mhc MENTAL HEALTH CLINICIAN

ORIGINAL RESEARCH Open Access

Transitions of care: Assessment of adherence to long-acting injectable antipsychotic treatment following discharge from inpatient psychiatry

Charnae Ross, PharmD, MSHA, BCSCP[1]
Katie S. Adams, PharmD, BCPP[2]
Ericka L. Crouse, PharmD, BCPP, BCGP[3]

How to cite: Ross C, Adams KS, Crouse EL. Transitions of care: Assessment of adherence to long-acting injectable antipsychotic treatment following discharge from inpatient psychiatry. Ment Health Clin [Internet]. 2025;15(1):9-16. DOI: 10.9740/mhc.2025.02.009.

Submitted for Publication: January 2, 2024; **Accepted for Publication:** September 25, 2024

Abstract

Introduction: Long-acting injectable antipsychotics (LAI-APs) are used in patients with chronic psychiatric disorders as a strategy to manage oral medication nonadherence. Inpatient LAI-AP administration may assist with transition to the outpatient setting. The study objective was to characterize receipt of the next LAI-AP injection as planned in the outpatient setting following administration during inpatient psychiatric hospitalization.

Methods: Patients 18 years and older were eligible for inclusion if they received an LAI-AP while inpatient and provided consent to monitor their 90-day follow-up. The primary outcome determined the percentage of patients who received the same LAI-AP administered during their inpatient psychiatric admission at their initial visit post discharge. The secondary outcomes compared appropriate documentation of the LAI-AP follow-up plan, oral overlap, and early psychiatric rehospitalization rates.

Results: Fifty-one patients were included. Twenty-nine patients (56.9%) followed up within the outpatient setting after discharge and received their next scheduled LAI-AP as planned. Twenty-two patients (43.1%) did not receive an LAI-AP injection following discharge, 15 of whom did not attend their initial follow-up appointment. Thirty-nine patients (76.5%) were newly initiated on LAI-AP therapy, 19 of whom received their next follow-up injection.

Discussion: More than 40% of patients who received an LAI-AP inpatient did not follow up in the outpatient setting despite appropriate discharge planning. Patients more likely to receive follow-up LAI-AP were older, received a maintenance injection while inpatient, and had a scheduled follow-up appointment. Prior to inpatient administration of LAI-AP, multiple factors should be considered, including outpatient adherence, access, feasibility of outpatient continuation, and transition of care plan.

Keywords: long-acting injectable antipsychotics, antipsychotics, prospective, bipolar disorder, schizophrenia

[1] Enterprise Pharmacy Regulatory Manager, New York Presbyterian, New York, New York; previously: Virginia Commonwealth University Health System, Richmond, Virginia, ORCID: https://orcid.org/0000-0002-4156-6102; [2] Clinical Pharmacy Specialist, Psychiatry, Virginia Commonwealth University Health System, Richmond, Virginia, ORCID: https://orcid.org/0000-0001-9360-2702; [3] (Corresponding author) Associate Professor, Department of Pharmacotherapy and Outcomes Science, Virginia Commonwealth University School of Pharmacy, Richmond, Virginia, ORCID: https://orcid.org/0000-0003-0732-0093

Disclosures: Dr Ross has nothing to disclose. Dr Adams has nothing to disclose. Dr Crouse is a paid consultant for Wolters-Kluwer and is on the editorial board of *The Medical Letter*. All relationships have been mitigated.

Introduction

Long-acting injectable antipsychotic (LAI-AP) medications are used in patients with chronic psychiatric disorders as a strategy to manage oral medication nonadherence and reduce relapse rates. LAI-APs are administered every 2 to 24 weeks, depending on the product.[1] Inpatient LAI-AP initiation can assist with the transition to outpatient care but requires outpatient provider collaboration.

