

Drug Use Evaluation: Off-label ADHD drugs and the impact on healthcare resource utilization (Part 1)

Plain Language Summary:

- Medicines that the Food and Drug Administration (FDA) approved treatment of attention deficit hyperactivity disorder (ADHD) have been studied for many other conditions. These medicines may also help improve symptoms for people with:
 - movement disorders (i.e., tics),
 - autism,
 - learning disabilities,
 - disruptive behavior, and
 - eating disorders.
- This review looked at Medicaid members enrolled in the Oregon Health Plan (OHP) who did not have ADHD documented in their health record but who received an ADHD medicine. Only 18% of these members had a behavioral health condition for which an ADHD medicine has been studied and shown to improve symptoms. These behavioral health conditions were more common for children. For people with a behavioral health condition, 60% of people had seen a mental health provider.
- While this analysis was not designed to look for all types of harms, we did not see a pattern indicating harms because of these medicines. Admission to the hospital decreased after an ADHD medicine was prescribed for these members.
- We recommend that the Oregon Health Authority pay for these medicines when they are prescribed to an OHP member by a mental health provider.

Research Questions:

1. What are the most common reasons for off-label use of ADHD drugs?
2. Does indication for ADHD drugs vary based on member, drug or prescriber characteristics?
3. Does initiation of an off-label ADHD drug improve healthcare resource utilization for members without ADHD (compared to prior care)?

Conclusions:

- Off-label indications for ADHD drugs:
 - In total, 626 members were included in this analysis. About 63% of members were adults (at least 18 years of age) at the time of their first claim. These members did not have a diagnosis of ADHD, and the indication for which these drugs were prescribed was generally unclear. A small proportion (18%) had a diagnosis of learning disorders, autistic disorders, conduct disorders, tic disorders, eating disorders, or narcolepsy/cataplexy for which there is some literature supporting use of ADHD drugs. Other common behavioral health diagnoses included anxiety disorders, stress and adjustment disorders, major depressive disorders, and substance use disorders.
- Subgroups:
 - In people with an evidence-based diagnosis, there was a larger proportion of pediatric members, a larger proportion of members prescribed guanfacine, and more members with a prescription written by a psychiatrist (26%) or other mental health provider (33%).

- Comparatively, in people without an evidence-based diagnosis, more members were adults, had prescriptions for atomoxetine, and fewer had prescriptions written by a psychiatrist (15%).
- Changes in healthcare resource utilization
 - For members without an ADHD diagnosis who were started an ADHD drug, there was a small decrease in inpatient healthcare costs, inpatient days and members with inpatient visits from the 6 months prior to the index event (IE) to the 6 months following the IE. The average change for inpatient hospital costs was larger in people with an evidence-based diagnosis (mean decrease of \$6,370 and change of 4.5% of members) compared to people without an evidence-based diagnosis (mean decrease of \$293 and change of 2.3% of members). Because these differences are small and this analysis did not control for confounding factors, the association between use of an ADHD drug and inpatient visits is unclear. However, there is no indication based on medical claims of overt harms because of off-label prescribing for ADHD drugs.
 - There was no change in emergency department visits, pharmacy utilization of other mental health drugs, or psychotherapy visits after prescription of an ADHD drug. Many members had claims for other mental health drugs including antidepressants (53%), antipsychotics (21%), and physical health (immediate-release) formulations of clonidine or guanfacine (18%)

Recommendations:

- Remove prior authorization including age and quantity limits from extended-release 12H clonidine and extended-release guanfacine tablets to permit off-label use in adults. Make both agents preferred on the PDL.

Background:

There are many drugs which are used for treatment of ADHD. These broadly include stimulants (such as amphetamine and methylphenidate derivatives) and non-stimulants (including atomoxetine, extended-release 12H clonidine, extended-release guanfacine, and viloxazine). The OHP fee-for-service (FFS) program covers non-stimulant medications for all members. Stimulants are covered by OHP's Coordinated Care Organizations (CCOs) for members enrolled in a CCO. Because stimulants are covered by CCOs, the most commonly prescribed drugs to which the FFS policy applies are non-stimulants. Atomoxetine is preferred with quantity limits, but it can be prescribed for all ages. Extended-release 12H clonidine and extended-release guanfacine have age restrictions which limit use to adults, consistent with Food and Drug Administration (FDA)-labeled indications.

