Healthcare Reform, Length of Stay and Readmissions for Child Mental Health Hospitalizations

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Abstract

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Background: Healthcare reform may impact inpatient mental health services by increasing access and changing insurer incentives. We examined whether the 2014 Affordable Care Act (ACA) implementation was associated with changes in length of stay (LOS) and 30-day readmissions for pediatric patients.

Methods: We used interrupted time series analysis to evaluate LOS and 30-day readmissions during the 30 months before and 24 months after ACA implementation, with a 6-month washout period, on patients aged 4-18 years who were discharged from the psychiatry unit of a children's hospital. Differences by payer (Medicaid vs. non-Medicaid) were examined in moderated interrupted time series. Logistic regression examined the association between LOS and 30-day readmissions post-ACA.

Results: There were 1,874 encounters in the pre-ACA period and 2,186 encounters in the post-ACA period. Compared with pre-ACA, post-ACA implementation was associated with LOS that was significantly decreasing over time (pre-ACA versus post-ACA slope difference -0.10 days per month [95% confidence interval -0.17 to -0.02]; P=0.01), especially for Medicaid-insured patients (pre-ACA versus post-ACA slope difference -0.14 days per month [95% confidence interval -0.26 to -0.01]; P=0.03). The overall proportion of 30-day readmissions increased

significantly (pre-ACA 6%, post-ACA 10%; P<0.05 for the difference). We found no association between LOS and 30-day readmissions post-ACA.

Conclusions: ACA implementation was associated with a decline in psychiatric inpatient LOS over time, especially for those on Medicaid, and an increase in 30-day readmissions. Post-ACA, LOS was not associated with 30-day readmissions. Further investigation to understand the drivers of these patterns is warranted.

Introduction

The prevalence of mental health conditions is rising among children and adolescents.[1,2] These conditions are frequent and expensive reasons for youth to be hospitalized.[3] Inpatient treatment for mental health conditions in children and adolescents is associated with considerable health gain,[4] however, average length of stay (LOS) for inpatient pediatric mental health conditions has been decreasing for decades. Patients with short LOS seem likely to be at higher risk of subsequent negative outcomes after admission,[5] with studies showing conflicting effects on outcomes such as readmissions.[6-10]

The Affordable Care Act (ACA) Medicaid expansion has been associated with increased receipt of general pediatric care,[11] but its impact on mental health services is less well characterized. Health insurance legislation could impact inpatient mental health services in multiple ways,[12] by increasing access and changing insurer incentives in an effort to reduce cost.[13] Given healthcare reform's potential to further accelerate the decline in inpatient LOS, we aimed to examine its effect on mental health LOS and readmissions.

Our primary objectives were to determine changes over time, before and after implementation of the ACA, in LOS, and 30-day readmissions for pediatric patients admitted for mental health conditions, overall and by insurance type. Given concerns that decreasing LOS could be resulting in increased readmissions, which have implications for care efficiency and quality measurement,[14] we also aimed to explore the relationship between LOS and readmissions in the post-ACA period. Specifically, our secondary objective was to determine if LOS was associated

with 30-day ED return visits or inpatient readmissions in the post-ACA period and to evaluate if these associations were modified by disease severity, diagnosis, or insurance type.

Methods

Data and Sample

We conducted a retrospective study of patients discharged from the inpatient psychiatric unit at Seattle Children's Hospital from October 1, 2011 through September 30, 2016. Seattle Children's Hospital is a tertiary care, university-affiliated, 403-bed pediatric hospital with a dedicated pediatric emergency department. As of 2019, there were 41 beds available in the psychiatric unit.

Children ages 4 to 18 years cared for by the psychiatry service and discharged from the psychiatric unit were eligible for inclusion in this study. We included patients admitted to other units during their hospital stay as long as they were discharged home from the psychiatric unit. We excluded patients who spent <24 hours on the inpatient psychiatric unit as such short admissions were unlikely to have the same therapeutic significance. The Seattle Children's Hospital Institutional Review Board approved this study.

Exposures and Outcomes

For our primary analysis, our exposure of interest was time with respect to the national-level healthcare reform associated with the Affordable Care Act, which was implemented in 2014. We considered the months before closure of the Market Place Exchange (October 2011 through March 2014) as the pre-reform period and the months from October 2014 through September

2016 as the post-reform period. We excluded the months during the implementation period (April through September 2014) from the analysis.

Our primary outcomes were inpatient LOS and 30-day readmissions. For descriptive purposes, we also report LOS in census days (number of days that the patient was present at midnight as an inpatient) grouped in 3-day blocks based on Medicaid's authorization approach.

In our secondary analysis, our exposure of interest was LOS and our outcomes of interest were 30-day ED return visits and hospital readmissions. We performed regressions only in the post-reform period given that our principle objective was to understand the effect of the 2014 healthcare reform, and whether its specific effect on pediatric inpatient mental health LOS was associated with 30-day readmissions.