Although LAI-APs are believed to promote adherence, previous studies, many of which assess long-term outcomes at 6 and 12 months, have not conclusively determined if they lower hospitalization rates.[2-6] There is insufficient evidence examining early relapse or readmission with inpatient LAI-AP initiation before achieving remission or whether patients remain on LAI-AP treatment after discharge. A retrospective cohort study of a single clinic's files assessing inpatient LAI-AP initiations found that 21% of patients discontinued LAI-AP within 1 month; 75% of those did not receive any further injections after discharge.[7] By 3 and 12 months, a cumulative 39% and 60% were no longer treated with LAI-AP therapy, respectively.[7]

The half-life of LAI-APs vary from 3 to 6 days with risperidone microspheres to 25 to 49 days with monthly paliperidone palmitate.[8] Usually, LAI-APs require 3 to 4 injections to achieve steady state.[8] It is unknown if a single injection delays readmission. Few studies look at the impact of treatment setting in which LAI-APs are initiated. Those that do are often conducted within a single health system with available outpatient services, which limits real-world application.[9]

This study was conducted to follow patients for 90 days after inpatient administration of an LAI-AP (either new starts, continuation, or adjustment of previous LAI-AP maintenance therapy) at a large academic medical center and discharged to the community to capture implementation or changes to the documented discharge plan and who actually received the LAI-AP as planned. Early rehospitalization rates were also collected. Based on the study institution's current practice, patients are considered viable LAI-AP candidates if they tolerate oral antipsychotics and are being treated for severe psychiatric disorders. A transition of care plan is needed to ensure ability to receive future injections, taking into consideration cost, access, and transportation. The LAI-APs available on formulary at the study institution include aripiprazole monohydrate, fluphenazine decanoate, haloperidol decanoate, paliperidone palmitate monthly, and risperidone microspheres. Aripiprazole monohydrate and paliperidone palmitate monthly are available through manufacturer-sponsored, free trial programs.

Methods

Study Design

This was a single-center, prospective study with patient enrollment from November 1, 2018, through February 7, 2020. Patients 18 to 85 years old who received an LAI-AP while hospitalized on inpatient psychiatry were eligible for inclusion. Patients who gave informed consent and either attended their initial outpatient visit or had their outpatient provider report that they did not attend their follow-up appointment were included. Patients unable or unwilling to give informed consent and patients whose outpatient provider could not be reached were excluded. Data was collected using REDCap (an electronic data capture tool hosted through a university grant; Award Number UL1TR002649 from the National Center for Research Resources) from Cerner Information Systems via medical record review. This study received expedited approval from the Virginia Commonwealth University Institutional Review Board (HM20014140).

The study institution process requires a Board-Certified Psychiatric Pharmacist (BCPP) to approve LAI-APs before dispensing, which is how patients were identified. Informed consent was obtained after LAI-AP receipt and before hospital discharge. Outpatient psychiatric providers were contacted more than 90 days after discharge using a standardized questionnaire to collect information on attendance to follow-up visit, LAI-AP administration, changes to LAI-AP regimen, and psychiatric readmission within 90 days of hospital discharge. Patients were grouped into 2 arms based on whether they received their next LAI-AP as planned (yes-LAI-APap) or LAI-AP was not given as planned (no-LAI-APap) for comparison.

The primary outcome was the percentage of patients who received the same LAI-AP at initial follow-up corresponding with the plan implemented during the inpatient admission. Patient characteristics in each group were compared to identify patients more likely to receive their LAI-AP as planned. Secondary outcomes compared yes-LAI-APap versus no-LAI-APap to identify differences in documentation of a detailed plan for LAI-AP continuation post discharge, appropriateness of oral overlap at discharge, and rehospitalization to any inpatient psychiatric facility within 30, 60, and 90 days of discharge. Documentation of a detailed plan was defined as appropriate psychiatric follow-up care for LAI-AP continuation included in the discharge instructions with evidence of LAI-AP administration including dose, frequency, and next injection due date. In patients prescribed oral overlap at discharge, the authors assessed whether this was included in the discharge instructions. Appropriateness of oral overlap treatment at discharge in new starts was assessed based on the LAI-AP agent initiated in accordance with manufacturer recommendations (dosing and duration) and standards of care.[1] Readmission at 30, 60, and 90 days were chosen as this was primarily an investigation to determine how often inpatient-initiated plans for LAI-APs are continued or changed and their impact on short-term readmission rates.

Data was analyzed using IBM SPSS Statistics version 2.5. Baseline characteristics were compared using descriptive statistics. Differences between continuous variables were analyzed using a Student *t* test. Primary and secondary outcomes were analyzed using chi-square or Fisher exact tests as appropriate. The level of statistical significance was set at $p<.05$.

