

Do Geographic Region, Pathologic Chronicity, and Hospital Affiliation Affect Access to Care Among Medicaid- and Privately Insured Foot and Ankle Surgery Patients?

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Objectives: Studies have shown that patients enrolled in Medicaid have difficulty obtaining access to care compared with patients with private insurance. Whether variables such as geographic location, state expansion versus nonexpansion, and private versus academic affiliation affect access to care among foot and ankle surgery patients enrolled in Medicaid has not been previously established. The purpose of this study was to assess the differences in access to care between patients who are privately insured and those with Medicaid in need of foot and ankle consultation. Secondary objectives include assessment of whether access to care for foot and ankle patients with Medicaid differs between those with acute and chronic conditions, Medicaid expanded and unexpanded states, geographic regions within the United States, and academic versus private practices.

Methods: Twenty providers from each of five Medicaid-expanded and five nonexpanded states in different US geographic regions were randomly chosen via the American Orthopaedic Foot & Ankle Society directory. One investigator contacted each office requesting the earliest available appointment for their fictitious relative's acute Achilles tendon rupture or hallux valgus. Investigator insurance was stated to be Medicaid for half of the telephone calls and Blue Cross Blue Shield (BCBS) for the other half. Appointment success rate and average time to appointment were compared between private insurance and Medicaid. Results were further compared across geographic regions, between private and academic practices, and between urgent acute injury (Achilles rupture) and chronic nonurgent injury (hallux valgus).

Results: Appointments were successful for all 100 (100%) calls made with BCBS as the insurer, in comparison to 73 of 100 calls (73%) with Medicaid ($P < 0.001$). Both acute and chronic injury had significantly

higher success rates with BCBS than Medicaid ($P < 0.001$). The appointment success rate was significantly lower with Medicaid than with BCBS ($P \leq 0.01$) in all of the geographic regions. The success rate with Medicaid (66.7%) was significantly lower than with BCBS (100.0%, $P < 0.001$) for private practice offices, but not for academic practices.

Conclusions: Patients with Medicaid experience fewer options when obtaining appointments for common nonemergent foot and ankle problems and may experience less difficulty scheduling appointments at academic rather than private institutions. The medical community should continue to seek and identify potential interventions which can improve access to orthopedic care for all patients and increase the visibility of practices that accept Medicaid.

Key Words: access to care, Achilles rupture, hallux valgus, insurance, Medicaid

Medicaid is a federally and state-funded program established to provide health coverage to individuals in the United States who live beneath the federally determined poverty line. A multitude of studies have demonstrated that disparities in

Key Points

- Insurance status continues to be an issue for patients trying to receive care for acute and chronic medical conditions. This can be devastating to individuals if they cannot work and their quality of life changes significantly because of their condition. This is often true for conditions relating to the foot and ankle.
- Our study found that overall success rates for Medicaid patients seeking appointments were lower than privately insured patients ($P < 0.001$), with acuity of pathology, private office, and geographic region having no effect on this relationship. There was no statistically significant difference in appointment success rate in academic offices between groups.
- In spite of Medicaid expansion, Medicaid patients continue to experience fewer options when obtaining appointments for common foot and ankle problems, and the medical community should continue to seek potential solutions to improve access to orthopedic care for all patients.

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The authors did not report any financial relationships or conflicts of interest.

Accepted August 10, 2020.
0038-4348/0-2000/114-35

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DOI: 10.14423/SMJ.0000000000001198

access to orthopedic care exist between patients who are enrolled in Medicaid and patients who are privately insured.¹⁻⁴ Delayed care jeopardizes appropriate healing and puts patients at risk of increased morbidity, which is ultimately costly to the healthcare system as a whole. The associations among insurance status, care delays, and potential modifying variables should therefore be identified and addressed.

Achilles tendon ruptures are an exceedingly common acute injury encountered by the foot and ankle orthopedic surgeon, with annual incidences as high as 37/100,000 population.⁵ Although most common among younger patient populations, the incidence has increased in the active older population in recent years.⁶ Hallux valgus (bunion), however, is a typically atraumatic deformity that develops over time. It is the most common pathologic process affecting the great toe and affects 2% to 4% of the global population.^{7,8} Treatment of Achilles rupture specifically has been shown to be time sensitive; delayed treatment can result in tendon scarring and retraction,⁹ and functional outcomes are improved with early rehabilitation and weight bearing following operative or nonoperative treatment.⁶ Similarly, longer wait times for hallux valgus surgery have been associated with higher pain scores and lesser postoperative functional improvement¹⁰; therefore, minimizing delays in care is critical for these patients.

