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Interstate variation in trends of psychotropic medication use among Medicaid-enrolled children in foster care☆,☆☆

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ABSTRACT

Background: High rates of treating children in foster care with second-generation antipsychotics, both singly and in combination with other psychotropics, have focused public interest on the use of these medications, and motivated some states to implement programs to curtail usage.
Objective: To estimate any antipsychotic use and psychotropic polypharmacy among children in foster care during the last decade and to characterize interstate variation in these trends.
Design/methods: Centers for Medicare and Medicaid Services Medicaid Analytic Extract data files for 47 states and the District of Columbia for years 2002–2007. The study sample included an average of 686,080 children annually aged 3–18 years of age with foster care Medicaid eligibility. Repeated cross-sectional design conducted with multilevel logistic regression, clustered at the state level and controlling for patient demographics. Main outcome measures were rates of filled prescriptions for any antipsychotic medication and for psychotropic polypharmacy (defined as concurrent use of 3 or more psychotropic medication classes for at least 30 days during the year). State-level rate trajectories over time were classified as increased (≥5% relative increase over interval), decreased (≥5% relative decrease over the interval), or stable.
Results: The rate of any antipsychotic use increased from 8.9% in 2002 to 11.8% in 2007 ($P<.001$ for temporal trend). In contrast, the rate of psychotropic polypharmacy was 5.2% in 2002, peaked in 2004 at 5.9%, and fell to 5.3% in 2007 ($P<.001$ for trend). State-specific rates of any antipsychotic use were significantly increased in 45 states over the period, while rates of psychotropic polypharmacy increased in only 18 states and declined in 19.
Conclusions: Although absolute rates of any antipsychotic use and psychotropic polypharmacy among children in foster care remained high, psychotropic polypharmacy began to abate during the last decade, as rates of antipsychotic use continued to rise.

1. Introduction

Children in foster care, beset by high prevalence of behavioral health concerns (Clausen et al., 1998; Garland et al., 2000; Glisson, 1994; Halfon et al., 1995; Landsverk et al., 2002; Pecora et al., 2005; Rubin et al., 2005; Trupin et al., 1993; Urquiza et al., 1994), disproportionately use behavioral health services to a much greater degree than other children in the community (dosReis et al., 2001; Zito et al., 2008). While representing less than 3% of all enrollees in the Medicaid program, children in foster care account for 25–41% of all mental health expenditures within the Medicaid program for children (Halfon et al., 1992; Harman et al., 2000; Takayama et al., 1994).

A large component of increased mental health expenditures among foster care children is their increased use of psychotropic medications, both singly and in combinations, compared to other children. Data from the beginning of the last decade revealed that 13.5% of children in the child welfare system were using psychotropic medications, 2–3 times the rate of other children in the community (Raghavan et al., 2005). Furthermore, children in foster care are often exposed to psychotropic polypharmacy: examination of Medicaid records from the state

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of Texas in 2004 revealed that 41% of children in foster care were using 3 or more classes of psychotropic medication within the same year, and 1 in 5 were duplicating medications within the same pharmacologic class (Zito et al., 2008).

Increased use of psychotropic medications by children in foster care occurs against a backdrop of rising use of such medications among all children over the last two decades (Mojtabai & Olfson, 2010; Olfson et al., 2002, 2006). Federal and state policymakers have begun to respond to the growing public debate on psychotropic use by children, particularly for children in foster care. In 2006, a Government Accountability Office (GAO) report on pending challenges for the child welfare system found that 1 in 3 states identified the use of psychotropic medication in their foster care populations as among their most pressing issues for the next five years (Ashby, 2006). More recently, a 2011 GAO report examined psychotropic oversight for children in child welfare in six states (Kutz, 2011). The report found variability in adoption of oversight policies across the states, but noted that each state had implemented at least one such policy, though none had thoroughly adopted guidelines set forth by a psychiatry professional board. On a national-level, by 2010, 26 states reported having a policy or guideline for use of psychotropic medication by foster care youth and 13 states were in the development stage of such policies or guidelines (Leslie et al., 2010).

Rates of use of the second-generation antipsychotic (SGA) medication class are of principal interest, particularly among children in foster care, as these drugs are prescribed to address disruptive behaviors in children despite limited efficacy data and emerging evidence of metabolic side effects that have questioned their use in pediatric populations (Correll, 2008; Correll et al., 2007, 2009; De Hert et al., 2011). Between 1993 and 2002, office visits involving the prescription of SGAs to children and youth increased five-fold (Cooper et al., 2006; Olfson et al., 2006). By 2003, greater than 1 in 10 foster youth were receiving an SGA, and of those, 1 in 5 were receiving duplication of this class (dosReis et al., 2011).

The impact of states' responses regarding psychotropic medication use, particularly of SGAs, among children in foster care is unknown. We therefore sought to estimate state-specific trajectories in psychotropic use in this high-risk population and to characterize interstate variation in these trajectories during the last decade.

