Effect of Delays in Civil Commitment Hearings on Outcomes Among Psychiatric Inpatients

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Patients admitted involuntarily to psychiatric hospitals may face waits of varying lengths before receiving civil commitment hearings. We aimed to assess the effects of the time spent awaiting a hearing on outcomes for such patients in a university health system, hypothesizing that patients with a longer prehearing length of stay (LOS) would also have increased LOS after their hearings. We included subjects who were admitted from January 1 through December 31, 2013, and had county court records of commitment hearings. Models for each outcome were constructed using generalized linear models to control for available confounding variables. 109 subjects were included in the analysis, 58 (53.2%) of whom had delayed commitment hearings (with prehearing LOS greater than seven days). The average posthearing LOS for the delayed group was 6.2 days greater. After controlling for covariates, prehearing LOS was statistically predictive of posthearing LOS, even after controlling for potential confounds. These results suggest that delays in involuntary civil commitment hearings for psychiatric inpatients are associated with extended posthearing LOS and extended total LOS, implying that LOS for involuntary patients could be improved by measures to increase the efficiency of commitment processes.

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Involuntary civil commitment for mental illness is sometimes necessary for the well-being of patients as well as for public safety.[1-3] There is, however, wide variation in civil commitment procedures across the United States, particularly in the time that states allow for the continuation of an emergency psychiatric hold without a court order; the modal length is 72 hours, although some states are nominally as low as 24 hours, and others (e.g., Alabama, New Mexico, New Hampshire, and Rhode Island) allow emergency holds to extend for seven days or more.[4] There is a paucity of data on the fidelity with which local jurisdictions implement states' involuntary commitment laws, but there is some reason to worry that processes in many areas may be suboptimal. An example is the phenomenon of psychiatric boarding, wherein patients under an emergency hold are detained in an emergency department for periods varying from hours to weeks while awaiting a psychiatric bed.[5-7] This may result in delays in the provision of treatment and is associated with worse outcomes and increased costs.[8,9] Little is known about whether other kinds of differences in either statutory or *de facto* civil commitment procedures affect subsequent treatment outcomes, making this an important area for further research.

In theory, longer delays in civil commitment procedures may contribute to worse clinical outcomes because they could be associated with delays in the initiation of scheduled psychotropic medications. Patients awaiting involuntary civil commitment sometimes accept pharmacological treatment, but often they do not. Frequently, if an involuntary patient has been refusing treatment, a medication-over-objection hearing will be held. In most states, medication-over-objection hearings are only initiated after an order of commitment is issued.[10] In Utah, medication-over-objection hearings are conducted by physicians and designated examiners who are not involved in the patient's care, often on the same day as the commitment hearing.[11] Thus, in much of the United States, a portion of involuntary

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patients do not receive psychotropic medications until after their involuntary commitment hearings are completed. Although there is a lack of data about the clinical effects of brief delays (e.g., week-long) in medication initiation on outcomes among involuntary patients, two lines of evidence suggest that they may have adverse effects. First, medication nonadherence in previously treated individuals is associated with symptomatic relapse and readmission risk in schizophrenia[12-15] and bipolar disorder,[16,17] and this has also been linked to reduced likelihood of treatment response in both disorders.[18-20] Second, the duration of untreated psychotic illness in first-episode patients with schizophrenia has been linked to reduced response rates.[21-24]

Civil commitment procedures in Salt Lake County in Utah have produced a natural experiment regarding the effect of civil commitment wait times on outcomes among psychiatric inpatients. In Utah, patients can be admitted under an emergency application for involuntary commitment that allows health care providers to detain them in the hospital for up to 24 hours during the business week and for up to 72 hours on weekends.[25] After this period, a physician may elect to submit an application for an order of involuntary commitment. This notifies the local mental health authority of the physician's intention to detain the patient and triggers the civil commitment process. Within 10 days of the application, a hearing is held with a county mental health commissioner.[26] In practice, the time patients wait for this hearing depends on when the application for involuntary commitment is filed with the county mental health authority. In our experience, Salt Lake County has long used a deadline of Tuesday at approximately 1:00 p.m. for patients to be scheduled for commitment hearings on the Friday of that calendar week. Patients evaluated by their physician after the deadline (or, more rarely, for whom the treatment team does not submit the application in a timely fashion) may have to wait an additional week, until the following Friday, for their hearing. Thus, for example, a patient admitted late Monday night may have a commitment hearing the following Friday (roughly 4 days later), while a patient admitted only 12 hours later (late Tuesday morning) may not have a commitment hearing until the following Friday (10 days later).

