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Association Between Targeted Early EKG Ordering and Emergency Department Length of Stay Among Psychiatric Patients in Southern New Jersey: A Retrospective Study

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Abstract

Introduction

Mental health-related visits make up a significant and growing share of emergency department (ED) utilization in the United States. At the Inspira Mullica Hill Emergency Department, a Six Sigma DMAIC analysis of the behavioral health intake process identified EKG ordering as a rate-limiting step in medical clearance, which is required before behavioral health evaluation. This study evaluates whether implementing a targeted early EKG order for psychiatric patients affects length of stay (LOS).

Materials and methods

Targeted early EKG ordering was implemented for patients presenting with suspected behavioral health conditions, and outcomes were evaluated over a three-month post-intervention period. A retrospective chart review was conducted to compare the pre-intervention and post-intervention groups. Encounters were compared between a pre-intervention period, January 1, 2025, to March 9, 2025, and a post-intervention period, April 16, 2025, to July 31, 2025. Encounters during the implementation/washout period were excluded. The primary outcome was ED LOS in minutes. Secondary outcomes included LOS >6 hours and LOS >12 hours. Because LOS was non-normally distributed, outcomes were summarized using median (IQR), 90th and 95th percentiles, Mann-Whitney U testing, and chi-square testing. Multivariable log-linear regression was performed using natural log-transformed LOS. Statistical process control and interrupted time-series analyses were performed to evaluate process stability and secular trends.

Results

A total of 412 encounters were included, with 133 pre-intervention and 279 post-intervention encounters. Median LOS decreased from 854 minutes (IQR 389-1301) pre-intervention to 785 minutes (IQR 304-1404) post-intervention, though this difference was not statistically significant ($p = 0.245$). The proportion of encounters with LOS >6 hours decreased from 78.2% to 71.3% ($p = 0.174$), and LOS >12 hours decreased from 60.9% to 52.7% ($p = 0.144$). In the adjusted analysis, the pre-intervention period was associated with longer LOS than the post-intervention period (LOS ratio 1.23, 95% CI 1.02-1.49, $p = 0.032$), equivalent to approximately 19% lower adjusted LOS in the post-intervention period. Statistical process control analyses demonstrated common-cause variation without special-cause variation, and interrupted time-series analyses did not demonstrate statistically significant level or slope changes.

Conclusions

Early targeted EKG ordering was associated with lower adjusted ED LOS among psychiatric encounters. However, unadjusted comparisons and time-series analyses did not demonstrate statistically significant process-level changes. These findings suggest a potential association between standardized early EKG acquisition and improved psychiatric ED throughput but should be interpreted cautiously given the single-center retrospective design and limited operational covariate data.

Categories: Psychiatry, Emergency Medicine, Quality Improvement
Keywords: behavioral emergencies, ed length of stay, medical clearance, onboarding improvement, workflow solutions

Introduction

Background

Mental health challenges in the United States have reached concerning levels. Over 1 in 5 Americans live with a mental health condition [1]. Additionally, mental health is a significant driver of emergency

department (ED) visits and one that continues to grow. In one North Carolina ED, almost 10% of ED visits were due to psychiatric conditions. Within a seven-year period, that same ED experienced a 23% increase in visits due to a psychiatric condition [2]. Psychiatric ED visits are often associated with prolonged transfer times and increased lengths of stay (LOS). The national average ED transfer time for mental health-related chief complaints (CC) was 6.7 hours [3]. A chi-squared analysis of the 2008 National Hospital Ambulatory Medical Care Survey (NHAMCS) showed that psychiatric patients had a 10.5% higher rate of boarding (LOS >6 hours) compared to all other ED patients [4]. Psychiatric patients also experience greater delays in receiving care. Wait times for psychiatric patients are variable: one retrospective study of NHAMCS data collected from 2002-2011 found that psychiatric patients waited 45 minutes longer than non-psychiatric patients [5]. Another prospective cohort study of five hospitals in the Northeastern US found that psychiatric patients waited 3.7 hours longer due to bed availability [6]. This issue is worse on weekends, with one Australian hospital reporting an eight-hour longer wait due to staffing shortages [7]. Increased wait times and LOS not only delay access to healthcare but may also increase the risk of adverse health outcomes. In one retrospective study of a level one trauma center, patients who had a three-hour longer ED stay had a 20% increase in delirium risk [8]. Additionally, extended ED LOS has been shown to significantly increase the odds that a patient will experience an adverse event [9]. In summary, the increasing demand for emergency psychiatric care places a significant burden on healthcare systems, limits access to care, and increases the risk of adverse patient outcomes.