Patient and Clinical Characteristics

We obtained relevant patient characteristics (age, gender, race/ethnicity, insurance, language, and admission type) from hospital administrative data. Patients were classified as covered by Medicaid, private insurance that contracted with the hospital, private insurance that did not contract with the hospital, or other types of insurance such as military. Patients who self-paid for care were considered to have "other" insurance. No major payer contract changes occurred during the study period, although a few patients switched from non-contracted to contracted insurance types; given their small representation, we kept them listed as contracted.
Because psychiatric admissions can be voluntary or involuntary, and their type might influence treatment outcomes, we also examined admission type. For patients 12 years of age and younger,

type of admission was defined as voluntary because parents have medical decision-making authority. Patients 13 years of age and older were classified in one of three ways: 1) admitted under the Involuntary Treatment Act (ITA), meaning psychiatric treatment was undertaken without the consent of the treated party; 2) having parent-initiated treatment (PIT) if the parent, for the purpose of mental health treatment, brought his/her child to the inpatient psychiatric unit; 3) voluntary, if neither of the aforementioned categories were documented. If more than one indication was documented, we classified patients as ITA if ITA was documented at any point during the stay. If not, then we classified it as PIT, if PIT was documented.

Clinical characteristics of interest included primary diagnosis, disease severity, and medical comorbidity. We used *International Classification of Diseases (ICD)* codes to group patients into categories based on a primary diagnosis of a depressive disorder, disruptive disorder, or other psychiatric disorder, given that our institution historically has had clinical pathways for treating depressive and disruptive behavioral disorders, which might have important effects on LOS or readmissions. Our "other diagnosis" category included those diagnosed with bipolar disorder, schizophrenia, psychotic disorders, anxiety and eating disorders, among others (Appendix One: ICD codes). We also noted the presence of diagnostic codes for developmental disorders (e.g. autism, intellectual disability) during the initial encounter as they could potentially affect LOS and inpatient readmissions. We identified patients who were prescribed a scheduled antipsychotic at discharge as a proxy for severity[15] (Appendix Two: antipsychotic list). Medical comorbidity included any non-psychiatric diagnosis coded during the encounter.

Statistical Analysis

Patient and clinical characteristics for encounters prior to and following ACA implementation were summarized via frequencies and percentages and means and standard deviation as appropriate.

As an interrupted time series (ITS) analysis strongly lends itself to evaluating natural experiments such as policy change,[16,17] we conducted an ITS analysis on the full population of admitted patients. Specifically, we evaluated the association of time, based on month of discharge relative to implementation of the ACA in 2014, with mean LOS and 30-day readmission proportions. We fit linear regression models with interaction terms for month of discharge and time period (pre- and post- ACA) to compare trends in each outcome between the two time periods. We compared the pre- and post-ACA period slopes and intercepts using t-tests. As we hypothesized that healthcare reform most likely affected patients insured by Medicaid, we repeated the ITS analysis stratifying by insurance type (Medicaid versus non-Medicaid).

To address our secondary objective, we used logistic regression to evaluate the association of LOS with 30-day ED return visits and readmissions in separate models among encounters from the post-ACA period. We controlled for age at discharge, race/ethnicity, the presence of intellectual disability and specific pervasive developmental disorders, and admission type.[18,19] To evaluate whether insurance type (Medicaid vs. non-Medicaid), disease severity (discharged on antipsychotics vs. not), or diagnosis (depressive disorder vs. disruptive disorder vs. neither) modified the observed associations between LOS and ED return visits and readmissions, we added interaction terms to our model and repeated the analysis.[20, 21]

All tests were two-sided and p-values <0.05 were considered statistically significant. All statistical analyses were performed in SAS version 9.4 (SAS Institute, Carey, NC) and R version 11 (R Foundation for Statistical Computing, Vienna, Austria).

Results

During our study period, there were 4,460 admissions from which patients were discharged from the inpatient psychiatric unit. We excluded 62 of these admissions as LOS was <24 hours. In 876 admissions (19.6% of 4460) patients spent time on other inpatient services, though 99.0% of all minutes during the encounter admission were spent in the psychiatric unit. Mean age at first discharge was similar between patients in the pre- and post-ACA implementation periods, as was the distribution of sex (Table 1). A smaller proportion of patients in the pre-ACA period were Hispanic, non-Hispanic Black, or other race/ethnicities. Medicaid covered 33.3% of admissions during the pre-ACA period, compared with 42.6% during the post-period. We noted smaller shifts in other payer types. More admissions to the psychiatric unit in the post-ACA period were for depressive disorders (48.4% vs 43.4%). Additionally, in the post-ACA period, we observed that during more admissions patients were being diagnosed with a developmental delay—specifically autism—and/or with an intellectual disability, and being discharged on antipsychotic medications. It was not possible to make a comparison of indication for admission type between the pre- and post ACA-periods because the indication was not documented for 51.7% of the admissions during the pre-ACA period (of note, admission type was only used as a covariate in the analysis restricted to the post-ACA period).

