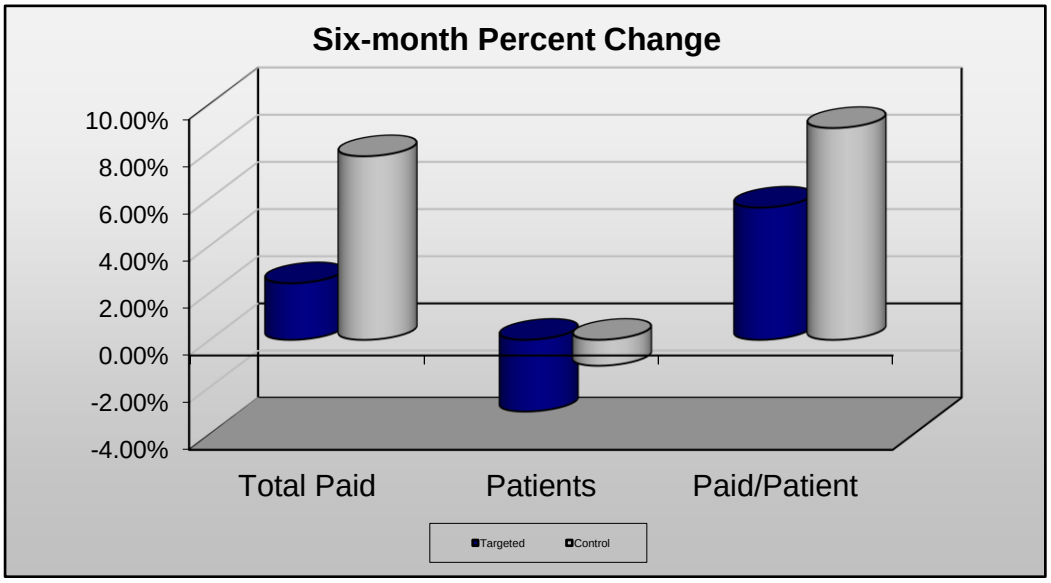
Attention-Deficit/Hyperactivity Disorder Medication Management

Prepared for Texas Medicaid in December 2022

EXECUTIVE SUMMARY

Purpose of Intervention	To promote the safe use and prescribing of medications for treatment of attention-deficit/hyperactivity disorder (ADHD).

Intervention	Intervention Type	Population-based mailing
	Intervention Mailing Date	Feb 17, 2022
	Pre-intervention Period (Baseline)	Sept 2021 – Feb 2022
	Post-intervention Period (Post)	Apr 2022 – Sept 2022
	Number of Letters Mailed	160
	Number of Targeted Physicians	171



Savings Calculation

State Cost Savings Calculation:	
Targeted Group: Actual ADHD Management Drugs Average Cost Per Patient Per Month (Pre)	$172.15
% Change in Control Group from Pre to Post	8.98%
Estimated ADHD Management Drugs Paid Amount Per Targeted Patient Per Month if No Intervention	$187.61
Targeted Group: ADHD Management Drugs Cost Per Patient Per Month (Post)	$181.80
Estimated Cost Savings Per Patient Per Month	$5.81
Total Number of Targeted Panel Patients Served in Post Period	50,787
6-Month Total Savings	$295,072.47
6-Month State General Revenue Funds Savings	$118,058.50
12-Month Total State Savings	$236,117.00

BACKGROUND

ADHD is one of the most common childhood neurobehavioral disorders. In community samples, it has a reported prevalence rate of 8.7% to 15.5% in school age children, and rates continue to increase.[1,2] ADHD can affect all aspects of a child's life and it is estimated one-third of children diagnosed with ADHD continue to be affected by symptoms into adulthood.[2] The mainstay of treatment in both children and adults is pharmacologic therapy based on its efficacy in controlling symptoms, most commonly with stimulants, however, non-stimulant medications are available for use as alternative or combination therapy.[1-3] Recent data indicates two-thirds of children and adolescents use medications to control their ADHD symptoms.[2] While stimulants are effective in controlling ADHD symptoms, their benefits should be balanced with the potential for adverse effects and misuse.[1,3,4]

Indicator #1: ADHD Medication Use without Indication

Use of ADHD medications only for their respective FDA-approved indications will help ensure safe and effective utilization. Current guidelines do not recommend the use of ADHD medications in patients that do not meet the Diagnostic and Statistical Manual of Mental Disorders, 5th edition (DSM-5) criteria for diagnosis, but instead recommend the use of psychosocial treatments.[1] Additionally, over-prescribing of ADHD medications can be problematic and increase risk of misuse and diversion.[1,3,4]

Candidates (denominator):	Patients ≥19 years of age receiving therapy with an ADHD medication (Appendix) in the last 45 days.
Exception Criteria (numerator):	Candidates without a diagnosis of ADHD (submitted ICD-10 codes) in the last 2 years. Exclusions: • Candidates taking mixed amphetamine salts IR, dextroamphetamine sulfate IR/ER, or methylphenidate IR/ER with a history of narcolepsy in the last 2 years. • Candidates taking lisdexamfetamine with a history of binge eating disorder in the last 2 years.