In January 2023, the OHP FFS criteria were updated to limit use to FDA-approved indications. Previous criteria required consultation with a relevant specialist before off-label indications could be authorized. Indications which are FDA-approved for stimulants include narcolepsy, binge-eating disorder, and ADHD. Non-stimulants have indications for ADHD, and immediate-release clonidine and guanfacine are indicated for hypertension under different brand names. However, many of these medications have been studied for a wide variety of indications other than ADHD.

A search of systematic reviews and clinical practice guidelines identified literature evaluating ADHD stimulants for chronic fatigue,¹ post-stroke symptoms,² and stimulant use disorder.³ While stimulants have been studied for these conditions, they are not generally recommended because risks are thought to outweigh benefits for most patients. FDA labeling for stimulants for ADHD includes risks for abuse and misuse, risk for cardiovascular disease, lowering the seizure threshold, psychiatric adverse reactions, peripheral vasculopathy, long-term growth suppression in pediatric patients, gastrointestinal obstruction, worsening glaucoma, and motor or verbal tics.⁴

Non-stimulants for ADHD have also been evaluated for a variety of behavioral health conditions, including:

- tic disorders, Tourette syndrome, and other movement disorders
- post-traumatic stress disorder (PTSD)

- autism and other developmental disorders
- conduct disorder, disruptive and violent behavior

Guidelines for treatment of ADHD generally recommend similar treatment options for people who have ADHD comorbid with other behavioral health conditions. For example, in people with ADHD and comorbid anxiety, tic disorder, or autism spectrum disorder, the National Institute for Health and Care Excellence (NICE) recommends offering the same medication choices as other people with ADHD.⁵ Recommended first-line treatments for ADHD include methylphenidate or lisdexamfetamine.⁵ If tics are stimulant-related, they recommend: 1) reduction of the stimulant dose; 2) changing to guanfacine (in people 5-17 years of age only), atomoxetine (off-label use for adults with no ADHD symptoms in childhood), or clonidine (off-label use for children); or 3) stopping medication.⁵ In people with ADHD and tics, clonidine should only be considered for people under 18 years after advice from providers who specialize in treatment of ADHD.⁵

In people with autism and comorbid ADHD or ADHD symptoms (e.g., hypersensitivity, impulsivity, inattention, distractibility), the American Academy of Pediatrics and NICE recommend treatment with an ADHD drug.^{6,7} One guideline recommended methylphenidate for management of attention difficulties/hyperactivity in children or young people with autism spectrum disorder and found insufficient information to make a recommendation regarding atomoxetine.⁸ Another guideline noted that clonidine or guanfacine may help with symptoms of anxiety, depression, irritability and severe disruptive behavior.⁷

In people with intellectual disability, the American Academy of Child and Adolescent Psychiatry identified that methylphenidate, clonidine, and guanfacine may be a clinical option to target comorbid psychiatric disorders or specific psychiatric symptoms (such as hyperactivity or inattention) in children and adolescents.⁹ Recommendations graded as a clinical option reflect emerging, rather than definitive, empiric evidence and are generally based on few randomized controlled trials (RCTs), RCTs with inconsistent results, or observational studies.⁹ In people with challenging behavior and learning disabilities, NICE recommends:

- Optimization of medications for coexisting mental or physical health problems that may be contributing to challenging behavior.¹⁰
- Do not offer medication for sleep unless the sleep problem persists after behavioral intervention, after consultation with a psychiatrist, in combination with non-pharmacologic interventions and with regular monitoring to evaluate benefits and risks.¹⁰

NICE suggests providers should not routinely offer medication for children and young people with conduct disorders, antisocial behavior or oppositional defiant disorder. For people with comorbid ADHD, NICE advises that atomoxetine or methylphenidate can be offered within their approved indications.¹¹

In people with tics, the American Academy of Neurology identified that clonidine and guanfacine may reduce tics more than placebo (based on moderate and low quality evidence, respectively).¹² The magnitude of benefit was largest in people with comorbid ADHD. Clonidine or guanfacine is recommended when treatment benefits (reduction in tics) outweigh risks with adequate monitoring for adverse events (including sedation, effects on heart rate, blood pressure and QTc prolongation, or rebound hypertension upon abrupt discontinuation).¹² Similarly European clinical guidelines recommend clonidine and guanfacine as reasonable options for people with tic disorders in whom pharmacotherapy is appropriate, particularly in the presence of comorbid ADHD.¹³ Atomoxetine probably does not worsen tics over 18 weeks based on one RCT, but it was associated with decreased body weight and increased heart rate compared to placebo (low quality evidence).¹²