Numerous variables play a role in healthcare quality and accessibility. For instance, it is well known that healthcare disparities exist across geographical regions because of differences in income, demographics, and culture.¹¹ Differences in practice dynamics also exist between hospitals with different affiliations, specifically private versus academic practice, as academic practices place greater emphasis on research and educating upcoming generations of physicians.

Passage of the Patient Protection and Affordable Care Act (PPACA, Public Law 111-148) allowed states to expand Medicaid coverage to citizens at or below 138% of the poverty level. Thirty-four states, including Washington, DC, have elected to enact the expansion of Medicaid, which has provided for a significant increase in Medicaid enrollment since the passage of the PPACA.¹² In addition to Medicaid expansion, the PPACA aimed to provide subsidies to citizens with incomes between 138% and 400% of the US poverty level, ideally allowing them to participate more easily in state-based exchanges. In theory, in Medicaid-expanded states under the PPACA, all citizens at or below 400% of the poverty level would receive government assistance in obtaining medical coverage. In states without Medicaid expansion, there is a “Medicaid gap” in the population. These are patients who live above the poverty line, and are therefore ineligible for Medicaid, but underneath the 138% of the poverty level required for subsidies under the PPACA. This population is estimated to be between 3 and 4 million American citizens.¹³

The purpose of our study was to assess the differences in access to care between patients who are privately insured and those with Medicaid in need of foot and ankle consultation. Secondary objectives include assessment of whether access to care for foot and ankle patients with Medicaid differs between those

with acute and chronic conditions, Medicaid-expanded and -unexpanded states, geographic regions within the United States, and academic versus private practices.

Methods

Offices of orthopedic surgeons who are members of the American Orthopaedic Foot & Ankle Society were included. Their online directory was searched, and a total of 200 practices providing foot and ankle care across 10 states were randomly selected to be called.¹⁴ The states were selected such that their geographical distribution represented four different US regions: West, South, Midwest, and Northeast. In addition, five of the states (California, New York, Ohio, Minnesota, and Washington) participated in Medicaid expansion, whereas five (Utah, Texas, Alabama, Missouri, and North Carolina) did not.

Twenty providers’ offices from each state were contacted via telephone during January 2019. The investigator introduced himself as the brother of a 30-year-old fictitious patient who needed either corrective bunion surgery or repair of an acute Achilles rupture, and he inquired about when the first available appointment could be made to see a foot and ankle surgeon. For each state, 10 calls were made describing the patient as needing bunion surgery, and 10 were made describing the need for repair of an acute Achilles rupture. Five calls for each condition were made with the patient having Medicaid, and 5 were made with the patient having Blue Cross Blue Shield (BCBS). Each telephone call was made using the same script.

For practices in which the directory provided a number that was not reachable, an attempt was made to find the correct contact information using a Web search. A single researcher completed all of the calls to avoid interobserver bias. Calls were made within a span of 5 working days. To avoid the possibility of practices recognizing the voice of the same caller on multiple calls, each office was called only once. Instances in which a call was directed to voicemail or wait time was >20 minutes were excluded.

The date of the projected appointment (if provided), reason for not providing an appointment date, additional information requested (eg, insurance details, primary care physician referral, medical records), and reason for denial were recorded as applicable to each telephone call. A “successful appointment” was defined as any call in which the scheduler agreed to provide an appointment with a foot and ankle physician, regardless of whether a specific date could be provided at that time. The wait time for an appointment was calculated by determining the number of days between the date of the call and the first available appointment. The rate of successful appointments within 1 week (early) and after 1 week (late) also was calculated. After an offer of a “successful” appointment, it was not confirmed to prevent the disruption of care to real patients.

The χ^2 test was used for categorical variables and the Mann-Whitney and the analysis of variance tests were used for continuous variables. Appointment success rates, average time to appointment, and early versus late appointment rates were compared between private insurance and Medicaid, Medicaid

expansion status, chronic versus acute injury, geographic region, and private versus academic practice affiliation. All of the statistical testing was performed two-tailed, with $P \leq 0.05$ denoting statistical significance.