Comparing LOS in census days, we noted a considerable shift in the percentages of individuals spending time in each census day category, with larger proportions spending less time inpatient post-ACA implementation (Table 2). Post-ACA implementation, we observed an increase in 30-day ED return visits and readmissions (Table 2).

Using ITS, we found that mean LOS, during the pre-ACA period, was rising at a rate of 0.05 days (or 72 minutes) per admission per month (95% confidence interval [CI] 0.006 to 0.10; Figure 1A). In the post-ACA period, the mean LOS was decreasing by 0.05 days per admission per month (95% CI -0.10 to 0.01). The difference in the rate of change in LOS between the pre- and post-ACA periods was statistically significant (p for interaction=0.01): compared with the steadily increasing mean LOS predicted by the pre-ACA slope trajectory, the post-ACA period had an observed LOS that was decreasing by a net of 0.10 days per month on average (95% CI -0.17 to -0.02). We observed a larger difference in the rate of LOS change over time among Medicaid-insured patients (pre- to post-ACA slope difference: -0.14; 95% CI -0.26 to -0.01) than among non-Medicaid insured patients (pre- to post-ACA slope difference: -0.06; 95% CI -0.14 to 0.03). Patients not insured by Medicaid had a significantly shorter mean LOS post-implementation (pre-ACA versus post-ACA mean intercept difference -2.02 days [95% CI -3.54 to -0.50]; P=0.01), but no significant time trend either before or after ACA implementation.

Again, using ITS, we observed a significant increase in the mean proportion of 30-day inpatient readmissions after the implementation of the ACA (Pre-ACA intercept 6% [95% CI 3% to 7%], post-ACA intercept 10% [95% CI 7% to 12%]; Figure 2A). We did not observe a trend over time in 30-day readmissions, either before or after ACA implementation, in the overall study

population. When we stratified by insurance type, for those on Medicaid we observed a probable change in the slope direction (increasing pre-ACA to decreasing post-ACA) and a net decrease in the change in readmissions over time that did not reach statistical significance (pre-ACA versus post-ACA slope difference -0.4%; 95% CI -0.8% to 0.03%). For those not on Medicaid, we saw the inverse, with a probable change in slope direction from decreasing pre-ACA to increasing post-ACA, and a net increase in the change in readmissions over time that did not reach statistical significance (pre-ACA versus post-ACA slope difference 0.2%; 95% CI -0.01% to 0.50%).

We did not find an association between length of stay and 30-day ED return visits (aOR 0.98; 95% CI 0.96 to 1.01) or readmissions (aOR 1.00; 95% CI 0.98 to 1.02) in the post-ACA period after adjusting for age, race/ethnicity, type of admission, developmental delay, intellectual disability, diagnosis, insurance type, and disease severity. We also did not find significant effect measure modification by diagnosis, insurance type, or disease severity (Appendix 3). A sensitivity analysis using LOS as an ordinal (versus continuous) predictor also supported these non-significant findings (data not shown).

Discussion

Our interrupted time series analysis supported our hypotheses that implementation of the ACA was associated with decreased inpatient LOS among patients admitted to the psychiatry unit, overall and by insurance type. While mean LOS during the pre-ACA period was rising, ACA implementation was associated with a halt to the rate of rising LOS; compared with the increase predicted by the pre-ACA slope trajectory, the post-ACA period had an observed LOS that was

steadily decreasing by 144 minutes per admission per month. Medicaid-insured patients were observed to have a steady decrease in their LOS post-ACA. Patients not insured by Medicaid had a significantly shorter mean LOS post-ACA implementation, but no trend over time. These patterns may reflect differences in the speed of influence of healthcare policy on insurer.

While few have reported on changes in LOS for pediatric mental health conditions subsequent to the ACA,[22] it has been observed that LOS has decreased over time despite increased rates of serious illness and self-harm.[9] Given that illness severity does not seem to be driving LOS, and that others have found that having a managed care payer[7] was a predictor of shorter LOS, it seems plausible that administrative and insurance factors have always had a disproportionately large influence on LOS for mental health indications.

We also observed our hypothesized increase in 30-day inpatient readmissions for those initially admitted for mental health conditions overall; the average proportion of patients readmitted increased roughly 4% (mean intercept difference) after ACA implementation. In one previous study, adolescents admitted after Medicaid managed care reforms were much more likely to experience readmissions; the highest risk was in the first 15-30 days post discharge, suggesting that the quality of care may be adversely affected by managed care reforms.[8] Yet, when we stratified by Medicaid vs. non-Medicaid, we saw no significant differences in monthly trends or intercepts. We did observe a non-significant increasing average proportion of patients readmitted for those not on Medicaid, and a non-significant decreasing average proportion of patients readmitted for those on Medicaid. For those on Medicaid, the observed trajectory, if real, could

potentially reflect better outpatient care, increased insurance denials, or a change in the covered population's illness severity.

