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Rates of new antipsychotic prescriptions and continuation at discharge from a medical unit in a community teaching hospital serving rural counties

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Abstract

Introduction: Antipsychotics are commonly used during hospitalization to manage a variety of acute indications and may be inadvertently continued at discharge. The purpose of this study was to identify the rate at which patients admitted to nonpsychiatric units were continued on newly prescribed antipsychotics at discharge from a rural community teaching hospital.

Methods: This study was a retrospective chart review of adult patients admitted to a large community teaching hospital and initiated on an antipsychotic from August 1, 2016, to August 31, 2017. Exclusion criteria were patients admitted to psychiatric or obstetrics/gynecology services, with a diagnosis of a psychotic disorder, or on an antipsychotic prior to hospitalization. The primary outcome measure was the number of new antipsychotic prescriptions during hospitalization that were continued at discharge. Secondary outcomes included antipsychotic characteristics and initiation indications. Descriptive statistics were used to describe antipsychotic use and demographic data.

Results: Of 100 patients included, 3 patients were discharged on an antipsychotic. Two patients had questionable indications, and 1 patient had a new psychotic disorder diagnosis. Of all antipsychotics newly initiated during hospitalization, haloperidol was the most commonly prescribed antipsychotic. The majority of doses were scheduled as 1-time or as-needed doses. Approximately 20% of antipsychotics were administered orally. No relevant indication was found for 35% of patients newly initiated on antipsychotics, and documented indications included agitation, psychosis, delirium, and anxiety.

Discussion: In an institution that largely serves a rural population, antipsychotic prescribing at discontinuation was not worse than what has been previously reported in other regions of the United States. Limitations for this study include the retrospective nature, single-center study, and small sample size. Although there was a lack of continuation after discharge, there was also a deficit of documentation with 35% of the antipsychotic initiations having no documented indication.

Keywords: antipsychotics, continuation, transitions of care

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Introduction

Antipsychotics are commonly used during hospitalization to prevent, treat, or manage a variety of on- and off-label

indications, including psychosis, substance withdrawal, delirium, and agitation.[1-3] Treatment with an atypical antipsychotic during critical illness has been identified as an independent risk factor for an antipsychotic prescription upon discharge.[4] Tomicheck et al[4] found that 24% of patients treated with an antipsychotic during their intensive care unit (ICU) admission were prescribed an antipsychotic at discharge. Similarly, Marshall et al[5] evaluated antipsychotic use in the ICU and throughout transitions of care, observing that, of 39 248 admissions, 8% of patients were newly initiated on an antipsychotic, for which 21% of patients were continued on an antipsychotic postdischarge. Another small retrospective study found that, of patients initially started on an antipsychotic in the medical ICU for presumed delirium, 26% of patients were continued on the antipsychotic at transfer to the medical floor, and 39% of those patients were given an antipsychotic prescription at discharge.[6]

Of particular interest, Herzig et al[7] evaluated more than 17 000 nonpsychiatric admissions at a large academic medical center and found that antipsychotics were used in 9% of patients. Common reasons for antipsychotic initiation included delirium and probable delirium. More than 25% of those initiated on the therapy were then discharged on the antipsychotic. Characteristics of patients discharged on antipsychotics included discharge to a location other than home and use of atypical antipsychotics. A recently published study by Fontaine et al[8] of newly initiated antipsychotics reported that, of 8297, 4% of patients at a 22-hospital health care system were discharged on an antipsychotic.

Although antipsychotic treatment can be useful in the acute setting, it is not without risk. Potential side effects of these medications include but are not limited to extrapyramidal symptoms, weight gain, metabolic side effects, sedation, and boxed warnings for increased risk of mortality in elderly patients with dementia.[9,10]

Previous literature[7,11] reports on potential overprescribing of antipsychotics and inappropriate continuation at discharge although the incidence at an institution, which serves a largely rural area, is unknown. The purpose of this study was to analyze the rates of new antipsychotic prescriptions and continuation at discharge within a community teaching hospital. Modeled after the Herzig et al[7] study, the objective was to investigate the prescribing patterns and subsequent number of nonpsychiatric unit patients discharged on newly initiated antipsychotics.

Methods

This study was a retrospective chart review of randomly selected adult patients admitted in a large (600+ beds) community teaching hospital located in southwest Georgia from August 1, 2016, to August 31, 2017. A list of patients was generated using hospital charges for antipsychotics as an indication of actual administration of antipsychotic orders. Inclusion criteria were all patients aged 18 years or older started on an antipsychotic at any point during their admission. Patients were excluded if they had been admitted for psychiatric services, had a primary or secondary diagnosis of a psychotic disorder, or were on an antipsychotic listed as a home medication. Patients admitted to obstetrics/gynecology service were also excluded from the study due to lack of generalizability to the general medical population. Randomization was completed by assigning a number using the random number generator in Microsoft Excel (Redmond, WA) to all patients meeting inclusion. Values were then sorted numerically in ascending order, and data were collected from the first 100 patients who did not meet exclusion criteria.

