Trends in Antipsychotic Prescribing in Medicaid-Eligible Youth

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Objective: To examine trends in the use of antipsychotic medication in Medicaid-eligible youth from 2008 to 2013 and the factors associated with this use.

Method: Youth aged 0 to 17 years with at least one claim indicating antipsychotic medication use were identified from the network of a behavioral health managed care organization (BHMCO). Demographic and clinical variables were derived from state eligibility data and service claims data from the BHMCO. Overall and specific prevalence rates of antipsychotic drug use were calculated over the course of 6 years (2008−2013). The probability of antipsychotic use during 2013 was further explored with logistic regression that included demographic and diagnostic groups.

Results: The overall trend in prevalence for antipsychotics for youth decreased from 49.52 per 1,000 members in 2008 to 30.54 in 2013 ($p < .0001$). Although rates decreased for all age groups, the rate per 1,000 members in 2013 for the youngest children was 3.79, versus 39.23 for 6- to 12-year-olds and 64.33 for 13- to 17-year-olds. Controlling for demographic and clinical variables, children 0 to 5 years old were 79% less likely to be prescribed antipsychotic medications compared to the oldest youth, 13 to 17 years of age ($p < .0001$). Rates were higher for males versus females regardless of age (odds ratio [95% CI] =1.48 [1.36−1.62], $p < .0001$). Children with a diagnosis of attention-deficit/hyperactivity disorder were less likely to be prescribed antipsychotics compared to those with diagnoses of autism spectrum disorder, bipolar disorder, psychoses, and depression.

Conclusion: Prevalence rates decreased significantly over time for all socio-demographic groups. The largest decrease was observed for the youngest children, ages 0 to 5 years, with a rate in 2013 under half the rate for 2008. Clinical, policy, and managed care implications are discussed.

Key words: atypical antipsychotics, prescribing trends, children, adolescents, Medicaid

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The use of antipsychotics has expanded in clinical practice, and these agents are now prescribed for the treatment of aggressive behavior, behavioral dyscontrol, disruptive behavior disorders, and as an adjunctive treatment for aggression associated with other disorders, including attention-deficit/hyperactivity disorder (ADHD).[1-5] There are clinical guidelines for the treatment of specific disorders (i.e., schizophrenia, autism spectrum disorder [ASD], and tic disorders) that incorporate the use of antipsychotics,[6] as well as a Practice Parameter from the American Academy of Child and Adolescent Psychiatry (AACAP) on the use of atypical antipsychotics. This Practice Parameter cites the evidence base for using specific atypical antipsychotics to treat schizophrenia/psychosis, bipolar disorder, disruptive behavior disorders, Tourette syndrome, tic disorders, and autism/irritability in children.[7] Prescribing antipsychotics in youth raises concerns about the risk of cardiometabolic problems, weight gain, movement disorders, sedation, and the possible impact of the medications on the developing brain; however, a survey of Vermont youth insured through Medicaid found that the AACAP best practice guidelines were followed only 50.1% of the time.[8] Furthermore, the AACAP recommendations note that the acute and long-term safety of these agents have not been fully evaluated.[7]

Although Food and Drug Administration (FDA) indications for the use of antipsychotics in the pediatric population are limited to the treatment of adolescent schizophrenia, bipolar mania, irritability associated with autism, and Tourette syndrome, there is an evidence base for off-label use. Zuddas *et al.*[9] reviewed randomized controlled studies on the use of atypical antipsychotics in treating nonpsychotic disorders in youth, using efficacy and safety indices as measures of effectiveness.[9] They found that the efficacy of these drugs was higher when treating mania, extreme mood variability, irritability, aggression, and disruptive behavior than when treating psychotic symptoms in schizophrenia.[9] Although all of the atypical antipsychotics reviewed seemed to work well for schizophrenia, the drugs have different safety profiles. The authors provided clinical guidance on the choice of antipsychotic for the individual pediatric patient based on the safety profile of each medication along with specific risk factors.[9]

In 2003, Treatment Recommendations for the use of Antipsychotics for Aggressive Youth (TRAAY) provided recommendations on the use of antipsychotics in youth with a variety of psychiatric disorders accompanied by externalizing behaviors.[10] Treatment of Maladaptive Aggression in Youth (T-MAY), published in 2010, provides recommendations on assessment, diagnosis, and treatment of aggression

disorders, including the possible use of antipsychotics if severe aggression continues after undertaking psychosocial treatment and/or medication for underlying disorders.[11] The Treatment of Severe Childhood Aggression (TOSCA) study, of children with ADHD, co-occurring oppositional or conduct disorder, and serious physical aggression, found that adding risperidone to parent training and stimulant medication was more effective than treatment without risperidone, although the effect sizes ranged from small to moderate.[12] The authors acknowledged that analyses of longer-term augmented treatment at 3 and 12 months might have different outcomes, including the risk of adverse effects. The authors also underscore that the results apply to severe irritability and aggression in children diagnosed with ADHD and caution against generalization beyond that population.[12]