Previous literature suggests that administratively limiting LOS among patients admitted for mental health conditions may have negative consequences such as increasing hospital readmission rates.[6,7] In theory, patients who stay longer are more likely to be stable at the time of discharge, be better engaged, and follow up with recommended care.[7] Given our observed progressively shorter duration of stays, one can imagine that this is decreasingly the case, but our study findings did not support this hypothesis: We did not find a significant association between LOS and 30-day ED return visits or inpatient readmissions in the post-ACA period, in spite of observing an increase in readmissions and decreasing LOS in the post-ACA period. One reason researchers speculate that LOS is not always observed to be associated with readmission is that patients who stay longer could potentially be sicker or lack social supports, which creates an opposing direction of effects: Longer LOS is both associated with decreased readmissions through its association with high quality care and associated with increased readmissions through its association with illness severity.[7,19,23] In our post-ACA analysis, we adjusted for illness severity using antipsychotic medication at discharge as a proxy; however, this does not capture the large proportion of patients experiencing suicidal ideation. LOS notwithstanding, varying rates of readmission to youth psychiatric services continue to suggest that organizational level factors associated with quality of care are influencing treatment outcomes.[18,24]

Limitations

This study has several limitations. We were unable to get specific data on patients who had been recommended for admission, and denied. While we measured antipsychotics as a proxy for illness severity, this does not fully capture the burden of very severe mental health conditions in our population. Additionally, our interrupted time series analysis may have been influenced by some population heterogeneity from the pre- to post- period. Unfortunately, a suitable concurrent control group for this study was not available given the anticipated broad-reaching effects of the policy. We did exclude data for the six months from when the ACA was first fully implemented to allow the potential effect to operate at "full speed," but this time period may have been too short. It should also be mentioned that changes in coding practice could potentially affect our report of descriptive results.[25] Given that this study took place at a single institution, we did not include readmissions to other institutions. However, Seattle Children's is the only hospital in the region accepting mental health admissions for children with medical complexity and for those under 13 years of age, thus decreasing the subset of our patient population who could have potentially been readmitted to another institution. We did investigate if any potential readmissions were diverted to other institutions from our ED; only 6 patient encounters were identified throughout the 5 year study period. The results of this research may not be generalizable to other hospitals or different geographic areas. Lastly, while this report assumes that readmissions are an undesirable outcome, it is not able to further comment on readmissions as a suitable indicator of quality.[26]

Conclusion

ACA implementation was associated with a halt in rising LOS for youth admitted with mental health conditions. A subsequent decline in mental health inpatient LOS was observed post-ACA

implementation, especially for those on Medicaid. Significantly increased 30-day readmissions were observed post-ACA, however there were no time trend differences, and no differences when stratifying by insurance status. Post-ACA, there was no association between LOS and 30-day readmissions. Our study, while illuminating healthcare reform's potential impact on pediatric mental health inpatient LOS and readmissions, does not suggest an association between the two. We hope that it inspires critical ongoing evaluation of drivers for pediatric inpatient mental health readmissions that endeavor to improve the quality of pediatric mental healthcare.

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Table 1. Descriptive statistics by encounter (n=4,398)

	Pre (30 months) n = 1,874	Implementation (6 months) n=338	Post (24 months) n = 2,186	p
Age at first discharge (years), mean (SD)	14.0 (2.9)	14.1 (2.6)	14.2 (2.8)	0.002[a]
Female	964 (51.4)	187 (55.3)	1194 (54.6)	0.1
Race/Ethnicity[b]				0.02
White	1193 (63.7)	190 (56.2)	1316 (60.2)	
Black or African American	125 (6.7)	31 (9.2)	171 (7.8)	
Hispanic	178 (9.5)	33 (9.8)	253 (11.6)	
Asian	82 (4.4)	14 (4.1)	75 (3.4)	
Other	296 (15.8)	70 (20.7)	371 (17.0)	
Language				0.3
English	1792 (95.6)	320 (94.7)	2094 (95.8)	
Spanish	34 (1.8)	6 (1.8)	49 (2.2)	
Other	48 (2.6)	12 (3.6)	43 (2.0)	
Payer				<0.001
Medicaid	625 (33.3)	139 (41.1)	932 (42.6)	
Private–contracted	899 (48.0)	141 (41.7)	946 (43.3)	
Private-not contracted	215 (11.5)	46 (13.6)	214 (9.8)	
Other	135 (7.2)	12 (3.6)	94 (4.3)	
Primary Diagnosis				
Depressive disorder	814 (43.4)	168 (49.7)	1059 (48.4)	0.003
Disruptive disorder	539 (28.8)	78 (23.1)	533 (24.4)	0.003
Other psychiatric diagnoses	521 (27.8)	92 (27.2)	594 (27.2)	0.90
Complexity				
Medical comorbidity[c]	937 (50.0)	176 (52.1)	1004 (45.9)	0.01
Discharged on antipsychotic[d]	482 (25.7)	77 (22.8)	639 (29.2)	0.007
Developmental Diagnosis				
Autism	147 (7.8)	48 (14.2)	296 (13.5)	<0.001
Developmental Delay	224 (12.0)	54 (16.0)	354 (16.2)	<0.001
Intellectual Disability	53 (2.8)	27 (8.0)	101 (4.6)	<0.001
Admission Type				<0.001
Voluntary	664 (35.4)	218 (64.5)	1590 (72.8)	
Parent Initiated	178 (9.5)	92 (27.2)	501 (22.9)	
Involuntary	63 (3.4)	28 (8.3)	95 (4.3)	
Unknown	969 (51.7)	0 (0.0)	0 (0.0)	

Abbreviations: SD, standard deviation.