We undertook a retrospective study of the effects of these administrative delays in civil commitment hearings on length of stay (LOS) and readmission risk among psychiatric inpatients treated within our university hospital system. We tested several hypotheses. First, we hypothesized that LOS after the civil commitment hearing (i.e., posthearing LOS) would be greater for those with hearings occurring more than seven days after admission, and that posthearing LOS would be positively associated with prehearing LOS (see Fig. 1). Second, we hypothesized that total LOS would be greater for persons who had hearings occurring more than seven days after admission. Finally, we hypothesized that time to readmission and number of readmissions in the following year would be positively associated with prehearing LOS.

Methods

Sample

Our sample included adults admitted to either of two psychiatric units within our university system from January 1 through December 31, 2013. Records pertaining to readmission were obtained by examining one year of retrospective follow-up. Data regarding commitment hearings were furnished by the Third District Court of Utah. An initial cohort was identified from court records and cross-referenced with the hospital medical record. Subjects were included regardless of diagnosis. Subjects who

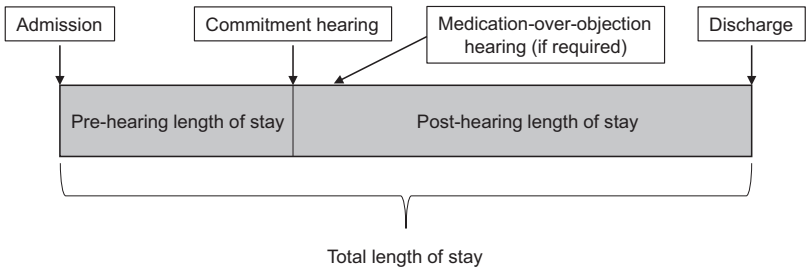

Figure 1. Length of stay intervals related to admission, commitment hearing, and discharge.

did not participate in a commitment hearing were excluded. We also excluded subjects if a petition for civil commitment had been filed more than a week after admission because these subjects had initially been admitted voluntarily but were converted to involuntary status after admission. Finally, subjects were excluded if their commitment hearing occurred during the admission only as the result of rehearing for a preexisting order of commitment. The study was exempted from review by the University of Utah Institutional Review Board.

Covariates

Models for LOS and readmission were developed using independent variables that had previously been associated with LOS and which were available in our dataset. LOS among psychiatric inpatients has been linked to multiple factors including age,[27-29] family support,[30-34] gender,[30,35,36] access to housing,[30,32,37,38] diagnosis,[27,28,30,31,39-43] insurance type,[30,35,37,41] and having a substance use disorder,[28,29,32,36,39] among others. Similarly, readmission risk has been associated with age,[44-50] employment status,[46,51-54] family support,[46,48,53,55-57] gender,[45-47,49,58-60] access to housing,[45,55,58,61-64] LOS,[44,47,65-68] number of previous admissions,[44-47,50,61,69-72] diagnosis,[32,44-46,58,67,71,73] number of diagnoses,[51,55,74] medication adherence,[75-78] and having a substance use disorder,[32,47,53,61,64,67,79-81] among other factors. We also assessed whether subjects were exposed to antipsychotic polypharmacy because this could be regarded as a marker of clinical severity,[82-84] which is an important confounding factor. Similarly, we noted whether subjects received depot antipsychotics during the admission because this might indicate initial severity and may reduce the risk of readmission.[85,86] We recorded subjects' other medications as a way of estimating clinical severity and medication nonadherence. We assessed whether subjects reported ongoing legal difficulties prior to or during the admission because we hypothesized that this would bear upon LOS. We also recorded subjects' disposition because we predicted that discharge to long-term care facilities such as the state hospital would affect both LOS and readmission risk.