The literature on antipsychotic prescribing trends reflects use consistent with FDA indications as well as off-label use for other clinical conditions. A study of office visits between 2005 and 2009 for which antipsychotics were prescribed found that only 6% of children's visits and 12.9% of adolescent visits were for diagnoses consistent with FDA indications for the medications. For children treated with antipsychotics, the most common diagnoses were ADHD, oppositional defiant disorder (ODD), and disruptive behavior disorder, whereas for adolescents the diagnoses were more likely to be bipolar disorder, anxiety disorder, and ADHD.[1] A retrospective study of a longitudinal prescription database from 2006, 2008, and 2010 found that antipsychotic prescriptions for children increased between 2006 and 2008 and then declined between 2008 and 2010, whereas for adolescents and young adults the increase persisted from 2006 to 2010.[13]

Penfold *et al.* reviewed studies drawing from Medicaid administrative claims, commercial administrative claims data, and national surveys of patients.[14] They concluded that antipsychotics are used chiefly to treat disruptive behavior disorders, and that comorbid mental health problems are prevalent in pediatric antipsychotic users.[14] Zito *et al.* found that Medicaid-eligible youth diagnosed with externalizing behavior disorders and bipolar disorder in 2006 were 2.4 to 3.8 times more likely to use antipsychotics than those diagnosed with schizophrenia, other psychoses, and pervasive developmental disorder in 1997.[15]

Children in the public sector have higher rates of antipsychotic prescriptions than those with private insurance.[16,17] Studies using national Medicaid data found that the rate of antipsychotic prescribing increased in the time period between 2002 and 2008.[18,19] A one-state study of Medicaid recipients aged 6 years or less reported an increase in antipsychotic prescribing in this age group between 2001 and 2010.[20] Crystal *et al.* reported that the use of antipsychotics among pediatric Medicaid recipients peaked at 1.86% in 2008 and declined to 1.73% by 2010.[17] However, use remained higher among children in foster care, increasing from 8.73% in 2005 to 9.6% in 2008 and then declining to 8.9% in 2010. From 2005 to 2010, no increase was found for the use of antipsychotics for diagnoses without a strong evidence base, including ADHD.[17]

Community Care Behavioral Health Organization, part of the UPMC Insurance Services Division, is a nonprofit behavioral health managed care organization (BHMCO) in Pennsylvania. As part of an ongoing quality initiative, the BHMCO has tracked antipsychotic prescribing trends in the Medicaid-eligible pediatric population. In light of the broadened use of antipsychotics in youth and reports of changes in the rates of prescribing, our study aims to examine trends in antipsychotic use from 2008 to 2013 with respect to demographic groups and diagnoses. Our objectives were to determine whether specific demographic factors increased the likelihood of antipsychotic prescribing and to understand the relationship of diagnoses to antipsychotic prescribing. In this study, we describe specific prevalence rates of antipsychotic use by age group, sex, race, and ethnicity across the study period. For the most recent study year, 2013, we examine the distribution of diagnoses for children prescribed antipsychotics by age group. We determine the odds for antipsychotic prescribing in 2013 by age group, sex, sex by age, and race as well as for specific diagnoses. Finally, we describe the types of behavioral health services used by those prescribed antipsychotics as well as the specialty of prescribers by age groups.

METHOD

Study Design and Sample Selection

Data from Medicaid-eligible youth enrolled with the BHMCO were used to identify youth aged 0 to 17 years with at least one claim indicating use of an antipsychotic medication from 2008 to 2013. Eligibility was determined through enrollment in Medicaid for at least 9 of 12 months. Yearly counts include unique youth with at least one episode of antipsychotic use. Youth with multiple episodes within the same year are not counted more than once. However, youth with episodes in different years appear in the count for each year and were considered to be independent. All activities and information collected through this study were approved by the University of Pittsburgh institutional review board.

Data Source Measures

Demographic information, including age, race, ethnicity, and sex, was derived from administrative eligibility data from the state. Youth were categorized by age into groups 0 to 5 years, 6 to 12 years, and 13 to 17 years. Pharmacy data were obtained from pharmacy claims reported by Medicaid providers to the state. Clinical variables, including diagnoses and behavioral health service use in the identified year of the prescription fill date, were collected through claims data from the BHMCO from youth receiving behavioral health services. Youth could receive multiple primary diagnoses; thus, the primary diagnosis that appeared most frequently on the behavioral health service claims was assigned to each child for each calendar year. Diagnoses were classified by *DSM-IV* and *International Classification of Diseases 9th edition* (*ICD-9*) criteria. Diagnostic categories were created including ADHD, disruptive behavior disorders (conduct disorder, oppositional defiant disorder [ODD], and disruptive behavior disorder), autism spectrum disorder (ASD), bipolar disorder, depression (dysthymia and major depressive disorder), psychoses (schizophrenia/psychosis/schizoaffective), and other. The specialty of prescribers was obtained from state administrative data and grouped as psychiatry, primary care physicians, physician assistants (PAs), and certified