At the Inspira Mullica Hill Emergency Department, patients presenting with a psychiatric CC undergo a standardized protocol. Upon arrival, an emergency physician evaluates and medically clears psychiatric patients. Following medical clearance, the behavioral health and addiction response team (BART) evaluates whether the patient poses a danger to themselves or others. If the patient is determined to be a danger, they are referred to the psychiatric emergency screening services. They are then placed on a mandatory 72-hour hold in the ED, followed by a BART reassessment. If the patient is not a danger, BART coordinates scheduling an outpatient behavioral health clinic appointment and discharge.

Discussions with ED staff and a Six Sigma DMAIC review of psychiatric patient intake identified EKG ordering as a rate-limiting step in medical clearance. Previous research has demonstrated that the Six Sigma DMAIC approach can improve healthcare performance by reducing costs, medical errors, administrative errors, and process defects [10]. BART staff felt the process was a bottleneck because providers needed reminders to submit an EKG order to complete medical clearance and initiate the BART evaluation. This created workflow interruptions and contributed to delays unrelated to patient acuity. As a result, the Inspira Mullica Hill Emergency Department implemented a policy of automatic EKG ordering for patients presenting with psychiatric emergencies to reduce workflow delays. Clinicians typically obtain EKGs in psychiatric emergencies when they suspect an underlying medical cause [4]. However, the potential role of early EKG ordering in reducing workflow delays remains insufficiently explored. This study investigated whether the policy change was associated with reduced ED LOS. If the intervention is associated with reduced LOS, future quality improvement studies could further evaluate its implementation.

Purpose and rationale

This study aimed to evaluate the association between targeted early EKG ordering and ED LOS among patients presenting with psychiatric complaints. Specifically, we evaluated whether a targeted early EKG order implemented at triage or early in the ED course facilitated throughput. If an automated EKG order is in place, it could reduce lag time associated with manual orders and shorten LOS. The potential role of early EKG ordering in reducing disposition times among psychiatric patients remains insufficiently explored in the literature. We hypothesized that patients treated after implementing targeted early EKG ordering would have a shorter ED LOS than those treated before implementation.

Materials And Methods

Study design

This was a retrospective study. The Inspira Mullica Hill Emergency Department instituted targeted early EKG orders for patients presenting with a psychiatric CC and assigned a psychiatric ICD-10 code as part of an internal practice change designed to improve throughput as previously described. The Inspira electronic medical record system, Cerner, was queried to identify patients presenting to the ED with a psychiatric CC before and after implementation of the EKG ordering practice change. Charts in the pre-intervention group were retrospectively selected from consecutive eligible encounters until the target sample size was reached. Charts in the post-intervention group were retrospectively selected from consecutive eligible encounters between April 16 and July 31, 2025, following a 30-day implementation period. The charts were reviewed based on the inclusion and exclusion criteria noted below. Eligible participants were assigned coded study identification numbers, which were recorded alongside their corresponding financial numbers in a study log. Data regarding LOS, clinical outcomes, and demographic characteristics were captured (identified only by their coded study ID) in a data collection spreadsheet.

Ethical considerations

This study was submitted to the Inspira Mullica Hill Institutional Review Board and received approval on

January 13, 2025. Formal review was not required, as data were collected from de-identified patient charts.

Study duration, enrollment, and sites

The study population comprised patients who presented to the Inspira Mullica Hill Emergency Department with psychiatric chief complaints. The study was conducted at the Inspira Mullica Hill Emergency Department in New Jersey. Analyses were performed at the Stratford campus of Rowan-Virtua SOM, New Jersey.

All analyses were performed using RStudio (Posit Software, PBC, Boston, MA, USA). Reporting was conducted in accordance with SQUIRE 2.0 principles. Distributional assumptions were evaluated using Shapiro-Wilk testing, histograms, and quantile-quantile plots. Because LOS demonstrated marked non-normality and right-skewness, LOS was summarized using the median (IQR) with the 90th and 95th percentiles. Continuous variables were compared using Mann-Whitney U testing. Categorical variables were compared using chi-square testing. Absolute differences in prolonged LOS proportions were calculated with approximate 95% confidence intervals.

To adjust for measured confounding, multivariable log-linear regression was performed using natural log-transformed LOS as the dependent variable. Covariates included study period, age, weekend arrival, discharge disposition, and collapsed race category. Results are reported as LOS ratios with 95% confidence intervals. To evaluate time-related bias and process stability, weekly median LOS and weekly proportions of encounters exceeding six and 12 hours were calculated. Statistical process control analyses included an individual chart and moving range chart for weekly median LOS and p-charts for prolonged LOS outcomes. Centerlines and control limits were recalculated only if special-cause variation was identified.

