A Description of 200 Consecutive Admissions to an Adolescent Male Treatment Unit

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ABSTRACT

Objectives: The objective of this study is to characterize patients admitted to a mental health Adolescent Male Treatment Unit (AMTU) over an 18-month interval.

Methods: The study is a cross-sectional retrospective chart review. Data concerning medication management was abstracted along with age, psychiatric diagnoses, degree of impairment, length-of-stay (LOS), and episodes of locked seclusion/restraint.

Results: Two hundred consecutive admissions were analyzed. It was common for a patient to be receiving multiple psychiatric medications. Multiple psychiatric diagnoses were the rule, and externalizing disorders were very frequent. Based on LOS, 4 distinct categories emerged. Patients in Categories I and II accounted for two-thirds of admissions to AMTU and had an LOS of 2 weeks or less. Patients in Category III and IV were one-third of admissions, were more ill, needed locked seclusion/restraint, and required a longer LOS to stabilize and treat them. Treatment tended to include a reduction in the number of psychiatric medications previously prescribed.

Conclusions: The majority of patients could be stabilized and discharged in 2 weeks or less. A minority required more intensive intervention including a longer LOS. Receiving multiple psychiatric medications may not be of benefit for some patients. Psychiatric medications may induce behavioral adverse effects in at least a subset of patients.

INTRODUCTION

Mendota Mental Health Institute (MMHI) is 1 of 2 state of Wisconsin psychiatric inpatient facilities. MMHI cares for the most complex and challenging patients in Wisconsin. It is common to admit children and adolescents to MMHI who are suffering from a variety of serious mental conditions, usually involving an element of danger either to themselves or to others. Many of these children and adolescents already have a psychiatric history and are receiving 1 or more psychiatric medications.

The use of psychiatric medications in a pediatric population has greatly increased in the past 15 years. Further, the prescribing of multiple psychiatric medications to children and adolescents is very common and comprises 37% to 40% of treatment regimens. There are only a handful of psychiatric medications with any Food and Drug Administration (FDA) indication for use in a pediatric population. Data regarding the use and consequences of psychiatric medications in children and adolescents continues to be limited, and data regarding the use of multiple psychiatric medications is almost nonexistent. Information is lacking concerning the clinical characteristics and management of pediatric patients admitted to a psychiatric facility, particularly information regarding medication management.

The objective of this study was to characterize the adolescent boys admitted to the Adolescent Male Treatment Unit (AMTU) at MMHI over an 18-month interval. Psychiatric medication management along with other clinical factors was investigated. A hypothesis is offered regarding the role of psychiatric medications in inducing behavioral adverse effects in at least a subset of adolescent boys admitted to AMTU.

METHODS

This observational investigation may best be thought of as a series of case reports. The study is a cross-sectional retrospective chart review. The psychiatric admission note and the corresponding psychiatric discharge summary were the primary source materials. All admissions to AMTU were included. The decision to admit an individual to AMTU was in every case made by the MMHI Nursing Office.
RESULTS

For the chart review portion of the study, data were obtained from 238 consecutive admissions to AMTU from July 2008 to January 2010. Thirty-eight cases (average age = 14.4 years; 71% white, 18% black, 5% Native American, 3% Asian/Hispanic; average LOS = 43 days) were excluded because of missing data. Two hundred individual admissions were then available for analysis. The characteristics of these 200 admissions are given in Table 1. Figure 1 shows the distribution by age at the time of admission to AMTU. Figure 2 shows the number of admissions per month to AMTU over a 1-year interval.

Based on LOS, 4 distinct categories emerged. Because of the brief LOS, Category I admissions were analyzed separately from the other categories. Category II, III, and IV admissions were analyzed both separately and together (see Table 2).

Category I comprised the largest group (n = 88), and each patient was hospitalized for 5 days or less. Of those Category I patients, 50% were 16 to 17 years old, and 33% were 14 to 15 years old. Eighty-five percent were white, and 8% were black. The most common DSM diagnoses were Adjustment Disorder with Mixed Disturbance of Emotions and Conduct (frequency = 26), Mood Disorder—not otherwise specified (frequency = 22), Disruptive Behavior Disorder—not otherwise specified (frequency = 21), Cannabis Abuse—Parent/Child Relational Problem (frequency = 17), Attention Deficit/Hyperactivity Disorder—not otherwise specified (frequency = 16), and Attention Deficit/Hyperactivity Disorder—combined type (frequency = 15). The mean admission GAF was 39.5. Although most patients were receiving some kind of psychiatric medication, 39.8% were receiving none. In the great majority of those receiving medication, no change was made in medication treatment. These individuals appeared to rapidly stabilize and were able to be discharged to outpatient mental health follow-up in 5 days or less.