Several organizations recommend against use of ADHD drugs for various conditions and populations. These include:

- Guanfacine for treatment of PTSD.¹⁴
- ADHD drugs for the core social and communication symptoms of autism.^{6,7}
- Clonidine for people with ADHD and comorbid sleep disturbance, rages, or tics.⁵
- Guanfacine for adults with ADHD.⁵

- Combination use of antipsychotics and stimulants in people with ADHD and comorbid pervasive aggression, rages or irritability.⁵
- Stimulants for treatment of fatigue in people with chronic multisystem illness and symptoms consistent with myalgic encephalomyelitis or chronic fatigue syndrome.¹ Medicines (including stimulants) to cure myalgic encephalomyelitis or chronic fatigue syndrome.¹⁵

The goal of this policy evaluation is to:

- 1) Evaluate common off-label conditions for which ADHD drugs are used
- 2) Evaluate how initiation of off-label use of an ADHD drug impacts healthcare utilization

Methods:

Members were identified for inclusion in the study based on at least one paid FFS claim for a drug in the ADHD Drugs PDL class. The evaluation window for ADHD claim was from 01/01/2022 to 06/30/2022. The first paid claim was defined as the IE. For each patient, the 6 months before and after the IE were used to define the baseline period (exclusive of the IE) and follow-up period (inclusive of the IE). Members were excluded if they had claims for an ADHD drug during the baseline period or had an ADHD diagnosis during the baseline or follow-up period (defined below).

Inclusion Criteria:

- Paid FFS claim for a drug in the ADHD Drugs PDL class during the evaluation window.

Exclusion Criteria:

- Members with non-Medicaid primary insurance coverage (i.e., third party liability [TPL]) during the baseline or follow-up period
- Members with Medicare Part D coverage or limited or no Medicaid drug benefit at any time during the baseline or follow-up periods. Claims data for these members may be incomplete. Members were identified based on the following benefit packages:

| Category | Benefit Package | Description |
|-------------------------------------|-----------------|---|
| Medicare Part D coverage | BMM | Qualified Medicare Beneficiary + Oregon Health Plan with Limited Drug |
| | BMD | Oregon Health Plan with Limited Drug |
| | MED | Qualified Medicare Beneficiary |
| Limited or no Medicaid drug benefit | MND | Transplant package |
| | CWM | Citizenship Waived Emergency Medical |
| | SMF | Special Low-Income Medicare Beneficiary Only |
| | SMB | Special Low-Income Medicare Beneficiary Only |

- Members with Heritage Native American All-Inclusive Rate (HNA AIR) claims during the baseline or follow up period
- Members with Medicaid eligibility of less than 75% of days during the baseline or follow-up periods
- Members with an ADHD diagnosis (ICD-10 code of F90x) in the baseline or follow-up period
- Members with claims for an ADHD drug in the baseline period

Outcomes evaluated in this analysis included total service days and costs for hospitalizations, emergency department visits, psychotherapy, and other mental health drugs.

Definitions:

- Relevant mental health diagnoses were evaluated in the baseline period and grouped into diagnoses with supporting evidence and diagnoses without supporting evidence based on available existing literature (**Appendix 1**).
- Baseline characteristics were identified at the time of the IE. Other mental health drugs were defined based on PDL class. The Hierarchical Ingredient Code List (HICL) sequence number (HSN) and non-carve-out status were used to identify physical health formulations of clonidine (HSN 000113) and guanfacine (HSN 000120).
- Provider specialty was identified based on primary prescriber taxonomy (**Appendix 1**).
- Residential area was based on member zip code and categorized into rural, urban, or frontier groups based on criteria in **Appendix 1**.¹⁶ Members without an Oregon zip code were categorized as unknown.
- Psychotherapy visits were identified based on common medical codes in **Appendix 1**
- Total service days were defined based on the number of unique days during which a service (e.g., inpatient hospitalization, emergency department visit, or psychotherapy) was billed on a medical claim.

Results

In the 6-month evaluation window for this study, 11,000 members were identified who had paid FFS claims for an ADHD drug. After exclusion of people with other insurance or less than 75% eligibility during the baseline and follow-up periods, almost 8,000 members were identified who had potentially complete claims data. Of members with complete claims data, most had an ADHD diagnosis (n=6240, n=78%). A total of 626 members without prior ADHD drug therapy and without an ADHD diagnosis in medical claims were included in the analysis.