Interrupted time-series analyses were performed using segmented regression models incorporating baseline trend, immediate intervention-associated level change, and post-intervention slope change. Statistical significance was defined as a two-sided $p < 0.05$.

Inclusion and exclusion criteria

The study included medical records of patients presenting to the ED with psychiatric CC. Eligible chief complaints included agitation, suicidal ideation, hallucinations, psychomotor agitation, and mania, as identified by their corresponding ICD-10 codes. Patients younger than 18 years, patients aged 65 years or older, pregnant patients, and incarcerated individuals were excluded.

Primary and secondary outcomes

The primary outcome was ED LOS, defined as the total time, in minutes, between documented ED arrival and departure or completion of disposition in the electronic medical record. Secondary outcomes included prolonged LOS, defined as LOS >6 hours and LOS >12 hours. Additional covariates included age, gender, race, weekend arrival status, and discharge disposition. Race categories were collapsed into White, Black, Hispanic, and Other/Unknown because several documented race categories contained small cell counts. Race was included as a covariate to adjust for measured case-mix differences rather than to evaluate race-specific outcomes.

Results

A total of 412 psychiatric ED encounters met the inclusion criteria, including 133 in the pre-intervention period and 279 in the post-intervention period. Table *1* shows the cohort's baseline demographic and clinical characteristics. Following our data selection plan, pre-implementation data were collected from January 1 to March 9, and post-implementation data were collected from April 16 to July 31. Patient disposition included discharge, transfer to psychiatric facilities, and hospital admission.

Variable	Pre-intervention, n = 133	Post-intervention, n = 279	p-value
Age, median (IQR)	37 (25-48)	35 (25-45)	0.693
Gender, n (%)			
Male	83 (62.4%)	165 (59.1%)	0.599
Female	50 (37.6%)	114 (40.9%)	
Race category, collapsed, n (%)			
White	92 (69.2%)	180 (64.5%)	0.224
Black	23 (17.3%)	72 (25.8%)	
Hispanic	9 (6.8%)	14 (5%)	
Other/unknown	9 (6.8%)	13 (4.7%)	
Arrival day, n (%)			
Weekday	96 (72.2%)	211 (75.6%)	0.529
Weekend	37 (27.8%)	68 (24.4%)	
Disposition, n (%)			
Admission	15 (11.3%)	24 (8.6%)	0.22
Discharge	80 (60.2%)	152 (54.5%)	
Transfer	38 (28.6%)	103 (36.9%)	

TABLE 1: Baseline characteristics of psychiatric ED encounters included in this study

Continuous variables are reported as median (IQR), and categorical variables are reported as frequency (%). Continuous variables were compared using the Mann-Whitney U test, and categorical variables were compared using the chi-square test.

IQR: interquartile range, ED: emergency department

LOS demonstrated substantial non-normality in the overall cohort (Shapiro-Wilk W = 0.716, p < 0.001), pre-intervention cohort (W = 0.623, p < 0.001), and post-intervention cohort (W = 0.805, p < 0.001). The histogram (Figure *1*) and Q-Q plot assessment (Figure *2*) showed right-skewed, heavy-tailed LOS distributions. Median LOS decreased from 854 minutes (IQR 389-1301) pre-implementation to 785 minutes (IQR 304-1404) post-implementation, though this difference was not statistically significant by Mann-Whitney U testing (W = 17240, p = 0.245). The 90th percentile decreased from 2359 to 2316 minutes, and the 95th percentile decreased from 2993 to 2872 minutes. Table *2* summarizes unadjusted LOS outcomes.

