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The Impact of the ACA Medicaid Expansion on Access to Care and Hospitalization Charges for Lupus Patients

Elizabeth A. Brown, PhD, MPA, Clara E. Dismuke-Greer, PhD, Viswanathan Ramakrishnan, PhD, Trevor D. Faith, MS, Edith M. Williams, PhD, MS

Department of Public Health Sciences, College of Medicine, Medical University of South Carolina, 135 Cannon Street, Suite CS303, Charleston, SC, 29425.

Abstract

Objective: We sought to examine the impact of the Affordable Care Act on preventable hospitalizations and associated charges for patients living with systemic lupus erythematosus (SLE), before and after Medicaid expansion.

Methods: A retrospective, quasi-experimental study, using an Interrupted Time Series (ITS) research design, was used to analyze data from the Healthcare Cost and Utilization Project (HCUP) State Inpatient Databases (SID) for eight states. Lupus hospitalizations with a principal diagnosis of pre-determined ambulatory care sensitive (ACS) conditions were the unit of primary analysis. The primary outcome variable was access to care measured by preventable hospitalizations caused by an ACS condition.

Results: There were 204,150 lupus hospitalizations in the final analysis with the majority (53.5%) of lupus hospitalizations in states that did not expand Medicaid. In unadjusted analysis, Medicaid expansion states had significantly lower odds of having preventable lupus hospitalizations (OR 0.958); however, after adjusting for several covariates, Medicaid expansion states had increased odds of having preventable lupus hospitalizations (OR 1.302). Adjusted analysis showed that those with increased age, public insurance (Medicare or Medicaid), no health insurance, rural residence, or low income had significantly higher odds of having a preventable lupus hospitalization. States that expanded Medicaid had \$523 significantly more charges than states that did not expand Medicaid. Older age and rural residence were associated with significantly higher charges.

Conclusion: Our findings suggest that while Medicaid expansion increased health insurance coverage, it did not address other issues related to access to care that could reduce the number of preventable hospitalizations.

Keywords

systemic lupus erythematosus; access to care; health care policy; Medicaid expansion; policy evaluation

Corresponding author: Edith M. Williams, PhD, MS, Assistant Professor, Department of Public Health Sciences, College of Medicine, Medical University of South Carolina, 135 Cannon Street, Suite CS303, Charleston, SC 29425, Office: (843) 876-1519, wiled@musc.edu.

Conflicts of Interest:
None

INTRODUCTION

Vulnerable populations, particularly people living with a chronic illness like systemic lupus erythematosus (SLE) or lupus, may face barriers gaining access to primary care services (1–3). SLE is a chronic illness with a varied spectrum of disease activity, damage, and flares unique to each person living with the disease. It is often difficult to diagnose SLE in a timely manner because of complex clinical symptoms and disease manifestations that often mimic those of other serious health conditions (4, 5). Approximately 322,000 individuals may have lupus in the United States (6). Minorities and women carry the greatest burden of SLE, and African American women have a higher prevalence of SLE compared to White women (7–9). SLE is typically diagnosed in women during the childbearing stage of life, between puberty and menopause (8, 10). Primary care providers have the ability to detect SLE and refer patients to specialty care. However, individuals living with SLE who do not have access to primary or specialty care may be at risk for delayed diagnosis and treatment of SLE, erroneous diagnoses, ineffective medication regimens, increased risk of complications and damage, and increased utilization of emergency healthcare services (11, 12). It is imperative that people living with chronic conditions have adequate access to primary care and specialty care to reduce the burden of the disease on not only the patient but also the health care system.

The Patient Protection and Affordable Care Act (PPACA) of 2010, commonly referred to as the Affordable Care Act (ACA) or “Obamacare,” aimed to increase access to primary care, improve quality of care, and decrease health care costs. Under the ACA, Medicaid expansion across all 50 states sought to provide low-income individuals, particularly those without children, better health coverage. However, some states chose not to expand Medicaid which could have impacted access to primary care and patient outcomes, especially for those individuals living with chronic illnesses (13, 14).

Study Purpose

The purpose of this study was to investigate whether Medicaid expansion, enacted by the ACA, improved access to care or hospital charges for patients living with SLE.

