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Psychiatric Hospitalization Precipitants and Outcomes in a Comprehensive Dementia Care Program

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Abstract

Objectives: Characterize the precipitants and outcomes of psychiatric hospitalizations among patients enrolled in a comprehensive dementia care program and identify factors associated with discharge to higher-level residential setting.

Design: Retrospective cohort study.

Setting: UCLA Alzheimer's and Dementia Care Program.

Participants: Patients hospitalized at the UCLA Resnick Neuropsychiatric Hospital (NPH).

Measurements: Precipitating reasons for hospitalization, patient demographic and clinical characteristics, hospitalization-level characteristics, and caregiver relationship. Discharge to higher-level residential settings (e.g., assisted living, nursing home). Change in scheduled Central Nervous System (CNS)-active medications (antipsychotics, antidepressants, and sedative/hypnotics).

Results: There were 180 psychiatric hospitalizations among 150 patients, with a median age of 79 years (IQR, 73–85) at admission and MMSE score of 17 (IQR, 12–24) at first hospitalization. Agitation was the most common precipitating reason for hospitalization (n=127, 71%). Median

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AUTHOR CONTRIBUTIONS

Lee, Romero, Endo, Serrano, Centeno, and Reuben contributed to the study concept and design. All authors contributed to data acquisition, analysis, or interpretation. Lee, Endo, Romero, and Reuben drafted the manuscript; all authors made critical revisions to the manuscript. Lee and Romero performed the statistical analysis. All authors provided final approval of the manuscript.

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length of stay was 14 days (IQR, 9–26); 54 (30%) resulted in discharge to a higher-level residential setting. In adjusted analyses, agitation as the precipitant for hospitalization (aOR, 4.7; 95% CI, 1.7–12.9, p=0.003) and male sex (aOR, 2.3; 95% CI, 1.0–5.5, p=0.049) were associated with higher odds of discharge to a higher-level setting. Most hospitalizations resulted in no change in the number of scheduled CNS-active medications (e.g., 69% had no change in the number of scheduled antipsychotics), while escalation occurred in 19% to 28%, depending on medication class.

Conclusion: Psychiatric hospitalization precipitated by agitation or involving male patients was often followed by transition to higher-level residential care. Future studies should evaluate whether earlier outpatient psychiatry involvement and proactive placement planning can reduce hospitalization and subsequent placement changes.

Keywords

Psychiatric Hospitalizations; Comprehensive Dementia Care; Neuropsychiatric symptoms; Psychotropic medications

INTRODUCTION

Neuropsychiatric behavioral symptoms such as agitation, psychosis, and mood disturbances are prevalent among persons living with dementia (PLWD), affecting about 75% of PLWD.[1] These symptoms can lead to caregiver distress, reduced quality of life, and increased emergency department and hospital utilization.[2–5] As Alzheimer's disease and related dementias (ADRD) progresses, behavioral symptoms often become more prominent.[6] The management of behavioral symptoms in outpatient settings is often difficult because of limited access to geriatric psychiatrists, challenges in closely monitoring treatment responses, and the limited effectiveness of currently available medications. In 2018, about 40% of psychiatric hospital patients had an ADRD diagnosis.[7] With over 7 million PLWD[4] and only about 600 psychiatric hospitals with approximately 4,500 beds in the United States,[8] understanding predictors for psychiatric hospitalization is important given limited health system capacity. Psychiatric hospitalization may also cause substantial disruption to normal care routines, contribute to caregiver burden and distress, and create uncertainty surrounding discharge disposition and long-term placement.[9,10]

Comprehensive dementia care programs and the Centers for Medicare & Medicaid Services (CMS) Guiding an Improved Dementia Experience (GUIDE) Model, which promotes national implementation of comprehensive dementia care,[11,12] aim to support persons living with dementia (PLWD) and caregivers through coordinated and holistic care designed to improve quality. Comprehensive dementia care programs, such as the UCLA Alzheimer's Dementia Care (ADC) program,[13] provide longitudinal assessment and monitoring, caregiver education and support, care coordination, and management of neuropsychiatric behavioral symptoms.[14–16] These programs use tools and strategies to stabilize symptoms in the outpatient setting[17] and aim to avoid or reduce hospitalizations. However, when dementia-related symptoms become too severe to manage, psychiatric hospitalization for medication titration and behavioral trigger avoidance may be necessary. Little is known about the predictors and outcomes of psychiatric hospitalizations among