[a]Kruskal-Wallis rank sum test (all other p-values use Pearson's Chi-squared test).

[b]Mutually exclusive categories, where individuals reporting Hispanic ethnicity are classified as Hispanic, and those reporting non-Hispanic ethnicity are classified by reported race.
[c]Medical comorbidity includes any non-psychiatric diagnosis coded during the encounter.
[d]We used discharged on antipsychotics (not as needed) as a proxy for severity.

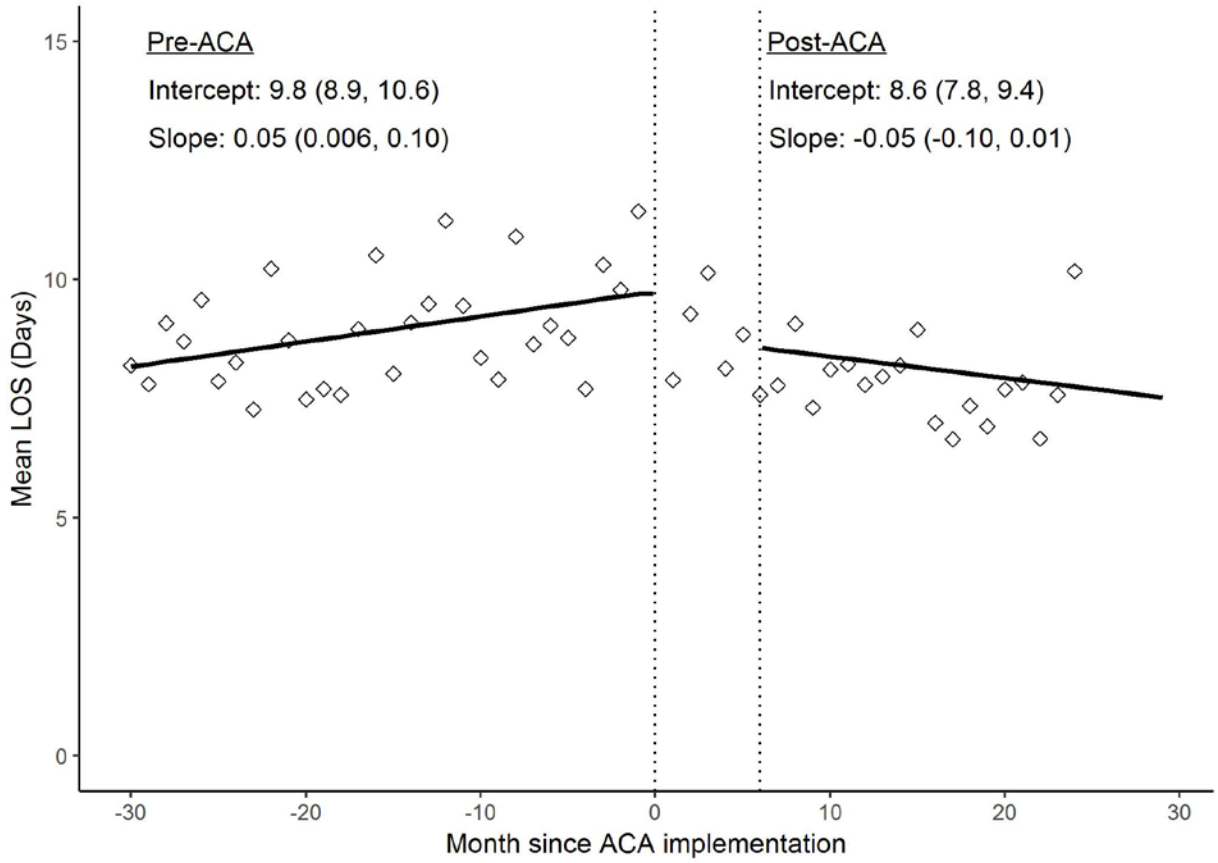
Table 2. Proportion of encounters with specified outcomes (n=4,398 encounters)

	Pre (30 months) n = 1,874	Implementation (6 months) n = 338	Post (24 months) n = 2,186	p
LOS in census days[a]				<0.001
1-3 days	136 (7.3)	22 (6.5)	239 (10.9)	
4-6 days	427 (22.8)	73 (21.6)	962 (44.0)	
7-9 days	860 (45.9)	138 (40.8)	595 (27.2)	
10+ days	451 (24.1)	105 (31.1)	390 (17.8)	
Readmissions				
30-day ED	103 (5.5)	44 (13.0)	279 (12.8)	<0.001
30-day inpatient	100 (5.3)	31 (9.2)	211 (9.7)	<0.001

Abbreviations: LOS, length of stay; ED, emergency department.