2. Methods

2.1. Design and sample selection

The data source was Centers for Medicare and Medicaid Services Medicaid Analytic Extract (MAX) data files for 50 states and the District of Columbia for years 2002 through 2007. Child-level demographic, eligibility, encounter, and pharmacy data were extracted from the personal summary, outpatient, inpatient, and pharmacy MAX files. Medicaid eligibility category was used as the basis for classifying youth in foster care. Youth were classified as foster care in a given year if they had at least one month of a foster care Medicaid eligible category in the year. The sample was restricted to foster care children aged 3–18 years of age with continuous Medicaid eligibility, defined as 10 of 12 months in a given year. Although this restriction removed 31% of potential children in foster care from the analysis, separate sensitivity analyses of this non-continuously eligible population revealed similar levels of psychotropic medication use and trajectories of prescribing over the period (data not shown). Because of uncertainty around coverage and service receipt during periods of disenrollment, we have chosen to report trends on only continuously enrolled children.

The dependent variables were a) use of a second-generation antipsychotic (SGA) and b) psychotropic polypharmacy, defined as the concurrent use of ≥3 psychotropic medication classes during the year. Concurrent use was defined as overlapping use of ≥3 psychotropic classes 30 days or more. Psychotropic classes included stimulants, antidepressants, SGAs, sedative/hypnotics, anxiolytics, mood-stabilizers, and alpha agonists. Antidepressants included selective serotonin reuptake inhibitors (SSRI), tricyclic antidepressants (TCA), and other antidepressants. Mood-stabilizing agents included carbamazepine, valproic acid, gabapentin, lamotrigine, and oxcarbazepine anticonvulsants and lithium. Since alpha-agonists, such as clonidine and guanfacine, can also be prescribed for medical conditions, these agents were only included in the analysis if a youth also had a claim for a psychotropic medication in one of the above-mentioned classes. Sedatives/hypnotics excluded antihistamines, which in pediatric practice most often have a non-psychiatric indication for use.

Independent variables included demographic information (age, race/ethnicity, sex, state of residence), psychiatric diagnoses, and a count of mental health encounters. Age was categorized within calendar years as 3 to 5 years, 6 to 11 years, and 12 to 18 years. Race/ethnicity was coded as white, black or African American, Latino, or other. Children with race classified as unknown were excluded from the analysis (n = 313,493; 7%). Eight states (IA, MT, MN, OK, NY, RI, VT, WI) had >15% of the state eligible population excluded as race unknown; sensitivity analyses for these states showed equivalent trajectories of psychotropic use over the study period. In two states (NY, WI), the levels of use differed slightly depending on the outcome — the direction of the differences varied by state (data not shown). Psychiatric diagnoses were coded using the *International Classification of Diseases, Ninth Revision* classification. Diagnostic categories included schizophrenia (295), bipolar disorder (296.00–296.10, 296.36–296.89), depression (296.20–

Table 1
Age-specific demographic characteristics of Medicaid-enrolled foster care children in the United States[a].

	Age 3–5 (Annual average = 100,000)			Age 6–11 (Annual average = 237,000)			Age 12–18 (Annual average = 349,000)		
	Average population percentage	Across years 2002–2007 (percentage)		Average population percentage	Across years 2002–2007 (percentage)		Average population percentage	Across years 2002–2007 (percentage)	
		High, low	Percentage point change 2002 to 2007		High, low	Percentage point change 2002 to 2007		High, low	Percentage point change 2002 to 2007
Sex									
Male	51.7	51.8, 51.6	+0.1	51.7	51.8, 51.6	−0.1	51.9	52.1, 51.8	+0.1
Female	48.3	48.4, 48.2	−0.1	48.3	48.4, 48.2	+0.1	48.1	48.3, 48.0	−0.1
Race[b]									
White	49.7	50.5 47.9	+2.3	47.4	48.9, 46.0	+2.9	47.9	49.8, 46.6	−3.2
Black	32.5	36.5, 29.9	−6.6	37.1	40.5, 33.8	−6.7	39.2	39.5, 38.2	+1.3
Hispanic	13.5	15.5, 11.9	+4.6	11.6	13.2, 10.1	+3.1	9.6	10.6, 8.8	+1.8
Other	4.3	4.5, 3.7	+0.8	3.9	4.1, 3.4	+0.7	3.3	3.5, 3.2	+0.2
Chronic conditions									
Mental retardation	0.7	0.8, 0.6	−0.2	1.0	1.2, 0.9	−0.3	1.4	1.5, 1.3	−0.1
Seizure disorder	1.0	1.1, 1.0	−0.1	1.0	1.0, 0.9	0.0	0.8	0.9, 0.8	+0.1

[a] 3 U.S. states not represented (Connecticut, Massachusetts, Maine).
[b] Children with race classified as unknown excluded (7%).