Characterization of Stimulant Utilization in a State Medicaid Population

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INTRODUCTION

- Prescription stimulants are commonly used for the treatment of attention-deficit/hyperactivity disorder (ADHD), narcolepsy, and excessive daytime sleepiness (EDS) in children and adults.
- Short-acting (SA) and long-acting (LA) formulations of amphetamines, amphetamine derivatives, and methylphenidate are available.
- Annually, approximately 16 million adults and 2.8 million children in the United States use stimulants.[1] Specifically, Massachusetts has been reported to have a high utilization of prescription stimulants.[2]
- High-dose stimulant use is not necessarily indicative of abuse or diversion; however, multiple units may be required to obtain higher doses. Higher unit counts could be associated with a risk of diversion.
- The clinical literature indicates SA formulations are more commonly abused than LA formulations, with the highest proportion of misuse among young adults.[1]

OBJECTIVE

Primary Objective:

To assess the utilization of stimulants on a per-member basis, accounting for average daily doses and monthly units dispensed, in the Massachusetts Medicaid (MassHealth) Fee-For-Service (FFS), Primary Care Clinician (PCC), and Primary Care Accountable Care Organization (ACO-B) populations

METHODS

- Members enrolled in the MassHealth FFS, PCC, and ACO-B plans with ≥1 paid pharmacy claim for a SA or LA stimulant from September 1, 2020 to August 31, 2021 were included.
- Members were excluded if they were enrolled in a third-party liability (TPL) plan.
- Primary endpoints were adjusted for MassHealth enrollment and included the following:
  - Proportion of members utilizing stimulants, stratified by age and formulation
  - Average dose per claim
- Secondary analyses evaluated the following:
  - Monthly trends of the units dispensed
  - Average cumulative daily dose (SA and LA formulations) per member
  - Monthly trends in the average dose per claim
- A high-dose (HD), defined as ≥60 mg per claim, analysis evaluated:
  - The proportion of members with an average daily dose per claim above the threshold (HD cohort)
  - The percentage of the HD cohort with a diagnosis of ADHD, narcolepsy, and/or EDS

DISCLOSURES/ACKNOWLEDGMENTS

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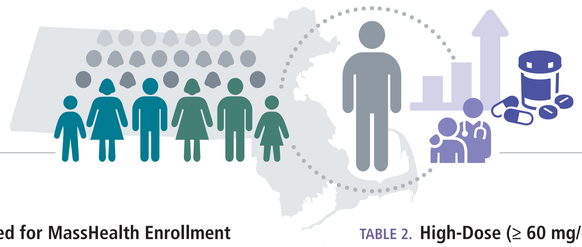
[3] Centers for Medicare and Medicaid Services. Stimulant and Related Medications: U.S. Food and Drug Administration-Approved Indications and Dosages for Use. Available from: https://www.cms.gov/Medicare-Medicaid-Coordination/Fraud-Prevention/Medicaid-Integrity-Program/Education/Pharmacy-Toolkits.

RESULTS

- **A total of 32,840 members had ≥1 claim for a stimulant, which comprised approximately 4.16% of the MassHealth population during the study timeframe.**



- **The mean (range) daily dose per claim was 31.61 mg (0.83–900 mg), whereas the mean (range) average cumulative daily dose (SA and LA formulations) per member was 33.88 mg (1.25–203.57 mg).**

Primary Outcomes

TABLE 1. **Stimulant Utilization Adjusted for MassHealth Enrollment**

Endpoint		Mean (Range)*
Unique Utilizers Per Month	Overall	23.07 (21.40–24.55)
	<18 years of age	26.30 (21.94–29.15)
	≥18 years of age	21.48 (20.78–22.31)
Total Quantity Units Per Month	Overall	1,231.06 (1,161.39–1,332.76)
	<18 years of age	1,193.99 (994.98–1,335.65)
	≥18 years of age	1,248.89 (1,165.18–1,313.67)
	Short-Acting Stimulants	661.13 (628.43–705.67)
	Long-Acting Stimulants	569.93 (527.35–627.09)
Average Dose (mg/day) Per Month		0.040 (0.037–0.043)

*Per 1,000 members

TABLE 2. **High-Dose (≥ 60 mg/claim) Cohort Analysis**

Endpoint	Value (Percent)*
Total Stimulant Claims	277,806
Claims Meeting HD Cohort Criteria	48,257 (17%)
Unique Utilizers of Stimulants	23.07*
Unique Utilizers Meeting HD Cohort Criteria	7.14 (31%)*
ADHD	2.79 (39%)*†
Narcolepsy	0.04 (1%)*†
EDS	0.09 (1%)*†
<18 years of age	0.75 (11%)*
≥18 years of age	6.38 (89%)*

*Per 1,000 members †Members may have had more than one diagnoses of ADHD, narcolepsy, or EDS

