STATE OF MARYLAND
DHMH
Maryland Department of Health and Mental Hygiene
201 W. Preston Street • Baltimore, Maryland 21201
Martin O'Malley, Governor – Anthony G. Brown, Lt. Governor – Joshua M. Sharfstein, M.D., Secretary

DEC 19 2012

The Honorable Edward J. Kasemeyer
Chairman
Senate Budget and Taxation Committee
3 West Miller Senate Office Bldg.
Annapolis, MD 21401-1991

The Honorable Norman H. Conway
Chairman
House Appropriations Committee
121 House Office Bldg.
Annapolis, MD 21401-1991

Re: 2012 Joint Chairmen's Report (p. 78) – Report on Utilization of Psychotropic Medications

Dear Chairmen Kasemeyer and Conway:

In keeping with the requirements of the 2012 Joint Chairmen's Report (p. 78), enclosed is the Department's report on the use of psychotropic medications among children in Maryland. The report includes a summary of the literature on the issue of psychotropic medication utilization rates among children; utilization rates among children in Medicaid and the Maryland Children's Health Program; Maryland-specific data on utilization rates among children covered by commercial insurance; and utilization rates among children in foster care, kinship care and those in the custody of the Department of Juvenile Services.

If you have any questions or need more information on this subject, please contact Marie Grant, Director of Governmental Affairs at (410) 767-6481.

Sincerely,

Joshua M. Sharfstein, MD
Secretary

Enclosure

cc: Chuck Milligan
Tricia Roddy
Marie Grant
Patrick Dooley
Simon Powell

Introduction

Promoting the health and well-being of all children in Maryland, especially those in the Medicaid program, is one of the primary goals of the Department of Health and Mental Hygiene (the Department). Children in foster care merit increased surveillance, and the Department understands the importance of ensuring access to quality somatic and behavioral health care for this vulnerable population. Foster children have complex medical needs, both in terms of behavioral health and physical health.

Psychotropic medication use amongst foster children has been garnering national attention. In December 2011, the United States Government Accountability Office (GAO) released a report, "Foster Children: HHS Guidance Could Help States Improve Oversight of Psychotropic Prescriptions." The GAO analyzed whether six states, including Maryland, followed recommended guidelines for monitoring psychotropic medication use in foster children put out by the American Academy of Child and Adolescent Psychiatry. Based on this analysis, the GAO found that states had implemented the recommendations to varying degrees. The report also analyzed prescribing patterns in five states[1] and found that foster children in these states received psychotropic medications at a higher rate than other children in Medicaid. The report noted that the Department of Health and Human Services (HHS) has provided limited guidance on how states should monitor psychotropic medication utilization among foster children (United States Government Accountability Office, 2011).

Currently, the Department is aware of some of the differences in health care utilization that are present in this population compared to other children in Medicaid. Overall, 75 percent of children in foster care and 79 percent of other HealthChoice children received at least one ambulatory care visit in CY 2009. For the youngest age groups, children in foster care accessed ambulatory care services at higher rates than other children in the HealthChoice program. For older age groups, children in foster care accessed services at lower rates than other HealthChoice children. In CY 2009, children in foster care and other HealthChoice children had a similar emergency department utilization rate, about 30 percent. Foster children aged 0 to less than 1 year and 15 through 20 years accessed outpatient emergency department services at higher rates than other children in the HealthChoice population. Children in foster care had a higher dental visit rate than other HealthChoice children across all age groups (The Hilltop Institute, 2012). Based on several measures, foster children utilized health care services at high rates compared to other children in Medicaid; therefore, it would be logical that they may also receive psychotropic medications at higher rates.

As part of the 2012 Joint Chairmen's Report (JCR), the Senate Budget and Taxation Committee and the House Appropriations Committee requested that the Department provide a report on the available literature on psychotropic medication utilization among foster care children and data on psychotropic medication utilization among children in foster care, kinship care, the custody of the Department of Juvenile Services, Maryland Medicaid and the Maryland Children's Health Program, and commercial insurance markets in Maryland. The Department collaborated with the Hilltop Institute to generate the figures for CY 2008, 2009, and 2010, as well as for the creation of the literature review.

[1] This analysis did not include Maryland.

Psychotropic medications were defined using the American Hospital Formulary Service therapeutic class of drugs, which includes classes such as alpha-agonists, antidepressants, antipsychotics, amphetamines, anxiolytics, and lithium. This report only examined the number of prescriptions filled and the rates in each population. Please note that "use", "receive", and "prescribe" are used interchangeably. The JCR requested that utilization be analyzed; however, it is impossible to measure utilization based on the data available to Medicaid. The Department can only measure prescription patterns. There was no analysis of risk factors for psychotropic medication use, associated diagnoses, nor utilization of other behavioral health services.

The report contains a literature review on psychotropic medication utilization rates among children; data analysis methodology; psychotropic medication utilization; antipsychotic medication utilization; and what Maryland Medicaid is doing to address the use of antipsychotic medications in children. Highlights include:

- The rates between Maryland and the peer-reviewed literature for psychotropic medication use among children in foster care were comparable.

- Frequency of use of psychotropic medications was three times greater among foster children than other children in Medicaid from 2008 to 2010. The rate among other children in Medicaid, on average, was 8.89 percent and the rate for foster children, on average, was 30.29 percent.

- There were disparities in psychotropic medication utilization by age group, region, race/ethnicity, and gender among foster children and between foster children, other children in Medicaid, and those who are privately insured.

- Children in foster care were 7 times more likely to receive an antipsychotic medication than other children enrolled in Medicaid in 2008 through 2010. The rate among other children in Medicaid, on average was 1.97 percent and the rate for foster children, on average was 13.9 percent.

- Disparities in antipsychotic medication use were apparent based on age group and gender among foster children and those in Medicaid and the private insurance market.

- The data in this report does not provide any evidence of the appropriateness or inappropriateness of psychotropic medication utilization among foster children.

Literature Review on Psychotropic Medication Utilization Rates Among Children

Research into the utilization of psychotropic medication among children spans more than a decade. Recent research largely focused on vulnerable populations, primarily children in the welfare and Medicaid systems. Overall, the literature revealed that utilization rates vary by geographic location, provider treatment practices, co-morbidities, and number of mental health diagnoses. As such, many studies were limited to specific mental disorders (autism disorder), geographical locations (state or county), or type of psychotropic medication (antipsychotics). This created challenges in summarizing the literature, as each utilization rate often required

noting the specifics of the population studied. This discussion focuses on several aspects of study design to aid in understanding reported rates.

For this review, a search was performed both on PubMed and Google Scholar. Keywords in the searches included psychotropic medication, children, utilization rate, national trend, and foster care. Articles selected from the cited references encountered throughout the search were also reviewed. Ultimately, the articles used below were chosen based on how often the article was referenced in other articles, how often the article appeared in searches, and whether a general utilization rate is reported. Articles citing data from the 1980s and 1990s were not included in this summary. Many articles were not used in this review due to the specificity of the population or an unusual reporting of a utilization rate (rate per number of office visits) (Thomas, Conrad, Casler, & Goodman, 2006). One article below that provided a utilization rate for antipsychotic medication was included based on the additional data analysis provided as part of completing the JCR request (Rubin, Matone, Huang, dosReis, Feudtner, & Localio, 2012).

Utilization Rates. Table 1 displays reported utilization rates for selected studies. Overall, the results demonstrated rates varying between 0 and 60 percent of the study populations. Because the population greatly affected the utilization rate, it is important to examine why and how each of these rates varies.