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PLWD already enrolled in comprehensive dementia care, including programs participating in the GUIDE Model, and understanding these factors could help dementia care programs identify PLWD at high-risk and better prepare families for post-discharge planning.

Comprehensive dementia care programs and the CMS GUIDE Model are also aligned with the "Aging in the Right Place" framework, which emphasizes supporting older adults to live in settings that best match their needs, preferences, and social circumstances over time.[18–21] For PLWD, psychiatric hospitalization may reflect a need for changes in living arrangements, as acute behavioral symptoms, functional decline, and caregiver strain may precipitate transitions to higher-level residential care settings. Understanding predictors and outcomes of psychiatric hospitalization among PLWD enrolled in comprehensive dementia care programs may help identify opportunities to better support aging in the right place and reduce potentially avoidable institutional transitions.

This study examined psychiatric hospitalizations at the UCLA Resnick Neuropsychiatric Hospital (NPH) among patients enrolled in the UCLA ADC program, which uses advanced practice practitioners who longitudinally co-manage dementia-related needs and support transitions in care when needed. This study characterized the precipitants of psychiatric hospitalization, changes to residential living setting at discharge, and patterns of medication prescribing.

METHODS

Study Design and Setting

This was a retrospective cohort study of patients enrolled in the UCLA ADC Program who were hospitalized at the UCLA Resnick Neuropsychiatric Hospital, which provides expert evaluation and treatment for dementia-related symptoms and mood disorders by providing a calming environment (therapeutic milieu) with mostly private rooms, outdoor spaces, and management by psychiatrists and other support staff. This study was approved by the UCLA Institutional Review Board.

Study Sample

All UCLA ADC patients were screened for eligible hospitalizations using an electronic medical record data pull, and only admissions to the UCLA NPH were included. Among the 3,837 PLWD enrolled in the UCLA ADC program between January 1st, 2012 and May 1st, 2024, 150 ADC patients had 180 psychiatric hospitalizations and were evaluated in this study. To be a UCLA ADC Program patient, they needed to have: 1) a dementia diagnosis, 2) receive care from a partnering UCLA physician (e.g., primary care provider, psychiatrist, or neurologist), 3) have an identified caregiver, and 4) not be enrolled in hospice or permanently reside in a skilled long-term care facility.

Outcome Measures

Residential care level was categorized as home, group care living setting (board and care, memory care, or assisted living), or nursing facility. The primary outcome was change in level of residential setting at psychiatric hospital discharge, defined as discharge

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to a higher-level residential care setting versus return to the same or a lower-level of residential care. A secondary outcome was change in scheduled Central Nervous System (CNS)-active medication prescribing before and at discharge from the hospital, categorized as de-escalation, no change, or escalation across three medication classes: antipsychotics, antidepressants, and sedative/hypnotic medications (eTable 1 for specific medications).

Additional Measures

Additional patient-level measures included demographic characteristics (sex, race and ethnicity); caregiver relationship (spouse, adult child, or other caregiver such as a sibling, hired caregiver, or facility staff); clinical characteristics such as age at dementia onset, Mini-Mental State Examination (MMSE) score within 12 months prior to first hospitalization,[22,23] and number of independent Activities of Daily Living (ADLs) and Instrumental Activities of Daily Living (IADLs) at first hospitalization.[24] Dementia type was categorized as Alzheimer disease, Lewy body dementia, vascular dementia, mixed dementia, or not otherwise specified (NOS).