Variables that could not be determined from structured data (i.e., discharge diagnoses, substance use disorder, medication-over-objection hearing, homelessness, current legal problems, transfer to the state hospital) were manually abstracted from subjects' charts by either of the two co-investigators and verified for accuracy by the first author. All other variables were obtained from the electronic medical record. Data abstraction was completed without regard to the exposure of interest, with each reviewer blinded to those data. Cohen's kappa statistic, calculated for abstracted variables to assess interrater reliability, varied from 0.87 (medication-over-objection hearing, homelessness) to 1.0 (discharge diagnosis, transfer to state hospital).[87] For inclusion in statistical analyses, discrepant annotations were corrected by the first author.

Variable Definitions

Our primary outcome was posthearing LOS, defined as the number of days elapsed between the commitment hearing and discharge. The time until the commitment hearing after admission (i.e., prehearing LOS) was defined as the number of days elapsed between the admission date and the hearing date. Subjects were regarded as having a delayed hearing (placed in the delayed group) if the hearing occurred more than seven days after admission; subjects were otherwise regarded as having a rapid hearing (placed in the rapid group). Our other outcomes were total LOS (defined as the total number of days between admission and discharge), time to first readmission in days, and number of readmissions per patient in the follow-up year. Subjects were defined as being exposed to antipsychotic polypharmacy if they received more than one FDA-approved antipsychotic medication, except for combinations with clozapine (i.e., augmentation of clozapine with a second antipsychotic is permitted in clozapine-resistant patients), because we wanted to identify antipsychotic treatment that was not adherent to clinical guidelines.[88] Subjects were regarded as nonadherent to their medication if they completely refused at least one dose of a prescribed psychotropic agent during the admission (as opposed to delaying a dose) or if they refused dose adjustments or a switch from a less effective agent (e.g., lamotrigine for mania) to a more effective agent (e.g., lithium for mania). Although this is a stringent standard, we found it easier to apply than alternative definitions. Subjects were defined as having a substance use disorder if any of the discharge diagnoses included a substance use disorder according to the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV), or DSM-5.

Statistical Analysis

Statistical analyses were conducted with version 9.4 of the SAS System for Windows (SAS Institute Inc., Cary, North Carolina). We performed *t* tests to assess whether mean outcomes differed for the delayed group and controls. Data for each outcome were judged to be Poisson distributed. Generalized linear models for both outcomes were constructed using generalized estimating equations with Poisson distributions and a cumulative logit link function. Models were refined by addition and removal of covariates to minimize the Aikake information criterion.[89] Statistical significance for each parameter was defined as alpha $< .05$ and two-tailed.

Results

Sample Characteristics

From court records, we identified a cohort of 127 patients who had reportedly been admitted to our hospital system and had attended a civil commitment hearing during the study period. Of these, 11 patients were excluded because their court records could not be correlated with hospital admission records. Seven other patients were excluded because applications for civil commitment had been filed for them more than seven days after admission or their commitment hearings during the admission were a rehearing for a preexisting commitment order. This yielded a final cohort of 109 subjects. Covariate and demographic data for the group are presented in Table 1. The sample included a slightly greater percentage of women (54.1%) than men. The most common primary diagnoses were schizophrenia (30.3%) and schizoaffective disorder (26.6%). Substance use disorders were common (40.4%). Nearly 27 percent of the cohort had been medication nonadherent during the index admission, although medication-over-objection hearings were rare (3.7%). The majority of subjects (74.3%) received an order of commitment. The mean (SD) time between admission and hearing was 7.4 ± 2.6 days.

