Antipsychotic Use by Medicaid-Insured Youths: Impact of Eligibility and Psychiatric Diagnosis Across a Decade

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Objective: This cross-sectional study evaluated the impact of Medicaid-eligibility category on the increased use of antipsychotic medication by Medicaid-insured youths across a decade. _Methods:_ The authors analyzed computerized administrative claims data for 456,315 youths aged two to 17 years who were continuously enrolled in Medicaid in a mid-Atlantic state in 1997 (N=159,171) and 2006 (N=297,144). Bivariate and multivariable analyses quantified changes in antipsychotic use in relation to the youths' psychiatric diagnosis and eligibility category (Temporary Assistance for Needy Families [TANF], state Children's Health Insurance Program [SCHIP], Supplemental Security Income [SSI], and foster care). A second multivariable regression model examined changes in demographic and clinical characteristics of antipsychotic users with a psychiatric diagnosis. _Results:_ The prevalence of antipsychotic use increased from 1.2% in 1997 to 3.2% in 2006. The increase in odds of antipsychotic use in 2006 was greatest among youths enrolled in SCHIP (adjusted odds ratio [AOR]=5.9), followed by youths enrolled in foster care (AOR=4.1), TANF (AOR=3.6), and SSI (AOR=2.8). Among users of antipsychotics who had a psychiatric diagnosis, youths with externalizing behavior disorders and bipolar disorder had 2.4- to 3.8-fold greater odds of using antipsychotics in 2006 versus 1997 compared with youths with schizophrenia or other psychoses and pervasive developmental disorders. The proportion of youths using antipsychotics between 1997 and 2006 increased significantly more among African Americans and Hispanics than among whites. _Conclusions:_ The expansion of antipsychotic use was most prominent among youths who were Medicaid eligible because of low family income (SCHIP) and reflects increased medication use for behavioral problems. (_Psychiatric Services_ in Advance December 15, 2012; doi: 10.1176/appi.ps.201200081)

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Over the past two decades, use of antipsychotic medication among youths has increased to a profound degree, outpacing the rate of increase among adults (1). In one mid-Atlantic state, annual prevalence of antipsychotic use among Medicaid-insured youths under age 20 rose from .15% in 1987 to .80% in 1996 (2). Other investigators have reported similarly striking increases during the past two decades among youths prescribed this drug class (3–6).

Young recipients of antipsychotic medication are more likely to be male and Caucasian, to be insured by Medicaid, and to be the most seriously impaired and vulnerable, for example, youths in foster care and those who receive disability coverage through Supplemental Security Income (SSI) (3,7). Use of antipsychotic medication in very young children who are privately insured or enrolled in Medicaid fee-for-service payment systems has been documented (8,9).

Since 1997, a number of major policy and research developments have influenced the use of antipsychotic medication among youths. These included a general shift from use of first- to second-generation antipsychotics, a rapid increase in the diagnosis of bipolar disorder, expansion of the state Children's Health Insurance Program (SCHIP)—a part of Medicaid in many states—a marked increase in the Hispanic population, and approval by the U.S. Food and Drug

Administration (FDA) of second-generation antipsychotics for psychiatric indications among youths with bipolar disorder, schizophrenia, and autistic disorder.

During these years, pediatric safety issues have risen in prominence, resulting in increased awareness among professionals of cardiometabolic adverse events, particularly in children, associated with extended use of a second-generation antipsychotic agent (10–12). In 2003, the FDA added cardiometabolic warnings to labeling of second-generation antipsychotics.

This research study focused on the use of antipsychotic drugs among Medicaid-insured youths in a mid-Atlantic state between 1997 and 2006. We examined use of antipsychotic drugs across age groups in a large Medicaid-insured population, including individuals enrolled in managed care, to update information about trends and increase the precision of earlier findings from national physician survey data (4). Moreover, using administrative claims data to assess diagnostic patterns related to antipsychotic use would elucidate the reasons for drug therapy.