For Category II patients (n = 44), 39% were 16 to 17 years old, 45% were 14 to 15 years old. Seventy percent were white; 25% were black. The most common DSM diagnoses were Mood Disorder—not otherwise specified (frequency = 26), Mood Disorder—not otherwise specified (frequency = 22), Disruptive Behavior Disorder—not otherwise specified (frequency = 21), Cannabis Abuse—Parent/Child Relational Problem (frequency = 17), Attention Deficit/Hyperactivity Disorder—not otherwise specified (frequency = 16), and Attention Deficit/Hyperactivity Disorder—combined type (frequency = 15). The mean admission GAF was 39.5. Although most patients were receiving some kind of psychiatric medication, 39.8% were receiving none. In the great majority of those receiving medication, no change was made in medication treatment. These individuals appeared to rapidly stabilize and were able to be discharged to outpatient mental health follow-up in 5 days or less.

Information abstracted from each chart was age, admission, and discharge psychiatric diagnosis based on the Diagnostic and Statistical Manual (DSM) of the American Psychiatric Association 4th edition, admission and discharge psychiatric medications, length-of-stay (LOS), number of episodes of locked seclusions and/or episodes of physical restraint, and admission and discharge Global Assessments of Function (GAF). The GAF is a continuous scale from 1 to 100 that is part of the multiaxial psychiatric diagnostic system. The GAF is a clinician-administered tool that assesses degree of impairment based on an individual’s current psychological, social, and occupational/educational functioning. Ratings below 10 indicate severe impairment, while ratings above 80 indicate superior functioning.

No patient identifying information was collected. Simple summary statistics were used. Data were displayed in tabular and graphic form. The study was approved by the MMHI Institutional Review Board.
bined type=Cannabis Abuse (frequency = 7). Fifty-five percent had 3 or more DSM diagnoses assigned at discharge. Similar to Category I, Category II patients appeared to stabilize within a relatively short time and were discharged to outpatient follow-up.

For Category III patients (n = 25), 56% were 16 to 17 years old, and 28% were 14 to 15 years old. Eighty-four percent were white; 8% were black. The most common DSM diagnoses were Disruptive Behavior Disorder—not otherwise specified (frequency = 8), Mood Disorder—not otherwise specified (frequency = 7), and Attention Deficit/Hyperactivity Disorder—combined type (frequency = 5). Fifty-two percent had 3 or more DSM diagnoses assigned at discharge. About 50% had formal psychological testing done by a doctoral-level clinical psychologist to help clarify the DSM diagnosis, to determine IQ and executive functioning, and to assess adaptive functioning. Medication management issues tended to be complex. Many needed a longer LOS for safekeeping.

For Category IV patients (n = 43), 47% were 14 to 15 years old, and 26% were 13 years old. Eighty-one percent were white; 12% were black. The most common DSM diagnoses were Disruptive Behavior Disorder—not otherwise specified (frequency = 14), Attention Deficit/Hyperactivity Disorder—combined type (frequency = 12), and Major Depressive Disorder (frequency = 7). Fifty-eight percent had 3 or more DSM diagnoses assigned at discharge. These patients tended to be the most ill and the most challenging to treat. Almost 60% had formal psychological testing done. The ability for a given patient to keep safe was a major concern. Because of a history of violence and/or sexual aggression, a few individuals could not be placed readily in the community, thus prolonging their LOS.

As indicated in Table 2, the grand mean GAF at discharge improved by 19 points. There was a reduction by at least 1 psychiatric medication across Categories II, III, and IV. Those patients in Category IV had the great majority of episodes of locked seclusion (mean = 10.79 episodes) and/or physical restraint (mean = 2.44 episodes).

**DISCUSSION**

From the data presented, several observations may be made. Although most of those admitted to AMTU were aged 15 to 17 years old, the Category IV patients tended to be younger—perhaps reflecting an earlier onset of mental illness. Category I and II patients accounted for two-thirds of the admissions to AMTU and had an LOS of 2 weeks or less; they were also the least ill by admission GAF. Category III and IV patients were more ill on admission, needed locked seclusion and restraint, and required a longer LOS to stabilize and treat them. Multiple DSM diagnoses on admission and discharge was the rule, and overtly disruptive and aggressive disorders (externalizing disorders) were very common. The use of multiple medications was common, and treatment included a reduction in the number of psychiatric medications by at least 1 medication; a longer LOS was frequently needed to safely accomplish the medication taper and discontinuation process. Most admissions occurred during the fall/winter months and declined over the summer (see Figure 2). Some incon-
the more vulnerable he/she is to the behavioral adverse
effects of psychiatric medications.

Several clinical implications can be derived from this
study. First, most pediatric patients admitted to a psy-
chiatric facility can be stabilized and safely discharged
within 2 weeks or less. A plurality of our patients
(Category I, n = 88) were stabilized and discharged in
5 days or less. This compares to a 2006 national survey
finding of an average LOS of 7 days in psychiatric facil-
ities. Thus, long hospital stays are not necessary for
most patients. Second, there is a relatively small subset
of pediatric patients who require intensive intervention,
including a long LOS. Some provision, most likely at
the state level, needs to be in place to care for this small
but challenging and complex group of patients. Lastly,
many children and adolescents are being prescribed 2
or more psychiatric medications. Some of this psychi-
atric polypharmacy may be of little benefit for a given
patient. At least some patients may experience serious
medication-induced behavioral adverse effects.