Results

Two hundred providers' offices were contacted. Successful and unsuccessful appointment rate comparisons are shown in Table 1. Overall, successful appointments were offered by 173 offices (86.5%), regardless of whether a date was provided. Successful appointment with a date was offered by 36.5% of practices, while successful appointment without a date was offered by 50%. The success rate was significantly different between telephone calls made with Medicaid and telephone calls made with BCBS. Appointments were successful for all 100 (100%) calls made with BCBS, in comparison to 73 calls (73%) with Medicaid ($P < 0.001$).

When assessing the success rate as by injury chronicity, both acute (Achilles rupture) and chronic (hallux valgus) injury had significantly higher success rates with private insurance than Medicaid ($P < 0.001$). These success rates for Medicaid were similar as well, with hallux valgus having a success rate of 72.0% and Achilles rupture 74.0%. Analysis of the success rate by geographic region demonstrated that the appointment success

rate was significantly lower with Medicaid than with BCBS ($P \leq 0.01$) in all of the regions. Success rates with Medicaid were greatest in the West (80.0%), followed by the South (73.3%), Midwest (70.0%), and Northeast (65.0%), respectively. Interestingly, the success rate with Medicaid (66.7%) was significantly lower than the success rate with BCBS (100.0%, $P < 0.001$) for private practice offices, but no significant difference was found for academic practices. The Medicaid success rate for these practices was 92.0%, compared with a 100% success rate for BCBS ($P = 0.232$).

The mean time until the first appointment is shown in Table 2. It is interesting that no significant differences were found in average appointment time between Medicaid and BCBS, regardless of injury chronicity, private versus academic affiliation, or geographic region. Similarly, no significant associations were found between insurance status and rate of early appointment versus late appointment with respect to any of these variables (Tables 3 and 4).

An appointment was denied by 13.5% of practices. All of the denials occurred when the patient was identified as having Medicaid. In 24 of the 27 (88.9%), reason for denial was that the office did not accept Medicaid. The remaining three practices did not accept any insurance. Of note, causes for not

Table 1. Appointment rates

	Insurance	Successful (%)	Denied (%)	<i>P</i>
Insurance status	BCBS	100 (100.0)	0 (0.0)	<0.001
	Medicaid	73 (73.0)	27 (27.0)	
Medicaid expansion status	Expanded	88 (88.0)	12 (12.0)	0.530
	Nonexpanded	85 (85.0)	15 (15.0)	
Pathology (injury chronicity)	Hallux valgus (chronic)	BCBS	50 (100.0)	<0.001
		Medicaid	36 (72.0)	
	Achilles rupture (acute)	BCBS	50 (100.0)	<0.001
		Medicaid	37 (74.0)	
Affiliation	Private practice	BCBS	83 (100.0)	<0.001
		Medicaid	50 (66.7)	
	Academic practice	BCBS	17 (100.0)	0.232
		Medicaid	23 (92.0)	
Region	West	BCBS	30 (100.0)	0.010
		Medicaid	24 (80.0)	
	South	BCBS	30 (100.0)	0.002
		Medicaid	22 (73.3)	
	Midwest	BCBS	20 (100.0)	0.008
		Medicaid	14 (70.0)	
	Northeast	BCBS	20 (100.0)	0.004
		Medicaid	13 (65.0)	

BCBS, Blue Cross Blue Shield.

Table 2. Mean time until first appointment (days)

	Medicaid	BCBS	P
Insurance status	9.75	11.43	0.840
Pathology (injury chronicity)			
Achilles rupture (acute)	7.92	12.96	0.252
Hallux valgus (chronic)	11.69	7.81	0.186
Affiliation			
Private	7.24	9.17	0.484
Academic	13.92	16.5	0.676
Region			
West	6.27	11.07	0.302
South	7.43	6.23	0.595
Midwest	16.17	11.78	0.511
Northeast	14.4	15	0.940

BCBS, Blue Cross Blue Shield.

obtaining an appointment date were primary care physician referral requirement or need for physician review.