Table 1. Reported Utilization Rates of Psychotropic Medications in Children

Literature	Psychotropic Utilization Rate Reported
dosReis *et al.* (2001)	30% Mid-Atlantic county foster care
Leslie *et al.* (2011)	0-40% depending on welfare catchment area
Raghavan *et al.* (2005)	13.5% National welfare recipients
Raghavan and McMillen (2008)	36% Midwestern state welfare recipients
Raghavan *et al.* (2010)	14.1% National welfare recipients; 7.1% in California; 20.1% in Texas
Rubin *et al.* (2009)	58% Foster care children with autism spectrum disorder
Rubin *et al.* (2012)	11.8% Foster care children using antipsychotics
Zito *et al.* (2005)	9.9% Maryland Medicaid; 25.8% Foster Care
Zito *et al.* (2008)	37.9% Texas foster care (Medicaid)

Data. The most recent data used in the reviewed literature were collected in 2007 (Rubin, Matone, Huang, dosReis, Feudtner, & Localio, 2012). For the most part, reported rates used data from calendar year 2000 through 2004 (Zito, Safer, Zuckerman, Gardner, & Soeken,

2005; Zito et al., 2008). All studies defined "psychotropic medication" using the American Hospital Formulary Service therapeutic class of drugs. Four of the articles used Medicaid data, whether from a particular state or the Centers for Medicare and Medicaid Services Medicaid Analytic eXtract (MAX) national data (Rubin, Matone, Huang, dosReis, Feudtner, & Localio, 2012; Rubin, Feudtner, Localio, & Mandell, 2009; Zito et al., 2008; Zito, Safer, Zuckerman, Gardner, & Soeken, 2005). Three studies reported on children in the welfare system using the National Survey of Child and Adolescent Well-Being (NSCAW) survey (Leslie, Raghavan, Hurley, Zhang, Landsverk, & Aarons, 2011; Raghavan, Lama, Kohl, & Hamilton, 2010; Raghavan, Zima, Andersen, Leibowitz, Schuster, & Landsverk, 2005). Finally, two studies reported on children recruited for a survey; one study recruited children who were in the custody of the child welfare system; and the other recruited children from the foster care sytem (Raghavan & McMillen, 2008; dosReis, Zito, Safer, & Soeken, 2001).

Findings. Not all studies considered mental health diagnoses, but of the studies that did, attention deficit hyperactivity disorder was the most prevalent diagnosis, especially in younger children (Rubin, Matone, Huang, dosReis, Feudtner, & Localio, 2012; Zito et al., 2008; Rubin, Feudtner, Localio, & Mandell, 2009). Conduct disorder and depression were reported as most common in older children (Rubin, Matone, Huang, dosReis, Feudtner, & Localio, 2012; Zito et al., 2008). Physical abuse, neglect, and sexual abuse, which were prevalent in children in Temporary Assistance for Needy Families, and therefore Medicaid, increased the use of psychotropic medications (Raghavan & McMillen, 2008).

Both Leslie et al. (2011) and Raghavan et al. (2010) attempted to assess the impact of having Medicaid insurance on the utilization rates of psychotropic medication. Leslie and colleagues found that, although children receiving health coverage through Medicaid bordered statistical significance ($p=0.054$) compared to uninsured children in terms of the likelihood of using psychotropic medication, child characteristics were the primary predictors of psychotropic medication use. Raghavan and colleagues confirmed this finding. They, however, did not find that Medicaid policies greatly affect the utilization rate in the population. Three studies reported rates of psychotropic utilization within Medicaid populations (Zito, Safer, Zuckerman, Gardner, & Soeken, 2005; Rubin, Feudtner, Localio, & Mandell, 2009; dosReis, Zito, Safer, & Soeken, 2001). Recent studies reported a higher rate of utilization in the Medicaid population. This may have been a result of using Medicaid data versus survey data, or variations in geographical and population size.

Zito et al. (2005) identified a utilization rate of 25.8 percent for children in foster care, 7.4 percent for children in TANF, and 6.0 percent for children in the State Children's Health Insurance Program (SCHIP). This study also reported that, at 34.7 percent, children in the Social Security's Supplemental Security Income (SSI) coverage category had a higher utilization rate than foster children. DosReis and colleagues (2001) reported a utilization rate of 30 percent for foster care children versus 18 percent for SSI children. However, this study only considered Medicaid children in one county, whereas the Zito et al. (2008) study addressed the population of the entire state of Maryland. Similarly, Rubin et al. (2009) compared autism spectrum disorder data of foster care children with the data of SSI children. This study indicated that foster care children had higher rates of utilization compared to SSI children (29 percent and 16 percent, respectively). This study calculated utilization rates based on children using three or more psychotropic medications concurrently.

Conclusion. While the above studies varied in design, they had recurring themes. First, most studies expressly stated that it was impossible to determine whether the psychotropic medications were appropriately used. As a result, it was difficult to establish whether reported utilization rates indicated an issue with over- or under-utilization for children in the population. Second, due to restrictions on studied populations and known geographical variation, results could not be generalized beyond the population analyzed. Third, children who suffered from abuse, neglect, and other behavioral, emotional, and psychological health issues had higher utilization rates. The presence of these health issues was most predictive of psychotropic utilization.

Finally, rates reported by Zito et al. (2005) were comparable to rates displayed in the data analysis provided as part of this report. Utilization rates reported in the literature used data from calendar year 2000 and limited analysis to children who were enrolled for more than one month, between the ages of 2 and 19, and who only had one eligibility coverage category during the entire calendar year. The data analysis portion of this report did not adhere to these restrictions.

Data Analysis Methodology

To conduct this analysis, data were extracted from two different databases, the Medicaid Management Information System (MMIS) and Medical Care Data Base (MCDB). MMIS was used to identify the Medicaid and foster children populations; MCDB pharmacy data sent from the Maryland Health Care Commission (MHCC) was used to pull data for the privately insured population. MMIS contained claims for recipients of Medicaid for both fee-for-service (FFS) and HealthChoice managed care providers. These data were kept in fiscal year files, with service dates from July 1 through June 30 of the following calendar year. The MCDB contains all claims for Maryland residents enrolled in a private insurance plan whose premium revenues exceed $1 million during the calendar year of interest. The population included in these data varies from year to year for two reasons. First, people who no longer have private health insurance will not have claims submitted by the payer. Second, payers whose premium revenues drop below $1 million are not required to submit claims for the calendar year; thus, the numbers of payers submitting claims varies from year to year.

Utilizing different databases for this analysis required various analytical decisions in order to normalize each data set for joint analysis. Caveats to this analysis include:

1. The analysis was conducted in a calendar year format. MCDB had approximately an 18-month lag for data, and CY 2011 data were currently not fully available. MMIS reflected claims with service dates from CY 2008 through CY 2010, mirroring the available data from the MCDB.
2. Age was defined in MCDB in two distinct ways: (1) as of December 31 of the calendar year and (2) as of the date of service. Analysis was performed in both MMIS and MCDB for both calculations of age.[2]

[2] The difference between the two different calculations was not significantly different. Unless otherwise noted, all tables and analysis are based on the date of service age calculation.

3. Area of residence was based on the county listed within each database. While county names were identical between the two databases, it was unclear as to whether county was assigned uniformly between the two databases.
4. Enrollee information was only available in the MCDB for CY 2010. Therefore, all denominator values for the privately insured were based off of enrollee information from CY 2010 only, although applied to each reporting year. Furthermore, the enrollee information for CY 2010 was limited to only those enrollees who had prescription coverage.
5. The medication therapeutic class was not available in the MCDB. As a result, therapeutic class was imputed from MMIS. All prescription national drug codes were assigned a therapeutic class from the crosswalk available in MMIS.

Analysis of this population was stratified by gender, age group, and area of residence (Baltimore City, Baltimore Suburbs, Southern Maryland, Western Maryland, Eastern Shore, and Prince George's and Montgomery County).[3] Analysis of the Medicaid program, including the foster care population, was also stratified by race/ethnicity. However, race/ethnicity was not reported to MHCC by all pharmacy payers. Asian, Pacific Islander, and Native American groups were combined to increase the reported cell size. Age was grouped according to age parameters of the Medicaid Pharmacy Program's Peer to Peer Review project: 0-4 years of age, 5-9 years of age, and 10-17 years of age.[4] The Peer to Peer Program is described in more detail later in this report.