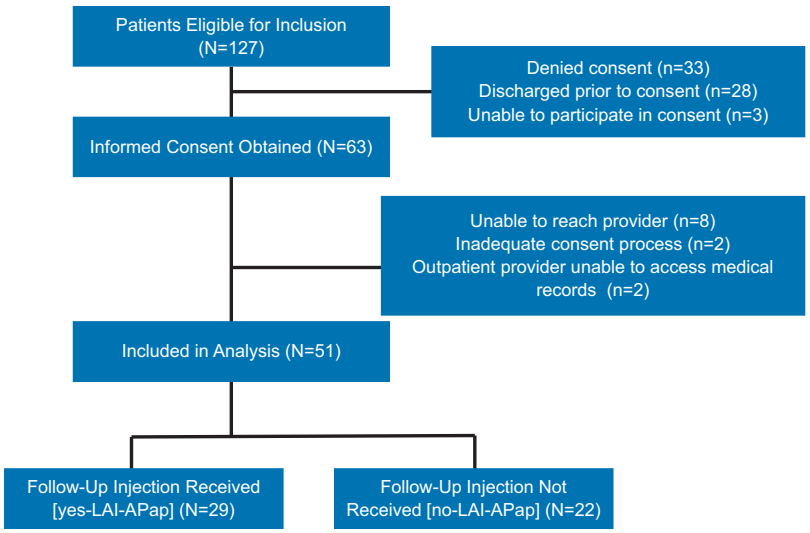

FIGURE: Patient enrollment

Results

One-hundred twenty-seven patients were identified for inclusion (Figure). Of those, 33 patients declined to provide informed consent, 28 patients were discharged before obtaining informed consent, and 3 patients were deemed unable to provide informed consent. Sixty-three patients provided informed consent. Twelve patients were excluded due to an inability to reach the outpatient provider (n=8) or an inadequate consent process (n=2) or the outpatient provider was unable to access medical records (n=2). Overall, 51 patients were included in the study analysis. Table 1 describes the characteristics of each group. Patients were primarily white males. On average, yes-LAI-APap patients were statistically significantly older compared to no-LAI-APap (41.6 versus 34.0 years p=.043). The most common diagnosis in both groups was psychosis, unspecified at discharge (8 versus 11, p=.101), which was not statistically different between groups.

Following inpatient LAI-AP administration, 56.9% (N=29) of patients were classified as yes-LAI-APap versus 43.1% (N=22) as no-LAI-APap. Fifteen of the 22 patients (68.2%) in the no-LAI-APap group did not present to their initial outpatient follow-up appointment after hospital discharge; thus, it was determined their planned follow-up injection was never received. Information on 1 of these 15 was available because the patient presented to the study institution's emergency department and was readmitted to an outside psychiatric facility. Thus, some results for the no-LAI-APap group in Table 2 are based on the 8 patients whose records were accessible.

The second-generation antipsychotics aripiprazole monohydrate, paliperidone palmitate, and risperidone microspheres were administered most frequently with no significant difference in agent between groups. Thirty-nine patients (76.5%) were newly initiated on LAI-AP therapy (19 yes-LAI-APap and 20 no-LAI-APap). Aripiprazole monohydrate and paliperidone palmitate accounted for most new starts (n=12 each). The majority of no-LAI-APap were newly initiated on LAI-AP treatment (90.9%) compared with 65.5% of yes-LAI-APap patients being new starts (p=.048). Most patients were scheduled to follow up at a community service board to receive care and follow-up injection (Table 1). Patients instructed to walk in were given the location of the clinic and a time to present for new patient appointments. Patients with a documented scheduled appointment were more likely to receive their next follow-up injection: 70.6% (n=24 of 34) of those with a scheduled appointment received their next injection as planned compared with 29.4% (n=5 of 17) who needed to walk in to receive services. Of the 15 no-LAI-APap patients who did not present to their initial outpatient appointment, 8 (53.3%) had a scheduled appointment and 7 (46.7%) were given instructions for a walk-in appointment.