This study has several limitations. First, although
200 admissions to AMTU were included in this study,
about two-thirds apparently were stabilized and were
discharged in 2 weeks or less. How many of these
patients simply exhibited a “honeymoon” phenom-
enon and would benefit from a longer LOS could not
be determined. Second, the study focused on indi-
vidual admissions and not necessarily on individual
patients. Several patients were admitted multiple times
to AMTU, potentially skewing some data points. Thus
the numerical data, especially numbers of locked seclu-
sions and/or restraint, should be interpreted with some
cautions. Third, not captured in the numerical data were
the individual cases of those with severe mental illness
and unusual features such as extreme self-injurious
behavior, catatonia, high sensitivity to adverse effects

sistencies by race were noted (see Table 1); blacks and
Native Americans were overrepresented in admissions
to AMTU, and Hispanics were underrepresented.

One hypothesis that can explain some of these
observations is that psychiatric medications are capable
of inducing behavioral adverse effects in children and
adolescents. These behavioral adverse effects include
impulsivity, agitation, hyperactivity, aggression, self-
harm behavior, and suicidal behavior. These external-
izing behaviors certainly would draw the attention of
caregivers, clinicians, and the authorities and in many
cases would result in an admission to a mental health
facility. For example, antidepressants as a group are known
to be able to induce behavioral adverse effects in children and adolescents. Consequently, the medi-
cation regimen for each patient admitted to AMTU
was closely examined for those medications that could
potentially induce agitated or aggressive behavior.

Three questions governed the clinical decision to
taper and discontinue a psychiatric medication that
caused a behavioral adverse effect: (1) By history, has
the medication in question been of any benefit; (2) Was
the medication in question recently started or was the
dose recently increased; (3) What is the age of the child
receiving the medication in question? If the medica-
tion had been of benefit to the child and the behavioral
adverse effects developed after a recent increase in dose,
then perhaps a simple reduction in dose might resolve
the behavioral adverse effects. If the medication was
started recently, or if the behavioral adverse effects per-
sisted after the dose was decreased, then the putative
offending medication was tapered and discontinued.
Age is an important consideration because neurologi-
cal maturation, especially individual subregions, follow
distinct trajectories over time. The younger the child,
the more immature is his/her neurodevelopment and

<table>
<thead>
<tr>
<th>Category</th>
<th>Average No. of DSM Diagnoses on Admission</th>
<th>Average No. of DSM Diagnoses on Discharge</th>
<th>Average Admission GAF</th>
<th>Average Discharge GAF</th>
<th>Average No. of Psychiatric Medications on Admission</th>
<th>Average No. of Psychiatric Medications on Discharge</th>
<th>Average LOS</th>
<th>Average Episodes of Locked Seclusion</th>
<th>Average Episodes of Restraints</th>
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<tr>
<td>II (n=44)</td>
<td>2.8</td>
<td>2.8</td>
<td>33.30</td>
<td>50.91</td>
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<td>1</td>
<td>11.23</td>
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<tr>
<td>III (n=25)</td>
<td>2.4</td>
<td>2.5</td>
<td>28.60</td>
<td>50.68</td>
<td>3</td>
<td>2</td>
<td>20.68</td>
<td>0.36</td>
<td>0.12</td>
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<tr>
<td>IV (n=43)</td>
<td>2.7</td>
<td>3.0</td>
<td>29.65</td>
<td>48.51</td>
<td>2</td>
<td>1</td>
<td>60.77</td>
<td>10.79</td>
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<td>Grand Means</td>
<td>2.7</td>
<td>2.8</td>
<td>30.85</td>
<td>49.94</td>
<td>2</td>
<td>1</td>
<td>32.36</td>
<td>4.22</td>
<td>0.96</td>
</tr>
</tbody>
</table>

a For clarity, the number of psychiatric medications on admission/discharge averages were rounded to the nearest whole number. GAF = Global Assessment of Function; LOS = length of stay.
of psychiatric medications, and the presence of medical illness (including asthma, diabetes, cardiac disease, chromosomal abnormalities, mitochondrial disease, and epilepsy). Fourth, although inconsistencies by race in terms of proportion admitted to AMTU were noted, no obvious explanation could be derived. Fifth, more sophisticated statistical analyses of those data generated in the study were not performed, nor was any algorithm offered describing medication taper and discontinuation. Those topics will be addressed in a subsequent paper based on the population described here. Lastly, those data presented here do not reflect the great effectiveness of the front-line staff who work with each patient daily on a 1-to-1 basis to implement individual treatment plans and to maintain a safe environment for patients and staff.

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REFERENCES
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