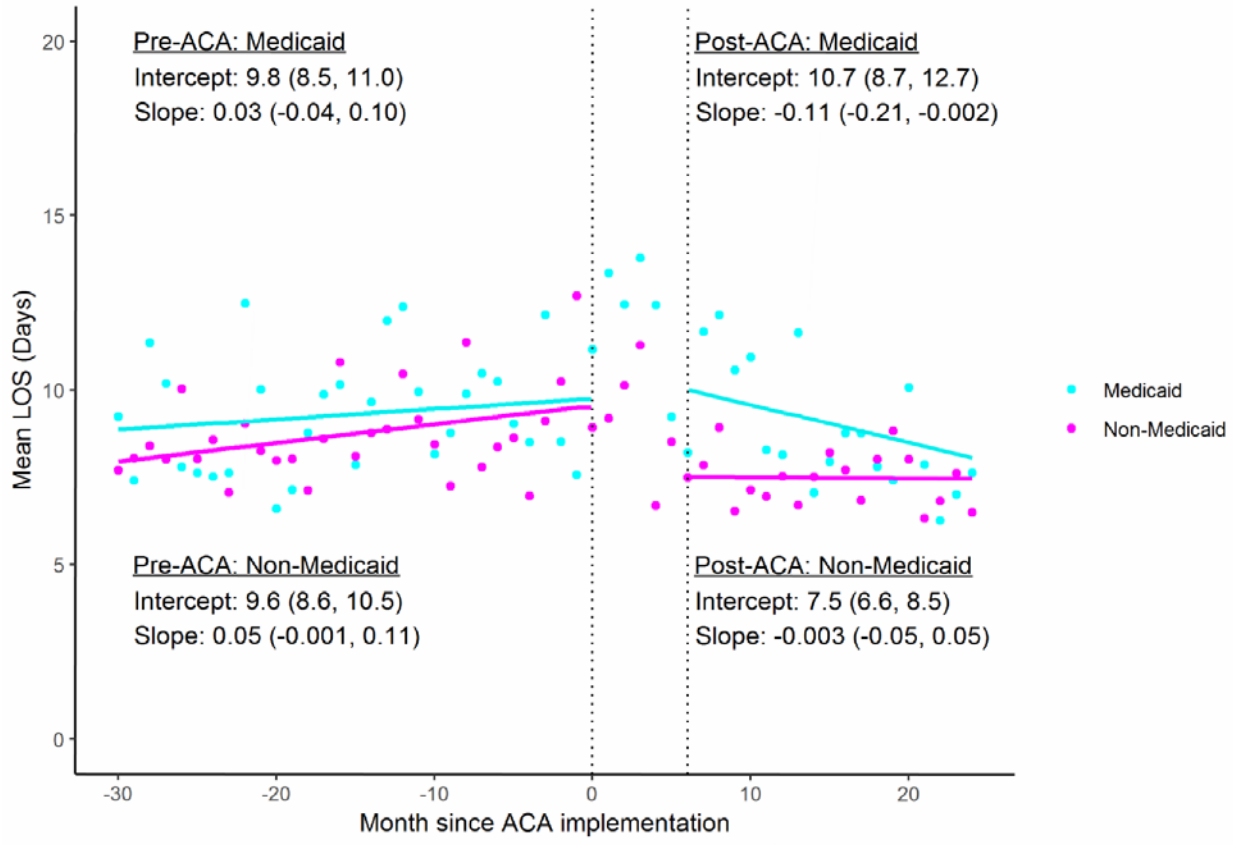
[a]Census days counts the number of days that the patient was present at midnight as an inpatient.

A. Mean LOS (overall)



Differences between Pre- and Post-ACA Period:
Intercepts: -0.91 (-2.31 to 0.48); P=0.19[a]
Slopes -0.10 (-0.17 to -0.02); P=0.01[b]
R^2 for model: 0.11