The primary goal of this research was to better understand the impact of eligibility group and diagnosis on the ten-year growth of antipsychotic use among youths. Subanalysis among antipsychotic users with a psychiatric diagnosis identified the specific temporal changes in the demographic and clinical features of the treated pediatric population. The Medicaid population, including children enrolled in SCHIP, is quite appropriate for this task because it covers over 40% of U.S. youths (13), and its data include characteristics such as eligibility and race-ethnicity, categories that are rarely available in other data sets.

Methods
Data source
This study analyzed computerized data from Medicaid administrative claims for the calendar years 1997 and 2006 in a mid-Atlantic state. The enrollment files, outpatient hospital clinic and physician files, and prescription drug files were included. Because the data set comprised deidentified data, the study was deemed exempt from review by the institutional review boards of the State Health Department, Morgan State University, and the University of Maryland.

Study design
In a cross-sectional study design, data were analyzed for 456,315 youths ages two to 17 years who were enrolled continuously for ten or more months in the Medicaid program of a mid-Atlantic state during calendar years 1997 (N=159,171) and 2006 (N=297,144). In 1997 and 2006, continuously enrolled youths represented 75.1% and 80.2%, respectively, of the state's Medicaid population between the ages of two and 17 years.

Study variables
Antipsychotic use, Medicaid eligibility, and demographic characteristics. Any dispensing of a first- or second-generation antipsychotic was assessed at the person level by linking enrollment files and prescription drug files. All antipsychotic medications available in the United States during the study years, 1997 and 2006, were considered in the study. Study covariates included Medicaid eligibility category, age group (two to four, five to nine, ten to 14, and 15–17 years), gender, race-ethnicity (white, African American, Hispanic, other, and unknown), region (northern metropolitan, southern metropolitan, and other counties), and age as of January 1 of the study year.

Medicaid eligibility categories included foster care, SSI, Temporary Assistance for Needy Families (TANF), and SCHIP. Among youths who were eligible for Medicaid in more than one category in a given year, eligibility category was assigned with a hierarchical approach beginning with foster care and followed by SSI, SCHIP, and TANF. The SCHIP program, currently known as the Children's Health Insurance Program, or CHIP, offers Medicaid coverage to youths whose families have incomes equal to or less than 200%–300% of the federal poverty level. TANF provides Medicaid coverage to youths whose families have incomes equal to or less than the federal poverty level. Medicaid coverage is provided to all youths in foster care, and SSI provides Medicaid coverage to youths with disabilities.

Psychiatric diagnoses. Clinician-reported psychiatric diagnoses per enrollee were assessed by using outpatient and physician files. At least two physician claims on separate days were required to qualify for a psychiatric diagnostic category. [A table reporting the *ICD-9* codes included in each diagnostic category is available online as a data supplement to this article.] To prevent overlap of categories among youths with diagnoses in more than one category, we adopted a hierarchical approach by Olfson and others (8), beginning with schizophrenia and other psychoses and followed by pervasive developmental disorders and mental retardation, bipolar disorder, disruptive disorders, attention-deficit hyperactivity disorder (ADHD), depressive disorders, anxiety disorders, adjustment disorder, communication and learning disorders, and any other psychiatric diagnosis.

Statistical analysis
SAS version 9.2 was used for all analyses in this study. All analyses were conducted at the person level. The primary outcome measure was annual prevalence of antipsychotic use, calculated as any youth with one or more antipsychotic prescriptions expressed as a percentage of eligible enrollees. Differences in demographic characteristics among the Medicaid-eligible youths and the stratum-specific prevalence of antipsychotic use by study year were assessed by using chi square statistics. Stratified characteristics included Medicaid eligibility categories, race-ethnicity, age group, gender, region, and psychiatric diagnosis.