Analysis has not been performed separately for the Department of Juvenile Services (DJS) or kinship care Medicaid sub-populations. It was difficult to determine which children were in foster care versus the DJS system on a yearly basis. Additionally, it was difficult to identify the children who were in formal kinship care and enrolled in Medical Assistance. In both instances, there was a great deal of movement between placement types and Departments from month to month. Children in formal kinship care are typically enrolled in the same category as families and children up to 116 percent of the federal poverty level, while foster care children are enrolled, along with children in subsidized adoption, in a separate category. In the tables below, it is possible that the psychotropic medication utilization was an overestimate for Medical Assistance children because it included kinship care children, while the rates for foster care children may have been an underestimate because children in subsidized adoption were included. Based on estimates by the Department of Human Resources (DHR), children in formal kinship care comprised approximately 10 percent of the children in foster care[5].

[3] Baltimore City: Baltimore City. Baltimore Suburbs: Anne Arundel, Baltimore, Carroll, Harford, and Howard Counties. Southern Maryland: Calvert, Charles, and St. Mary's Counties. Western Maryland: Allegany, Garrett, and Washington Counties. Eastern Shore: Caroline, Cecil, Dorchester, Kent, Queen Anne's, Somerset, Talbot, Wicomico, and Worcester Counties. Prince George's and Montgomery: Frederick, Prince George's and Montgomery Counties.

[4] http://mmcp.dhmh.maryland.gov/pap/SitePages/Peer%20Review%20Program.aspx

[5] It was difficult to calculate annual enrollment in foster care and kinship care, therefore, DHR provided point-in-time estimates. In February 2008, there were 1,109 children in kinship care and 8,540 in foster care. In June 2009, there were 979 in kinship care and 9,323 in foster care. In July 2010, 771 were in kinship care and 8,632 were in foster care. In July 2011, 705 were in kinship care and 7,562 were in foster care. In July 2012, 611 were in kinship care and 6,893 were in foster care.

Definition of the Population. All children under the age of 18 years were identified. All pharmacy claims for medication with therapeutic classes on the American Hospital Formulary Service (AHFS) therapeutic class listed in the Maryland Medicaid Mental Health Formulary, effective July 1, 2011, were identified as psychotropic (see Appendix III). Claims for medications not on the formulary were identified as non-psychotropic. This analysis also reported for the Medicaid sub-population of foster children. Children were identified as being in the foster care program by eligibility coverage group.[6] While the eligibility group may have varied throughout the year, for this analysis, a child in a foster care-related coverage group at any time during the year was classified as being in the foster care program. Children identified as being in foster care were not included in the other population of Medicaid children in the data analysis.

Payment. Total payment for Medicaid children was calculated. Payment included both the annual capitation paid and the wrap around FFS payments for services provided outside the scope of the managed care organization (MCO). Payments are presented as both a total for the population and as an average per child for the population. Payments were calculated for Medicaid (excluding those in foster care) and the foster care populations.

Utilization Rate. Stratified results were reported for the total number of children eligible for Medicaid in a calendar year (excluding those in foster care), total number of children in the foster care program during the year, and the total number of children enrolled in a private payer prescription plan in CY 2010. The utilization rate presented for Medicaid and Foster Care was a true utilization rate for those populations; the rate represented the number of children receiving a prescription for psychotropic or antipsychotic medications per the number of eligible children. The utilization rate for privately insured children was the closest to a true rate as possible. As stated above, the number of children privately insured was the number enrolled in a prescription plan in CY 2010, regardless if CY 2008 or CY 2009 was reported. Furthermore, since all insurance companies were not required to submit data to MHCC, the privately insured rate was limited to only the companies with revenue over $1 million, and those who did report did not always report pharmacy claims.

Age Calculation. The analysis was performed for both age calculated at the end of the calendar year and age calculated as of the date of service. For the analysis presenting age at the end of the year, all people in MMIS and MCDB were included if age was under the age of 18 as of December 31 of the reporting year. Stratified analysis of age group was based solely on this number, allowing for a child to be present in only one age group.

However, for the analysis where age was calculated as of the date of service, the logic varied slightly, allowing for a child to be present in more than one age group during the year. First, all children under the age of 18 as of January 1st of the reporting year were initially pulled from MMIS. Then, age was calculated for all children as of the date of service. All children changed in age during the year. For the MMIS analysis only, those children who had a prescription under 18 remain in the analysis, while those who filled a prescription after turning

[6]E01: IV-E or SSI, Foster Care or Subsidized Adoptions. E02: Non-IV-E, Foster Care or Special Needs Subsidized Adoption and Subsidized Guardianship. E03: State Funded Foster Care. E04: State Funded Subsidized Adoptions and Subsidized Guardianship.

18 were removed from the analysis. The denominator for the Medicaid (MMIS) data was comprised of all children who were 18 during the course of the calendar year. Since age as of the date of service was already calculated in the MCDB, the analysis was straightforward, keeping only those children who have an age recorded under 18 years as of the date of service.

The stratified analysis was also performed for the antipsychotic therapeutic class. Unless otherwise noted, all charts reflect age at date of service.

Psychotropic Medication Utilization

In this section, data on the number of children in each coverage type, the number receiving psychotropic medications, and the overall rate of psychotropic medication use from 2008 to 2010 are presented. Further analysis based on age, region of residence, race/ethnicity, and gender are also presented here. Additional tables on psychotropic medication utilization for each year for the various demographic characteristics are available in Appendix I.

Table 2a presents the average total number of children in Medicaid, foster care, and private insurance, total number who received a psychotropic medication in each of those categories, and the percentage of each group who received psychotropic medication from 2008 to 2010. The percentage of children enrolled in Medical Assistance who received a psychotropic medication was slightly higher than those who were privately insured who were receiving psychotropic medications. On average, during the three year period, almost 9 percent of Medical Assistance children received psychotropic medication, while almost 7 percent of those in the commercial carrier market received those medications. In contrast, an average of 30 percent of foster children received psychotropic medications. The utilization rate among foster children was over 3 times greater than other children in Medicaid. Based on the information provided in the literature review, it would appear that psychotropic medication utilization for both Medicaid and foster children in Maryland was comparable to rates found in the literature.

Table 2a. Utilization of Children Under the Age of 18 Receiving Psychotropic Medications, for Medicaid and Privately Insured, 2008-2010

Utilization Rate	Medicaid						Privately Insured [1]		
	Total Number of Medicaid Children (Excluding Foster Care Children)	Total Number of Medicaid Children Receiving Psychotropic Medications	Percent of Population Receiving Psychotropic Medications	Total Number of Foster Care Children	Total Number of Foster Care Children Receiving Psychotropic Medications	Percent of Foster Care Children Receiving Psychotropic Medications	Total Number of Privately Insured Children[1]	Total Number of Privately Insured Children Receiving Psychotropic Medications	Percent of Privately Insured Population Receiving Psychotropic Medications
Average	531,300	47,245	8.89%	16,853	5,103	30.28%	533,159	36,732	6.89%
Rates Reported in Peer-Reviewed Literature			9.9% [2] 14.1% [3] 13.5% [4]			30% [5] 25.8% [2] 37.9% [6]			NA

[1] Total Number of Privately Insured based on MHCC MCDB Enrollee data. Data reports the number of children enrolled in private insurance and has drug coverage in CY2010. Not all private insurance companies in MCDB report pharmacy data for enrollees with drug coverage.

[2] Zito, J. M., Safer, D. J., Zuckerman, I. H., Gardner, J. F., & Soeken, K. (2005). Effect of Medicaid eligibility category on racial disparities in the use of psychotropic medications among youths. Psychiatric Services, 56(2), 157-163.