B. Mean LOS (stratified by insurance type)



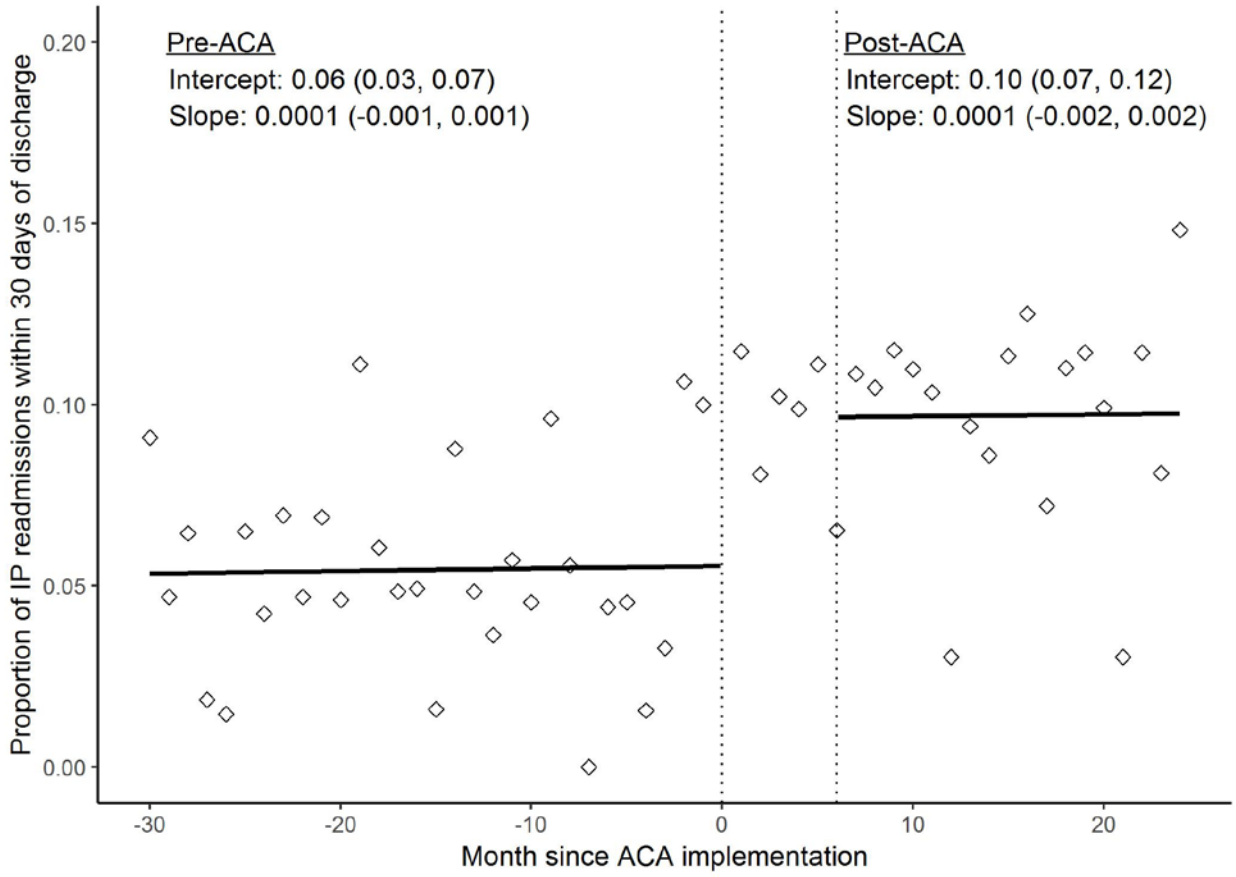
Abbreviations: LOS, length of stay; ACA, Affordable Care Act.

Differences between Pre- and Post-ACA Period for those on Medicaid:
Intercepts: 0.90 (-1.38 to 3.18); P=0.43
Slopes -0.14 (-0.26 to -0.01); P=0.03
R^2 for model: 0.17

Differences between Pre- and Post-ACA Period for those not on Medicaid:
Intercepts: -2.02 (-3.54 to -0.50); P=0.01
Slopes -0.06 (-0.14 to 0.03); P=0.17
R^2 for model: 0.33