Discussion

There is a paucity of literature that describes disparities in access to care among foot and ankle patients. The results of the present study demonstrated that overall, the ability of patients to successfully schedule appointments with an orthopedic foot and ankle surgeon is relatively more limited if they are enrolled in Medicaid as compared with if they are enrolled in private insurance. These findings call attention to variables that significantly affect patient access to care and warrant further investigation.

The appointment success rate in the present study was significantly associated with insurance type. The relatively

Table 3. Early appointment vs late appointment time based on insurance status and pathology

Insurance		Successful appointment within 1 wk (1–7 d) (%)	Successful appointment after 1 wk (≥8 d) (%)	P
Insurance status	BCBS	21 (47.7)	12 (52.3)	0.530
	Medicaid	16 (55.2)	13 (44.8)	
Medicaid expansion status	Expanded	13 (39.4)	20 (60.6)	0.070
	Nonexpanded	24 (80.0)	16 (20.0)	
Pathology (injury chronicity)				
Achilles rupture (acute)	BCBS	10 (43.5)	13 (56.5)	0.298
	Medicaid	8 (61.5)	5 (38.5)	
Hallux valgus (chronic)	BCBS	11 (52.4)	10 (47.6)	0.886
	Medicaid	8 (50.0)	8 (50.0)	

BCBS, Blue Cross Blue Shield.

Table 4. Early appointment vs late appointment time based on affiliation and region

Insurance		Successful appointment within 1 wk (1–7 d) (%)	Successful appointment after 1 wk (≥8 d) (%)	P
Affiliation				
Private practice	BCBS	20 (55.6)	16 (44.4)	0.528
	Medicaid	11 (64.7)	6 (35.3)	
Academic practice	BCBS	1 (12.5)	7 (87.5)	0.163
	Medicaid	5 (41.7)	7 (58.3)	
Region				
West	BCBS	7 (50.0)	7 (50.0)	0.100
	Medicaid	9 (81.8)	2 (18.2)	
South	BCBS	8 (61.5)	5 (38.5)	0.423
	Medicaid	3 (42.9)	4 (57.1)	
Midwest	BCBS	2 (22.2)	7 (77.8)	0.264
	Medicaid	3 (50.0)	3 (50.0)	
Northeast	BCBS	4 (50.0)	4 (50.0)	0.279
	Medicaid	1 (20.0)	4 (80.0)	

BCBS, Blue Cross Blue Shield.

increased rate of denied appointments among patients enrolled in Medicaid as compared with those with private insurance is comparable with prior studies. For example, a study by Patterson et al in North Carolina showed that of 71 orthopedic practices contacted across the state, 72% of practices offered the patient with Medicaid and a rotator cuff tear an appointment, whereas 96% of practices offered an appointment to a privately insured patient with a rotator cuff tear.¹⁵ Other studies also have demonstrated similar results among ankle fracture patients specifically. Medford-Davis et al used methodology similar to that of the present study and found that among patients with ankle fractures, appointment success rate and odds of having a successful appointment were significantly lower among patients with Medicaid when compared with privately insured patients.² Labrum et al also used this methodology and found a significantly lower acceptance rate for patients with Medicaid than patients with private insurance.¹ Each of these studies assessed access to care in ankle fracture patients rather than those undergoing elective surgery, however. In addition, none assessed practice affiliation, geographic region, or urgency of injury as potential modifying factors for time to care as was done in the present study.

The appointment success rate was significantly lower with Medicaid than private insurance when appointment scheduling was attempted with private practices; however, success rates were similar (100% for private insurance and 92% for Medicaid) between the two insurance types when appointments were attempted at academic institutions. The core values of the Association of American Medical Colleges support the notion that all individuals receive necessary comprehensive medical care. In

concordance with these principles, academic teaching hospitals are responsible for the treatment of a large proportion of Medicaid patients, with approximately 28% of all Medicaid discharges cited as coming from teaching hospitals.¹⁶ As such, our results further validate the implementation of these principles of care. Given that our results demonstrate no significant difference in time to appointment for patients enrolled in Medicaid compared with patients who were privately insured, Medicaid patients may find success by seeking care at academic rather than private or community-based hospitals. Furthermore, access to information such as which practices accept Medicaid insurance may enhance the efficiency with which Medicaid patients are able to find and make an appointment.