SUBJECTS AND METHODS

Study Design.

The ACA’s Medicaid expansion allowed for a retrospective, quasi-experimental study using an Interrupted Time Series (ITS) research design to evaluate health policy. An ITS research design compares trends over time and examines differences in pre-and post-intervention outcome measures. The design allows for some sort of change or intervention to separate time periods and compare the effect of the intervention; it is increasingly used in the evaluation of healthcare interventions such as healthcare policies and programs (15). The intervention, or “interruption,” was the change in health policy, which was the implementation of Medicaid expansion under the ACA, effective January 1, 2014.

We compared four states that expanded Medicaid on January 1, 2014 with four states that did not expand Medicaid. We examined eight (8) quarterly pre-intervention time points over two years (January 1, 2012 – December 31, 2013) and seven (7) post-intervention time points over two years (January 1, 2014 – September 30, 2015). In 2015, fourth quarter hospital admissions—October through December—were not used due to the transition from ICD-9 to ICD-10 codes.

Data Sources.

Data from the Agency for Health Research and Quality's (AHRQ) Healthcare Cost and Utilization Project (HCUP) State Inpatient Database (SID) were used for analysis. SID provided administrative hospital data, patient demographics, ICD-9 diagnoses codes, total charges, length of stay, and expected payment source for all hospital inpatient stays in community hospitals, which included academic medical centers and tertiary care hospitals, in each state (16). We used 2012–2015 HCUP SID administrative data to measure access to primary care both before (2012–2013) and after (2014–2015) ACA Medicaid expansion. SC 2015 data did not include cost data. Data from HCUP SID were not linked to individual patient data, and the states were defined as the unit of analysis.

Study Sample.

The sample consisted of hospitalizations across eight states. The states used in this analysis included four states that expanded Medicaid under the ACA on January 1, 2014: Arizona (AZ), Kentucky (KY), New Jersey (NJ), and New York (NY). These states were compared to four states that did not expand Medicaid under the ACA: Florida (FL), Georgia (GA), South Carolina (SC), and Wisconsin (WI). Inclusion criteria included the following characteristics: (a) all payers (b) 20–64 years old, (c) all races, and (d) all lupus hospitalizations.

Definition of Medicaid Expansion.

States that expanded Medicaid under the ACA increased their Medicaid income eligibility limits, which is measured by the federal poverty level (FPL), to 138% of the FPL. However, on average, states that did not expand Medicaid chose to have lower Medicaid income eligibility limits (see Figure 1) (17). States' Medicaid income eligibility for parents before and after Medicaid expansion are available in supplemental documents (Supplemental Table 1).

Definition of SLE Cases.

Lupus hospitalizations were defined as a hospitalization with an ICD-9 code of 710.0 for the discharge diagnosis. The ICD-9 code 710.0 was listed as the primary discharge diagnosis or in a subsequent discharge diagnosis field (e.g. Dx1, Dx2, Dx3, etc.). Within this cohort of lupus hospitalizations, preventable lupus hospitalizations were defined as a lupus hospitalization that had an ACS condition (e.g. asthma, cellulitis, diabetes, etc.) as the primary discharge diagnosis. Appropriate discharge diagnoses for lupus and ACS conditions were identified with ICD-9 codes (*International Classification of Diseases, 9th Revision, Clinical Modification* codes).

Definition of Preventable Lupus Hospitalization.

Preventable hospitalizations (PH) were defined as a lupus hospitalization with an ambulatory care sensitive (ACS) condition as the principal discharge diagnosis. These specific hospitalizations were used to measure access to primary care. Theoretically, ACS conditions are illnesses or diagnoses that, with proper primary care, hospitalizations can be avoided if the disease is appropriately managed in the community setting (18). The use of ACS conditions is a validated method to measure access to primary care (19). Authors used similar ACS conditions from a 1992 study on avoidable hospitalizations (20) and a 2010 SLE access to care study (21) for data analysis (see Table 1).

Dependent Variable(s).

The primary dependent variable was the likelihood of a PH for adults hospitalized with lupus, ages 20–64 years old, from January 2012 to September 2015, for selected states. Lupus hospitalizations with a principal diagnosis of a pre-determined ACS condition were considered for analysis.