Table 1. Attrition table

| | All | |
|---|------------|-------|
| | # | % |
| Members with a FFS paid claim for an ADHD drug in the evaluation window | 11,000 | |
| After exclusion of members with HNA AIR claims in the baseline or follow-up period | 10,870 | 98.8% |
| After exclusion of members with TPL or Medicare in the baseline or follow-up period | 8,364 | 76.0% |
| After exclusion of members with <75% eligibility in the baseline period | 8,052 | 73.2% |
| After exclusion of members with <75% eligibility in the follow-up period | 7,957 | 72.3% |
| After exclusion of members with an ADHD diagnosis in the baseline or follow-up period | 1,717 | 15.6% |
| After exclusion of member with claims for an ADHD drug in the baseline period (not treatment naïve) | 626 | 5.7% |

For many members in this analysis, the indication for which the drug was prescribed was unclear. Less than 18% of members in this analysis had an evidence-based diagnosis of learning disorders, autism spectrum disorder, conduct disorder, oppositional defiant disorder, intermittent explosive disorder, tic disorders, eating disorders, narcolepsy or cataplexy.

Thirty-three percent of members prescribed an off-label ADHD drug had some type of anxiety disorder and 27% had a stress or adjustment disorder (such as PTSD). Mood disorders such as major depressive disorder, depressive episodes and bipolar disorder were present for 20%, 20% and 10% of members, respectively. Substance use disorders were also relatively common. Ten percent of members had a diagnosis of nicotine dependence, 7% had alcohol-related disorders, 7% had stimulant and opioid use disorders, and 6% had cannabis use disorders.

Table 2. Behavioral health diagnoses in the 6 months before the first claim for an ADHD drug

| | All | |
|--|-----|-------|
| | 626 | % |
| Evidence-based diagnosis | 110 | 17.6% |
| Learning disorder or intellectual disability | 18 | 2.9% |
| Autistic disorder | 34 | 5.4% |
| Conduct, oppositional defiant disorder, intermittent explosive disorder | 41 | 6.5% |
| Tic disorders | 16 | 2.6% |
| Eating disorders | 16 | 2.6% |
| Narcolepsy and cataplexy | 2 | 0.3% |
| Members without a diagnosis supported by evidence (most common mental health diagnoses) | 516 | 82.4% |
| F41 Other anxiety disorders | 207 | 33.1% |
| F43 Reaction to severe stress, and adjustment disorders | 170 | 27.2% |
| F33 Major depressive disorder, recurrent | 127 | 20.3% |
| F32 Depressive episode | 125 | 20.0% |
| F17 Nicotine dependence | 65 | 10.4% |
| F31 Bipolar disorder | 60 | 9.6% |
| F10 Alcohol related disorders | 44 | 7.0% |
| F15 Other stimulant related disorders | 44 | 7.0% |
| F11 Opioid related disorders | 42 | 6.7% |
| F12 Cannabis related disorders | 38 | 6.1% |

About 63% of members were adults and 60% identified as White. More than half of members lived in urban areas and only 3% lived in Oregon’s frontier counties. Almost 90% of members were enrolled in a CCO, and because CCOs pay for the majority of stimulant claims, the most prescribed drugs to which the FFS policy applies are non-stimulants. Paid claims for atomoxetine (55%), a preferred product, were more common than paid claims for extended-release guanfacine (27%) and extended-release clonidine (11%). General practitioners were the most common type of prescriber (47%).

Patient characteristics were generally similar upon comparison of people with an evidence-based diagnosis and people without an evidence-based diagnosis. Differences existed based on member age, drug prescribed, and prescriber type. Of people with an evidence-based diagnosis, 74% of members were children or adolescents. Extended-release guanfacine was the most common medication in people with an evidence-based diagnosis (58%) followed by extended-release clonidine (22%) and atomoxetine (17%). The prescriber was more commonly a psychiatrist in people with an evidence-based diagnosis (26%) compared to people without an evidence-based diagnosis (15%). Most people without an evidence-based diagnosis were adults (72%) and the most common medication was atomoxetine (63%) followed by guanfacine (20%). Stimulant use was slightly more common in people without an evidence-based diagnosis compared to people with an evidence-based diagnosis (8.7% vs. 2.7%).