Multivariable logistic regression modeling was employed to examine the association between the study year and antipsychotic use, adjusted for potential confounders. The interaction of the ten-year change in antipsychotic use and the Medicaid eligibility categories was included in the model to account for the modifying effect of Medicaid eligibility on the association between antipsychotic use and study year. A second multivariable logistic regression model was employed to examine temporal changes between 1997 and 2006 in demographic and clinical features among antipsychotic medication users with a psychiatric diagnosis.

Results

Characteristics of the study cohort

Table 1 illustrates the baseline characteristics of the study sample by the Medicaid enrollment year. In 1997, the cohort consisted largely of youths who were Medicaid eligible by TANF, African Americans, children five to nine years old, and residents of the state's northern metropolitan counties. The study cohort had a similar distribution of males and females.

Major changes between the 1997 and 2006 Medicaid populations were evident. The proportion of Medicaid-insured youths in SCHIP was higher in 2006 than in 1997 (37.1% versus 7.9%), but the proportion of Medicaid-insured youths was lower in 2006 in foster care (5.0% versus 8.7%), SSI (5.5% versus 9.5%), and TANF (52.5% versus 73.9%) was lower. In both years, African Americans constituted a majority of continuously enrolled Medicaid-insured youths; however, a comparison of 1997 and 2006 showed a large decrease in the proportion of African Americans (68.2% versus 55.9%) and a large increase in the proportion of Hispanic youths (2.5% versus 11.0%). There was a modest change in the proportion of white youths in 1997 and 2006 (26.7% versus 27.3%).

The proportion of youths who were older (ten to 17 years) and who resided in the southern metropolitan or other counties was higher in 2006 than in 1997. Gender differences across the decade were not evident.

Prevalence of antipsychotic use

The overall prevalence of antipsychotic medication use increased from 1.2% in 1997 to 3.2% in 2006 (Table 2). The table also displays the annual prevalence of antipsychotic medication use stratified by selected patient and administrative characteristics.

Although there were proportional increases in antipsychotic medication use by year across all Medicaid eligibility categories, greater increases were observed among youths who were Medicaid eligible by SCHIP and TANF. Although the prevalence of antipsychotic use in 2006 was greater among youths in foster care and SSI—the "special needs" eligibility groups—the increase in prevalence of antipsychotic use between 1997 and 2006 among youths in TANF and SCHIP—the "family-income" eligibility groups—encompassed far more youths. Between 1997 and 2006, the prevalence of antipsychotic medication use expanded nearly sevenfold among youths eligible by TANF (.3% versus 2.0%) and 12-fold among youths eligible by SCHIP (.1% to 1.2%). Thus, whereas the TANF and SCHIP populations accounted for 20.2% of the prevalence of antipsychotic use in 1997, these income-eligible youths accounted for nearly half (45.8%) of all antipsychotic medication users in 2006.

Between 1997 and 2006, there were major increases in prevalence of use of antipsychotics among whites (2.1% and 5.5%, respectively) and African Americans (.8% and 2.7%, respectively). Males continued to have a higher prevalence of antipsychotic use compared with females in 1997 (1.7% versus .7%) and 2006 (4.2% versus 2.1%).

In 2006, the largest proportions of youths treated with antipsychotic medication were given externalizing psychiatric diagnoses (ADHD and disruptive behavior) or had bipolar disorder. Together, individuals with these diagnoses constituted nearly 63% of youths who had been dispensed antipsychotic medications in 2006.

Antipsychotic use by Medicaid eligibility

Table 3 reports an adjusted analysis of the association between study year and antipsychotic medication use. The adjusted odds ratio (AOR) comparing antipsychotic use (versus no antipsychotic use) in 2006 versus 1997 was highest among youths eligible by SCHIP (AOR=5.85, 95% confidence interval [CI]=4.46–7.67), followed by foster care (AOR=4.10, CI=3.69–4.56), TANF (AOR=3.58, CI=3.20–4.02), and SSI (AOR=2.81, CI=2.55–3.10).