Outcome variables are reported in Table 2. The mean (SD) posthearing LOS was 16.6 ± 16.3 days. The average total LOS for all subjects was 24.0 ± 17.2 days. Nearly 40 percent of subjects were readmitted within one year, with the average time to first readmission being 142.7 ± 160.6 days. The average number of readmissions per patient in the year of follow-up was 0.85 ± 3.7.

Table 1 Cohort Characteristics

Variable	*n* (%)
Gender	
Male	50 (45.8)
Female	59 (54.1)
Principal diagnosis	
Dementia	1 (0.9)
Major depressive disorder without psychosis	4 (3.7)
Major depressive disorder with psychosis	4 (3.7)
Mood disorder not otherwise specified	4 (3.7)
Psychosis not otherwise specified	10 (9.2)
Schizoaffective disorder	29 (26.6)
Schizophrenia	33 (30.3)
Bipolar disorder type II, depressed	1 (0.9)
Bipolar disorder type I, depressed	2 (1.8)
Bipolar disorder type I, manic, without psychosis	3 (2.8)
Bipolar disorder type I, manic, with psychosis	17 (15.6)
Substance use disorder	44 (40.4)
Antipsychotic polypharmacy	11 (10.1)
Medication-over-objection hearing	4 (3.7)
Long-acting injectable antipsychotic	13 (11.9)
Homeless	24 (22.0)
Medication nonadherence	29 (26.6)
Current legal problems	6 (5.5)
Uninsured	15 (13.8)
Public insurance (i.e., Medicare or Medicaid)	66 (60.6)
Received civil commitment	81 (74.3)
Transferred to state hospital	4 (3.7)
Age, mean ± SD	38.9 ± 15.1
Number of diagnoses, mean ± SD	1.8 ± 0.95
Pre-hearing length of stay, mean ± SD	7.4 ± 2.6

SD, standard deviation.

Effects of Commitment Delays on LOS

Of the 109 subjects, 58 (53.2%) were deemed to be in the delayed group. The mean prehearing LOS was 9.4 ± 1.3 days (95% CI 9.0–9.7) for the delayed group and 5.1 ± 1.6 days (95% CI 4.6–5.6) for the rapid group. The average posthearing LOS was 19.5 ± 17.3 days (95% CI 14.9–24.0) for the delayed group and 13.3 ± 14.7 days (95% CI 9.2–17.4) for the rapid group; the means for the two groups were significantly different ($t = -1.99$, $p = .049$). The Hedge's *g* effect size for posthearing LOS for the delayed group was 2.9. The mean total LOS for the delayed group was 28.8 ± 17.5 days (95% CI 24.2–33.4) and 18.4 ± 15.1 days (95% CI

Table 2 Outcomes

Variable	Mean ± SD
Total length of stay	24.0 ± 17.2
Post-hearing length of stay	16.6 ± 16.3
Time to first readmission	142.7 ± 160.6
Number of readmissions within 1 year	0.85 ± 3.7
Readmitted within 1 year, *n* (%)	43 ± 39.5

SD, standard deviation.

14.2–22.6) for the rapid group. As expected, the mean lengths of stay for the two groups were significantly different ($t = -3.31$, $p = .001$). The Hedge's g effect size for LOS for a delayed hearing was 0.63.

Generalized linear models for posthearing LOS and total LOS were constructed using the covariates specified above. Posthearing LOS was significantly and positively associated with prehearing LOS ($\beta = 0.121$, $p = .0004$) (Table 3). Other model factors significantly associated with posthearing LOS included having current legal difficulties ($\beta = 0.764$, $p = .009$), nonadherence with medications ($\beta = 0.404$, $p = .02$), and receiving a long-acting injectable antipsychotic ($\beta = -0.731$, $p = .03$). Other tested covariates were not significantly associated with posthearing LOS. Total LOS (Table 4) was also significantly associated with delayed group membership, ($\beta = 0.496$, $p < .0001$), having current legal difficulties ($\beta = 0.599$, $p = .007$), nonadherence with medication ($\beta = 0.285$, $p = .02$), and receiving a long-acting injectable antipsychotic ($\beta = -0.535$, $p = .01$). Other tested covariates were not significantly associated with total LOS. We did not test for an association between prehearing LOS and total LOS because these variables are collinear by definition.