The secondary dependent variable was diagnosis-related group (DRG) standardized charges, following the methodology of Cartmell, Dismuke, Dooley et al.(2018) (22). Based on the year of the discharge, the total charge was adjusted to March 2019 dollar value using the U.S. Department of Labor Bureau of Labor Statistics Inflation Calculator (23). Due to the varying profit margin inherent in hospital inpatient charges, we standardized charges based on the associated DRG, using the median charge for each DRG across all hospitals and states. To examine the association of Medicaid expansion with DRG standardized charges, we estimated a generalized linear model (GLM) with gamma distribution and log link, based on the distribution of the charges.

Statistical Analysis.

Descriptive statistics compared differences in demographic variables between hospitalizations in states that expanded Medicaid and states that did not expand Medicaid. First, associations were tested between Medicaid expansion status (Medicaid expansion vs. non-Medicaid expansion), patient demographics, and hospitalization type (preventable vs. non preventable) in bivariate logistic regression analyses. Chi-square tests were used to determine significance of associations between categorical variables. For continuous variables, two-sample t-tests were conducted to test the equality of difference in means between the two cohorts.

A segmented regression analysis model was used to assess the impact Medicaid expansion had on the likelihood of having a PH. This segmented regression analysis (a form of interrupted time series (ITS) analysis) included a “dummy” variable specifying two segments: (1) time period before January 1, 2014 when the policy intervention was implemented and (2) time period after the January 1, 2014 (24). We included interaction of this “dummy” variable with time to define and test separate intercepts and slopes before and after the intervention. The unadjusted model accounted for change over time (quarterly data from January 1, 2012 to September 30, 2015), Medicaid expansion (time after January 1,

2014), and an interaction term between the two variables (time and time after Medicaid expansion).

Covariates were entered into the model separately to determine the effect on the dependent outcome. After fitting the best model, results are provided for the adjusted model. Because states were chosen purposefully (not at random), to control for state to state variability, it was used as a fixed effect with Florida as the reference state, since Florida had the highest proportion of hospitalizations. We used SAS 9.4 to complete all data analysis (SAS Institute Inc, Cary, NC).

Ethics Review.

The Institutional Review Board (IRB) at the Medical University of South Carolina (MUSC) deemed this research to not be human subject research (ID: Pro00037013) since the data will use de-identified public use data. The appropriate persons completed the HCUP Data Use Agreement (DUA) online training.

RESULTS

There were 204,150 lupus hospitalizations across the eight states over 15 quarters, with approximately 53% of lupus hospitalizations occurring in the four states that did not expand Medicaid. States that did not expand Medicaid had significantly more lupus hospitalizations with the following characteristics: minority (52.50% vs. 47.50%), male (52.73% vs. 47.27%), rural residence (60.09% vs. 39.91%), and preventable lupus hospitalizations (54.34% vs. 45.66%) (Table 2). Both cohorts (Medicaid expansion states and non-Medicaid expansion states) saw more hospitalizations for those 45–54 years old and on Medicare (Table 2). Over time, states that did not expand Medicaid had a higher number of preventable lupus hospitalizations (supplemental Figure 2).

Preventable Hospitalizations.

From 2012–2015, the most prevalent ACS conditions were pneumonia, congestive heart failure, and cellulitis (supplemental Table 2). The data illustrating all ACS conditions at each quarter is available in a supplemental Excel file. In the base model examining change over time, the probability of having a preventable lupus hospitalization was not significantly different over time (OR 1.004, 95% CI 0.996, 1.013) (Table 3). Once states' Medicaid expansion statuses were added to the base model, the cohort of Medicaid expansion states had a significantly lower odds of having a preventable lupus hospitalization (OR 0.958, 95% CI, 0.932, 0.985). Once the following covariates were added to the base model one at a time, the following were associated with a significant increased odds of a preventable lupus hospitalization: increased age, public health insurance (Medicare or Medicaid), uninsured status, low income (<\$42,000), and rural residence (Table 3). Race was the only covariate that was not statistically significant and was not considered in the final model.