Table 1

Characteristics of 456,315 children in a mid-Atlantic state with Medicaid insurance in 1997 and 2006

Characteristic	1997 (N=159,171)		2006 (N=297,144)		χ^2	df	p
	N	%	N	%			
Eligibility[a]					45,484	3	<.001
TANF	117,689	73.9	155,933	52.5			
Foster care	13,852	8.7	14,854	5.0			
SSI	15,078	9.5	16,216	5.5			
SCHIP	12,552	7.9	110,141	37.1			
Race-ethnicity					14,337	4	<.001
White	42,554	26.7	81,237	27.3			
African American	108,577	68.2	166,039	55.9			
Hispanic	3,895	2.5	32,694	11.0			
Other	1,904	1.2	8,179	2.8			
Unknown	2,241	1.4	8,995	3.0			
Age group					3,704	3	<.001
2–4 years	40,287	25.3	65,331	22.0			
5–9 years	59,853	37.6	95,068	32.0			
10–14 years	40,656	25.5	88,240	29.7			
15–17 years	18,375	11.5	48,505	16.3			
Gender					13.5	1	<.001
Female	79,410	49.9	146,548	49.3			
Male	79,761	50.1	150,596	50.7			
Region					4,433	2	<.001
Northern metropolitan counties	96,885	60.9	151,151	50.9			
Southern metropolitan counties	35,082	22.0	87,934	29.6			
All other counties	27,204	17.1	58,059	19.5			

[a] TANF, Temporary Assistance for Needy Families; SSI, Supplemental Security Income; and SCHIP, State Children's Health Insurance Program

Table 2

Use of antipsychotic medication among 456,315 Medicaid-insured children in a mid-Atlantic state in 1997 and 2006, by patient characteristic

Characteristic	1997 N	%	2006 N	%	χ^{2a}	p
Total	1,860	1.2	9,556	3.2		
Eligibility[b]						
TANF	361	.3	3,072	2.0	1,497.8	<.001
Foster care	608	4.4	2,431	16.4	1,086.2	<.001
SSI	877	5.8	2,750	17.0	946.6	<.001
SCHIP	14	.1	1,303	1.2	121.8	<.001
Race-ethnicity						
White	905	2.1	4,478	5.5	769.6	<.001
African American	886	.8	4,518	2.7	1,235.0	<.001
Hispanic	18	.5	248	.8	4.2	.04
Other	10	.5	53	.7	.4	.54
Unknown	41	1.8	259	2.9	7.6	.01
Age group						
2–4 years	32	.1	300	.5	114.7	<.001
5–9 years	481	.8	2,424	2.5	608.6	<.001
10–14 years	897	2.2	4,361	4.9	532.4	<.001
15–17 years	450	2.4	2,471	5.1	223.3	<.001
Gender						
Female	526	.7	3,014	2.1	649.2	<.001
Male	1,334	1.7	6,542	4.2	1,127.0	<.001
Region						
Northern metropolitan counties	1,198	1.2	5,221	3.5	1,151.8	<.001
Southern metropolitan counties	295	.8	1,685	1.9	1,83.1	<.001
All other counties	367	1.4	2,650	4.6	561.1	<.001
Psychiatric diagnosis						
Schizophrenia or other psychosis	119	70.4	239	83.6	11.0	<.001
Pervasive developmental disorder and mental retardation	88	14.2	199	38.6	89.3	<.001
Bipolar disorder	179	43.9	1,418	72.1	122.5	<.001
Disruptive behavior	298	9.6	1,552	22.1	228.5	<.001
Attention-deficit hyperactivity disorder	288	7.3	2,991	20.2	362.9	<.001
Depressive disorder	195	10.8	1,103	21.5	101.2	<.001
Anxiety disorder	25	3.0	206	12.4	59.9	<.001
Adjustment disorder	37	1.8	261	4.8	34.8	<.001
Communication or learning disorder	4	.4	12	.9	2.5	.11
Other	12	7.8	94	24.4	19.2	<.001
None	615	.4	1,481	.6	39.6	<.001

[a] df=1
[b] TANF, Temporary Assistance for Needy Families; SSI, Supplemental Security Income; and SCHIP, State Children's Health Insurance Program

In terms of covariates, the AOR of antipsychotic use (versus no antipsychotic use) increased with increasing age, was higher among males compared with females, and was highest among white youths compared with youths of other race or ethnicity.