Location of follow-up impacted the receipt of the next injection. One hundred percent of patients who followed up within the study institution's health system (n=4) received their follow-up injection versus 64.3% (n=9 of 14) of those who saw a private psychiatrist and 50% of those referred to an indigent clinic (n=1 of 2), and only 45% (n=14 of 31) of those referred to a community services board received their follow-up injection. All 4 patients who moved or were discharged out of state did not receive their follow-up injection.

Referring to Table 2, of the yes-LAI-APap patients, 13.8% (n=4) discontinued the LAI-AP within 3 months of hospital discharge. The reasons for discontinuation include not following up after the initial outpatient visit (n=1), cost (n=1), and discontinuing secondary to adverse effects (n=2). One insured patient received aripiprazole monohydrate through

TABLE 1: Patient characteristics

	All (N = 51)	Follow-Up Injection Received as Planned (yes-LAI-APap) (N = 29)	Follow-Up Injection Not Received as Planned (no-LAI-APap) (N = 22)	*P*-value
Age, mean±SD	38.27±13.37	41.6±13.3	34.0±12.5	.043[a]
Male, n (%)	33 (64.7)	18 (62.0)	15 (68.2)	.651
Race, n (%)				.291
Caucasian	27 (52.9)	18 (62.1)	9 (40.9)	
African American	21 (41.2)	10 (34.5)	11 (50.0)	
Other	3 (5.9)	1 (3.4)	2 (9.1)	
LAI antipsychotic, n (%)				.827
Risperidone microspheres	14 (27.4)	9 (31.0)	5 (22.7)	
Paliperidone palmitate	14 (27.4)	9 (31.0)	5 (22.7)	
Aripiprazole monohydrate	14 (27.4)	7 (24.1)	7 (31.8)	
Haloperidol decanoate	7 (13.7)	3 (10.3)	4 (18.2)	
Fluphenazine decanoate	2 (3.9)	1 (3.4)	1 (4.5)	
Psychiatric Diagnosis,[b] n				
Schizophrenia	9	7	2	.268
Bipolar Disorder	9	7	2	.268
Schizoaffective Disorder	12	6	6	.583
Major Depressive Disorder	5	3	2	1.00
Psychosis, Unspecified	19	8	11	.101
Other	5	4	1	.375
Reason for Administration, n (%)				.048[a]
New Start	39 (76.5)	19 (65.5)	20 (90.9)	
Continuation of Previous Therapy (Maintenance Injection)	12 (23.5)	10 (34.5)	2 (6.9)	
Inpatient Coverage of LAI Antipsychotic, n (%)				.079
No Free Trial Program	34 (66.7)	22 (75.9)	12 (54.5)	
Manufacturer Free Trial Program	17 (33.3)	7 (24.1)	10 (45.5)	
Outpatient Provider Setting, n (%)				.028[a]
Community Service Board	31 (60.8)	14 (48.3)	17 (77.3)	
Private Psychiatrist/Indigent Clinic[c]	16 (31.4)	11 (37.9)	5 (22.7)	
Study Institution Provider	4 (7.8)	4 (13.8)	0	
Type of Follow-Up, n (%)				.012[a]
Appointment	34 (66.7)	24 (82.8)	10 (45.5)	
Walk-In	17 (33.3)	5 (17.2)	12 (54.5)	

LAI = long-acting injectable.
[a]*P* value<.05.
[b]Note that some patients had multiple diagnoses.
[c]One patient in each group received services at an indigent clinic.

a free trial program while inpatient and received the initial follow-up aripiprazole injection after discharge as planned but ultimately was switched back to oral aripiprazole due to cost after losing insurance coverage. Two risperidone microsphere patients discontinued secondary to adverse effects. Two patients' outpatient provider (1 per follow-up group) switched their LAI-AP therapy. Three patients had their doses reduced after discharge, 2 of whom were on maximum doses. Four patients not on maximum doses (eg, paliperidone palmitate 117 mg) had their doses increased after discharge. One patient received the next risperidone microspheres injection as planned but later changed to paliperidone palmitate. One patient who did not receive the next haloperidol decanoate injection as planned was later changed to paliperidone palmitate. Of patients who presented to their follow-up appointment but classified as no-LAI-APap, 1 patient on risperidone microspheres discontinued secondary to adverse effects and the other refused to continue paliperidone palmitate.