In the final adjusted model, Medicaid expansion states had a significantly higher odds of having preventable lupus hospitalizations (OR 1.302, 95% CI 1.119, 1.515) (Table 4). A jackknife sensitivity analysis, where we removed each state one by one, showed Medicaid expansion states still had a significantly higher odds of having preventable hospitalizations

(OR 1.263, 95% CI 1.085, 1.471) (not shown). Those 55–64 years old had a 49% increased odds of a preventable lupus hospitalization compared to 20–34 years old. Those on Medicaid and the uninsured had 30% and 33% increased odds of having a preventable lupus hospitalization, respectively. People in the lowest median household income (MHI) quartile had a 1.14 times higher likelihood of a preventable lupus hospitalization compared to those in the highest MHI quartile. Additionally, being in Georgia (OR 1.171) or South Carolina (OR 1.114) (compared to Florida) was associated with a higher likelihood of having a preventable lupus hospitalization. Yet, states that expanded Medicaid each had significantly lower odds of preventable lupus hospitalizations, when individually compared to Florida (Table 4).

DRG Standardized Charges.

States that expanded Medicaid had \$523 significantly more DRG standardized charges than states that did not expand Medicaid. The following individual-level characteristics were associated with significantly higher DRG standardized charges in the adjusted model: those 55–64 years old (\$7,277), 45–64 years old (\$3,299), and people from rural areas (\$2,183) (Table 5). Female sex (-\$6,370), the uninsured (-\$4,751), and those on Medicaid (-\$3,105) had significantly lower DRG standardized charges. When states were compared to Florida, which had the most preventable lupus hospitalizations, Wisconsin (non-Medicaid expansion state), Georgia (non-Medicaid expansion state), and Arizona (Medicaid expansion states) had significantly higher DRG standardized charges.

DISCUSSION

The probability of having a preventable lupus hospitalization did not change over time; however, once accounting for various covariates, including time, Medicaid expansion states had a higher likelihood of having preventable lupus hospitalizations when compared with non-expansion states. In adjusted models, the following characteristics were associated with higher odds of a preventable lupus hospitalization: older age, public health insurance (Medicare and Medicaid), no insurance, low income, and rural residence. These findings are consistent with existing evidence that avoidable hospitalizations occur more often among older and poorer patients, suggesting that these patients have more difficulty accessing care (26).

According to Gillis, et al (2007), patients with SLE who have Medicaid, an insurance program for individuals with less income, may have limited access to care. In their study, they noted SLE patients with Medicaid were more likely to travel greater distances for specialized care and utilize general practitioners and emergency rooms more frequently than those with Medicare or other insurance (2). Thus, low-income individuals with SLE appear to have several issues related to access to quality care, including distance to quality care and limited specialized care in their local communities. Another study assessed the need for improved access to rheumatology care in Massachusetts. Feldman and colleagues (2013) surveyed community health center medical directors to determine the limitations in clinics and systems for patients with rheumatic diseases, including SLE. Alarming, the study found that approximately 94% of respondents would not begin an immunosuppressive

regiment for patients with SLE. This may have been due to their limited expertise in rheumatology or fear of prescribing erroneous medication or dosages. One of the key findings was the fact that many patients with SLE may not be put on the proper medications due to inexperience of local primary care physicians which could negatively affect disease flares and disease progression (3).

In the current study, states that expanded Medicaid all had lower odds of having preventable lupus hospitalizations compared with Florida, which did not expand Medicaid. When states were combined into one cohort based on their Medicaid expansion status (e.g. expansion states), Medicaid expansion states' aggregated data showed higher odds of preventable lupus hospitalizations. However, when states were examined separately, all Medicaid expansion states had lower odds of having preventable lupus hospitalizations (compared to Florida), and non-Medicaid expansion states, particularly South Carolina and Georgia, had increased odds of having preventable lupus hospitalizations compared to Florida. This finding may illustrate how well Medicaid expansion health care policy is fairing for lupus patients in each individual state, or it could be measuring different state policies in the Medicaid expansion group. Ideally, Medicaid expansion increased the number of people eligible for health insurance for adults without children and more low-income adults. This increase in coverage may have impacted access to care in Medicaid expansion states and may equate to lower odds of preventable lupus hospitalizations. Specifically, if individuals gain health insurance coverage and access to appropriate health care services, they have a better opportunity to work with their health care provider to treat, manage, and control various health conditions and should not be hospitalized for ACS conditions (e.g. asthma, diabetes, etc.) that can be treated in the ambulatory care setting (18). However, this does not explain why aggregate state data shows Medicaid expansion states have higher odds of preventable lupus hospitalizations.