Indicator #2: Duplicate Therapy with Stimulants

Stimulants have a high potential for abuse. While most individuals who need these medications to control their ADHD symptoms use them appropriately, overutilization has become a growing concern.[1,3,4] Additionally, use of more than one stimulant medication is not generally recognized as synergistic and may increase the risk of adverse effects.

Candidates (denominator):	All patients with a diagnosis of ADHD (submitted ICD-10 codes) with a claim for a stimulant (Appendix) in the last 60 days.
Exception Criteria (numerator):	Candidates with at least two different stimulants with > 35 days of overlapping therapy in the last 60 days from: • 1 prescriber • > 1 prescriber

Exclusion: Patients receiving an IR and ER product of the same medication.

Indicator #3: Multiple Prescribers of Stimulants-Informational

Stimulants have a high potential for abuse. Individuals who visit multiple providers and/or receive multiple stimulant products may be obtaining medications for reasons other than therapeutic purposes. Minimizing overutilization of stimulants may help prevent misuse and diversion.[1,3,4]

Candidates (denominator): All patients with a diagnosis of ADHD (submitted ICD-10 codes) with a claim for a stimulant (Appendix) in the last 60 days.

Exception Criteria (numerator): Candidates with stimulants prescribed by 2 or more prescribers.

Indicator #4: Risk of Suicidal Ideation with Selective Norepinephrine Reuptake Inhibitors in Youth

Selective norepinephrine reuptake inhibitor (i.e., atomoxetine and viloxazine) use has been associated with an increased risk of suicidal ideation in short-term studies in children and adolescents with ADHD. Official prescribing information for atomoxetine and viloxazine contain boxed warnings regarding increased risk of suicidal thoughts and behavior in pediatric and adolescent patients.[5,6] It is recommended that patients taking these medications be closely monitored for clinical worsening and/or the emergence of suicidal thoughts and behaviors, especially during the initiation of therapy and during dosage changes.[5,6] Clinicians should balance this risk with the clinical need for these medications.

Candidates (denominator): All patients < 18 years of age with a diagnosis of ADHD (submitted ICD-10 codes) in the last 2 years receiving atomoxetine or viloxazine therapy in the last 45 days.

Exception Criteria (numerator): Candidates who have a history of suicide attempts, severe major depression, or bipolar disorder in the last 2 years.

Indicator #5: Nonadherence with Non-Stimulant ADHD Medications

ADHD is a chronic medical condition and treatment with medication has been shown to improve patient symptoms and clinical outcomes. Despite these improvements, medication nonadherence and/or discontinuation are still reported by patients with ADHD because of medication-related adverse effects and/or lack of perceived effectiveness.[7] Continued therapy is important for patients to realize successful clinical outcomes. This is especially important for non-stimulant medications which are intended for daily use and unlike stimulants, may take several weeks for full clinical benefit to be realized.[8]

Candidates (denominator): All patients with a history ADHD (submitted ICD-10 codes) in the last 2 years receiving therapy with a non-stimulant medication (Appendix) in the most recent 45 days and 90 to 135 days ago (identifies chronic therapy).

Exception Criteria (numerator):	Candidates who received less than a 60-day supply of the non-stimulant ADHD medication during the last 90-day period. Exclusion: Patients that are currently pregnant.

METHODOLOGY

In February 2022, all physicians treating patients with any of the aforementioned drug-related problems were identified. Based on the distribution of patients/physician, the minimum patient/month threshold was set at one or more patients (i.e., physicians with one or more patients having a drug-related problem received the mailing). Providers were mailed the intervention materials on February 17, 2022.