Table 3. Baseline demographics

| | All | | By Diagnosis | | | |
|-------------------------------|-----|-------|--------------------------|--------------|-----------------------------|--------------|
| | | | Evidence-based diagnosis | | No evidence-based diagnosis | |
| | 626 | % | 110 | 17.6% | 516 | 82.4% |
| Age | | | | | | |
| <= 5 yo | 8 | 1.3% | 3 | 2.7% | 5 | 1.0% |
| 6-17 yo | 221 | 35.3% | 82 | 74.5% | 139 | 26.9% |
| 18-64 yo | 397 | 63.4% | 25 | 22.7% | 372 | 72.1% |
| >= 65 yo | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% |
| Race | | | | | | |
| White | 376 | 60.1% | 61 | 55.5% | 315 | 61.0% |
| Unknown | 148 | 23.6% | 28 | 25.5% | 120 | 23.3% |
| Other | 102 | 16.3% | 21 | 19.1% | 81 | 15.7% |
| Member Location | | | | | | |
| Urban | 340 | 54.3% | 60 | 54.5% | 280 | 54.3% |
| Rural | 247 | 39.5% | 45 | 40.9% | 202 | 39.1% |
| Frontier | 20 | 3.2% | 2 | 1.8% | 18 | 3.5% |
| Other | 19 | 3.0% | 3 | 2.7% | 16 | 3.1% |
| Enrollment | | | | | | |
| CCO | 563 | 89.9% | 104 | 94.5% | 459 | 89.0% |
| FFS | 63 | 10.1% | 6 | 5.5% | 57 | 11.0% |
| IE Drug | | | | | | |
| Stimulant | 48 | 7.7% | 3 | 2.7% | 45 | 8.7% |
| AMP IR | 22 | 3.5% | 1 | 0.9% | 21 | 4.1% |
| AMP LA | 14 | 2.2% | 1 | 0.9% | 13 | 2.5% |
| MTH IR | 10 | 1.6% | 1 | 0.9% | 9 | 1.7% |
| MTH LA | 2 | 0.3% | 0 | 0.0% | 2 | 0.4% |
| Non-stimulant carve-out | 578 | 92.3% | 107 | 97.3% | 471 | 91.3% |
| Atomoxetine | 344 | 55.0% | 19 | 17.3% | 325 | 63.0% |
| Clonidine (extended-release) | 67 | 10.7% | 24 | 21.8% | 43 | 8.3% |
| Guanfacine (extended-release) | 167 | 26.7% | 64 | 58.2% | 103 | 20.0% |
| Viloxazine | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% |

Prescriber on the IE

| | | | | | | |
|---|-------------|-------|--------------|--------------|-------------|--------------|
| Psychiatrist | 107 | 17.1% | 29 | 26.4% | 78 | 15.1% |
| Non-physician mental health provider | 226 | 36.1% | 37 | 33.6% | 189 | 36.6% |
| General practitioner | 293 | 46.8% | 44 | 40.0% | 249 | 48.3% |
| Covered days for ADHD drug in the follow-up period | 86.7 (56.1) | 61 | 101.1 (59.8) | 106.5 | 83.6 (54.8) | 60 |
| Mean (SD); Median | | | | | | |

Because ADHD drugs may be prescribed for people with symptoms of inattention or hyperactivity and comorbid conditions, we also evaluated common behavioral health signs and symptoms present on medical claims in the 6 months before prescription of an ADHD drug. About 13% of people had symptoms related to cognitive function and awareness, most commonly attention and concentration deficit. These diagnoses were more common in people without an evidence-based diagnosis. About 10% had signs and symptoms related to the emotional state which were more common in people with an evidence-based diagnosis. Malaise and fatigue were present in 10% of people.

Table 4. Common behavioral health signs and symptoms

| | All | By Diagnosis | | | |
|--|-----|--------------------------|---|-----------------------------|---|
| | | Evidence-based diagnosis | | No evidence-based diagnosis | |
| | | 626 | % | 110 | % |