Documentation on the discharge instructions given to the patient regarding administration of LAI-AP and follow-up plan was not statistically significantly different between yes-LAI-APap and no-LAI-APap patients (Table 2). Three no-LAI-APap patients did not have clear instructions for the next LAI-AP dose and follow-up compared with only 1 patient in the yes-LAI-APap group (p=.303). All patients had appropriate documentation of administration of an LAI-AP while inpatient except 1 no-LAI-APap patient (p=.431). It is unclear whether this lack of documentation impacted receipt of the patient's next injection. Instructions regarding oral overlap were included in the discharge paperwork for all patients except 1 no-LAI-APap patient (p=.364). A little over 51% of yes-LAI-APap patients were

TABLE 2: Secondary outcomes

	Follow-Up Injection Received as Planned (yes-LAI-APap) (N = 29)	Follow-Up Injection Not Received as Planned (no-LAI-APap) (N = 22)	*P*-value
Plan for Follow-up of Next Scheduled LAI-AP Not Included in Discharge Paperwork, n (%)	1 (3.4)	3 (13.6)	.303
Inpatient Administration of LAI-AP Not Included in Discharge Paperwork, n (%)	0 (0)	1 (4.5)	.431
Oral Overlap at Discharge, n (%)	15 (51.7)	20 (90.9)	.002
Oral Overlap Included in Discharge Paperwork, n (%)	15 (100)	19 (95)	.364
Oral Overlap in New Starts, n (% of Oral Overlap Group)	12 (80)	18 (90)	.185
Oral Overlap Deemed "Appropriate" in New Starts, n (% of Oral Overlap in New Starts)	11 (91.7)	17 (94.4)	.765
Access to 90-Day Follow-up Records, n, (%)	29 (100)	8 (36.4)	<.05
Rehospitalized 0 to 30 Days After Discharge, n (%)	2 (6.9)	0 (0)[a]	.445
Rehospitalized 31 to 60 Days After Discharge, n (%)	2 (6.9)	1 (12.5)[a]	.607
Rehospitalized 61 to 90 Days After Discharge, n (%)	1 (3.4)	1 (12.5)[a]	.316
Total Patients Rehospitalized Within 3 Months of Discharge, n (%)	4 (13.8)	2 (25)[a]	.446
LAI-AP Changed by Outpatient Provider Within 3 Months of Discharge, n (%)	11 (37.9)	3 (37.5)[a]	1
LAI-AP Discontinued by Outpatient Provider, n (%)	4 (13.8)	3 (37.5)[a]	.13
Associated Reason for Change in LAI-AP, n			
Dose Increased	4	—	
Dose Decreased	3	—	
Adverse Effects	2	1	
Cost	1	—	
Switched LAI-AP	1	1	
Patient Refusal	—	1	

LAI-AP = long-acting injectable antipsychotic.
[a]Percentage based on access to records (n = 8).

prescribed oral overlap at discharge compared with a much higher percentage (90.9%) in the no-LAI-APap group (p=.002). Oral overlap at discharge was considered appropriate in all patients prescribed it except 2, 1 patient per group (p=.623). Thirty patients newly started on LAI-AP treatment received a prescription for oral overlap. All new starts requiring oral overlap aripiprazole monohydrate (n=12), risperidone microspheres (n=9), haloperidol decanoate (n=4), and fluphenazine decanoate (n=1) received it at discharge when indicated. Four patients newly initiated on paliperidone palmitate were discharged with oral overlap, including 3 patients who were treated with oral risperidone 8 mg/day and 1 who received only the first loading dose while inpatient. Five patients on maintenance LAI-APs received a prescription for oral overlap at discharge, 1 patient each for paliperidone palmitate, risperidone microspheres, and aripiprazole monohydrate, and 2 haloperidol decanoate patients. These oral prescriptions were primarily associated with a plan to increase the maintenance LAI-AP dose.