Aggregate state data for Medicaid expansion states may reflect other issues in accessing appropriate health care services. The Medicaid expansion cohort may have increased odds of preventable lupus hospitalizations due to issues and certain characteristics within the U.S. health care system. For example, in Medicaid expansion states, adults may attain health care insurance (coverage) but may not get appropriate and timely primary care (access). A health insurance card does not lead to immediate access to health care (27). An insurance card does not create convenient office hours, guarantee transportation to a medical provider, and does not address the unique needs of each individual patient (27). Adults may face barriers with transportation, communication and trust, medication affordability, language/cultural barriers, and a host of other social determinants of health (SDOH) that cannot be measured in certain datasets (28).

Additionally, adults with hourly employment may not have the luxury to take time from work or may not have childcare, and the emergency department (ED) has some of the most convenient hours of operation compared to other providers in the ambulatory care setting. For example, many physician offices are closed on the weekends and close by 5pm during the week. These barriers to health care access could influence the likelihood of being hospitalized for an ACS condition. Thus, while Medicaid expansion gave adults an insurance card (health care coverage), the policy did not address communication and trust between

patient and provider (health care access). The policy did not create more convenient health care office hours. Lastly, the policy did not provide all adults with adequate or personal transportation to travel to physician appointments. As more people gain insurance under the ACA and find a usual source of care or primary care doctor, they may be less likely to have a PH. We may need more time to see individuals find and develop more trusting relationships with primary care providers before we see a significant decrease in the number of PH (29).

With regard to DRG standardized charges, we observed higher charges in non-expansion states (with the exception of Arizona which was a Medicaid expansion state with higher charges), relative to Florida. These trends suggest that Medicaid expansion may be reducing charges in those states with Medicaid expansion. Variations in charges according to sociodemographic characteristics such as age and sex could be attributed to a number of factors. Older lupus patients may be sicker which could lead to more charges. People from rural areas tend to delay care which could make them sicker and lead to more charges. Additionally, females are generally more proactive in their care and thus, may not present as sick as the men (1, 12).

Limitations

This study had several limitations, including possible administrative errors with ICD-9 codes. There was also the inability to measure unobserved differences in populations across the different states, including the differences in Medicaid enrollment and marketing strategies and patient care-seeking behaviors. Lupus prevalence or severity was not accounted for in the analysis. Segmented regression analysis generally calls for 12 data points before and after the intervention; however, this study had eight time points before and seven time points after the intervention. Lastly, findings are limited to the population studied.

Conclusions

This study evaluated ACA Medicaid expansion and its impact on access to care for people living with lupus. Our findings emphasize the importance of addressing systemic problems with American healthcare delivery at multiple levels. Medicaid expansion has increased the rate of health insurance coverage in participating states, however subsequent gains do not appear to be made in access to care. For SLE patients and other chronic disease bearing populations, Medicaid coverage alone may not be sufficient to encourage effective use of healthcare services. Further policy initiatives, interventions, and operational changes will be needed to address access to care as well as associated patient level factors in order to provide cost-effective chronic disease management.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Significance and Innovations

- While a handful of studies have investigated the impact of Medicaid expansion on healthcare access and utilization, no studies have examined the impact on hospitalization charges for lupus patient care.
- Medicaid expansion states had a higher likelihood of having preventable lupus hospitalizations when compared with non-expansion states.
- Trends suggest that Medicaid expansion may be reducing hospitalization charges in those states with Medicaid expansion.
- Our findings suggest that while Medicaid expansion increased health insurance coverage, it did not address other barriers to care, which may include communication and trust, transportation, and socioeconomic status.

Figure 1. Medicaid Income Eligibility for Parents, by State Medicaid Expansion Status, 2013 v. 2014¹

¹This figure only includes data from states used in this analysis: Medicaid expansion states (AZ, KY, NJ, NY) and non-Medicaid expansion states (FL, GA, SC, WI).