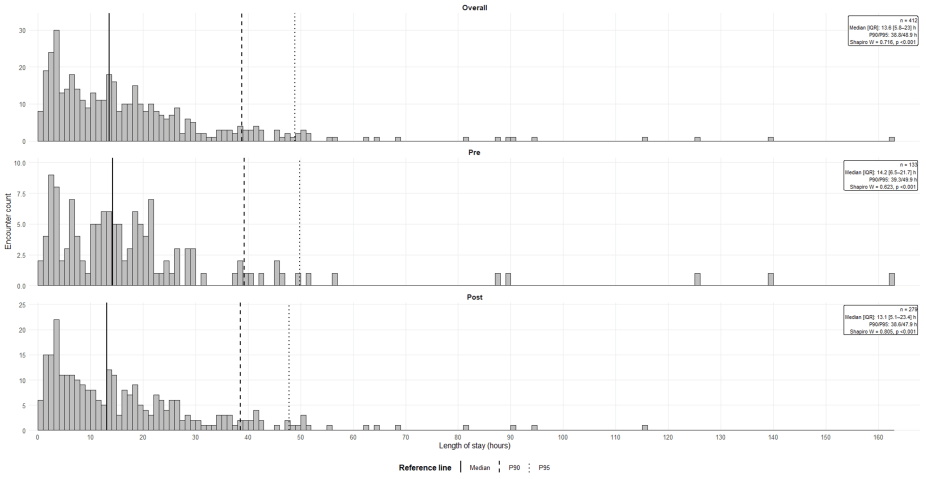


FIGURE 1: Distribution of ED LOS

Histograms display ED LOS among all included psychiatric encounters, stratified by pre- and post-intervention periods. Solid vertical lines represent the median LOS, dashed lines represent the 90th percentile, and dotted lines represent the 95th percentile. LOS was right-skewed with heavy-tailed distributions.

ED: emergency department, LOS: length of stay

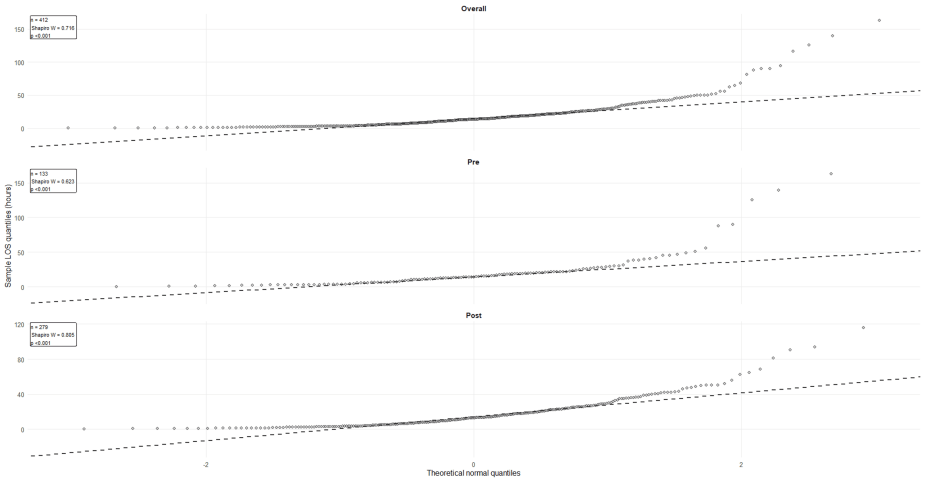


FIGURE 2: Quantile-quantile plots of ED LOS

ED: emergency department, LOS: length of stay

Outcome	Pre-intervention	Post-intervention	Difference	p-value
Median LOS, min (IQR)	854 (389-1301)	785 (304-1404)	-69 min	0.245
P90 LOS, min	2359	2316	-43 min	-
P95 LOS, min	2993	2872	-121 min	-
LOS >6 hours	104/133 (78.2%)	199/279 (71.3%)	-6.9 pp	0.174
LOS >12 hours	81/133 (60.9%)	147/279 (52.7%)	-8.2 pp	0.144
Additional test details:				
Test	Statistic	p-value	-	-
Mann-Whitney/Wilcoxon LOS	W = 17240	0.2453	-	-
LOS >6 hours chi-square	$\chi^2 = 1.8455$	0.1743	-	-
LOS >12 hours chi-square	$\chi^2 = 2.1377$	0.1437	-	-

TABLE 2: Unadjusted ED LOS outcomes before and after targeted early EKG ordering

LOS was summarized using the median (IQR) and 90th/95th percentiles because LOS was non-normally distributed. LOS was compared using the Mann-Whitney U test. Prolonged LOS proportions were compared using chi-square testing.

pp: percentage points, ED: emergency department, LOS: length of stay, IQR: interquartile range, EKG: electrocardiogram

The proportion of encounters with LOS >6 hours decreased from 78.2% pre-implementation to 71.3% post-implementation, an absolute difference of -6.9 percentage points (approximate 95% CI -15.7 to +1.9; $\chi^2 = 1.8455$, p = 0.174). The proportion of encounters with LOS >12 hours decreased from 60.9% to 52.7%, an absolute difference of -8.2 percentage points (approximate 95% CI -18.4 to +1.9; $\chi^2 = 2.1377$, p = 0.144). Table *2* shows these prolonged LOS outcomes.

Discharge dispositions did not differ significantly between study periods ($\chi^2 = 3.0288$, df = 2, p = 0.220). However, LOS varied substantially by disposition. Median LOS was 400 minutes (IQR 194-842) for discharged patients, 1134 minutes (IQR 818-2057) for admitted patients, and 1311 minutes (IQR 909-1800) for transferred patients. Table *3* shows LOS by disposition.