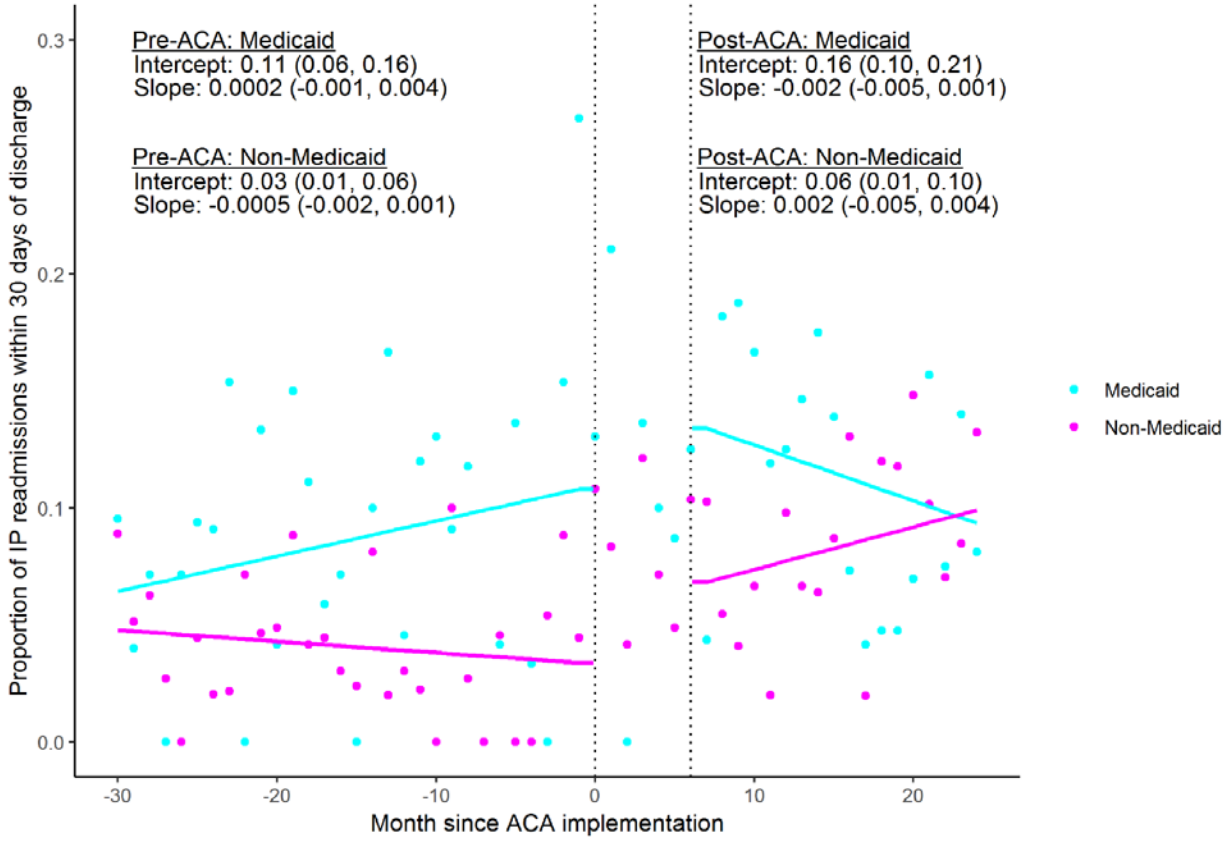
Figure 1. Interrupted time series analysis results for length of stay (LOS) in days, before and after full implementation of the 2014 Affordable Care Act (ACA). The six month washout period is denoted by the dashed center lines. A, Mean LOS in days. B, Mean LOS in days, stratified by insurance status. All estimates are followed by 95% confidence intervals. Intercept refers to the y-intercept for each time period–specific regression line. Slope refers to the slope for each time period–specific regression line, which indicates the change in outcome by month over the study.
[a]Difference between pre- and post-ACA period intercepts is the calculated difference in time period–specific intercepts, indicating the mean value for the outcome at the beginning of each time period. When no significant slope exists during the time period, the intercept equals the mean value for the time period. The *p* value indicates whether the two intercepts are statistically different from one another.
[b]Difference between pre- and post-ACA slopes is the calculated difference in time period–specific slopes, indicating the change from the established trajectory during the pre-ACA period to the observed trajectory during the post-ACA period. The *p* value represents whether the two slopes are statistically different from one another.

A. Inpatient readmissions (overall)



Differences between Pre- and Post-ACA Period:
Intercepts: 0.04 (0.0008 to 0.08); P=0.046[a]
Slopes -0.00001 (-0.002 to 0.002); P=0.99[b]
R^2 for model: 0.29

B. Inpatient readmissions (stratified by insurance type)



Abbreviations: IP, inpatient; ACA, Affordable Care Act.

Differences between Pre- and Post-ACA Period for those on Medicaid:
Intercepts: 0.04 (-0.04 to 0.12); P=0.29
Slopes -0.004 (-0.008 to 0.0003); P=0.07
R^2 for model: 0.11

Differences between Pre- and Post-ACA Period for those not on Medicaid:
Intercepts: 0.02 (-0.02 to 0.07); P=0.33
Slopes 0.002 (-0.0001 to 0.005); P=0.06
R^2 for model: 0.37

Figure 2. Interrupted time series analysis results for readmissions, before and after full implementation of the 2014 Affordable Care Act (ACA). The six month washout period is denoted by the dashed center lines. A, Monthly proportion of inpatient readmissions within 30 days of index discharge. B, Monthly proportion of inpatient readmissions within 30 days of index discharge, stratified by insurance status. All estimates are followed by 95% confidence intervals. Intercept refers to the y-intercept for each time period–specific regression line. Slope refers to the slope for each time period–specific regression line, which indicates the change in outcome by month over the study.

[a]Difference between pre- and post-ACA period intercepts is the calculated difference in time period–specific intercepts, indicating the mean value for the outcome at the beginning of each time period. When no significant slope exists during the time period, the intercept equals the mean value for the time period. The *p* value indicates whether the two intercepts are statistically different from one another.

[b]Difference between pre- and post-ACA slopes is the calculated difference in time period–specific slopes, indicating the change from the established trajectory during the pre-ACA period to the observed trajectory during the post-ACA period. The *p* value represents whether the two slopes are statistically different from one another.