Information collected from the electronic medical record consisted of demographic information, number of patients with time spent in the intensive care unit, number of patients requiring mechanical ventilation, and the length of stay. Antipsychotic information recorded included name, dose, frequency, duration of therapy, route of administration, and dosing (scheduled or as needed). Finally, the indication for the use of the medication (eg, altered mental status, delirium, dementia, insomnia, anxiety, agitation, psychosis) was obtained by the signs/symptoms described in the physician's notes within the chart or from diagnostic information.

The primary outcome of the study was to identify the rate at which patients were continued on newly prescribed antipsychotic medications upon discharge from the institution. The outcome measure was the number of new antipsychotic prescriptions during hospitalization that were continued at discharge. Secondary outcomes evaluated included the antipsychotic characteristics and exposure, the reasons for initiation of antipsychotics, and the patient characteristics associated with initiation and continuation postdischarge. Descriptive information on the antipsychotic was obtained, including average dose of each antipsychotic, number of orders of each antipsychotic, frequency of each schedule, number of each route of each antipsychotic, and the number of each particular diagnosis for antipsychotic initiation.

Statistical analysis was completed using Excel. Descriptive statistics were used to describe antipsychotic use, demographic information, and hospitalization characteristics. This study was approved by both the hospital and university institutional review boards.

TABLE 1: Demographic data of the study

Parameter	Value (N = 100)[a]
Age, y	
Average	58.61
Range	21–92
Sex, n[b]	
Male	56
Female	44
Race, n[b]	
White	53
African American	44
Other	3
Hospitalization data	
ICU: Patients with time in the unit, n[b]	32
ICU: Patients with time on mechanical ventilation, n[b]	18
Length of stay, d	
Average	7.81
Range	0–77

ICU = intensive care unit.

[a]N = over all study sample.

[b]n = number of patients in the study sample meeting specified parameter.

Results

After applying exclusion criteria to the list of patients who had an order for an antipsychotic during hospitalization, 1023 unique patients remained. After randomization and assessment of 294 patients for eligibility, 194 patients were excluded, leaving a total of 100 patients included in the study. Patients were excluded because they had an antipsychotic listed prior to admission (n = 59), they had a diagnosis involving psychosis (n = 25), they did not have any antipsychotic administered during hospitalization (n = 5), or they could not be found in the new electronic medical record (n = 105). Table 1 shows the demographic characteristics. Of note, 32 patients were admitted to the ICU, and 18 patients required mechanical ventilation. Three patients were discharged on an antipsychotic. Characteristics of these patients are listed in Table 2.

Of the indications for the antipsychotic initiation for all patients included in the study, 40% of patients were initiated for documented agitation, 12% for psychosis, 12% for delirium, and 5% for anxiety. No relevant indication was documented for 35% of patients. Patients could have had more than 1 documented indication.

A total of 164 doses were administered to the 100 patients receiving antipsychotics (Table 3). A majority (38%) of the antipsychotics were initiated in the emergency department, followed by the intensive care units (30%). Haloperidol was the most commonly used antipsychotic, followed by ziprasidone, olanzapine, quetiapine, risperidone, and perphenazine. Most of the antipsychotic administrations were a 1-time dose (82 doses), 48 doses were given on an as-needed dosing schedule, and 34 doses were given as a scheduled regimen. The average number of doses administered was 3 doses per patient (range of 1 to 47 doses). The average dose per milligram of each antipsychotic was within the range based on the Food and Drug Administration-approved indications. Of those receiving antipsychotics, 57.3% were given as intramuscular injections, 22.6% were administered intravenously, and 20.1% were given by mouth.

Discussion

Compared to prior studies,[4,5,7,8] patients at this institution were not as likely to be discharged on an antipsychotic that was initiated during hospitalization. Only 3% of patients were discharged on an antipsychotic, and 1 patient was diagnosed with a psychotic disorder via psychiatry consult, leaving 2 patients with a questionable therapy continuation.

Indications for antipsychotic use were obtained from the medical record of all patients in this study and included agitation, anxiety, psychosis, and delirium. Some of these documented indications could have been symptoms of

TABLE 2: Characteristics of patients discharged on an antipsychotic

Characteristic	Patient 1	Patient 2	Patient 3
Race	White	African American	African American
Sex	Female	Male	Male
Age, y	90	77	56
Antipsychotic indication	Agitation associated with altered mental state from urinary tract infection	Psychotic disorder (major depressive disorder with psychotic features) per psychiatry consult	Alcohol abuse with possible delirium tremens per physician note indicating altered mental state, confusion, delirium, and agitation
Discharge antipsychotic	Quetiapine	Perphenazine	Risperidone