[3] Raghavan, R., Lama, G., Kohl, P., & Hamilton, B. (2010). Interstate variations in psychotropic medication use among a national sample of children in the child welfare system. Child Maltreatment, 15(2), 121-131

[4] Raghavan, R., Zima, B.T., Andersen,R.M., Leibowitz, A.A., Schuster, M.A., Landsverk, J. (2005). Psychotropic medication use in a national probability sample of children in the child welfare system. Journal of Child and Adolescent Psychopharmacology, 15(1), 97-106

[5] dosReis, S., Zito, J. M., Safer, D. J., & Soeken, K. L. (2001). Mental health services for youths in foster care and disabled youths. American Journal of Public Health, 91(7), 1094-1099

[6] Zito, J. M., Safer, D. J., Sai, D., Gardner, J. F., Thomas, D., Coombes, P., et al. (2008). Psychotropic medication patterns among youth in foster care. Pediatrics, 121(1), 157-163.[7]

[7] Utilization rates based on Maryland data.

Table 2b shows the average total expenditure for children in Medicaid and foster care, as well as the average per child payment from 2008 through 2010. The average amount per child included not just pharmaceuticals and behavioral health costs, but also somatic care. On a per child basis, Medicaid paid more than 3 times as much for foster children than on other children in Medicaid.

Table 2b. Average Total Payments and Average Per Child Payments for Children Under the Age of 18 Receiving Psychotropic Medications in Medicaid, 2008-2010

Payment Amount	Medicaid	
	Medicaid Children	Foster Children
	Average	Average
Total Payment	$1,580,259,074	$161,059,399
Average Per Child Payment	$3,137	$9,805

Table 2c presents average utilization rates for each of the three populations broken down by discreet age groups. As mentioned above, in the "Data Analysis Methodology" section, the cut-off points used in this analysis were chosen to mirror those used by the Maryland Medicaid Pharmacy Program (MMPP) Peer Review Program for Mental Health Medications and make comparisons to antipsychotic utilization easier. (The Peer Review Program is described in more detail below in the section "What Maryland Medicaid Is Doing to Address the Use of Antipsychotic Medications in Children.") The results presented in this table show that most of the children who received psychotropic medications were at least ten years old. In each category, foster children received psychotropic medications at a greater rate than their peers in Medicaid and the private insurance market between 2008 and 2010. For foster children less than 5 years of age and 10 to 17, the rate of psychotropic medication use was over twice as much as for other Medicaid children, while foster children ages 10 to 17 received psychotropic medications over 2.5 more often than children in Medicaid. For foster children aged 5 to 9, the rate of utilization was almost 3 times greater in foster children than it was for Medicaid children.

Table 2c. Average Utilization Rate of Children Under the Age of 18 Receiving Psychotropic Medications by Age Group, for Medicaid and Privately Insured, 2008-2010

Age Group	Medicaid		Privately Insured [1]
	Medicaid Children (excluding foster children)	Foster Children	
	Average	Average	Average
Less than 5 Years	2.76%	5.90%	1.49%
5 - 9 Years	10.56%	31.20%	5.55%
10 - 17 Years	14.92%	39.36%	10.86%

[1] Total Number of Privately Insured based on MHCC MCDB Enrollee data. Data reports the number of children enrolled in private insurance and has drug coverage in CY 2010. Not all private insurance companies in MCDB report pharmacy data for enrollees with drug coverage.

Table 2d presents the average total number of children in each group, the average total number of children who received psychotropic medication, and the average utilization rates based on six regions in Maryland and those children who lived out of state who were in Medicaid and foster care. The lowest rates of psychotropic medication use for foster children were in the Washington suburban area, followed by Baltimore City. The regions with the highest utilization for foster care children in the state were Western Maryland and the Eastern Shore, but both regions had relatively few foster children compared with most other regions in the state. The Baltimore suburban area had the largest number of foster care children residing there, but had utilization rates that were on the lower end of the spectrum for that population. However, rates were still much higher for this group across the state than for children who were privately insured or who were in Medicaid for other reasons.

Table 2d. Average Utilization Rate of Children Under the Age of 18 Receiving Psychotropic Medications by Region of Residence, for Medicaid and Privately Insured, 2008-2010

Area of Residence[2, 3]	Medicaid[1]						Privately Insured		
	Medicaid Children			Foster Children					
	Total Number of Medicaid Children (Excluding Foster Care Children)	Total Number of Medicaid Children Receiving Psychotropic Medications	Percent of Medicaid Children Receiving Psychotropic Medications	Total Number of Foster Care Children	Total Number of Foster Care Children Receiving Psychotropic Medications	Percent of Foster Children Receiving Psychotropic Medications	Total Number of Privately Insured Children with Drug Coverage[4]	Total Number of Privately Insured Children with Drug Coverage Receiving Psychotropic Medications	Percent of Privately Insured Population Receiving Psychotropic Medications
Baltimore City	112,758	10,058	8.92%	7,789	2,143	27.51%	62,082	4,419	7.12%
Baltimore Suburban	138,937	13,715	9.87%	3,164	1,081	34.17%	154,931	11,230	7.25%
Eastern Shore	50,722	6,826	13.46%	1,056	406	38.45%	29,232	2,514	8.60%
Out of State	960	106	11.04%	34	*	Between 40-45%			
Southern Maryland	25,112	2,494	9.93%	623	181	29.05%	36,797	2,528	6.87%
Prince George's & Montgomery County	175,560	9,365	5.33%	3,255	890	27.34%	231,172	13,525	5.85%
Western Maryland	27,251	4,681	17.18%	873	386	44.22%	15,650	1,243	7.94%

[1]Cells under 20 children are not reported.
[2]Area of residence is reported by region due to low cell numbers for foster children. Region is based on county of residence. Each data set (MMIS2 and MCDB) contain a variable county; the assignment of county may not be uniform between data sets.
[3] Baltimore City: Baltimore City. Baltimore Suburbs: Anne Arundel, Baltimore, Carroll, Harford, and Howard Counties. Southern Maryland: Calvert, Charles, and St. Mary's Counties. Western Maryland: Allegany, Garrett, and Washington Counties. Eastern Shore: Caroline, Cecil, Dorchester, Kent, Queen Anne's, Somerset, Talbot, Wicomico, and Worcester Counties. Prince George's and Montgomery: Frederick, Prince George's and Montgomery Counties.
[4] Total Number of Privately Insured based on MHCC MCDB Enrollee data. Data reports the number of children enrolled in a private insurance and has drug coverage in CY 2010. Not all private insurance companies in MCDB report pharmacy data for enrollees with drug coverage.

In Table 2e, data on racial and ethnic identification is presented for children in Medicaid and the foster care system. Private health insurance carriers do not collect racial and ethnic data; therefore, comparisons are not available. In both the other groups presented below, on average, Caucasian children had the highest utilization rates. Caucasian foster children are over 2 times more likely to receive a psychotropic drug than Caucasian children in Medicaid. However, Black children in the foster care system are over 3 times more likely to receive psychotropic medication than their peers in the Medicaid program, while Asian/Native American/Pacific Islander children are more than six times more likely and Hispanic foster care children are over 7 times more likely to receive psychotropic medication than their peers in Medicaid.

Table 2e. Average Utilization Rate of Children Under the Age of 18 Receiving Psychotropic Medications by Race/Ethnicity, for Medicaid and Privately Insured, 2008-2010

Race/Ethnicity*	Medicaid	
	Medicaid Children (excluding foster children)	Foster Children
	Average	Average
Asian/ Native American/ Pacific Islander	3.78%	23.45%
Black	7.94%	28.32%
Caucasian	14.79%	37.09%
Hispanic	4.08%	29.72%
Unknown	5.83%	22.73%

*MHCC MCDB currently does not receive reporting of Race/Ethnicity from the payers for pharmacy data.