Pre-hospitalization variables included precipitating reasons for hospitalization (e.g., agitation, psychotic symptoms, risk of harm to self or others, anxiety or depression, insomnia, and wandering were recorded as non-mutually exclusive categories) and outpatient psychiatrist visit within one year prior to admission. Hospitalization-related variables included length of stay, primary diagnosis at hospital discharge, and treatment for urinary tract infection (UTI) during hospitalization.

Data Collection

Electronic health record encounters and notes from NPH hospitalization were reviewed and entered in Research Electronic Data Capture (REDCap, Version 12.4.19).[25,26] Chart abstractors (DRL, ASE, MT, IAJ, and DBR) completed training sessions using standardized data abstraction guidelines. Any discrepancies during abstraction were reviewed collectively and discussed until consensus was reached.

Statistical Analysis

Descriptive statistics were used to summarize demographic, clinical, and hospitalization characteristics. Continuous variables were reported as medians with interquartile ranges (IQR) and compared using the Mann-Whitney U Test; and categorical variables were summarized as frequencies and percentages and compared using Fisher's exact tests. Transitions between pre-admission and discharge living locations were summarized descriptively and visualized using an Alluvial diagram; differences in the marginal distribution of living location pre-admission and at discharge were evaluated using the Stuart–Maxwell test. Multivariable logistic regression models were used to evaluate factors associated with transition to a higher level of care (yes vs no) at discharge. Hospitalizations served as the unit of analysis. Because some individuals contributed multiple hospitalization episodes, cluster robust standard errors were estimated at the patient level using the sandwich estimator to account for within patient correlation.[27] Adjusted odds ratios (aORs) and 95% confidence intervals (CIs) were derived from model coefficients and robust standard errors, using the sandwich and lmtest packages in R. Covariates were selected

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based on clinical judgment and include age at hospitalization (years), patient sex (female vs male), spouse as primary caregiver (yes vs no), agitation as precipitating reason for hospitalization (yes vs no), and whether the patient was evaluated by an outpatient psychiatrist within the year prior to admission (yes vs no). Of note, hospitalizations occurring within 14 days of discharge from a prior hospitalization were considered unplanned readmissions within the same clinical episode; in these instances, only the final hospitalization was retained for analysis. All tests were two-sided with statistical significance level set at $P<.05$. Statistical analyses were performed using R statistical software (v4.1.3).

RESULTS

Patient and Hospitalization Characteristics

There were 180 psychiatric hospitalizations among 150 patients (Table 1), with 19 patients (13%) experiencing more than one hospitalization. Among individuals with repeat hospitalizations, the median time between hospitalizations was 13.3 months (IQR, 6.0–27.7 months).

At the patient-level (n=150), 45 PLWD (30%) were men. Most PLWD were non-Hispanic White (n=90, 60%), followed by Hispanic or Latino (n=16, 11%), non-Hispanic Black (n=11, 7%), and non-Hispanic Asian (n=9, 6%). Caregivers were most commonly spouses (n=60, 40%) or adult children (n=57, 38%). The median age at dementia onset was 74 years (IQR, 68–81), and Alzheimer's disease was the most common dementia diagnosis (n=71, 47%), followed by dementia NOS (n=38, 25%). The median MMSE score within one year prior to first hospitalization was 17 (IQR, 12–24). PLWD had a median of 5 independent ADLs (IQR, 2–6) and 0 independent IADLs (IQR, 0–1) at first hospitalization.

At the hospitalization level, the median age at admission was 79 years (IQR, 73–85), and the median length of stay was 14 days (IQR, 9–26). Agitation was the most common reason for NPH hospitalization (n=127, 71%) and Dementia with Behavioral Disturbance was the most common primary diagnosis at discharge (n=119, 66%). One third of hospitalizations involved treatment for a urinary tract infection (n=60, 33%), with documented cognitive improvement following antibiotic treatment occurring in 20 of 60 hospitalizations (33%). Only 72 hospitalizations (40%) had an outpatient psychiatry visit within one year prior to admission.