Most common behavioral signs/symptoms - ICD-10 codes between R40-R46 or R53x)

| | | | | | | | |
|------------|---|-----------|--------------|----------|-------------|-----------|--------------|
| R41 | Cognitive function and awareness | 82 | 13.1% | 4 | 3.6% | 78 | 15.1% |
| R41840 | Attention and concentration deficit | 66 | 10.5% | 4 | 3.6% | 62 | 12.0% |
| R410 | Disorientation, unspecified | 7 | 1.1% | | 0.0% | 7 | 1.4% |
| R4182 | Altered mental status, unspecified | 5 | 0.8% | | 0.0% | 5 | 1.0% |
| R419 | Unspecified symptoms and signs with cognitive functions and awareness | 3 | 0.5% | | 0.0% | 3 | 0.6% |
| R413 | Other amnesia | 3 | 0.5% | | 0.0% | 3 | 0.6% |
| R4189 | Other symptoms and signs w cognitive functions and awareness | 3 | 0.5% | | 0.0% | 3 | 0.6% |
| R4183 | Borderline intellectual functioning | 1 | 0.2% | | 0.0% | 1 | 0.2% |
| R41841 | Cognitive communication deficit | 1 | 0.2% | | 0.0% | 1 | 0.2% |
| R42 | R42 Dizziness and giddiness | 27 | 4.3% | 2 | 1.8% | 25 | 4.8% |
| R43 | Disturbance of smell/taste | 2 | 0.3% | 0 | 0.0% | 2 | 0.4% |
| R430 | Anosmia | 1 | 0.2% | | 0.0% | 1 | 0.2% |
| R432 | Parageusia | 1 | 0.2% | | 0.0% | 1 | 0.2% |
| R438 | Other disturbances of smell and taste | 1 | 0.2% | | 0.0% | 1 | 0.2% |

| | | | | | | | |
|------------|---|-----------|--------------|-----------|--------------|-----------|--------------|
| R44 | General sensations and perceptions | 8 | 1.3% | 3 | 2.7% | 5 | 1.0% |
| R440 | Auditory hallucinations | 4 | 0.6% | 1 | 0.9% | 3 | 0.6% |
| R443 | Hallucinations, unspecified | 3 | 0.5% | 1 | 0.9% | 2 | 0.4% |
| R448 | Other symptoms and signs w general sensations and perceptions | 1 | 0.2% | 1 | 0.9% | | 0.0% |
| R441 | Visual hallucinations | 1 | 0.2% | | 0.0% | 1 | 0.2% |
| R45 | Symptoms/signs of the emotional state | 66 | 10.5% | 20 | 18.2% | 46 | 8.9% |
| R45851 | Suicidal ideations | 43 | 6.9% | 9 | 8.2% | 34 | 6.6% |
| R451 | Restlessness and agitation | 11 | 1.8% | 5 | 4.5% | 6 | 1.2% |
| R454 | Irritability and anger | 9 | 1.4% | 4 | 3.6% | 5 | 1.0% |
| R4589 | Other symptoms and signs involving emotional state | 5 | 0.8% | 1 | 0.9% | 4 | 0.8% |
| R4586 | Emotional lability | 3 | 0.5% | 1 | 0.9% | 2 | 0.4% |
| R45850 | Homicidal ideations | 3 | 0.5% | 1 | 0.9% | 2 | 0.4% |
| R4588 | Nonsuicidal self-harm | 2 | 0.3% | 1 | 0.9% | 1 | 0.2% |
| R4581 | Low self-esteem | 1 | 0.2% | | 0.0% | 1 | 0.2% |
| R456 | Violent behavior | 1 | 0.2% | 1 | 0.9% | | 0.0% |
| R455 | Hostility | 1 | 0.2% | | 0.0% | 1 | 0.2% |
| R450 | Nervousness | 1 | 0.2% | | 0.0% | 1 | 0.2% |
| R4587 | Impulsiveness | 1 | 0.2% | 1 | 0.9% | | 0.0% |
| R53 | Malaise and fatigue | 55 | 8.8% | 3 | 2.7% | 52 | 10.1% |
| R5383 | Other fatigue | 38 | 6.1% | 2 | 1.8% | 36 | 7.0% |
| R5382 | Chronic fatigue, unspecified | 11 | 1.8% | 1 | 0.9% | 10 | 1.9% |
| R531 | Weakness | 10 | 1.6% | 1 | 0.9% | 9 | 1.7% |
| R5381 | Other malaise | 5 | 0.8% | | 0.0% | 5 | 1.0% |
| R530 | Neoplastic (malignant) related fatigue | 2 | 0.3% | | 0.0% | 2 | 0.4% |

For people initiating treatment with an ADHD drug, 66% had claims for other mental health drugs in the 6 months prior to the ADHD prescription. The most common types of medications included antidepressants (53%), antipsychotics (21%), and non-carveout formulations of clonidine or guanfacine (18%). After initiation of an ADHD drug, prescribing patterns of other mental health drugs were generally similar for the population.