To help understand the association between hearing delays and LOS, we examined the association between delayed group membership and medication nonadherence. More than a third (34.9%) of those in the delayed group were medication nonadherent, whereas 23.1 percent of those in the rapid group were nonadherent, although this difference was not statistically significant ($X^2 = 31.6$, $p = .2$). To further assess the contribution of medication nonadherence to posthearing LOS and total LOS, we modified the above multivariable models to include interaction terms. We found that the interaction of prehearing LOS and medication nonadherence was significantly associated with posthearing LOS ($\beta = 0.178$, $p = .02$), such that posthearing LOS was affected more by prehearing LOS for patients who were medication nonadherent than for those who were medication adherent. Similarly, we found that the interaction of delayed group membership and medication nonadherence was significantly associated with total LOS ($\beta = 0.595$, $p = .02$), again suggesting that total LOS was increased more by delayed group membership for those who were medication nonadherent than for those who were medication adherent.

Table 3 Regression Coefficients for a Generalized Linear Model of Post-Hearing Length of Stay

Parameter	β	p
Pre-hearing length of stay	0.121	.0004
Medication non-adherent	0.187	.04
Current legal problems	0.764	.009
Long-acting injectable antipsychotic	−0.731	.03

Table 4 Regression Coefficients for a Generalized Linear Model of Total Length of Stay

Parameter	β	p
Pre-hearing length of stay	0.496	< .0001
Medication non-adherent	0.285	.02
Current legal problems	0.599	.007
Long-acting injectable antipsychotic	−0.535	.01

Effects of Prehearing LOS on Readmission

The average time to first readmission for the delayed group was 123.2 ± 141.4 days (95% CI 57.0–189.3), compared with 163.2 ± 180.2 days (95% CI 76.4–250.1) for the rapid group. There was no significant difference in time to readmission between the delayed group and the rapid group ($t = 0.77$, $p = .4$). The average number of readmissions in the follow-up year in the delayed group was 0.95 ± 1.36 (95% CI 0.59–1.30), whereas the average number of readmissions in the rapid group was 0.75 ± 1.43 (95% CI 0.34–1.15). The groups did not differ significantly with respect to number of readmissions in the follow-up year ($t = -0.76$, $p = .5$). In generalized linear models, no variables significantly predicted time to first readmission, although the number of readmissions in the year after the index admission was positively and significantly associated with having public insurance ($\beta = 0.843$, $p = .007$).

Discussion

This study suggests that increased wait time before the completion of a civil commitment hearing for a person admitted to a psychiatric hospital is associated with both increased posthearing LOS and total LOS. It is perhaps unsurprising that a longer wait before the commitment hearing is associated with a longer total LOS because that outcome includes the prehearing LOS. This finding is nonetheless important: if total LOS for persons who receive a civil commitment is determined largely by the rate of treatment response, and if treatment is initiated at similar points irrespective of the timing of the hearing, total

LOS for the delayed and rapid groups in our study should be similar. That they are not similar indicates that delays in treatment or other unmeasured factors associated with prehearing LOS contribute to increased total LOS.

More importantly, those in our cohort with delayed hearings also demonstrated significantly greater posthearing LOS, an average of 6.2 days longer than the comparison group. Likewise, in generalized linear models, longer prehearing LOS was associated with longer posthearing LOS. Together, these findings imply that delays in commitment hearings could both create unnecessary burdens for patients and contribute to excess service utilization and hospital costs. Moreover, there was no evidence that these effects were offset by reduced hospital utilization after discharge because of a longer initial duration of treatment, as prehearing LOS and total LOS were not associated with the number of readmissions or time to first readmission.