Disposition	n	Median LOS	Q1	Q3
Admission	39	1134	818	2057
Discharge	232	400	194	842
Transfer	141	1311	909	1800

TABLE 3: ED LOS by discharge disposition

ED: emergency department, LOS: length of stay

In multivariable log-linear regression adjusting for age, weekend arrival, discharge disposition, and collapsed race category, the pre-intervention period was associated with longer LOS compared with the post-intervention period (LOS ratio 1.23, 95% CI 1.02-1.49, p = 0.032). Equivalently, the post-intervention period was associated with approximately 19% lower adjusted LOS. Age was associated with longer LOS (LOS ratio 1.01 per year, 95% CI 1.00-1.02, p = 0.009). Discharge disposition was associated with shorter LOS compared with admission (LOS ratio 0.35, 95% CI 0.25-0.47, p < 0.001).

Transfer disposition was not significantly different from admission (LOS ratio 1.10, 95% CI 0.79-1.52, p = 0.583). Weekend arrival and race category were not significantly associated with LOS. Table *4* shows full multivariable regression results.

Variable	LOS ratio	95% CI	p-value
Pre vs post	1.23	1.02-1.49	0.032
Age (years)	1.01	1.00-1.02	0.009
Weekend vs weekday	1.08	0.88-1.32	0.481
Discharge vs admission	0.35	0.25-0.47	<0.001
Transfer vs admission	1.1	0.79-1.52	0.583
Hispanic vs Black	1.17	0.77-1.78	0.452
Other/Unknown vs Black	0.77	0.50-1.18	0.233
White vs Black	0.98	0.79-1.22	0.868
Residual SE: 0.9054	-	-	-
Adjusted R^2: 0.2903	-	-	-
Overall model p-value: <0.001	-	-	-
Equivalent post-vs-pre LOS ratio: 0.81, 95% CI approximately 0.67-0.98	-	-	-
Interpretation: post-intervention period associated with approximately 19% lower adjusted LOS	-	-	-

TABLE 4: Multivariable log-linear regression model evaluating factors associated with ED LOS

ED: emergency department, LOS: length of stay

Statistical process control analyses demonstrated common-cause variation without evidence of special-cause variation. No observations exceeded control limits, and no sustained shifts were identified on the Individuals chart, moving range chart, or p-charts. For this reason, centerlines and control limits were not recalculated. Figure *3* and Figure *4* show the individual chart and moving range chart for weekly median LOS. Figure *5* and Figure *6* show the p-charts for weekly LOS >6 hours and >12 hours, respectively.

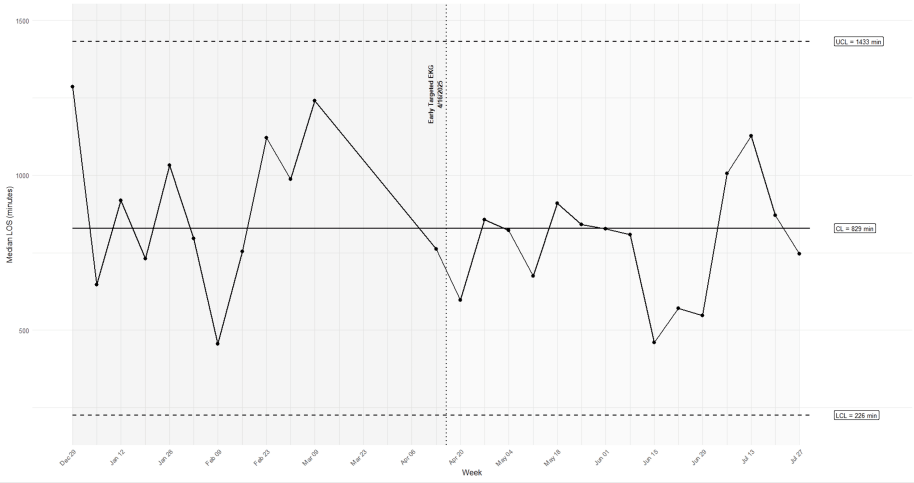


FIGURE 3: Individuals' chart of weekly median ED LOS

The vertical dashed line indicates mandatory EKG implementation on April 16, 2025. The centerline and upper/lower control limits are displayed. No special-cause variation was identified. Solid horizontal line = CL, dashed lines = UCL/LCL.