Table 2f shows the average utilization rates for females and males in each group. Once again, there were disparities in the rate of utilization between foster children and children who were in Medicaid or privately insured for both females and males. Additionally, there were also differences in the ratio of utilization between males and females who were in foster care compared to those in Medicaid. Although males in foster care received psychotropic medication at higher rates than females (as they did in the private insurance market and in Medicaid), females in foster care were prescribed psychotropic medications at a higher ratio to their female peers in Medicaid. Females were prescribed psychotropic drugs at a ratio of 3.65:1 for foster care to Medicaid, while males were prescribed these medications at a ratio of 3.25:1.

Table 2f. Average Utilization Rate of Children Under the Age of 18 Receiving Psychotropic Medications by Gender, for Medicaid and Privately Insured, 2008-2010

Gender	Medicaid		Privately Insured [1]
	Medicaid Children (excluding foster children)	Foster Children	
	Average	Average	Average
Female	6.81%	24.88%	5.37%
Male	10.91%	35.41%	8.36%

[1] Total Number of Privately Insured based on MHCC MCDB Enrollee data. Data reports the number of children enrolled in a private insurance and has drug coverage in CY 2010. Not all private insurance companies in MCDB report pharmacy data for enrollees with drug coverage.

Antipsychotic Medication Utilization

Analysis of antipsychotic medication utilization was included in this report because these drugs are in a therapeutic class that falls under the category of psychotropic medication. Analysis of antipsychotics was also included because this class is the focus of the Peer Review Program and can have significant side effects in pediatric populations, such as involuntary movements, obesity/metabolic side effects, and cardiovascular side effects. The Program evaluates the appropriateness of antipsychotic utilization in Medicaid children because approximately 75 percent of all Medicaid pediatric antipsychotic prescriptions are for "off-label" use (Kuehn, 2010). This section presents the total number of children in each eligibility category, the total number who received antipsychotic medications, and the utilization rate of antipsychotic medications, as well as tables presenting average rates based on age and gender differences. In Appendix II, data on overall yearly rates and age group and gender analysis are available.

In Table 3a, a similar pattern to psychotropic medication utilization emerges for antipsychotic medication use. Although antipsychotic medication use was somewhat higher in the Medicaid population than it was in the privately insured group, it was dramatically higher among foster children than in the other two groups. On average, children in foster care were seven times more likely to receive an antipsychotic medication than other children enrolled in Medicaid. The rate reported in the peer-reviewed literature was not much lower than the rate presented below.

Table 3a. Utilization of Children Under the Age of 18 Receiving Antipsychotic Medications, for Medicaid and Privately Insured, 2008-2010

Utilization Rate	Medicaid						Privately Insured [1]		
	Medicaid Children			Foster Children					
	Total Number of Medicaid Children (Excluding Foster Care Children)	Total Number of Medicaid Children Receiving Anti-psychotic Medications	Percent of Population Receiving Antipsychotic Medications	Total Number of Foster Care Children	Total Number of Foster Care Children Receiving Antipsychotic Medications	Percent of Foster Care Children Receiving Anti-psychotic Medications	Total Number of Privately Insured Children[1]	Total Number of Privately Insured Children Receiving Antipsychotic Medications	Percent of Privately Insured Population Receiving Anti-psychotic Medications
Average	531,300	10,422	1.96%	16,853	2,343	13.90%	533,159	3,417	0.64%
Rates Reported in Peer-Reviewed Literature			NA			11.8% [2]			NA

[1] Total Number of Privately Insured based on MHCC MCDB Enrollee data. Data reports the number of children enrolled in private insurance and has drug coverage in CY2010. Not all private insurance companies in MCDB report pharmacy data for enrollees with drug coverage.

[2] Rubin, D., Matone, M., Huang, Y.S., dosReis, S., Feudtner, C., & Localio, R. (2012). Interstate variation in trends of psychotropic medication use among Medicaid-enrolled children in foster care. Children and Youth Services Review, 34, 1492-1499.[8]

[8] Utilization rates based on Maryland data.

In Table 3b, antipsychotic medication use is analyzed by discreet age groups. Among the privately insured, very few children were reported as using antipsychotics, particularly in the younger age groups. Children in Medicaid were being prescribed antipsychotics more frequently than their privately insured peers, particularly between the ages of 5 to 9. Comparatively, foster children, even those under the age of 5, were being prescribed antipsychotics at much higher rates than children in the other groups. Foster children who were 10 to 17 years old were over 4.5 times more likely to receive antipsychotic medications than their peers in Medicaid, while foster children ages 5 to 9 years old were over 6 times more likely to be prescribed antipsychotic drugs. The largest difference between foster children and Medicaid children was actually in the youngest age group. Foster children under the age of 5 were over 21 times more likely to receive an antipsychotic prescription than other children in Medicaid.

Table 3b. Average Utilization Rate of Children Under the Age of 18 Receiving Antipsychotic Medications by Age Group, for Medicaid and Privately Insured, 2008-2010

Age Group	Medicaid		Privately Insured [1]
	Medicaid Children (excluding foster children)	Foster Children	
	Average	Average	Average
Less than 5 Years	0.09%	1.97%	Less than 1%
5 - 9 Years	1.82%	11.23%	0.38%
10 - 17 Years	4.21%	19.61%	1.14%

[1]Cells under 20 children are not reported.

Table 3c shows the average utilization rates of antipsychotic medications separated by gender. Like with psychotropic medications, males received antipsychotic medications at higher rates than females. However, as with psychotropic drugs, the ratio of foster children and Medicaid children receiving antipsychotics was higher among females. For females in foster care compared to Medicaid, the ratio was 8.47:1 that they would receive an antipsychotic medication, while for males, the ratio was 6.37:1.

Table 3c. Average Utilization Rate of Children Under the Age of 18 Receiving Antipsychotic Medications by Gender, for Medicaid and Privately Insured, 2008-2010

Gender	Medicaid		Privately Insured [1]
	Medicaid Children (excluding foster children)	Foster Children	
	Average	Average	Average
Female	1.31%	11.09%	0.45%
Male	2.60%	16.56%	0.82%

[1] Total Number of Privately Insured based on MHCC MCDB Enrollee data. Data reports the number of children enrolled in a private insurance and has drug coverage in CY 2010. Not all private insurance companies in MCDB report pharmacy data for enrollees with drug coverage.

What Maryland Medicaid Is Doing to Address the Use of Antipsychotic Medications in Children

Because the use of antipsychotic agents in children and adolescents has increased substantially over the past decade, the Maryland Medicaid Pharmacy Program (MMPP) established the Peer Review Program for Mental Health Medications to try to ensure that medications are being appropriately prescribed. There is greater public scrutiny, controversy, and debate regarding the increasing use of antipsychotic agents in children and the lack of data on long-term effects. The long-term efficacy and safety of these agents in the pediatric population has not been well-established for any given clinical indication.

The Peer Review Program for Mental Health Medications began in October 2011, and initially addressed the use of antipsychotics in Medicaid patients under five years of age. In partnership with the Mental Hygiene Administration (MHA) and the University of Maryland (UMD) Division of Child and Adolescent Psychiatry and School of Pharmacy, the program's goal is to ensure that members of this vulnerable population receive evidence-based treatment in concert with appropriate monitoring and non-pharmacologic measures in the safest manner possible. Effective July 31, 2012, the peer Review Program expanded to encompass children under the age of 10. The Peer Review Program consults with clinicians regarding the appropriate use and monitoring of antipsychotic medications. Claims for antipsychotic medications that are for recipients under the age of 10 require a Prior Authorization (PA) based on the peer review assessment.