Transitions in Living Situation Pre-admission and at Discharge

There were 129 admissions (72%) originated from home, 41 (23%) from group care setting, and 10 (6%) from nursing facility (Figure 1). Among admissions originating from home, 78 (60%) were discharged home, while 51 (40%) were discharged to a higher level of care, including 33 (26%) to group care setting and 18 (14%) to nursing facility. Most admissions from group care settings returned to the same setting (37/41, 90%), while 3 (7%) were discharged to a nursing facility. Similarly, most admissions from nursing facility returned to a nursing facility (8/10, 80%). Overall, 54 (30%) hospitalizations resulted in discharged to a higher level of residential care, and agitation as the reason for hospitalization was

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more common among discharge to a higher level of residential care than among those discharged to the same or lower level of care (89% vs 63%, Fisher's exact test, p<0.001) (Table 1). The distribution of living locations changed between pre-admission and discharge (Stuart–Maxwell, χ^2=45.4, df=2, p<0.001), with the proportion of admissions residing in a group care setting or nursing facility increasing from 28% (n=51) pre-admission to 56% at discharge (n=100) (Figure 1).

Multivariable Predictors of Discharge to a Higher-Level Residential Care Setting

In a multivariable logistic regression analyses of 180 hospitalization, male sex compared to female sex (aOR, 2.3; 95% CI, 1.0–5.5; p=0.049) and agitation as the reason for hospitalization (aOR, 4.7; 95% CI 1.7–12.9; p=0.003) were associated with higher odds of discharge to a higher-level residential care setting (Table 2). Patient age, spouse as primary caregiver, and having had an outpatient psychiatry visit in the year prior to hospitalization were not significantly associated with change in residential care setting. Regression models accounted for repeated hospitalizations using cluster robust standard errors at the patient level.

Changes in CNS-Active Medication Prescribing

Across the three CNS-active medication classes, most NPH hospitalizations resulted in no change in the number of scheduled medications (Figure 2). Initiation or escalation of medications occurred in 22% of hospitalizations for antipsychotics, 28% for antidepressants, and 19% for sedative/hypnotics. De-escalation was less common, occurring in 9% of hospitalizations for antipsychotics, 16% for antidepressants, and 13% for sedative/hypnotics.

DISCUSSION

Among comprehensive dementia care program patients admitted to a psychiatric hospital, nearly one-third of hospitalizations resulted in discharge to a higher-level residential care setting. Agitation as the precipitating reason for hospitalization and male sex were associated with discharge to a higher-level care setting. About one-third of patients were treated for a UTI during admission, yet documented improvement was noted in only one-third of those treated. Fewer than half of hospitalizations were preceded by an outpatient psychiatry visit in the prior year, and scheduled psychotropics were rarely de-escalated; most patients were discharged on the same or a higher number of psychotropic medications.

Discharges to a higher-level residential care setting were frequent in our cohort, consistent with national trends in which PLWD are less often discharged home and more frequently discharged to a skilled nursing facility after inpatient psychiatric hospitalization.[7] Although our study could not distinguish short-term placements (e.g., skilled nursing facilities for rehabilitation) from long-term settings (e.g., custodial nursing homes), these transitions in living situation may reflect multiple overlapping factors. First, psychiatric hospitalizations may signal worsening neuropsychiatric symptoms or functional decline related to ADRD progression.[6,28,29] The hospitalization may have been precipitated by inadequate caregiving support in the pre-hospital setting as the disease progressed. Alternatively, the pre-hospital living environment may have been adequate until an acute behavioral crisis made returning

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to the prior living situation unsafe or unsustainable. Additionally, the hospitalization itself may have contributed to subsequent need for higher-level care through deconditioning, delirium, or further loss of functional abilities. Together, the findings underscore the importance of aligning care needs with the most supportive and sustainable living environment, consistent with the "Aging in the Right Place" framework.[18–21] Future improvement efforts, including the use of social needs surveys,[30] could help comprehensive dementia care programs anticipate transitions, support proactive planning, and ensure families are prepared for residential options when behavioral crises arise.