Characteristics of antipsychotic users

An adjusted analysis was conducted to assess temporal changes with respect to demographic and clinical characteristics among antipsychotic users with a psychiatric diagnosis (N=9,320) (Table 4).

The AOR of using antipsychotic medication in 2006 compared with 1997 among antipsychotic users with a psychiatric diagnosis was significantly higher among youths eligible by family income (TANF or SCHIP, AOR=3.70, CI=3.14–4.35) and did not differ among youths eligible by foster care (AOR=1.05, CI=.91–1.22).

Among antipsychotic users with a psychiatric diagnosis, the pattern of antipsychotic use by age group did not appreciably differ across the decade, indicating similar rates of increase among children in the youngest group

(aged two to four years) and older youths (aged ten to 17 years). Although the characteristics of users of antipsychotic medication among psychiatrically diagnosed youths did not differ across the decade by gender, the proportion of youths with psychiatric diagnoses who used antipsychotic medication increased significantly more among African Americans (AOR=1.49, CI=1.30–1.70) and Hispanics (AOR=3.16, CI=1.72–5.81) than among whites. We also observed significant changes by psychiatric diagnosis across the decade in the proportion of youths who were dispensed antipsychotics. The AOR of receiving antipsychotic medication over ten years increased significantly among youths with bipolar disorder (AOR=3.77, CI=2.98–4.77) and disruptive behavior or ADHD (AOR=3.48, CI=2.86–4.24) compared with youths with schizophrenia or pervasive development disorder and mental retardation.

Discussion

This study emphasized the impact of eligibility category and psychiatric diagnosis on the growth in use of antipsychotics by Medicaid-insured youths by comparing data from 1997 and 2006. The person-based Medicaid claims analysis in this study confirmed—at least through 2006—a report by Olfson and others from a national survey of physician office visits from 1993 to 2002 that found prominent growth in use of antipsychotic medication (4). Subpopulations of youths who qualified for Medicaid because of family income continued to have a much lower prevalence of antipsychotic medication than youths with a disability enrolled in SSI and youths in foster care. However, the population qualifying for Medicaid because of low (SCHIP) and very low (TANF) family income grew so much that by 2006, it represented nearly 90% of Medicaid-eligible youths. Furthermore, antipsychotic use among youths eligible by SCHIP or TANF grew by seven- to 12-fold. Thus although youths in the Medicaid eligibility categories related to family income accounted for only 20% of those prescribed antipsychotic medication in 1997, they accounted for nearly half (46%) of antipsychotic users in 2006.

The linkage of clinician-reported diagnostic data with antipsychotic medication usage revealed that the use of these drugs to treat externalizing behavior symptoms has been paramount. This finding supported numerous similar findings in the field across various age groups and for both publicly and privately insured youths (3,6,9). There was a prominent increase in the population of Medicaid enrollees who were Hispanic over the decade, but it did not proportionally increase their antipsychotic medication usage. However, among antipsychotic users with a clinician-reported diagnosis, the odds of being medicated in 2006 versus 1997 were 3.2-fold greater among Hispanic versus white youths.