Table 1.

Ambulatory Care Sensitive (ACS) Conditions and ICD-9 codes

ACS Conditions		ICD-9 codes
Ruptured appendix	540.0, 540.1	
Asthma	493	
Cellulitis	681, 682	
Congestive Heart Failure	428, 402.01, 402.11, 402.91	
Diabetes	250.1, 250.2, 250.3, 251.0	
Gangrene	785.4	
Hypokalemia	276.8	
Malignant Hypertension	401.0, 402.0, 403.0, 404.0, 405.0, 437.2	
Pneumonia	481, 482, 483, 485, 486	
Pyelonephritis	590.0, 590.1, 590.8	
Perforated or bleeding ulcer	531.0, 531.2, 531.4, 531.6, 532.0, 532.2, 532.4, 532.6, 533.0, 533.1, 533.2, 533.4, 533.5, 533.6	

Table 2.

Demographic variables by Medicaid expansion status, 2012–2015, 20–64 years old

Demographic Variables ²	Non-Medicaid Expansion States n=109121 (%)	Medicaid Expansion States n=95029 (%)	p value
Race			<.0001
Minority	52257 (52.50)	47283 (47.50)	
Sex			0.0205
Male	12029 (52.73)	10783 (47.27)	
Age			<.0001
20–34 years old	19229 (23.76)	16800 (24.04)	
35–44 years old	18002 (22.24)	14960 (21.41)	
45–54 years old	22789 (28.15)	19422 (27.80)	
55–64 years old	20924 (25.85)	18693 (26.75)	
Primary Payer			<.0001
Private Insurance	23829 (22.06)	25862 (27.38)	
Medicaid	20884 (19.33)	21432 (22.69)	
Medicare	54327 (50.28)	42935 (45.45)	
Uninsured	5575 (5.16)	2633 (2.79)	
Other ³	3426 (3.17)	1604 (1.70)	
Median Household Income (MHI)⁴			<.0001
Quartile 1 (<\$42,000)	45585 (43.53)	26788 (29.39)	
Quartile 2 (<\$52,000)	31068 (29.67)	18447 (20.24)	
Quartile 3 (<\$68,000)	20034 (19.13)	19025 (20.87)	
Quartile 4 (\$68,000+)	8032 (7.67)	26895 (29.50)	
Residence Type			<.0001
Rural	3252 (60.09)	2160 (39.91)	
Hospitalizations			0.0039
PH ⁵	12697 (54.34)	10670 (45.66)	

²Chi-square tests conducted for categorical variables and t-tests conducted for continuous variables. Each sample (n) is all nonmissing data

³Includes Worker's Compensation, CHAMPUS, CHAMPVA, Title V, and other government programs

⁴MHI quartiles changed each year from 2012–2015. See website for more information: https://www.hcup-us.ahrq.gov/db/vars/zipinc_qrtl/nisnote.jsp

⁵PH: Preventable hospitalizations (measure of access to care)

Table 3.Unadjusted Model⁶, Odds Ratios for Preventable Lupus Hospitalizations

Characteristic	Odds Ratio	95% Confidence
Quarters		
Change over time	1.004	(0.996, 1.013)
Medicaid expansion status		
Did not expand Medicaid (ref)		
Expanded Medicaid	0.958	(0.932, 0.985)
Race/ethnicity		
White (ref)		
Non-White	0.998	(0.962, 1.016)
Sex		
Male (ref)		
Female	0.948	(0.908, 0.989)
Age, years		
20–34 (ref)		
35–44	1.256	(1.194, 1.321)
45–54	1.405	(1.340, 1.473)
55–64	1.444	(1.377, 1.514)
Primary Payer		
Private insurance (ref)		
Medicaid	1.197	(1.147, 1.249)
Medicare	1.364	(1.316, 1.413)
Uninsured	1.304	(1.213, 1.403)
Other ⁷	0.999	(0.905, 1.103)
Median Household Income (MHI)		
Quartile 1 (<\$42,000)	1.121	(1.076, 1.167)
Quartile 2 (< \$52,000)	1.034	(0.990, 1.080)
Quartile 3 (<\$68,000)	1.006	(0.960, 1.054)
Quartile 4 (\$68,000+) (ref)		
Residence		
Urban (ref)		
Rural	1.287	(1.190, 1.391)
State		
Florida (ref)		
Georgia	1.173	(1.123, 1.226)
South Carolina	1.160	(1.092, 1.233)
Wisconsin	0.997	(0.928, 1.070)
Arizona	1.029	(0.975, 1.087)