The MMPP implemented a "hard" edit which prevents a claim for an antipsychotic drug from processing for all Medicaid-enrolled children under the age of 10. This edit occurs at the point of service. The pharmacy provider contacts the prescriber to inform him/her that the Program requires a peer review and consultation and, therefore, s/he will need to call the peer-review call center. The prescriber then contacts the call center, and upon completing the PA form, receives consultation from the call center and, ultimately, a decision related to the PA, either an approval or denial.

The MMPP's board-certified child psychiatrist oversees the peer-review project. Additionally, MMPP has contracted with UMD Division of Child and Adolescent Psychiatry and School of Pharmacy to provide call center services. UMD utilizes appropriate personnel (psychiatrists and pharmacists) to answer calls from the Medicaid prescribers who prescribe antipsychotic medications to children and provide timely clinical reviews of patient profiles to determine if the Program will approve or deny the claim. If there is a denial of the PA by the clinical pharmacist, then the reconsideration process is handled by the UMD's Child and Adolescent Psychiatrist. If there is a denial of the PA by UMD's clinical psychiatrist, then the reconsideration process is handled by the State's clinical psychiatrist.

What Other Organizations in Maryland Are Doing to Address the Psychotropic Medication Utilization in Foster Care Children

MATCH (Making All The Children Healthy) is a collaborative program with the Baltimore City Department of Social Services and Health Care Access Maryland (HCAM) that provides health care coordination and medical case management for Baltimore City children in

foster care. This program was launched in 2009 to ensure that these children get the health care services they need. As noted above, the majority of children in foster care reside in Baltimore City, which makes this program well-targeted.

The MATCH Program's goal is to assure that all of the medical needs of foster children are being met by increasing care coordination and simplifying the structure of the health and mental health care delivery system to ease access while maintaining and promoting continuity of care and a healthy home. The HCAM staff works closely with Baltimore City Department of Social Services (BCDSS) case workers, foster parents, private foster care agency staff, health care providers, and Medicaid programs. Services include coordination of the mandated comprehensive health assessment for all children newly entering foster care; medical case management by nurses for children with complex medical needs and medical case management by licensed social workers and a half time child psychiatrist for children with complex mental health needs; monitoring treatment of youth with mental health needs, including youth on multiple psychotropic medicines or determined high risk; coordination of health care for all children in foster care in Baltimore City, including assuring routine medical and dental exams are completed and maintaining medical records; and enrollment in Maryland Medical Assistance and annual redeterminations.

In addition to the MATCH Program, MHA, DHR, and the BCDSS are also monitoring psychotropic medications among foster children in Baltimore City. The Psychopharmacology Monitoring Database is an initiative by State leadership at MHA and DHR in collaboration with BCDSS to examine the use of psychotropic medication with children and youth in the Baltimore City child welfare system. The database combines mental health treatment claims data from MHA, psychotropic medication prescription data, and child welfare data. This initiative has been ongoing for the past two years as a result of successful collaboration among the State child-serving agencies, BCDSS, and faculty at the University of Maryland, Schools of Pharmacy, Medicine, and Social Work.

MHA and DHR are also working together in consultation with the University of Maryland School of Pharmacy, the Child Psychiatry Divisions in the University of Maryland, Johns Hopkins University School of Medicine, and the Maryland Coalition of Families for Children's Mental Health to standardize the consent for psychotropic medication process utilized by DHR and local departments of social services (DSS). This will include the development of training and materials on the appropriate use and side effects of psychotropic medications with children and youth for DSS staff, foster families, and parents.

Conclusion

Based on the data presented in this report, it is clear that foster children in Maryland received more psychotropic and antipsychotic medications than their peers in Medicaid and the commercial insurance market from 2008 to 2010. The utilization rate among foster care children was over three times greater than other children in Medicaid, which was on par with reported rates in the literature. On a per child basis, Medicaid paid over three times as much for foster children than for other children in Medicaid for all of their health care needs. Differences in residency, age, race/ethnicity, and gender were also present among all three groups and within the category of foster care children. The highest rates of psychotropic medication use occurred

among foster children who were ages 10 to 17, lived in Western Maryland, who identified as Caucasian, and who were male. There were greater discrepancies between other demographic groups in foster care when compared to children in Medicaid who received psychotropic medication.

Antipsychotic medication use was also much higher among foster care children than other children in Medicaid or privately insured children by more than a magnitude of seven. Major differences emerged for foster children when analyzing utilization based on age group. Foster children who were 10 to 17 years old were over 4.5 times more likely to receive antipsychotic medications than their peers in Medicaid, while foster children ages 5 to 9 years old were over six times more likely to be prescribed antipsychotic drugs, and foster children under the age of 5 were over 21 times more likely to receive an antipsychotic prescription than children in Medicaid. A disparity between genders was also evident. Although males were more likely to be prescribed antipsychotics, when comparing utilization between children in foster care and Medicaid, females were eight times more likely to receive this type of medication. Another difference emerged in medication utilization between Medicaid and foster children. In the foster care population, antipsychotic medications made up a larger portion of the drugs being prescribed than in the rest of the Medicaid population.

Despite these major differences in use between foster care children and children in Medicaid and the private insurance market, it is difficult to draw any conclusions about the appropriateness of psychotropic medication use in foster children. As noted in the GAO report and the literature review above, the higher medication usage may have been a result of greater prevalence of mental health problems in this population (United States Government Accountability Office, 2011). In this report, there was no examination of risk factors for increased medication use or the associated diagnoses that these children had. There was also no analysis of the utilization of other behavioral health interventions among foster care children.

It is also important to note that the data presented in this report was collected prior to the implementation of the Peer Review Program by the Maryland Medicaid Pharmacy Program. Because approximately 14 percent of foster care children are on antipsychotics compared to two percent of all other Medicaid children, foster care children are likely to reap many of the rewards of this program. The Department anticipates that the Peer Review Program will have beneficial effects on utilization rates of antipsychotic medications in the coming years as a result of provider education and reformed prescribing patterns. The Department will continue to monitor foster children's care utilization, work to reduce health disparities between this special population and other children in Maryland, and ensure that all children in Medicaid are receiving the appropriate psychotropic prescriptions.

References

dosReis, S., Zito, J. M., Safer, D. J., & Soeken, K. L. (2001). Mental Health Services for Youth in Foster Care and Disabled Youth. *Am. Journal of Public Health, 91*(7), 1094-1099.

Kuehn, B. M. (2010). Questionable Antipsychotic Prescribing Remains Common, Despite Serious Risks. *JAMA*, 1582-1584.

Leslie, L.K., Raghavan, R., Hurley, M., Zhang, J., Landsverk, J., & Aarons, G. (2011). Investigating geographic variation in use of psychotropic medications among youth in child welfare. *Child Abuse and Neglect, 35*, 333-342.

Raghavan, R., & McMillen, J. C. (2008). Use of Multiple Psychotropic Medcations Among Adolescents Aging Out of Foster Care. *Psychiatric Services, 59* (9), 1052-1055.

Raghavan, R., Lama, G., Kohl, P., & Hamilton, B. (2010). Interstate Variations in Psychotropic Medication Use Among a National Sample of Children in the Child Welfare System. *Child Maltreatment, 15* (2), 121-131.

Raghavan, R., Zima, B.T., Andersen, R.M., Leibowitz, A.A., Schuster, M.A., & Landsverk, J. (2005). Psychotropic Medicaiton Use in a National Probablility Sample of Children in the Child Welfare System. *Journal of Child and Adolescent Psychopharmacology,15*(1), 97-106.

Rubin, D. M., Feudtner, C., Localio, R., & Mandell, D. S. (2009). State Variation in Psychotropic Medication use by Foster Care Children with Autism Spectrum Disorder. *Pediatrics, 124* (2), 305-312.

Rubin, D., Matone, M., Huang, Y.S., dosReis, S., Feudtner, C., & Localio, R. (2012). Interstate variation in trends of psychotropic medication use among Medicaid-enrolled children in foster care. *Children and Youth Services Review, 34*, 1492-1499.