CL: centerline, UCL/LCL: upper and lower control limits, EKG: electrocardiogram, ED: emergency department, LOS: length of stay

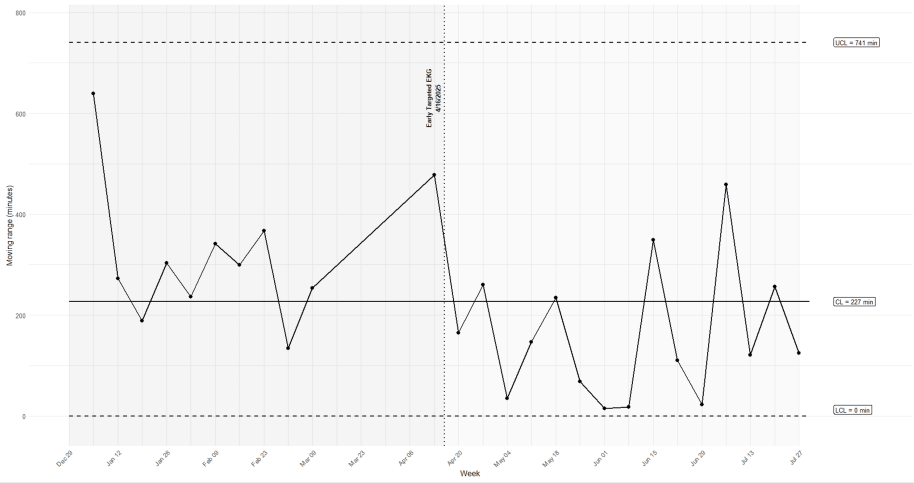


FIGURE 4: Moving range chart of weekly median ED LOS

The lower control limit for the moving range chart is conventionally zero. Solid horizontal line = CL, dashed lines = UCL/LCL.

CL: centerline, UCL/LCL: upper and lower control limits, ED: emergency department, LOS: length of stay

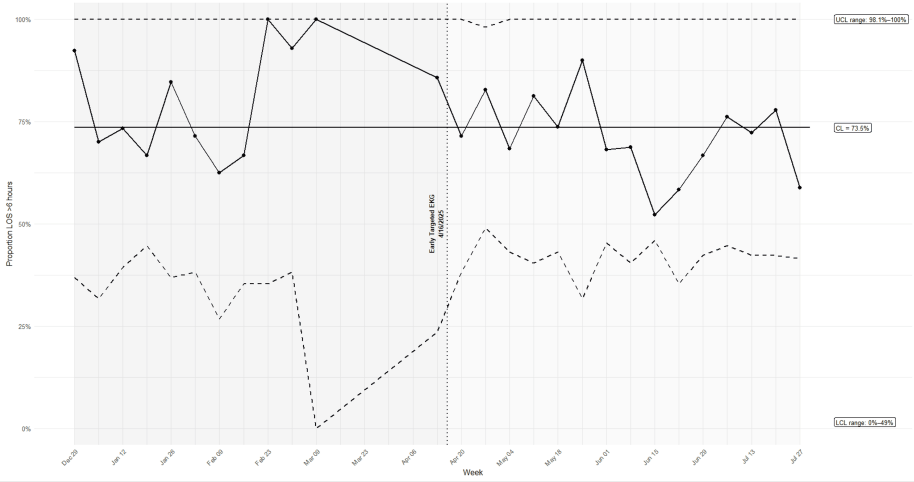


FIGURE 5: p-chart of weekly proportion of encounters with LOS >6 hours

The centerline represents the overall process proportion, and the control limits represent three-sigma limits adjusted for the weekly sample size. No special-cause variation was identified. Solid horizontal line = CL, dashed lines = UCL/LCL.

CL: centerline, UCL/LCL: upper and lower control limits, LOS: length of stay

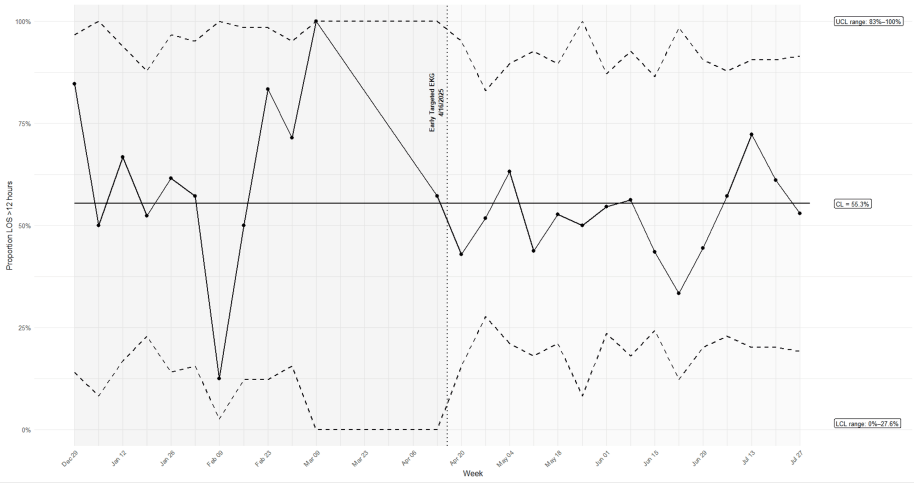


FIGURE 6: p-chart of weekly proportion of encounters with LOS >12 hours

The centerline represents the overall process proportion, and the control limits represent three-sigma limits adjusted for the weekly sample size. No special-cause variation was identified. Solid horizontal line = CL, dashed lines = UCL/LCL.