⁶Each covariate entered in the base model separately⁷Includes Worker's Compensation, CHAMPUS, CHAMPVA, Title V, and other government programs

Characteristic	Odds Ratio	95% Confidence
Kentucky	1.124	(1.054, 1.199)
New Jersey	1.169	(1.115, 1.227)
New York	0.919	(0.884, 0.956)

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Table 4.

Adjusted Model, Odds Ratios for Preventable Lupus Hospitalizations

Characteristic	Full (Adjusted)	Model (95% CI)
Medicaid expansion status		
Did not expand Medicaid (ref)		
Expanded Medicaid	1.302	(1.119, 1.515)
Sex		
Male (ref)		
Female	0.930	(0.882, 0.980)
Age, years		
20–34 (ref)		
35–44	1.273	(1.208, 1.341)
45–54	1.430	(1.362, 1.501)
55–64	1.488	(1.415, 1.564)
Primary Payer		
Private insurance (ref)		
Medicaid	1.298	(1.238, 1.361)
Medicare	1.206	(1.156, 1.259)
Uninsured	1.334	(1.235, 1.442)
Other ⁸	0.962	(0.862, 1.074)
Median Household Income (MHI)		
Quartile 1 (<\$42,000)	1.138	(1.077, 1.202)
Quartile 2 (<\$52,000)	1.062	(1.002, 1.125)
Quartile 3 (<\$68,000)	1.000	(0.943, 1.061)
Quartile 4 (\$68,000+) (ref)		
Residence		
Urban (ref)		
Rural	1.142	(1.032, 1.263)
State		
Florida (ref)		
Georgia	1.171	(1.111, 1.233)
South Carolina	1.114	(1.027, 1.208)
Arizona	0.793	(0.675, 0.932)
Kentucky	0.788	(0.688, 0.929)
New Jersey	0.960	(0.818, 1.128)
New York	0.679	(0.580, 0.796)

⁸Includes Worker's Compensation, CHAMPUS, CHAMPVA, Title V, and other government programs

Table 5.

Adjusted Model, DRG and Inflation Adjusted Charges for Preventable Lupus Hospitalizations

Characteristic	Full (Adjusted)	Model (95% CI)
Medicaid expansion status		
Did not expand Medicaid (ref)		
Expanded Medicaid	\$523 *	(96, 950)
Sex		
Male (ref)		
Female	-\$6,370 *	(-7123, -5616)
Age, years		
20-34 (ref)		
35-44	\$1,023 *	(453, 1592)
45-54	\$3,299 *	(2737, 3860)
55-64	\$7,277 *	(6,652, 7902)
Primary Payer		
Private insurance (ref)		
Medicaid	-\$3,105 *	(-3669, -2541)
Medicare	\$1,361 *	(1.156, 1.259)
Uninsured	-\$4,751 *	(-5575, -3928)
Other ⁹	-\$511	(-1823, 799)
Median Household Income (MHI)		
Quartile 1 (<\$42,000)	-\$447	(-1106, 210)
Quartile 2 (<\$52,000)	-\$676	(-1356, 3)
Quartile 3 (<\$68,000)	-\$325	(-1021, 371)
Quartile 4 (\$68,000+) (ref)		
Residence		
Urban (ref)		
Rural	\$2,183 *	(807, 3560)
State		
Florida (ref)		
Georgia	\$2,424 *	(1579, 3269)
South Carolina	\$1,988 *	(1129, 2848)
Wisconsin	\$3,017 *	(1933, 4100)
Arizona	\$2,424 *	(1579, 3269)
Kentucky	\$1,546 *	(563, 2529)
New Jersey	-\$1,032 *	(1791, -273)
New York	\$376	(-227, 980)

⁹Includes Worker's Compensation, CHAMPUS, CHAMPVA, Title V, and other government programs

* Indicates significance at $P < 0.05$

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