The Hilltop Institute. (2012). *Evaluation of the HealthChoice Program.*

Thomas, C. P., Conrad, P., Casler, R., & Goodman, E. (2006). Trends in the Use of Psychotropic Medications Among Adolescents, 1994 to 2001. *Psychiatric Services, 57* (1), 63-69.

United States Government Accountability Office. (2011). *Foster Children: HHS Guidance Could Help States Improve Oversight of Psychotropic Prescriptions.* Washington: GAO.

Zito, J. M., Safer, D. J., Sai, D., Gardner, J. F., Thomas, D., Coombes, P., et al. (2008). Psychotropic Medication Patterns Among Youth in Foster Care. *Pediatrics , 121* (1), 157-163.

Zito, J. M., Safer, D. J., Zuckerman, I. H., Gardner, J. F., & Soeken, K. (2005). Effect of Medicaid Eligibility Category on Racial Disparities in the Use of Psychotropic Medications Among Youths. *Psychiatric Services, 56* (2), 157-163.

Appendix I. Psychotropic Medication Utilization

Table Ia. Utilization Rate of Children Under the Age of 18 Receiving Psychotropic Medications, for Medicaid and Privately Insured, 2008-2010

Utilization Rate	Medicaid						Privately Insured [1]		
	Medicaid Children			Foster Children					
	Total Number of Medicaid Children (Excluding Foster Care Children)	Total Number of Medicaid Children Receiving Psychotropic Medications	Percent of Population Receiving Psychotropic Medications	Total Number of Foster Care Children	Total Number of Foster Care Children Receiving Psychotropic Medications	Percent of Foster Children Receiving Psychotropic Medications	Total Number of Privately Insured Children[1]	Total Number of Privately Insured Children Receiving Psychotropic Medications	Percent of Privately Insured Population Receiving Psychotropic Medications
2008	502,682	44,310	8.81%	17,507	5,215	29.79%	533,159	40,562	7.61%
2009	530,828	47,000	8.85%	16,769	5,091	30.36%	533,159	32,566	6.11%
2010	560,391	50,425	9.00%	16,282	5,003	30.73%	533,159	37,068	6.95%

[1] Total Number of Privately Insured based on MHCC MCDB Enrollee data. Data reports the number of children enrolled in a private insurance and has drug coverage in CY 2010. Not all private insurance companies in MCDB report pharmacy data for enrollees with drug coverage.

Table Ib. Utilization Rate of Children Under the Age of 18 Receiving Psychotropic Medications by Age Group, for Medicaid and Privately Insured, 2008-2010

Age Group	Medicaid						Privately Insured [1]		
	Medicaid Children			Foster Children					
	2008	2009	2010	2008	2009	2010	2008	2009	2010
Less than 5 Years	2.74%	2.72%	2.81%	6.40%	5.71%	5.60%	1.78%	1.32%	1.37%
5 - 9 Years	10.59%	10.50%	10.58%	30.70%	31.96%	30.96%	6.35%	4.88%	5.42%
10 - 17 Years	14.83%	14.87%	15.06%	38.58%	39.40%	40.09%	11.90%	9.62%	11.05%

[1] Total Number of Privately Insured based on MHCC MCDB Enrollee data. Data reports the number of children enrolled in a private insurance and has drug coverage in CY 2010. Not all private insurance companies in MCDB report pharmacy data for enrollees with drug coverage.

Table Ic. Utilization Rate of Children Under the Age of 18 Receiving Psychotropic Medications by Region of Residence, for Medicaid and Privately Insured

Area of Residence[2, 3]	Medicaid						Privately Insured [1]		
	Medicaid Children			Foster Children					
	2008	2009	2010	2008	2009	2010	2008	2009	2010
Baltimore City	8.55%	8.95%	9.25%	27.29%	27.54%	27.75%	8.06%	6.38%	6.91%
Baltimore Suburbs	9.90%	9.81%	9.91%	32.71%	34.39%	35.49%	8.25%	6.60%	6.90%
Eastern Shore	13.13%	13.38%	13.84%	37.71%	38.80%	38.83%	9.62%	7.74%	8.44%
Out of State	12.03%	11.26%	10.12%	Between 40-45%	Between 35-40%	Between 50-55%			
Southern Maryland	9.91%	9.84%	10.04%	29.88%	28.76%	28.64%	7.98%	6.31%	6.32%
Washington Suburbs	5.37%	5.27%	5.37%	27.09%	27.47%	27.50%	6.76%	5.48%	5.32%
Western Maryland	16.77%	17.37%	17.38%	43.79%	43.93%	45.15%	9.50%	7.02%	7.32%

[1]Cells under 20 children are not reported.

[2]Area of residence is reported by region due to low cell numbers for foster children. Region is based on county of residence. Each data set (MMIS2 and MCDB) contain a variable county; the assignment of county may not be uniform between data sets.

[3] Baltimore City: Baltimore City. Baltimore Suburbs: Anne Arundel, Baltimore, Carroll, Harford, and Howard Counties. Southern Maryland: Calvert, Charles, and St. Mary's Counties. Western Maryland: Allegany, Garrett, and Washington Counties. Eastern Shore: Caroline, Cecil, Dorchester, Kent, Queen Anne's, Somerset, Talbot, Wicomico, and Worcester Counties. Washington Suburbs: Frederick, Prince George's and Montgomery Counties.

Table Id. Utilization Rate of Children Under the Age of 18 Receiving Psychotropic Medications by Gender, for Medicaid and Privately Insured, 2008-2010

Gender	Medicaid						Privately Insured [1]		
	Medicaid Children			Foster Children					
	2008	2009	2010	2008	2009	2010	2008	2009	2010
Female	6.70%	6.78%	6.94%	24.59%	24.78%	25.26%	6.01%	4.74%	5.37%
Male	10.87%	10.87%	11.00%	34.69%	35.62%	35.93%	9.15%	7.43%	8.48%

[1] Total Number of Privately Insured based on MHCC MCDB Enrollee data. Data reports the number of children enrolled in a private insurance and has drug coverage in CY 2010. Not all private insurance companies in MCDB report pharmacy data for enrollees with drug coverage.

Appendix II. Antipsychotic Medication Utilization

Table IIa. Utilization Rate of Children Under the Age of 18 Receiving Anti-psychotic Medications, for Medicaid and Privately Insured, 2008-2010

Utilization Rate	Medicaid						Privately Insured [1]		
	Medicaid Children			Foster Children					
	Total Number of Medicaid Children (Excluding Foster Care Children)	Total Number of Medicaid Children Receiving Anti-psychotic Medications	Percent of Population Receiving Antipsychotic Medications	Total Number of Foster Care Children	Total Number of Foster Care Children Receiving Antipsychotic Medications	Percent of Foster Children Receiving Antipsychotic Medications	Total Number of Privately Insured Children[1]	Total Number of Privately Insured Children Receiving Antipsychotic Medications	Percent of Privately Insured Population Receiving Antipsychotic Medications
2008	502,682	10,527	2.09%	17,507	2,434	13.90%	533,159	3,861	0.72%
2009	530,828	10,551	1.99%	16,769	2,356	14.05%	533,159	3,033	0.57%
2010	560,391	10,187	1.82%	16,282	2,238	13.75%	533,159	3,358	0.63%

[1] Total Number of Privately Insured based on MHCC MCDB Enrollee data. Data reports the number of children enrolled in a private insurance and has drug coverage in CY2010. Not all private insurance companies in MCDB report pharmacy data for enrollees with drug coverage.