Socioeconomic influences

The expanded enrollment of youths in Medicaid, including youths whose family income qualified them for SCHIP (200%–300% of the federal poverty level) was an important factor responsible for the increased prevalence of antipsychotic medication use by Medicaid-insured youths in a mid-Atlantic state. Youths in the low (SCHIP) and very low (TANF) family income population totaled 82% of youths enrolled in Medicaid in 1997 but 90% in 2006. Both the increased size of these two Medicaid-eligibility categories and the increased prevalence of use of antipsychotic medication by youths enrolled in these programs combined to produce an increase of 20% to 46% in the proportion of income-eligible youths among all antipsychotic users over the decade.

Some of this increase during the decade was due to the prominent increase in enrollment of Hispanic youths in Medicaid insurance. From an overall perspective, the prevalence of antipsychotic medication among youths with Medicaid insurance coverage is fourfold greater than among youths who are recipients of private insurance (3,14).

Diagnostic influences

In the United States, the growth in the past 20 years in use of psychotropic medication to treat children with externalizing behavior disorders is well established (2,4,15). Overall, the use of psychotropic medication in pediatric

Table 3

Adjusted odds of antipsychotic drug use among 456,315 Medicaid-insured children in 2006 versus 1997, by patient characteristic[a]

Variable	Adjusted odds ratio	95% CI
Year×eligibility, 2006 (reference: 1997)[b]		
TANF	3.58	3.20–4.02
Foster care	4.10	3.69–4.56
SSI	2.81	2.55–3.10
SCHIP	5.85	4.46–7.67
Age group (reference: 2–4 years)		
5–9 years	2.64	2.34–2.98
10–14 years	3.93	3.48–4.43
15–17 years	4.00	3.53–4.53
Male (reference: female)	1.72	1.64–1.80
Race-ethnicity (reference: white)		
African American	.48	.46–.50
Hispanic	.40	.35–.46
Other	.60	.53–.68
Region (reference: northern metropolitan counties)		
Southern metropolitan counties	1.17	1.10–1.24
All other counties	1.23	1.16–1.30

[a] The multivariable logistic regression analysis was adjusted for year, Medicaid eligibility category, interaction of year and eligibility, age group, gender, race-ethnicity, region, and psychiatric diagnosis. Model-fit statistics: likelihood ratio test, χ^2=45,423.2, df=26, p<.001
[b] TANF, Temporary Assistance for Needy Families; SSI, Supplemental Security Income; and SCHIP, State Children's Health Insurance Program

Table 4

Changes in clinical and demographic characteristics in 2006 versus 1997 among 9,320 Medicaid-insured children who used antipsychotics[a]

Variable	Adjusted odds ratio	95% CI
Eligibility (reference: SSI)[b]		
TANF and SCHIP	3.70	3.14–4.35
Foster care	1.05	.91–1.22
Age group (reference: 2–4 years)		
5–9 years	.58	.37–.91
10–14 years	.72	.47–1.12
15–17 years	1.09	.69–1.72
Male (reference: female)	.90	.78–1.03
Race-ethnicity (reference: white)		
African American	1.49	1.30–1.70
Hispanic	3.16	1.72–5.81
Other	1.76	1.16–2.66
Region (reference: Northern metropolitan counties)		
Southern metropolitan counties	1.32	1.09–1.60
All other counties	1.48	1.26–1.73
Psychiatric diagnosis (reference: schizophrenia or other psychosis and pervasive developmental disorder and mental retardation)		
Bipolar disorder	3.77	2.98–4.77
Attention-deficit hyperactivity or disruptive behavior disorder	3.48	2.86–4.24
Other	2.44	1.96–3.04

[a] The multivariable logistic regression model was adjusted for Medicaid eligibility category, age group, gender, race-ethnicity, region, and psychiatric diagnosis. Model-fit statistics: likelihood ratio test χ^2=610.32, df=14, p<.001
[b] SSI, Supplemental Security Income; TANF, Temporary Assistance for Needy Families; SCHIP, State Children's Health Insurance Program

medical care has been primarily related to the use of stimulants to treat behavioral problems. Appropriateness concerns have been raised about a more recent trend toward increased use of antipsychotic medication to treat young children with externalizing behavior disorders, including ADHD, and pediatric bipolar disorder (PBD) (16–18). Olfson and others (19) found that new-onset PBD is often preceded by a diagnosis of a behavior disorder– for example, ADHD or disruptive behavior disorder—and is followed by an increased use of antipsychotics and decreased use of stimulants. In this study, use of antipsychotics in PBD and ADHD and disruptive disorders grew threefold.