Six patients were rehospitalized within 90 days of discharge. Two patients (both yes-LAI-APap) were readmitted within 30 days. One 30-day readmission patient received a haloperidol decanoate maintenance injection without oral overlap. The other patient with 30-day readmission was newly started on paliperidone palmitate, received 117 mg as the outpatient scheduled injection, and was readmitted a second time within 60 days. Two additional patients (both new starts) were readmitted between 31 and 60 days (n=1 in the yes-LAI-APap, n=1 in the no-LAI-APap), and an additional 2 patients (n=1 in each group) were readmitted between 61 and 90 days. This totaled 4 patients (5 admissions) within 90 days in the yes-LAI-APap group and 2 patients (out of 8 with access to records) in the no-LAI-APap group (p=.446). Three patients rehospitalized within 90 days in the yes-LAI-APap group were new starts on LAI-AP therapy. No patients who received their aripiprazole monohydrate follow-up injections were rehospitalized within 90 days. One patient who received a maintenance aripiprazole monohydrate injection while inpatient but missed the scheduled follow-up injection appointment was rehospitalized within 90 days of discharge. One patient newly initiated on paliperidone palmitate did not receive the next injection and was rehospitalized within 60 days. No patients newly started on an LAI-AP requiring oral overlap were rehospitalized within 30 days.

Discussion

This prospective study sought to determine continued adherence to an LAI-AP plan following discharge from

inpatient psychiatric hospitalization. Results from the primary outcome indicate that more than 40% of patients who received an LAI-AP inpatient did not adhere to the plan in the outpatient setting despite appropriate discharge planning. Patients most likely to follow through with the inpatient plan were those who continued a previous outpatient LAI-AP plan receiving a scheduled or recently missed maintenance injection while inpatient, were older in age, followed up within the health system, had a scheduled follow-up appointment (date, time, and provider), and did not require oral overlap at discharge.

Since completing this project, the study institution also refers patients to independent pharmacies offering LAI-AP administration services, and these often schedule a date and time for receipt. Pharmacist-administered LAI-APs have documented positive patient experiences.[10]

Patients on an established LAI-AP were more likely to receive their follow-up injection (83.3%), than new LAI-AP initiations (48.7%). Patients receiving risperidone microspheres or paliperidone palmitate were more likely to receive a follow-up injection (64.3% per group) than those who received aripiprazole monohydrate (50%) or a first-generation agent (haloperidol or fluphenazine, 43% and 50%, respectively). It is unknown if adverse effects, efficacy, or access to the injection impacted this. The authors agree with a recent publication on LAI-APs emphasizing the importance of ensuring the intended product is covered and can be continued post discharge.[1] To facilitate this, the study institution requires approval by a BCPP before dispensing the LAI-AP.

Rates of complete documentation regarding LAI-AP administration and follow-up plan were higher than expected. Given the prospective nature of this study, it is possible they were higher than normal practice given that the investigators knew this was being collected and this information would be necessary to complete follow-up calls. Since completion of this project, the BCPP ensures the LAI-AP administration and follow-up plan are documented on the discharge instructions.

A similar study (N=75) was published on adherence to paliperidone palmitate or aripiprazole monohydrate following discharge from inpatient psychiatry.[11] The authors defined adherence as having a Medicaid claim for an outpatient fill of a second-generation LAI-AP within 30 days of the scheduled outpatient dose. Similar to the current study's population, the average age was 36 years, 54.7% male and treated for psychosis-related (82.7%) indications. Whereas the current study reported almost 57% received their first follow-up injection, the Medicaid claim study found an even lower rate of adherence (n=28, 37.3%). Of those receiving their initial follow-up injection, 78.6% and 67.9% continued treatment at 2 and 3 months, respectively. Less than half (46%) remained on treatment after 6 months, only 17% of the original population. The consent process and participant knowledge of someone checking to confirm receipt of their follow-up injection possibly introduced bias and impacted the current study's higher adherence rates. As in the current study, patients in the Medicaid claim study previously treated with an LAI-AP were more likely to be initially adherent (21.4% versus 6.4%); however, these rates were lower than the current study (83.3% versus 48.7%). They reported non–statistically significant higher rates of psychiatric-related readmission or emergency room visits over 6 months in the initially adherent group (35.7%) versus the nonadherent group (23.4%) (p=.251); the authors suggest this may have been related to patient acuity or the small sample size. The authors recommend that inpatient clinicians should facilitate outpatient adherence before LAI-AP initiation as initial follow-up adherence after inpatient initiation was found to be low.[11]