Table IIb. Utilization Rate of Children Under the Age of 18 Receiving Antipsychotic Medications by Age Group, for Medicaid and Privately Insured, 2008-2010

Age Group	Medicaid						Privately Insured [1]		
	Medicaid Children			Foster Children					
	2008	2009	2010	2008	2009	2010	2008	2009	2010
Less than 5 Years	0.10%	0.09%	0.09%	2.14%	1.87%	1.91%	Less than 1%	Less than 1%	Less than 1%
5 - 9 Years	2.02%	1.79%	1.64%	11.51%	11.53%	10.65%	0.44%	0.32%	0.37%
10 - 17 Years	4.45%	4.28%	3.89%	19.46%	19.91%	19.47%	1.28%	1.01%	1.12%

[1]Cells under 20 children are not reported.

Table IIc. Utilization Rate of Children Under the Age of 18 Receiving Antipsychotic Medications by Gender, for Medicaid and Privately Insured

Gender	Medicaid						Privately Insured [1]		
	Medicaid Children			Foster Children					
	2008	2009	2010	2008	2009	2010	2008	2009	2010
Female	1.37%	1.33%	1.23%	11.18%	11.12%	10.96%	0.51%	0.40%	0.44%
Male	2.80%	2.63%	2.39%	16.47%	16.81%	16.40%	0.93%	0.73%	0.81%

[1] Total Number of Privately Insured based on MHCC MCDB Enrollee data. Data reports the number of children enrolled in a private insurance and has drug coverage in CY 2010. Not all private insurance companies in MCDB report pharmacy data for enrollees with drug coverage.

Appendix III. Maryland Medicaid Mental Health Formulary[9]

Effective July 1, 2011. Listed in the following pages are mental health drugs that are carved out of the managed care organization (MCO) pharmacy benefit. Some of these drugs are subject to prior authorization requirements of the Preferred Drug List. Refer to http://mmcp.dhmh.maryland.gov/pap/SitePages/paphome.aspx for a complete listing of all drugs subject to preferred drug list requirements.

All drugs from American Hospital Formulary Service (AHFS) therapeutic classes included in the Mental Health Formulary, including specific drugs that may not be listed below, are carved out of the MCO pharmacy benefit and are payable as fee-for-service (FFS) through Maryland Medical Assistance, *unless otherwise noted.*

The following seven drugs, which may be used for some mental health indications, are not payable FFS (unless otherwise noted) and are the responsibility of the HealthChoice MCOs for their enrollees, regardless of the prescriber.

*When leuprolide acetate or medroxyprogesterone are used for the treatment of adult males with certain diagnosed behavioral disorders, these two drugs will be paid FFS but will require preauthorization (PA) through the University of Maryland School of Pharmacy CAMP program at 410-706-3431.

Leuprolide acetate*	Naltrexone	Liothyronine
Clonidine**	Medroxyprogesterone*	Disulfiram
Guanfacine**		

** Generic guanfacine (Tenex) and clonidine (Catapres) remain drugs for which coverage is the responsibility of the member's MCO. For recipients aged 6 to 17 years, the extended release form of guanfacine (Intuniv) and clonidine (Kapvay) will be added to the mental health formulary and be billed FFS. For individuals not in this age range, Intuniv and Kapvay will continue to be part of the MCO pharmacy benefit.

Please note: In the table below, brand drugs that currently do not have a generic equivalent are listed by brand name in italics. Those drugs currently available generically are listed by generic name. All brand drugs, which are available as multi-source generics, require prior approval and completion of a Maryland Medwatch Form unless otherwise noted on the Maryland Medicaid Preferred Drug List.

[9] Maryland Medicaid Pharmacy Program. (2011, July). *Maryland Medicaid mental health formulary.* Retrieved from http://www.mdmahealthchoicerx.com/healthchoice_docs/mmmh_form.pdf.

.

Table III. Maryland Medicaid Psychotropic Formulary

Therapeutic Class	Drug
Central Alpha-Agonist AHFS Class No. 240816	*Kapvay* Kapvay is the only drug carved out fee-for-service (for recipients 6 – 17 years old) in this AHFS drug class
Benzodiazepines (Anticonvulsants) AHFS Class No. 281208	clonazepam Onfi
Miscellaneous Anticonvulsants AHFS Class No. 281292	topiramate *Banzel* carbamazepine carbamazepine XR *Felbatol* gabapentin *Gabitril* *Keppra XR* lamotrigine levetiracetam *Lyrica* oxcarbazepine *Sabril* *Stavzor* valproate/divalproex valproate/divalproex ER *Vimpat* zonisamide
Antidepressants AHFS Class No. 281604	amitriptyline amoxapine *Aplenzin* bupropion bupropion SR bupropion XL citalopram clomipramine *Cymbalta* - Clinical criteria apply see http://mmcp.dhmh.maryland.gov/pap/SitePages/paphome.aspx desipramine doxepin *Effexor XR* escitalopram fluoxetine fluvoxamine imipramine *Luvox CR* maprotiline *Marplan* mirtazapine

Therapeutic Class	Drug
	mirtazapine Soltab nefazodone nortriptyline *Oleptro* *Parnate* paroxetine *Paxil CR* *Pexeva* phenelzine *Pristiq* protriptyline *Prozac Weekly* *Sarafem* sertraline *Silenor* *Surmontil* *Symbyax* trazodone venlafaxine venlafaxine ER *Viibryd*
Antipsychotic Agents AHFS Class No. 281608	*Abilify* - Clinical criteria apply see http://mmcp.dhmh.maryland.gov/pap/SitePages/paphome.aspx chlorpromazine clozapine *Fanapt* *FazaClo* fluphenazine haloperidol *Invega* *Invega Sustenna* Loxapine *Latuda* *Moban* olanzapine *Orap* Perphenazine quetiapine risperidone *Risperdal Consta* *Risperdal M-Tab* *Saphris* *Seroquel XR* *Symbyax* thioridazine thiothixene

Therapeutic Class	Drug
	trifluoperazine ziprasidone *Zyprexa Relprevv* - Clinical criteria apply see http://mmcp.dhmh.maryland.gov/pap/SitePages/paphome.aspx *Zyprexa Zydi s* - Clinical criteria apply see http://mmcp.dhmh.maryland.gov/pap/SitePages/paphome.aspx
Amphetamines AHFS Class No. 282004	amphetamine *Desoxyn* dextroamphetamine dextroamphetamine/amphetamine dextroamphetamine/amphetamine XR methamphetamine *ProCentra* *Vyvanse*
Anorexigenic Agents and Respiratory and Cerebral Stimulants (Anorexigenic Agents are not covered) AHFS Class No. 282092	*Concerta* *Daytrana* dexmethylphenidate *Focalin XR* *Metadate CD* methylphenidate methylphenidate ER *Nuvigil* *Provigil* *Ritalin LA*
Anxiolytics, Sedatives and Hypnotics – Benzodiazepines AHFS Class No. 282408	alprazolam chlordiazepoxide clorazepate *Diastat* diazepam *Doral* estazolam flurazepam lorazepam midazolam oxazepam temazepam triazolam
Miscellaneous Anxiolytics, Sedatives and Hypnotics AHFS Class No.282492	buspirone chloral hydrate droperidol hydroxyzine *Intermezzo* *Lunesta* meprobamate *Rozerem* zaleplon

Therapeutic Class	Drug
	zolpidem zolpidem CR *Zolpimist*
Antimanic Agents AHFS Class No. 282800	lithium
Anticholinergic Agents AHFS Class No. 283608	benztropine trihexyphenidyl
MAO Inhibitors AHFS Class No. 283632	*Emsam* Emsam is the only drug carved out fee-for-service in this AHFS drug class
Central Nervous Systems Agents Misc. AHFS Class No. 289200	*Intuniv* *Strattera* – Clinical criteria apply see http://mmcp.dhmh.maryland.gov/pap/SitePages/paphome.aspx Intuniv (for recipients 6 – 17 years old) and Strattera are the only drugs carved out fee-for-service in this AHFS drug class.