In the *DSM-5* revision, there has been a controversy about whether PBD is an appropriate diagnosis for very young children whose main presenting concern is aggression (20). ADHD and disruptive disorders are not among the labeled indications for antipsychotic drugs. Furthermore, use of antipsychotics for aggression in children is not adequately evidence based, although antipsychotic medications have been shown in short-term studies to lessen aggressive symptoms (21). Given the controversy surrounding the *DSM-5* revision for PBD, a dilemma is presented—does evidence from clinical studies supporting short-term use of antipsychotic medications for aggression outweigh the emerging long-term risks, such as cardiometabolic disorders, associated with antipsychotic treatment (10,11)? Outcomes research is needed to assess the benefits and risks of long-term antipsychotic use in this broadened population of community-treated youths, particularly those who are Medicaid insured.

Clinical and demographic features
The sociodemographic and clinical characteristics of antipsychotic users with a clinician-reported psychiatric diagnosis changed across the decade (1997–2006) in several important ways. First, the proportion of income-eligible youths (TANF and SCHIP enrollees) increased more than the proportion of vulnerable youths (SSI and foster care enrollees). Second, the increase in antipsychotic users who were very young

children (aged two to four years) was similar proportionally to the increase in antipsychotic users who were aged ten to 17 years. Third, among antipsychotic users, Hispanic youths had a higher proportional increase in antipsychotic use across the decade than any other racial or ethnic group. Finally, among antipsychotic users, youths with externalizing disorders had much greater proportional increases in antipsychotic use than youths with schizophrenia and other psychoses and severe developmental disorders. These findings indicate emerging subpopulations in need of close monitoring for safety evaluation—for example, lab tests for lipids and glucose—as well as short- and long-term effectiveness.

Limitations of the study
The study data reflected only one state Medicaid program. Prescription dispensing does not necessarily equate with patients' consumption. Diagnostic groups are derived from the *ICD-9-CM* clinician-reported claims for reimbursement and do not have the reliability of research-assessed diagnoses. However, to increase the validity of clinician-reported diagnoses, we required that the diagnosis be confirmed by more than one claim on different days in the study year. Also, a hierarchical approach to diagnosis emphasized severity of conditions in relation to antipsychotic medication use (8). To enhance the availability and the validity of the antipsychotic medication exposure, we restricted our sample to youths continuously enrolled for ten to 12 months per study year. Because these youths represented a majority of Medicaid-insured youths in 1997 (75.1%) and 2006 (80.2%), the results are generalizable to Medicaid-insured youths in this mid-Atlantic state.

Conclusions
The expansion of antipsychotic medication use from 1997 to 2006 among Medicaid-insured youths was most prominent among those qualifying with low (SCHIP) and very low (TANF) family incomes. This was the case even though the most impaired youths—those in foster care or those receiving SSI—had distinctly higher levels of antipsychotic drug

use within each study year. Factors contributing to this antipsychotic use pattern included the expanding SCHIP and TANF populations, the increased use of antipsychotics among youths enrolled in SCHIP and TANF, and the increased use of antipsychotic medication for behavior disorders over the decade. Likewise, although youths with diagnoses of schizophrenia and other psychotic disorders and pervasive developmental disorders had the highest rates of antipsychotic medication use, youths with externalizing behavior disorders far outnumbered those with these less common conditions and constituted the largest group of utilizers of antipsychotic medications.

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