Operational definitions:

Targeted Group – physicians treating one or more patients with any of the aforementioned drug-related problem(s) and who received mailed intervention materials *(Section 1.e.1.A Exhibit A of the Agreed Modifications to the RFP and Contractor Proposal).*

Control Group - physicians treating patients taking an ADHD drug but did not receive mailed intervention materials *(Section 1.e.1.A Exhibit A of the Agreed Modifications to the RFP and Contractor Proposal).*

Intervention Drugs – ADHD drugs

Pre-Intervention Time Period – September 2021 through February 2022

Post-Intervention Time Period – April 2022 through September 2022

6-month Total Paid – total drug costs can be defined as the total amount of paid ADHD drug claims for the above time periods for the prescribers in the control and target groups. The target group consisted of those prescribers who had prescribed ADHD drug therapy to Medicaid patients and received intervention materials. The control group consisted of all other prescribers who prescribed ADHD drug therapy agents in the designated time periods *(Sections 1.e.1. and 1.e.2 Exhibit A of the Agreed Modifications to the RFP and Contractor Proposal).*

Average Number of Panel Patients per Month - during the 6-month pre and post time periods, the number of unique Medicaid patients with a drug claim submitted using a respective provider number was captured each month. Medicaid patients that did not have a drug claim were not counted in the prescriber's panel. The monthly numbers were totaled then divided by six to calculate the monthly average. For example, in Table 1, the physician (with provider number AB123456) had an average of 12 patients with at least one drug claim per month. If a patient had two different claims in June, they would be counted as one patient. By evaluating all patients seen by a specific physician, changes in prescribing patterns can be evaluated on existing and new patients *(Sections 1.e.1. and 1.e.2 Exhibit A of the Agreed Modifications to the RFP and Contractor Proposal).*

Table 1: Average Number of Panel Patients per Month

Provider Number	Month #	Number of Unique Patients with a Drug Claim
AB123456	1	10
	2	10
	3	10
	4	12
	5	13
	6	17
Total		72
Average Number of Panel Patients per Month		12

Average Cost/Patient per Month – this was calculated by dividing the total dollars paid for drug claims during the analysis time period by the total number of Medicaid panel patients during the respective time period. For example, in the targeted group post analysis; there were 50,787 patients who had a drug claim during the six-month review period. The total amount of dollars paid for drug claims for these patients during the post analysis was $9,233,210. Dividing these two numbers ($9,233,210/50,787) yields an average cost per patient of $181.80 *(Sections 1.e.1. and 1.e.2 Exhibit A of the Agreed Modifications to the RFP and Contractor Proposal).*

$$\text{Average Cost/Patient/per Month} = \frac{\text{6-month Total Amount Paid for ADHD Drugs}}{\text{Average number of Panel Patients per Month}} / \text{(\# Months)}$$

Total State Savings *(Sections 1.e.3 and 1.e.4 Exhibit A of the Agreed Modifications to the RFP and Contractor Proposal)***:**

- Intervention Average Cost Savings per Month - the percent change seen in the control group was applied to the intervention group baseline Average Cost per Patient per Month. This amount represents the estimated Amount Paid per Targeted Physician per Patient in the absence of the intervention (i.e., Estimated Paid Amount). The Estimated Paid Amount per Patient per Month was then subtracted from the actual Intervention Target Group Average Cost per Patient per Month to estimate the Average Cost Savings per Patient per Month.
- 6-Month Total Savings - the Intervention Average Cost Savings per Patient per Month was multiplied by the total number of targeted patients served over the 6-month time frame.
- 6-Month State General Revenue Funds Savings= 6-Month Total State Savings X 0.4001.
- Total State Savings = 6-Month State General Revenue Funds Savings X 2.

RESULTS

Population-based intervention

A total of 171 physicians were targeted, and 11 letters were removed due to incomplete addresses. A total of 160 physicians received intervention materials. Table 2 compares the 6-month total amount paid for ADHD drugs, the total number of patients in each physician's panel per month, and the average cost per patient for the targeted and control groups during the six-month pre and post periods. When comparing the pre-Average Cost per Patient per Month between the targeted and control groups, the cost was approximately $11 higher for the targeted group. This difference may be due to such factors as the targeted group having more patients prescribed ADHD drugs per physician or that associated average ADHD drug costs are inherently higher in the targeted group.

The target group saw a 2.40% increase in the amount paid for intervention-related drugs while the control group saw a 7.78% increase. Additionally, the average number of monthly patients for the physician's panel decreased 3.04% for the target group and decreased 1.10% for the control group. To control for changes in case load variance (i.e., the change in the number of panel patients) between the two groups, the average cost per patient was also calculated. Total amount paid and number of panel patient trends led to a 5.61% increase in average cost per patient per month in the targeted group and an 8.98% increase for the control group.