Another small study (N=55) completed at a single site Veterans Affairs Medical Center (VAMC) compared outcomes of LAI-AP initiation (fluphenazine decanoate, haloperidol decanoate, paliperidone palmitate, or risperidone microspheres) in treatment-naïve patients (primarily treated for schizophrenia or schizoaffective disorder) by inpatient (N=35) versus outpatient (N=20) setting.[9] The authors found no statistically significant difference in hospitalization rates or time to hospitalization within 1 year of LAI-AP initiation: 37% of inpatient initiations and 45% of outpatient initiations were hospitalized (p=.28). Average time to psychiatric admission was 147 versus 138 days in the inpatient versus outpatient initiation group (p=.42), respectively. This was longer than the current study's 90-day readmission period, which may account for the lower readmission rates in the current study. The VAMC provides both inpatient and outpatient care; thus, it is more likely to have access to readmission data.[9] It is difficult to compare these findings to the current study in which most patients were referred outside of the health system for LAI-AP continuation.

The results of this study are subject to several limitations. The small sample size likely affected the results although it was similar in size to previous LAI-AP publications.[7,9,11] The lack of a statistically significant difference in rehospitalization rate within 3 months following discharge should be interpreted with caution as this may represent a type II error given the small number of participants and that data regarding rehospitalization was unavailable for 14 patients in the no-LAI-APap group, which is a major limitation. This study was conducted at a single site but included contacting multiple follow-up sites. This made it challenging to

obtain information for patients who did not follow-up outpatient, and some secondary outcomes could not be fully analyzed. The authors had limited access to patient records and were dependent on the outpatient provider to provide accurate information, and some were unwilling to do so although written informed consent was obtained. Thus, this study differed from the retrospective single clinic study that had continued access to the patients' adherence and medication changes following an inpatient LAI-AP initation.[7] The impact of COVID-19 possibly contributed to the lack of follow-up during the study period as LAI-APs require an in-person visit. Inclusion of patients on an LAI-AP prior to their inpatient admission may have influenced results as they were more likely to have established outpatient providers. This study did not include the aripiprazole lauroxil products with a loading dose strategy or the risperidone subcutaneous products, both of which reduce need for oral overlap.[1]

The primary objective of this study assessed receipt of the next scheduled injection as planned following LAI-AP administration during inpatient hospitalization. Thus, the outcome of 90 days was shorter than previously published studies looking at 6- and 12-month outcomes.[7,9,11] Prior studies were retrospective with 2 completed within a single health system or that used Medicaid claims data.[2,7,9,11] Thus, their authors had access to longer term data. Whereas 90-day readmission rates may be a limitation for the current study's secondary outcome, early readmission rates are of interest to inpatient clinicians. Most patients in the current study were newly initiated on LAI-APs (n=39, 76.5%) and, thus, were not yet at steady state. This study's prospective, retrospective nature limited the feasibility of collecting longer term outcomes given that follow-up calls were intended to occur at least 90 days after consent within the time constraint of a 1-year pharmacy residency. The authors were mindful of the outpatient provider's time because they were asked to review 90 days of documentation.

The current study adds to the literature regarding transitions of care following inpatient LAI-AP administration in the first 3 months post discharge. The study included patients referred for care outside of the health system where the LAI-AP was initiated, which is more reflective of real-world, non-VAMC practice. It also highlights barriers associated with transitioning care, including clinics requiring walk-in services for new patients. Additional strengths are inclusion of more LAI-APs than previous publications, both first- and second-generation LAI-APs, all insurance statuses, and a variety of diagnoses. This study differs from others as it verified injection receipt versus utilizing claims data or refill history.

Future studies should compare LAI-AP follow-up rates to oral prescriptions only, new starts to maintenance injections, and LAI-APs with loading doses to those requiring oral overlap. Additionally, future investigations should detail the BCPP's role and effect of interventions on the LAI-AP transition of care process.

Conclusion

Overall, more than 40% of patients did not receive a follow-up injection in the outpatient setting as planned after LAI-AP receipt during psychiatric hospitalization despite appropriate discharge planning. Additional data is needed to assess the effect of treatment setting on LAI-AP adherence. Prior to LAI-AP inpatient initiation, multiple factors should be considered, including outpatient adherence, access, ability to establish a transition of care plan, and feasibility of initiating LAI-APs outpatient. It is important to communicate to the next level of care that an LAI-AP was administered during inpatient hospitalization. Emphasis on complete discharge documentation, including date, time, and dose of next LAI-AP injection and oral overlap, should be stressed to inpatient providers to improve transitions of care.

