

# A NATIONAL LOOK AT CHILDREN USING ANTIPSYCHOTICS

## WHAT WE ASKED:

**Over the past decade, what were the mental health diagnoses associated with antipsychotic use across the United States?**

The use of second-generation antipsychotics in children has grown, over the past two decades, at a rate exceeding that of all other psychotropic medications. Despite the increased use of these medications, **evidence of their efficacy for treating a number of mental health diagnoses is lacking**. Moreover, there is growing research documenting **serious side effects** of antipsychotics in children. Therefore, we conducted a national analysis to understand the relationship between population-level diagnosis patterns and antipsychotic prescriptions among Medicaid-enrolled children over time. **Population-level data describing antipsychotic use can be beneficial in informing policies aiming to ensure safe and limited use of these medications in children.**

## WHAT WE DID:

We used **Medicaid data** from the Centers for Medicare and Medicaid Services for **48 states** and the District of Columbia from **2002-2007**. First, we calculated the number and proportion of children within each category of mental health diagnosis who were receiving antipsychotics. Next, we calculated the proportion of total antipsychotic use in 2002 and 2007 attributable to each mental health diagnostic category.

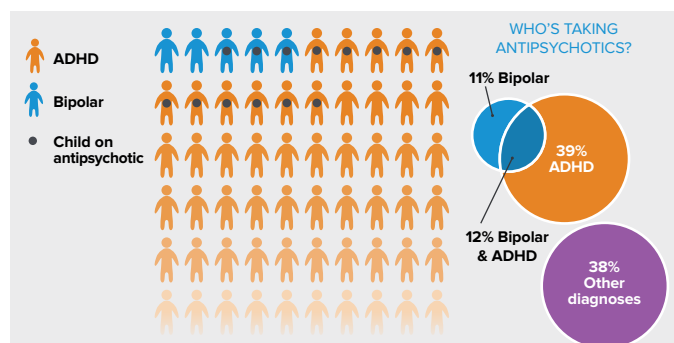
Among an annual average of 15.2 million Medicaid-enrolled children, we calculated over the six-year period the **rates of 1) mental health diagnoses among 10 primary diagnostic categories and 2) antipsychotic medication use**.\*

\* FOR DETAILED STUDY METHODS, SEE THE BACK OF THIS SHEET.

## WHAT WE FOUND:

- ▶ Between 2002 and 2007, the number of Medicaid-enrolled children ages 3-18 using antipsychotics increased 62%, reaching 354,000 children by 2007. This increase was present across the majority of mental health diagnoses.
- ▶ While the number of children with mental health diagnoses increased 28% over the study period, accounting for this increase, antipsychotic growth was still present.
- ▶ Children with mental health diagnoses clinically indicated for antipsychotic use (e.g. bipolar disorder) received these medications at the highest rates; however, the majority of children taking antipsychotics (65%) were receiving them for diagnoses lacking regulatory approval for use, such as ADHD and conduct disorder (see example at right).
- ▶ In 2007, 50% of all children taking antipsychotics had a diagnosis of ADHD, and 14% had ADHD as their only mental health diagnosis.

Frequently diagnosed conditions without clinical indication for antipsychotics account for the majority of children's antipsychotic use.



Children with ADHD are prescribed antipsychotics at less than one-third the rate of children with bipolar disorder (17% vs. 60%).

However, the high prevalence of ADHD makes children with this diagnosis the largest population of antipsychotic users.

## WHAT IT MEANS:

Seen from a population perspective, **antipsychotic use increased across mental and behavioral diagnoses** from 2002 to 2007. Thus, population-based interventions (e.g. public policy) should aim to influence pediatric antipsychotic use holistically by strengthening mental health systems that support children to include alternative treatment options.

Nevertheless, given the high rate of antipsychotic use for diagnoses associated with **behavioral concerns**, such as ADHD, future research should seek to understand this indication for use.

By 2007, **65% of children on antipsychotics** were using them for diagnoses **not approved by the FDA**. The lack of safety and efficacy data is especially significant given a growing body of research indicating serious adverse side effects of antipsychotics in children.

**Parents and healthcare providers should be educated** on approved pediatric uses for antipsychotics, as well as possible side effects and alternative therapies.

## STUDY METHODS:

The data source was Medicaid Analytic Extract (MAX) data files for 48 states and the District of Columbia for years 2002 through 2007. Child-level demographic, eligibility, encounter, and pharmacy data were extracted from MAX files. The sample was restricted to children aged 3-18 years of age with continuous Medicaid eligibility, defined as 10 of 12 months in a given year. The dependent variable was use of second-generation antipsychotics (SGA). Independent variables included demographic information (age, race/ethnicity, sex, state of residence), psychiatric diagnoses, and a count of behavioral health encounters. Psychiatric diagnoses were encoded into 10 primary diagnosis profiles: attention-deficit disorder, autism, anxiety disorder, bipolar disorder, conduct disorder, depression, intellectual disability, learning disability and/or developmental delay, miscellaneous behavioral health, and schizophrenia. Two states were deemed ineligible for use in this study (CT, ME) due to data quality issues.

Demographic, clinical, and medication use characteristics were summarized as frequencies across year and categories of age (3-5, 6-11, 12-18). Aggregate data on SGA use among diagnostic profiles (including single and multiple diagnosis combinations) were described for years 2002 and 2007 in three ways: first, by calculating the total number (and proportion) of children with a given diagnostic profile; second, by calculating the total number (and proportion) of children with a given diagnostic profile who had at least one SGA claim; and third, by calculating the overall number (and proportion) of SGA use accounted for by children with a given diagnostic profile. Lastly, generalized linear models were used to estimate the probability of diagnosis for each the primary ten diagnostic categories over time within age strata, controlling for demographics and clustered at the state-level. Similar generalized linear models, restricted to cohorts of children with the primary ten diagnoses were then used to estimate the probability of SGA treatment. Results for all models were standardized by child-level characteristics, including age group, gender, race, mental health diagnoses, diagnosis of seizure disorder, and frequency of outpatient and inpatient mental health visits. Results were transformed into probabilities using predictive margins and robust variance estimates.

## COMPLETE STATE-LEVEL DATA:

POLICYLAB WEBSITE: <http://www.research.chop.edu/policylab>

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## PUBLICATION:

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