Additionally, agitation as the reason for hospitalization was strongly associated with discharge to a higher-level residential care. This is consistent with prior literature showing that dementia-related behavioral symptoms are associated with disease progression, caregiver burden, and risk of institutionalization.[28,31,32] Our findings also suggest that urinary tract infections may be overstated as the primary cause of behavioral change since only one-third of patients treated for a urinary tract infection had documented symptom improvement. Male sex was also associated with greater likelihood of discharge to higher-level care, which may reflect differences in the perceived severity or manageability of agitated behaviors for caregivers.[4,33] Notably, fewer than half of hospitalized patients had an outpatient psychiatry visit within the year prior to hospitalization, suggesting potential gaps in access to specialty behavioral health care for PLWD with worsening neuropsychiatric behavioral symptoms. Although outpatient psychiatric interventions may reduce hospitalizations in general psychiatric patients,[34] their role in preventing psychiatric hospitalization among PLWD remains unclear. Overall, these results highlight the need for comprehensive dementia care programs that proactively address behavioral symptoms and caregiver needs, an approach emphasized by policies like the GUIDE model.[12] Future studies could evaluate whether earlier outpatient psychiatry involvement or embedding a psychiatrist in comprehensive dementia care programs could reduce psychiatric hospitalizations and help PLWD remain safely in their pre-hospital living settings.

A strength of this study is the rigorous chart abstraction that enabled detailed assessment of patient, caregiver, and hospital-related characteristics. Additionally, by examining real-world patients enrolled in a comprehensive dementia care program, this study provides insights that can inform the development and improvement of other comprehensive dementia care programs.

There are several limitations to this study. First, this study was conducted at a single academic medical center, which may limit generalizability. Additionally, hospitalizations occurring at outside psychiatric facilities were not captured, although patients and caregivers were typically directed to the UCLA NPH by their dementia care specialist. Future studies linking UCLA ADC patient data with healthcare utilization claims could provide a more comprehensive view of healthcare use and outcomes. Second, despite detailed chart abstraction, certain clinical factors that may influence transitions in residential care, such as caregiver burden, home safety considerations, social support and financial constraints were not routinely available and therefore could not be evaluated. Additionally, this study included multiple univariable comparisons in Table 1, which may have increased the risk of Type I error; therefore, the findings from Table 1 should be interpreted cautiously.

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Nevertheless, these analyses were intended to descriptively characterize the cohort, whereas the primary analysis was based on multivariable regression modeling. Lastly, this study did not evaluate post-discharge trajectories, including whether higher-level residential care placements were temporary or permanent, or whether these transitions in care setting were associated with improved symptom management and clinical outcomes; however, future longitudinal studies could examine these outcomes.

CONCLUSIONS

Psychiatric hospitalization among patients enrolled in a comprehensive dementia care program was often followed by discharge to a higher-level residential care setting, particularly when hospitalization was precipitated by agitation and among men. These changes to living situation likely reflect a combination of ADRD progression, caregiver capacity, and potential hospitalization-related factors such as delirium and deconditioning. Future studies could evaluate whether strengthening comprehensive dementia care programs through earlier psychiatry involvement and proactive planning for residential care transition needs can reduce or delay psychiatric hospitalizations.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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The funder had role in the design and conduct of this study.

DATA STATEMENT

Preliminary findings were presented in part at the 2024 American Geriatrics Society Annual meeting, conducted virtually. Available data is subject to approval and requires data use agreements; contact the study lead author.