CL: centerline, UCL/LCL: upper and lower control limits, LOS: length of stay

Interrupted time-series analyses did not demonstrate statistically significant intervention-associated level or slope changes. Weekly median LOS demonstrated an immediate estimated level change of -189.2 minutes (p = 0.276) and post-intervention slope change of +4.1 minutes per week (p = 0.857). Weekly LOS >6 hours demonstrated an immediate level change of -11.5 percentage points (p = 0.196) and a slope change of -2.3 percentage points per week (p = 0.058). Weekly LOS >12 hours demonstrated an immediate level change of -19.7 percentage points (p = 0.141) and a slope change of -0.3 percentage points per week (p = 0.847). Table *5* shows the interrupted time-series results.

Outcome	Immediate level change	p-value of immediate level change	Slope change	p-value of slope change
Weekly median LOS	-189.2 min	0.276	+4.1 min/week	0.857
Weekly LOS >6 hours	-11.5 pp	0.196	-2.3 pp/week	0.058
Weekly LOS >12 hours	-19.7 pp	0.141	-0.3 pp/week	0.847

TABLE 5: Interrupted time-series segmented regression analyses of weekly LOS outcomes

LOS: length of stay

Discussion

In this single-center quality improvement study of psychiatric ED encounters, implementing targeted early EKG ordering was associated with a shorter adjusted ED LOS. Although unadjusted analyses showed numerically lower median LOS, lower 90th- and 95th-percentile LOS, and lower proportions of prolonged LOS after implementation, these unadjusted differences did not reach statistical significance. The adjusted analysis identified a significant association between study period and LOS. After controlling for age, weekend arrival, discharge disposition, and collapsed race category, the pre-intervention period was associated with a 23% longer LOS than the post-intervention period. This suggests that standardized early EKG acquisition may be associated with improved psychiatric ED throughput, although this retrospective observational quality improvement design cannot establish causality.

Disposition was a major driver of LOS. Discharged patients had substantially shorter LOS than admitted or transferred patients, and transfer patients had the longest median LOS. This finding is clinically consistent with the operational complexity of psychiatric placement and interfacility transfer and supports inclusion of disposition in the adjusted model.

Psychiatric patients frequently require extensive interdisciplinary coordination before final disposition. A study by Nicks and Manthey showed that delays during the early phases of ED evaluation contribute to prolonged boarding and reduced departmental throughput [11]. This highlights the complexity of caring for this patient population and suggests that multiple workflow interventions may be necessary to achieve statistically significant improvements. One study demonstrated that dedicated psychiatric emergency services and structured workflows reduced boarding times and improved ED capacity in some healthcare systems [12]. A more focused and streamlined approach that addresses multiple operational factors may improve patient outcomes and disposition times.

Statistical process control and interrupted time-series analyses did not demonstrate a discrete process shift after implementation. No special-cause variation was identified in weekly median LOS or the proportions of encounters with prolonged LOS, and no level or slope changes in the interrupted time-series analyses reached statistical significance. These findings suggest that any observed improvement may have been gradual or modest, influenced by differences in patient characteristics, or obscured by substantial unmeasured operational variation.

This study had several limitations. Although the study included 412 encounters, excluding a substantial number of patients may have limited the generalizability of the findings. The single-center design may have further limited generalizability. Another limitation is the retrospective study design, which limits causal inference.

Important operational variables, such as ED census, boarding volume, hospital occupancy, staffing ratios, psychiatric bed availability, and real-time crowding metrics, were unavailable. This leaves the possibility of residual confounding from these unmeasured variables. Finally, the baseline observation period was relatively short for statistical process control and interrupted time-series analyses. Accounting for more operational variables, conducting the study at multiple centers, and extending the study (i.e., one year) could potentially alleviate some of these issues.