The mechanisms by which greater prehearing LOS could contribute to increased posthearing LOS require further investigation. One possibility is that patients with longer prehearing LOS who also refuse medications have longer posthearing LOS because they can refuse medications for longer periods. Of course, only a small portion of our sample (3.7%) had medication-over-objection hearings, and there was no significant difference in the proportion of medication-over-objection hearings between the delayed and rapid groups. Instead, it may be that prehearing LOS affects the start of treatment for patients initially nonadherent to medication because receiving a civil commitment incentivizes some patients to accept medications even without a medication-over-objection hearing. This is consistent with our clinical experience. Later acceptance of treatment would presumably result in longer times to symptomatic remission and thus longer posthearing LOS.

That medication nonadherence contributes to LOS is supported by our multivariable models, in which medication nonadherence was associated with longer posthearing LOS and total LOS. Moreover, we found that the interaction term for medication nonadherence and prehearing LOS was significantly associated with posthearing LOS; similarly, the interaction term for medication nonadherence and delayed group membership was significantly associated with total LOS. A final piece of evidence that medication adherence partially mediates the effect of prehearing LOS and delayed group membership on posthearing LOS and total LOS is that use of a long-acting injectable medication, which helps ensure medication adherence, was significantly associated with reduced posthearing LOS and total LOS.

Limitations

Despite these findings, our study does have several limitations. Although large enough to test our hypothesis, our sample size was relatively small because it was limited by the need to manually extract many independent variables. The sample is also diagnostically heterogeneous, introducing more potential unmeasured factors that could skew our results and limiting the conclusions that can be drawn about the impact of commitment time frames on particular populations. Conversely, however, the inclusion of multiple diagnostic groups increases the generalizability of these results. Another limitation is that the study reflects the commitment process specific to Salt Lake County and the outcomes in one hospital system, potentially limiting its applicability to other treatment settings and jurisdictions. Widespread variations in civil commitment procedures, however, suggest that similar effects could be found in other states.

A possible source of bias in our results is that our study design excluded patients who were admitted involuntarily but converted to voluntary status before attending a hearing. Some subjects in the delayed group may have been more likely to remit spontaneously and to be switched to voluntary status or discharged before a hearing occurred; we may, therefore, have inadvertently selected for the most ill patients in the delayed group. We regard this as relatively unlikely, however. In our clinical experience, relatively few applications for involuntary commitment are rescinded before the hearing, and 53.2 percent of our sample had a delayed hearing, while we estimated that 56.9 percent were admitted in a timeframe such that any hearing would have been delayed if one occurred. Moreover, a chi-square test indicated that the proportion of the delayed group who received civil commitments did not differ significantly from that proportion in the rapid group ($X^2 = 3.3$, $p = .07$), indicating that there was little attrition in the delayed group.

The most important limitation of our models is that they explain only a small proportion of the variance in posthearing LOS and total LOS (16% and

15%, respectively). This suggests that unmeasured factors, such as differences in access to outpatient services, baseline symptom severity, or treatment resistance, contribute substantially to differences in outcomes in our sample. Still, it is relatively unlikely that such variables would account for the association between prehearing LOS and posthearing LOS because it is unlikely that they would be associated with having a delayed hearing. Whether an individual's hearing is delayed depends primarily on the day and time a petition for commitment is filed, which depends primarily on when the patient was admitted and first assessed by the physician; these factors should vary at random.

Conclusions

Persons detained under an application for an order of involuntary civil commitment for psychiatric illness in Utah may face different waits before their commitment hearings, from as few as four days to as many as 10 days. Those facing greater delays before their hearings may also be exposed to delays in treatment, which could contribute to longer posthearing LOS. In a sample of patients admitted in our university hospital system, we found that longer prehearing LOS was associated with longer posthearing LOS and longer total LOS. Although all of the connections between these factors remain to be elucidated, the observed associations indicate that changes in the administration of the commitment process could, if otherwise feasible, shorten total LOS for some patients who are awaiting civil commitment hearings. This would, in theory, produce a net savings to the health care system while improving the care of patients and better protecting their civil liberties.

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