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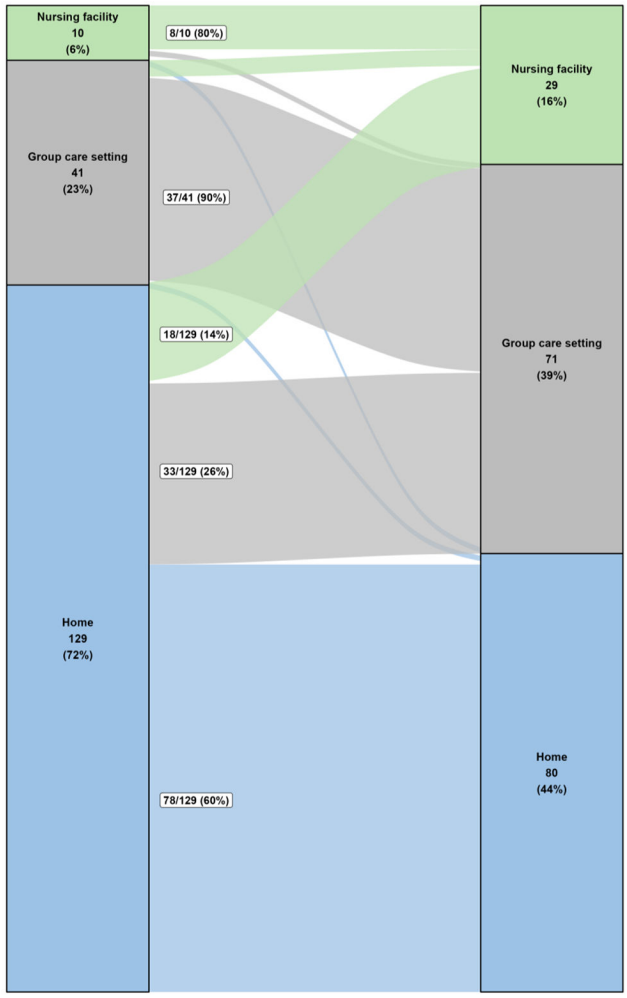
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HIGHLIGHTS

- **What is the primary question addressed by this study?** What factors precipitate psychiatric hospitalizations and subsequent changes in residential care setting on discharge among persons enrolled in a comprehensive dementia care program?
- **What is the main finding of this study?** In this retrospective study of 180 psychiatric hospitalizations, agitation was the most common precipitating reason for hospitalization with about one-third resulting in discharge to a higher-level residential setting. Agitation and male gender were significantly associated with transition to higher-level; patients were also discharged on a similar or higher number of Central Nervous System-active medications.
- **What is the meaning of the finding?** Psychiatric hospitalizations precipitated by agitation was often followed by transition to a higher-level residential care setting, underscoring the need for more caregiver support, earlier psychiatry involvement, and proactive placement planning.

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Pre admission	Home	Group care setting	Nursing facility
Home	78 (60%)	33 (26%)	18 (14%)
Group care setting	1 (2%)	37 (90%)	3 (7%)
Nursing facility	1 (10%)	1 (10%)	8 (80%)

Figure 1. Transitions in Living Location Pre-admission and at Discharge Following Neuropsychiatric Hospitalization.

The diagram shows proportions and transitions between pre-admission and discharge living locations. Flow widths are proportional to the number of individuals in each transition pathway. Group care setting refers to board and care, memory care units, and assisted living facilities. The overall distribution of living locations differed significantly between pre-admission and discharge (Stuart–Maxwell test, $\chi^2 = 45.43$, df=2, $p<0.001$).