Conclusions

Targeted early EKG ordering was associated with lower adjusted emergency department LOS among psychiatric encounters. However, unadjusted comparisons and time-series analyses did not demonstrate statistically significant process-level changes. These findings suggest a potential association between standardized early EKG acquisition and improved psychiatric ED throughput, but results should be interpreted cautiously given the single-center design, retrospective nature, limited baseline period, and lack of operational covariate data. Given the limited literature on the role of EKG ordering in ED workflow efficiency, longer studies incorporating additional operational variables may provide more precise estimates of its association with LOS. Alternatively, repeating the Six Sigma analysis may help identify additional rate-limiting steps to target for intervention. Future studies should investigate whether multimodal workflow interventions, rather than isolated interventions such as mandatory EKG ordering, are necessary to achieve meaningful improvements in patient disposition times.

Appendices

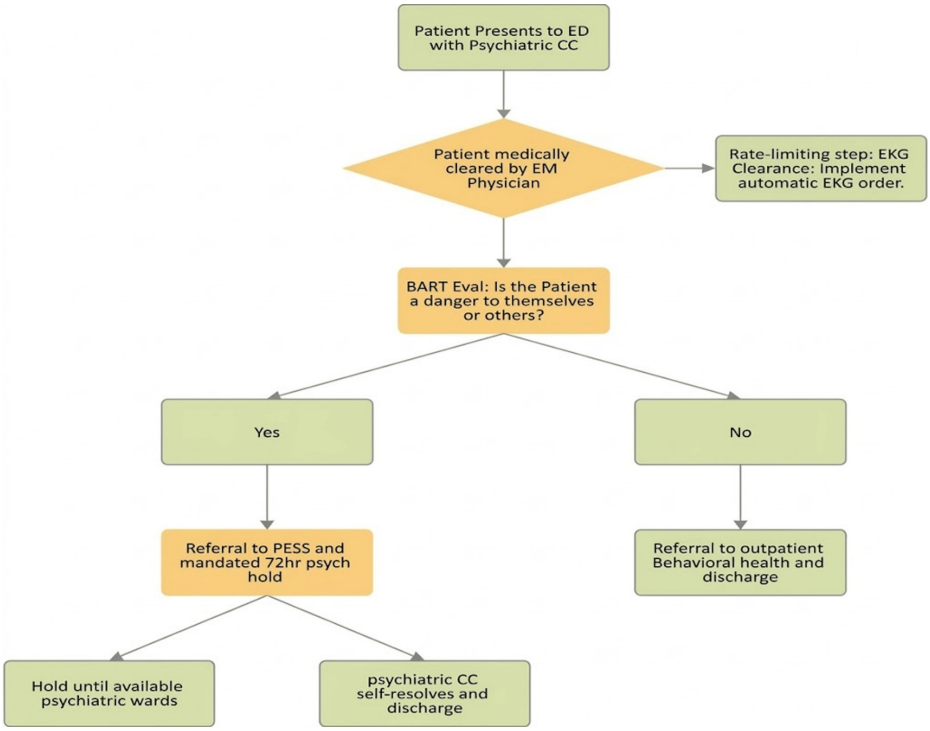


FIGURE 7: Inspira Mullica Hill Behavioral Health Protocol

Workflow graphic created by the author using Canva (Canva Pty Ltd, New South Wales, Australia).

BART: behavioral health and addiction response team, CC: chief complaint, ED: emergency department, EKG: electrocardiogram, EM: emergency medicine

Additional Information

Author Contributions

All authors have reviewed the final version to be published and agreed to be accountable for all aspects of the work.

Concept and design: Austin Parry, James Baird

Acquisition, analysis, or interpretation of data: Austin Parry, Alexander Frias

Drafting of the manuscript: Austin Parry, Alexander Frias

Critical review of the manuscript for important intellectual content: Austin Parry, Alexander Frias, James Baird

Supervision: James Baird

Disclosures

Human subjects: Informed consent for treatment and open access publication was obtained or waived by all participants in this study. **Animal subjects:** All authors have confirmed that this study did not involve animal subjects or tissue. **Conflicts of interest:** In compliance with the ICMJE uniform disclosure form, all authors declare the following: **Payment/services info:** All authors have declared that no financial support was received from any organization for the submitted work. **Financial relationships:** All authors have declared that they have no financial relationships at present or within the previous three years with any organizations that might have an interest in the submitted work. **Other relationships:** I, Austin Parry, am a commissioned officer in the United States Army. The views expressed in this manuscript reflect the results of research conducted by the author(s) and do not necessarily reflect the official policy or position of the Defense Health Agency, Department of War, or the U.S. Government.

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Data, analytic methods, and study materials are available upon request. Data are available upon reasonable request. The data are stored as de-identified participant data and are available upon request to James Baird at bairdja@rowan.edu.

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