

Do you have breast implants?

- No.

Supplemental insurance

- “None.”

Medicaid provider

- “I just have plain Medicaid.”

Age

- “I am 45 years old.”

Date of birth

- “June 10th, 1960.”

Name/where did you move from?

- “Barbara Lee” from “Chicago.”
- “Lisa Robinson” from “Miami.”

Social security number

- “I don’t give out my social security number over the phone” (first answer in each round).
- 123-45-6789 (Round 1)
- 123-45-6789 (Round 2)

When did you move?

- “A month ago.”

Response to questions of personal concern (eg, “how are you doing honey,” “are you nervous?”...)

- “I am doing okay. I guess it’s just something that I need to get checked out.”

Questions about other personal demographic information: Where lived in Chicago, kids, etc

- “Before you take all of that down, can I find out what times are available?”

If asked for local address

- “I am staying with a friend and I don’t feel comfortable giving out her information.”

If scheduler asks you for a date—redirect

- After first appointment, “I work odd hours.”
 - After second appointment, “I am pretty much free after that.”
-

Table 3**Overall Acceptance of Medicaid and Medicare by Mammography Facilities**

Medicaid and Medicare Mammography Facilities	Accepting Medicaid (No./ Total No.)	Accepting Medicare % (No./ Total No.)	Difference % (95% CI)	P*
All facilities	91 (382/420)	99.1 (416/420)	8.1 (5.3–10.9)	<.001
Reimbursement groups				
High	92 (160/174)	98.9 (172/174)	6.9 (2.8–11)	.001
Middle	91 (71/78)	100 (78/78)	9 (2.6–15.3)	.008
Low	89.9 (151/168)	98.8 (166/168)	8.9 (4–13.8)	<.001
Between-group differences for Medicaid	.50 [†]			
Between-group differences for Medicare	.97 [†]			
State				
Ark	92.1 (35/38)	100 (38/38)	7.9 (–0.7 to 16.5)	.08
Colo	95 (38/40)	100 (40/40)	5 (–1.8 to 11.8)	.16
Conn	91 (71/78)	100 (78/78)	9 (2.6–15.3)	.008
Mo	78.8 (26/33)	100 (33/33)	21.2 (13.9–35.2)	.008
Neb	97 (32/33)	100 (33/33)	3 (–2.8 to 8.9)	.32
NH	96.7 (29/30)	100 (30/30)	3.3 (–3.1 to 9.8)	.32
NJ	78.8 (26/33)	93.9 (31/33)	15.2 (–1.9% to 32.2)	.10
NY	90.6 (29/32)	96.9 (31/32)	6.3 (–2.1 to 14.6)	.16
Okla	83.9 (26/31)	100 (31/31)	16.1 (3.2–29.1)	.025
Utah	100 (32/32)	100 (32/32)	No difference	NA
Va	95 (38/100)	97.5 (39/40)	2.5 (–6.0 to 11.0)	.56

95% CI indicates 95% confidence interval; NA, not applicable.

* Except where indicated, all *P* values were determined using the McNemar test.

[†] This *P* value was determined by using the Mantel-Haenszel chi-square test.

Table 4

State Reimbursement for Screening and Diagnostic Mammography*

State	Diagnostic Mammogram, Unilateral (CPT 76090)				Screening Mammogram, Bilateral (CPT 76092)			
	Medicaid Rate, \$	Medicare Rate, \$	Medicaid to Medicare Ratio, %	Medicaid Rate, \$	Medicaid Rate, \$	Medicare Rate, \$	Medicaid to Medicare Ratio, %	Medicaid Rate, \$
Alaska	117	131	89.3	128	143	89.5		
Ala	50	71	70.7	48	77	62.3		
Ark	67	69	97.5	80	75	106.7		
Ariz	32	78	41	34	85	40		
Calif	74	86	86	68	94	72.3		
Colo	27	78	34.6	40	85	47.1		
Conn	44	87	50.6	48	95	50.5		
Del	75	80	93.8	82	87	94.3		
Fla	42	79	53.2	46	86	53.5		
Ga	60	78	76.9	57	88	64.8		
Hawaii	55	84	65.5	49	91	53.8		
Iowa	59	71	83.1	82	77	106.5		
Idaho	66	70	94.3	72	77	93.5		
Ill	39	82	47.6	72	89	80.9		
Ind	38	72	52.8	60	79	75.9		
Kan	45	72	62.5	115	78	147.4		
Ky	40	71	56.3	50	77	64.9		
La	38	73	52.1	37	79	46.8		
Mass	61	88	69.3	88	106	83		
Md	38	80	47.5	57	88	64.8		
Me	70	74	94.6	42	81	51.9		
Mich	46	82	56.1	51	89	57.3		
Minn	42	76	55.3	71	83	85.5		
Mo	20	73	27.4	33	79	41.8		
Miss	63	70	90	68	76	89.5		
Mont	61	71	85.5	67	78	85.9		
NC	70	74	95.1	76	80	95		
ND	63	71	89	68	77	88.3		

State	Diagnostic Mammogram, Unilateral (CPT 76090)			Screening Mammogram, Bilateral (CPT 76092)		
	Medicaid Rate, \$	Medicare Rate, \$	Medicaid to Medicare Ratio, %	Medicaid Rate, \$	Medicare Rate, \$	Medicaid to Medicare Ratio, %
Neb	85	71	120.4	85	77	110.4
NH	25	80	31.4	42	87	48.3
NJ	26	89	29.2	36	97	37.1
NM	59	73	80.8	60	79	75.9
Nev	76	81	93.8	85	88	96.6
NY	90	89	101.1	90	97	92.8
Ohio	35	75	46.4	45	82	54.9
Okla	70	70	100.3	76	76	100
Ore	29	75	38.7	34	82	41.5
Pa	44	78	56.4	74	84	88.1
RI	39	80	48.8	32	88	36.4
SC	57	71	79.8	72	78	92.3
SD	41	70	58.3	60	76	78.9
Tex	41	76	53.9	58	83	69.9
Utah	24	74	32.3	16	81	19.8
Va	71	74	95.9	77	81	95.1
Vt	55	76	72.7	59	83	71.1
Wash	47	79	59.5	52	86	60.5
Wis	54	74	72.9	96	81	118.5
WVa	55	72	76.1	60	79	75.9
Wyo	72	72	99.8	78	78	100
Mean (range)	53 (20–117) [†]	77 (69–131) [†]	68.7 (27.4–120.4)	63 (16–128) [†]	85 (75–143) [†]	74.6 (19.8–147.4)

CPT indicates Current Procedural Terminology.

* For the Year 2005. Study states are shown in boldface.

[†] Statistically significant difference at $P < .001$.