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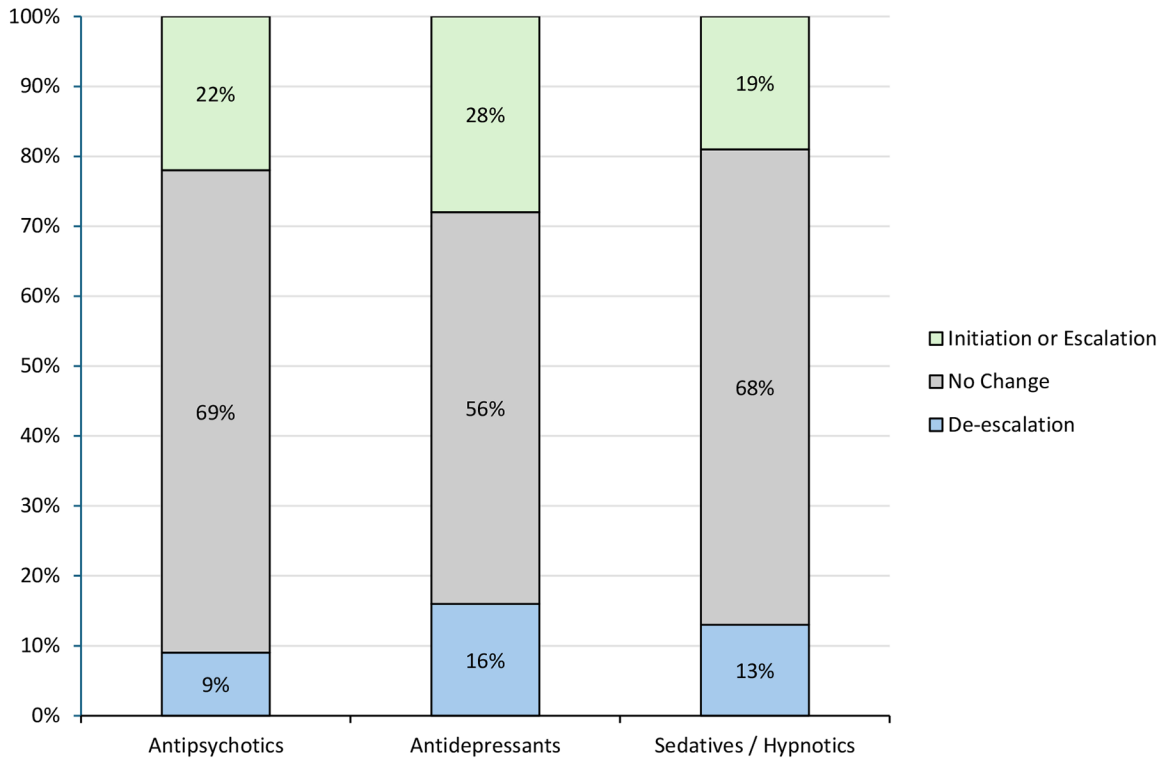


Figure 2. Change in the Number of Scheduled CNS-Active Medications (De-escalation, No Change, Escalation).

Stacked bars show the proportion of patients with de-escalation, no change, or initiation/escalation in prescribed antipsychotic, antidepressant, and sedative/hypnotic medications from before hospitalization to discharge. Medication class categories were not mutually exclusive, and patients could be included in multiple categories.

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Table 1.

Demographic, Clinical, and Hospital Characteristics by Discharge to a Same or Lower vs Higher Residential Care Setting.

Patient Demographic and Clinical Characteristics at First Hospitalization				
	Total Sample (n=150)	**Same or Lower Care Setting n=101 (67%)**	**Higher-Level Care Setting n=49 (33%)**	**p-value[a]**
Men, n (%)	45 (30%)	26 (25.7%)	19 (38.8%)	0.13
Race and Ethnicity				0.3
Non-Hispanic White	90 (60%)	60 (59.4%)	30 (61.2%)	
Non-Hispanic Black	11 (7%)	6 (5.9%)	5 (10.2%)	
Non-Hispanic Asian	9 (6%)	5 (5%)	4 (8.2%)	
Hispanic or Latino	16 (11%)	10 (9.9%)	6 (12.2%)	
Other[b]	24 (16%)	20 (19.8%)	4 (8.2%)	
Caregiver Relationship, n (%)				0.5
Spouse	60 (40%)	39 (39.8%)	21 (42.9%)	
Children	57 (38%)	39 (39.8%)	18 (36.7%)	
Other (i.e. siblings, hired caregiver/agency, facility)	30 (20%)	20 (18%)	10 (19%)	
Median age of dementia onset (IQR), years	74 (68 – 81)	74 (68–81)	75 (69–79)	0.7
Dementia Type, n (%)				0.9
Alzheimer's Disease	71 (47%)	48 (47.5%)	23 (46.9%)	
Lewy Body Dementia	16 (11%)	10 (9.9%)	6 (12.2%)	
Vascular Dementia	11 (7%)	9 (8.9%)	2 (4.1%)	
Mixed Dementia	14 (9%)	9 (8.9%)	5 (10.2%)	
Dementia NOS	38 (25%)	25 (24.8%)	13 (26.5%)	
Median MMSE Score within one year prior to first hospitalization (IQR)	17 (12 – 24)	17 (11–24)	17 (12–22)	0.7
Median number of independent ADLs at first hospitalization (IQR)	5 (2–6)	5 (2–6)	5 (2–6)	0.5
Median number of independent IADL at first hospitalization (IQR)	0 (0–1)	0 (0–1)	0 (0–1)	0.7