To date, this is the first study that assesses whether injury type and urgency influences the accessibility of care for patients with Medicaid versus private insurance. Chronic ailments, such as hallux valgus, can progress over time and have worse associated outcomes with longer wait times until surgery.¹⁰ Achilles rupture, although not an emergent injury, is more urgent as it causes immediate functional incapacitation. In addition, delayed repair can result in increased morbidity because of scarring and retraction of the Achilles tendon.^{6,9} Although the urgency of an injury could theoretically influence practices' leniency with patient scheduling, all of the appointment denials in this study were attributable to practices not accepting patients with Medicaid. With this policy as the underlying cause for appointment denial, it is not surprising that the success rate was significantly lower for Medicaid patients, regardless of pathologic chronicity or urgency.

It is certainly known that Medicaid-expanded states have provided more Americans with federally funded health insurance, but it is unknown whether the increase in coverage has resulted in an increase in access to medical care in these states. Prior analyses have revealed barriers to access to care for Medicaid patients, but there is a limited amount of data concerning access to care for Medicaid patients in expanded versus unexpanded states.^{3,4,15,17} The present study suggests no change in access to care for Medicaid patients with foot and ankle pathology, regardless of Medicaid expansion status. A study by Wiznia et al showed no difference in the ability of 25 year-old Medicaid patients with meniscal tears to obtain an appointment in Medicaid-expanded and -unexpanded states³; however, Kim et al showed an increased ability of patients with Medicaid to make appointments in Medicaid-expanded states for knee arthroscopy.¹⁷ Our study correlates more closely with that of Wiznia et al.

The disparities in access to care for orthopedic patients with Medicaid has been further characterized by geographical location. Although previous studies have provided information concerning access to care based on location within a single state, few data are available that address access to care for orthopedic patients based on geographic region across the United States. The results of the present study demonstrate that regardless of geographic region, the appointment success rate is lower for patients who are enrolled in Medicaid than for those who have private insurance. Patterson et al showed that Medicaid patients

in North Carolina were more likely to receive an appointment in less populous areas than in more populous areas.¹⁵ They note that these patients were less likely to receive an appointment at a private practice that was located in close proximity to an academic center.¹⁵ Labrum et al studied the variation in the Medicaid acceptance rate by state within the Northeast region via telephone survey and found rates ranging from 21% to 66.6%.¹ Similarly, the results of the present study showed variation in appointment success rates, although across multiple regions rather than states within one region. The rates ranged from 65% to 80%, with the Northeast having the lowest relative acceptance rate and the West having the highest. Appointments were denied by practices in the present study if the practice did not accept Medicaid as insurance; therefore, it can be inferred that differences in appointment success rates by region are a function of Medicaid acceptance rates. This is the first study to assess whether access to care for patients with Medicaid versus private insurance differs by US geographic region.

Our study does have limitations. Our sample size is limited to 10 states and to 20 providers within each state; however, this study represents a greater diversity of geographical representation than prior analyses, and it provides a diversity of foot and ankle pathology with designations between acute and chronic problems.^{3,4,15,17} In addition, it would not be feasible to include all of the practices in all of the states for this study, and the sample of practices selected may not necessarily represent patterns within the United States as a whole. Nevertheless, states from different geographic regions across the United States were included, and care was taken to randomly select practices for calls. We therefore believe that our sample adequately reflects true trends in access to care.

Conclusions

Patients with Medicaid have fewer options when obtaining outpatient appointments for common nonemergent foot and ankle problems. In addition, patients with Medicaid may experience relatively increased difficulty in scheduling appointments if seeking care at private institutions rather than academic institutions. The chronicity and time sensitivity of pathology have no bearing on the ability to gain an appointment or on the wait time until the appointment. Regardless of geographic region, patients with Medicaid have decreased appointment success rates, although rates are highest in the West and lowest in the Northeast. Patients enrolled in Medicaid should know which medical centers are accessible to them in cases of injury and be aware of the potential for appointment denial at specific locations. Publicity or information regarding specific practices that accept Medicaid insurance may improve the efficiency with which these patients are able to make an appointment and receive appropriate care. The medical community should continue to seek out and identify potential interventions that can improve access to orthopedic care for all patients.

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