TABLE 3: Specific antipsychotic data administered to patients

Parameter	Value (N = 164 doses administered)[a]
Total antipsychotics administered, n (%)[b]	
Haloperidol	78 (47.6)
Olanzapine	21 (12.8)
Perphenazine	5 (3.0)
Quetiapine	19 (11.6)
Risperidone	5 (3.0)
Ziprasidone	36 (22.0)
Average doses of patients receiving antipsychotics, mg (note: not total daily dose, dose per each administration)	
Haloperidol	4.4
Olanzapine	8.2
Perphenazine	5.2
Quetiapine	50.0
Risperidone	0.7
Ziprasidone	12.0
Average number of doses of patients receiving antipsychotics per order (patients can receive multiple antipsychotics)	
Haloperidol	1.8
Olanzapine	2.1
Perphenazine	6.6
Quetiapine	6.2
Risperidone	5.4
Ziprasidone	1.7
Routes of administration for all doses, n (%)[b]	
Intramuscular	94 (57.3)
Intravenous	37 (22.6)
Oral	33 (20.1)
Dosing of antipsychotics, n (%)[b]	
Scheduled	34 (20.7)
As needed dosing	48 (29.3)
One-time dose	82 (50.0)

[a]N = over all study sample.

[b]n = number of patients in the study sample meeting specified parameter.

delirium although delirium may not specifically have been documented. Agitation was the most commonly reported indication and may describe a wide range of subjective symptoms that may be described by the patient or observed by the health care provider. Although the potential reasons for agitation were not consistently reported, when it was documented, reasons included that agitation could be secondary to a postictal period with metabolic encephalopathy, altered mental state associated with urinary tract infection, sedation before magnetic resonance imaging, drug-induced psychosis, dementia, various substance withdrawals, or intoxication. Although continuation of antipsychotic therapy may be appropriate for newly diagnosed psychiatric disorders, it is likely that the majority of reasons for antipsychotic initiation were meant for acute and limited use. Of note, the clinical practice guidelines for the prevention and management of pain, agitation/sedation, delirium, immobility, and sleep disruption in adult patients in the ICU do not recommend the use of haloperidol or atypical antipsychotics for the prevention or treatment of delirium.[12] In our institution, providers selected antipsychotics based on prescriber preference and formulary agents. All agents received by patients in this study were on formulary. One population-based cohort study[13] of Canadian patients found that 1.4% of patients discharged with an antipsychotic medication had no documented indication as an indicator for "potentially unintentional medication continuation."(p196) The lack of appropriate documentation for approximately a third of patients in this study leaves room for improvement. Accurate documentation of the antipsychotic indication could help improve the care of patients by assisting in determination of appropriateness of therapy.

Haloperidol was most commonly used, possibly due to the availability of multiple routes of administration or more evidence-based indications. Haloperidol was the only antipsychotic administered intravenously although it was administered both intravenously and orally in patients, and interestingly, no patients received haloperidol intramuscularly. Ziprasidone and olanzapine were the most frequently used atypical antipsychotics and are also available for oral or intramuscular administration. The doses of antipsychotics used were generally in the low-to-moderate range according to Food and Drug Administration-approved indications. Upon discharge, the electronic medical record charting system would prompt providers to specify which medications were to be discontinued and continued. The low number of discharge antipsychotics could have been due to the high number of 1-time doses and as-needed dosing as well as the high number of nonoral doses administered, which are generally not continued upon discharge.

Limitations for this design include the retrospective nature and single-center study as well as the small sample size. This study might be generalizable to other institutions serving rural populations with a similar electronic medical record platform although some differences may occur depending on prescribing practices. A regression analysis to identify predictors of antipsychotic prescribing at discharge was planned in the study protocol but could not be performed because only 2 patients were discharged on potentially inappropriate antipsychotics. Due to changes in the electronic medical record platform, some patients could not be found using patient identifiers provided via the initial generated report. Patients may have been archived in another charting system if they did not visit the hospital system again after the visit wherein

an antipsychotic was prescribed. Recording of indications also depended on documentation in patient charts. Patients may have been initiated for appropriate indications, but without documentation, the appropriateness could have been underreported. Additionally, the appropriateness of antipsychotics for various off-label indications, such as anxiety, could be debated. Of note, antipsychotics may be initiated for other psychiatric indications that we did not exclude, such as treatment of bipolar disorder and as augmentation therapy in major depressive disorder.

Actual reasons for initiating antipsychotic therapy should be assessed to determine appropriateness of therapy. Although 2 patients may have been started on antipsychotics inappropriately at discharge, this study was not able to evaluate the appropriateness of antipsychotic initiation during hospitalization, which could potentially reduce the number of patients discharged on new antipsychotics. In the future, reasons for poor documentation should also be evaluated and strategies for improved documentation, such as alerts or education, should be implemented.

Conclusion

In this small, single-center, retrospective chart review of antipsychotic prescribing at discharge from a nonpsychiatric hospitalization, 3% of patients were found to have been continued on an antipsychotic at discharge. A majority of the antipsychotics received by patients were dosed as needed or single dose, and many were given via a nonoral route. In an institution that largely serves a rural population, antipsychotic prescribing at discontinuation was not worse than what has been previously reported in other regions of the United States.[4,5,7,8]

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