Hospitalization Characteristics				
	Total Sample (n=180)	**Same or Lower Care Setting n=126 (70%)**	**Higher-Level Care Setting n=54 (30%)**	**p-value[a]**
Median age (IQR), years	79 (73 – 85)	79 (73–85.5)	79 (73–85)	>0.9
Median Length of Stay (IQR), days	14 (9 – 26)	14 (8–22.8)	15.5 (10–28.8)	0.16
Reason for going to hospital, n (%)[c]				
Agitation	127 (71%)	79 (62.7%)	48 (88.9%)	<0.001
Psychotic Symptoms	82 (46%)	57 (45.2%)	25 (46.3%)	>0.9
Risk of harm to self or others	66 (37%)	44 (34.9%)	22 (40.7%)	0.5
Anxiety / Depression	42 (23%)	33 (26.2%)	9 (16.7%)	0.18
Insomnia / Sleep Disturbances	33 (18%)	25 (19.8%)	8 (14.8%)	0.5

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Hospitalization Characteristics				
	Total Sample (n=180)	**Same or Lower Care Setting n=126 (70%)**	**Higher-Level Care Setting n=54 (30%)**	**p-value[a]**
Wandering	24 (13%)	18 (14.3%)	6 (11.1%)	0.6
Primary Diagnosis at Discharge, n (%)				0.06
Dementia with Behavioral Disturbance	119 (66%)	77 (62.1%)	42 (80.8%)	
Dementia and Primary Psychiatric Condition (i.e., Bipolar disorder, Schizophrenia, Substance Use Disorder, Suicidal Ideation)	44 (24%)	36 (29%)	8 (15.4%)	
Dementia and Delirium (i.e. secondary to infection, substance use).	13 (7%)	11 (8.9%)	2 (3.8%)	
Treated for Urinary Tract Infection during the hospitalization, n (%)	60 (33%)	38 (30.4%)	22 (41.5%)	0.17
Outpatient psychiatry visit within one year prior to admission, n (%)	72 (40%)	55 (45.8%)	17 (32.1%)	0.10

Abbreviations – IQR: interquartile range; MMSE: Mini Mental State Examination; ADL: Activities of Daily Living; IADL: Instrumental Activities of Daily Living; NOS: Not Otherwise Specified.

[a]Continuous variables were compared using Mann-Whitney U tests and categorical variables using Fisher's exact tests.

[b]"Other" includes "American Indian or Alaska Native"; "Middle Eastern or North African"; "Multiple Races"; "Other"; "Patient Refused"; "Unknown".

[c]Not mutually exclusive categories.

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Table 2.

Factors Associated with Discharge to a Higher-Level Residential Care Setting.

Covariates	Adjusted Odds Ratio (95% CI)	p-value[a]
Patient Age (years)	1.02 (0.98–1.06)	0.3
Patient Male sex (ref: Female)	2.34 (1.01–5.45)	0.049
Spouse caregiver (ref: all other)	1.27 (0.61–2.52)	0.5
Agitation as reason for going to the hospital (ref: Not Agitation)	4.67 (1.69–12.88)	0.003
Outpatient psychiatry visit within one year prior to admission (ref: No)	0.72 (0.35–1.50)	0.4

[a]Adjusted odds ratios, 95% confidence intervals, and P-values were estimated using a logistic regression model with robust standard errors clustered at the patient level to account for repeated hospitalizations.