FIGURE 1. **Distribution of Formulation By Age**

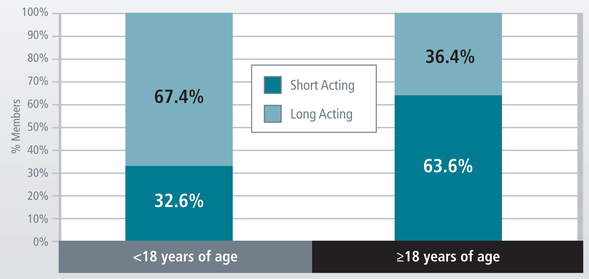


FIGURE 2. **Monthly Trends of Units Dispensed**

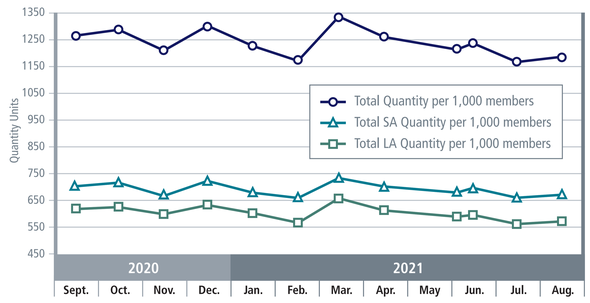


FIGURE 3. **Average Cumulative Daily Dose Per Member**

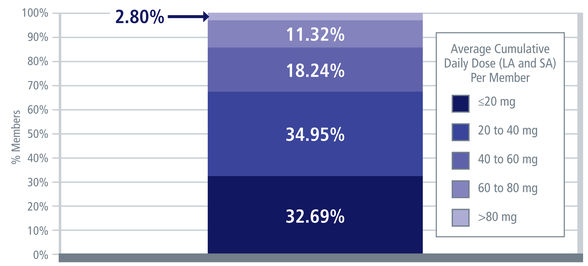
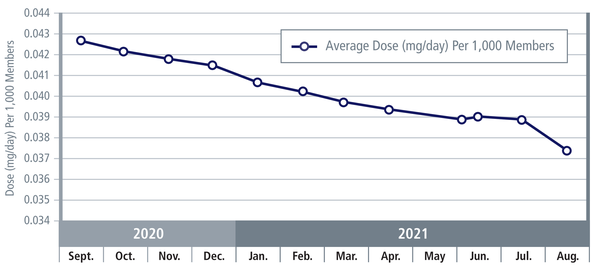


FIGURE 4. **Monthly Trends in Average Dose Per Claim**



DISCUSSION

- For this state Medicaid program, the diagnoses for stimulant use are not available from claims data alone; however, the average cumulative daily dose (33.88 mg) per member was below the FDA-approved maximum dosing for ADHD and narcolepsy.
- Doses ≥60 mg daily may be appropriate in narcolepsy.[3] Given the rarity of a narcolepsy diagnosis code in claims (Table 2), it is unlikely that most patients with doses ≥60 mg daily were using stimulants consistent with the FDA labeling.
- Among members <18 years of age, LA stimulants were more common than SA stimulants (Figure 1), aligning with the established literature and preferences of LA formulations with the lasting effects during the school day.[1]
- In members who use SA stimulants several times a day, best practice would support conversion to a LA stimulant. Opportunities to ensure appropriate SA stimulant use in adults should be evaluated given the associated risks of misuse and abuse.[1]
- There was a higher proportion of members with average cumulative daily doses (Figure 3) above thresholds than claims with doses above thresholds, suggesting that cumulative per-member utilization should be considered in management strategies since there is limited data to support high doses.

LIMITATIONS

- Overall utilization was not stratified by individual drug; thus, it was not possible to assess whether the utilization of a single stimulant changed in proportion to overall stimulant utilization.
- The maximum daily dose threshold was not evaluated on an individual drug level to determine whether a particular agent was more likely to be utilized/prescribed at higher doses.
- The maximum daily dose threshold set at 60 mg was an average estimate for all stimulants and formulations. Higher doses may be necessary based on provider evaluation to achieve desired clinical outcomes.
- This study excluded any TPL, thus overall utilization may have been underestimated. Additionally, only paid pharmacy claims were included, so members who may have paid for a prescription out of pocket were not assessed.
- The timeframe analyzed occurred during the COVID-19 pandemic and utilization of stimulants may have been impacted by changes in lifestyle, remote school or work, and isolation requirements.

CONCLUSIONS

- The overall utilization of stimulants in the MassHealth population demonstrated that the average daily dose was below FDA maximum dose thresholds; however, approximately 15% of members exceeded this threshold during the evaluated time frame.

FUTURE STUDIES

- Future studies should investigate provider specialties for outreach opportunities as well as utilization pre- and post- the COVID-19 pandemic.
- Further opportunities to manage class utilization and minimize SA formulation use among the adult population is recommended.