Table 2: Six-Month Trends for Overall Targeted vs Control Group

Group	ADHD Management Drugs -- Six Months Total Paid Pre/Post			Average Number of Panel Patients per Month			ADHD Management Drugs Average Cost per Patient per Month		
	Pre	Post	Change	Pre	Post	Change	Pre	Post	Change
Targeted	$9,017,127	$9,233,210	2.40%	8,730	8,465	-3.04%	$172.15	$181.80	5.61%
Control	$77,576,920	$83,614,908	7.78%	80,466	79,583	-1.10%	$160.68	$175.11	8.98%

Table 3 shows the Intervention Average Cost Savings per Patient per Month and the savings calculations. Had the intervention not been mailed, the targeted pre average cost per patient per month would have increased 8.98% from $172.15 to $187.61. The net difference between the actual and estimated average cost/patient for the targeted group was $5.81. Based on 50,787 targeted patients served per month during the six-month post period, the six-month Total Savings and Total State Savings were $295,072.47 and $118,058.50 respectively. Over a twelve-month period, the Total State Savings was $236,117.00.

Table 3: Overall Intervention Average Cost Savings

State Cost Savings Calculation:	
Targeted Group: Actual ADHD Management Drugs Average Cost Per Patient Per Month (Pre)	$172.15
% Change in Control Group from Pre to Post	8.98%
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Table 4 shows the changes in the clinical indicators based on the intervention. The overall change in indicators is a decrease of 27.7%.

Table 4: Overall Intervention Changes in Clinical Indicators

Clinical Indicators	Baseline	Sept-2022	% Change
ADHD Medication with No Indication in Adults	93	67	-28.0%
Duplicate Therapy with Stimulants	3	2	-33.3%
Multiple Prescribers of Stimulants	12	8	-33.3%
Risk of Suicidal Ideation with Selective Norepinephrine Reuptake Inhibitors in Youth	11	8	-27.3%
Nonadherence with Maintenance ADHD Medication	72	53	-26.4%
Total	191	138	-27.7%

CONCLUSIONS

This population-based intervention was successful in encouraging appropriate use of drug therapy for patients with ADHD and providing prescribers with educational tools to better communicate with their patients' issues regarding appropriate treatment. This resulted in an economic impact on Texas Medicaid's pharmacy program expenditures, with a calculated twelve-month overall savings of $590,144.94 and savings to the State of $236,117.00 and a decrease in clinical indicators of 27.7%.

REFERENCES

1. Wolraich ML, Hagan JF, Allen C, et al. American Academy of Pediatrics Subcommittee on Children and Adolescents with Attention-Deficit/Hyperactivity Disorder. Clinical Practice Guideline for the Diagnosis, Evaluation, and Treatment of Attention-Deficit/Hyperactivity Disorder in Children and Adolescents. Pediatrics. 2019;144(4):e20192528. Available at: https://pediatrics.aappublications.org/content/144/4/e20192528. Accessed August 27, 2021.
2. National Institute of Mental Health. Attention-Deficit/Hyperactivity Disorder (ADHD). Available at: https://www.nimh.nih.gov/health/statistics/attention-deficithyperactivity-disorder-adhd. Accessed August 27, 2021.
3. Post RE, Kurlansik SL. Diagnosis and management of attention-deficit/hyperactivity disorder in adults. Am Fam Physician. 2012;85(9):890-896. Available at: https://www.aafp.org/afp/2012/0501/p890.html. Accessed August 27, 2021.
4. Harstad E, Levy S and Committee on Substance Abuse. Attention-Deficit/Hyperactivity Disorder and Substance Abuse. Pediatrics 2014;134;e293. Published online June 30, 2014. doi:10.1542/peds.2014-0992. Available at: https://pediatrics.aappublications.org/content/pediatrics/134/1/e293.full.pdf. Accessed September 2, 2021.
5. Strattera® (atomoxetine) [package insert]. Indianapolis, IN: Eli Lilly and Company; February 2021.
6. Qelbree™ (viloxazine extended-release) [package insert]. Rockville, MD: Supernus Pharmaceuticals, Inc; April 2021.
7. Charach A, Ferdandez R. Enhancing ADHD medication adherence: challenges and opportunities. Curr Psychiatry Rep. 2013;15:371. Published online May 28, 2013. doi:org/10.1007/s11920-013-0371-6.
8. Briars L, Todd T. A review of pharmacological management of attention-deficit/hyperactivity disorder. J Pediatr Pharmacol Ther. 2016;21(3):192–206.
9. Drugs@FDA: FDA Approved Drug Products. U.S. Food & Drug Administration website. Available at: https://www.accessdata.fda.gov/scripts/cder/daf/index.cfm Accessed August 27, 2021.
10. Level 1 Drug-Drug Interactions and Drug-Disease Contraindications. First Databank, Inc., San Francisco, CA.

Appendix

ADHD Medications

Stimulant	Non-Stimulant
• Amphetamine base products • Amphetamine mixed salt products • Amphetamine sulfate • Dexmethylphenidate products • Dextroamphetamine products • Lisdexamfetamine products • Methylphenidate products	• Atomoxetine • Clonidine extended release • Guanfacine extended release • Viloxazine