Acknowledgments

Emily Burger, PharmD, BCPP, and Jill Nofziger, PharmD, BCPS, BCPP, helped with the consent process. Teresa Potter, PharmD, BCPS, helped with statistical analysis.

References

1. VandenBerg AM. An update on recently approved long-acting injectable second-generation antipsychotics: knowns and unknowns regarding their use. Ment Health Clin. 2022;12(5):270-81. DOI: 10.9740/mhc.2022.10.270
2. Marcus SC, Zummo J, Pettit AR, Stoddard J, Doshi JA. Antipsychotic adherence and rehospitalization in schizophrenia patients receiving oral versus long-acting injectable antipsychotics following hospital discharge. J Manag Care Spec Pharm. 2015;21(9):754-68. DOI: 10.18553/jmcp.2015.21.9.754
3. Huang SS, Lin CH, Loh EW, Yang HY, Chan CH, Lan TH. Antipsychotic formulation and one-year rehospitalization of schizophrenia patients: a population-based cohort study. Psychiatr Serv. 2013;64(12):1259-62. DOI: 10.1176/appi.ps201200506
4. Kishimoto T, Hagi K, Nitta M, Leucht S, Olfson M, Kane JM, et al. Effectiveness of long-acting injectable vs oral antipsychotics in patients with schizophrenia: a meta-analysis of prospective and retrospective cohort studies. Schizophr Bull. 2018;44(3):603-19. DOI: 10.1093/schbul/sbx090
5. Kishimoto T, Robenzadeh A, Leucht C, Leucht S, Watanabe K, Mimura M, et al. Long-acting injectable vs oral antipsychotics for relapse prevention in schizophrenia: a meta-analysis of randomized trials. Schizophr Bull. 2014;40(1):192-213. DOI: 10.1093/schbul/sbs150
6. Tiihonen J, Mittendorfer-Rutz E, Majak M, Mehtala J, Hoti F, Jedenius E, et al. Real-world effectiveness of antipsychotic

treatments in a nationwide cohort of 29 823 patients with schizophrenia. JAMA Psychiatry. 2017;74(7):686-93. DOI: 10.1001/jamapsychiatry.2017.1322
7. Rittmannsberger H, Rosenleitner J, Malsiner-Walli G, Werl R, Rittmannsberger B, Yazdi K. Treatment duration with long-acting injectable antipsychotics after in-hospital initiation: a retrospective cohort study. J Clin Psychopharmacol. 2017;37(2):250-54. DOI: 10.1097/JCP.0000000000000672
8. Correll CU, Kim E, Sliwa JK, Hamm W, Gopal S, Mathews M, et al. Pharmacokinetic characteristics of long-acting injectable antipsychotics for schizophrenia: an overview. CNS Drugs 2021;35(1):39-59. DOI: 10.1007/s40263-020-00779-5
9. Romstadt N, Wonson E. Outcomes comparison of long-acting injectable antipsychotic initiation in treatment-naïve veterans in the inpatient versus outpatient setting. Ment Health Clin. 2018;8(1):24-7. DOI: 10.9740/mhc.2018.01.024
10. Mascari LN, Gatewood SS, Kaefer TN, Nadpara P, Goode JVR, Crouse E. Evaluation of patient satisfaction and perceptions of a long-acting injectable antipsychotic medication administration service in a community-based pharmacy during the COVID-19 pandemic. J Am Pharm Assoc. 2022;62(4S):S29-34. DOI: 10.1016/j.japh.2022.01.016
11. Gilbert JL, Nelson LA, Kriz CR, Liu Y, Iuppa CA, Diefenderfer LA, et al. Identifying predictors of primary adherence to second generation long-acting injectable antipsychotics following discharge from an acute inpatient psychiatric unit. Psychopharmacol Bull. 2019;49(2):8-16. PubMed PMID: 31308578; PubMed Central PMCID: PMC6598778.