Table 5. Utilization of other medications

| | By Diagnosis | | | | | |
|--|---------------------|-------|---------------------------------|-------|------------------------------------|-------|
| | All | | Evidence-based diagnosis | | No evidence-based diagnosis | |
| | 626 | | 110 | | 516 | |
| Baseline | # | % | # | % | # | % |
| Members with claims for other mental health drugs | 414 | 66.1% | 78 | 70.9% | 336 | 65.1% |
| Benzodiazepines | 49 | 7.8% | 5 | 4.5% | 44 | 8.5% |
| Antidepressant | 334 | 53.4% | 47 | 42.7% | 287 | 55.6% |
| Antipsychotic | 131 | 20.9% | 28 | 25.5% | 103 | 20.0% |
| SUD | 30 | 4.8% | 2 | 1.8% | 28 | 5.4% |
| Sedative | 9 | 1.4% | 1 | 0.9% | 8 | 1.6% |
| Physical health (IR) clonidine/guanfacine | 114 | 18.2% | 39 | 35.5% | 75 | 14.5% |
| Follow-Up | | | | | | |
| Members with claims for other mental health drugs | 450 | 71.9% | 80 | 72.7% | 370 | 71.7% |
| Benzodiazepines | 42 | 6.7% | 6 | 5.5% | 36 | 7.0% |
| Antidepressant | 371 | 59.3% | 52 | 47.3% | 319 | 61.8% |
| Antipsychotic | 151 | 24.1% | 33 | 30.0% | 118 | 22.9% |
| SUD | 30 | 4.8% | 3 | 2.7% | 27 | 5.2% |
| Sedative | 18 | 2.9% | 3 | 2.7% | 15 | 2.9% |
| Physical health (IR) clonidine/guanfacine | 106 | 16.9% | 42 | 38.2% | 64 | 12.4% |
| Change | | | | | | |
| Members with claims for other mental health drugs | 36 | 5.8% | 2 | 1.8% | 34 | 6.6% |
| Benzodiazepines | -7 | -1.1% | 1 | 0.9% | -8 | -1.6% |
| Antidepressant | 37 | 5.9% | 5 | 4.5% | 32 | 6.2% |
| Antipsychotic | 20 | 3.2% | 5 | 4.5% | 15 | 2.9% |
| SUD | 0 | 0.0% | 1 | 0.9% | -1 | -0.2% |
| Sedative | 9 | 1.4% | 2 | 1.8% | 7 | 1.4% |
| Physical health (IR) clonidine/guanfacine | -8 | -1.3% | 3 | 2.7% | -11 | -2.1% |

About 5% of members had an inpatient hospital visit in the 6 months before prescription of an ADHD drug. Twenty-nine percent of members had an emergency department visit in the baseline period and 54% had at least one psychotherapy visit. In the 6-month follow-up period after prescription of an ADHD drug, utilization for inpatient hospital visits decreased to 2.6%, but differences were small. This trend was largest for members with an evidence-based diagnosis and was consistent when data were evaluated based on members with service visits (**Table 6**), total number of service days (**Table 7**), or total costs (**Table 8**). Utilization for emergency department visits and psychotherapy visits was similar in the baseline and follow-up period.

For members without an ADHD diagnosis who started an ADHD drug, the average healthcare costs in the 6 months prior to the IE was \$16,578 for inpatient visits, emergency department visits, psychotherapy, and pharmacy costs. In the 6 months after prescription of an ADHD drug, these costs decreased slightly by an average of \$882, driven primarily by changes in inpatient hospital costs. The average change for inpatient hospital costs was larger in people with an evidence-based diagnosis (mean decrease of \$6,370) compared to people without an evidence-based diagnosis (mean decrease of \$293).

Table 6. Healthcare resource utilization – members with service visits

| | All | | By Diagnosis | | | |
|---|-----|-------|--------------------------|--------|-----------------------------|-------|
| | | | Evidence-based diagnosis | | No evidence-based diagnosis | |
| | 626 | | 110 | | 516 | |
| Baseline | # | % | # | % | # | % |
| Members with inpatient hospital visit | 33 | 5.3% | 7 | 6.4% | 26 | 5.0% |
| Members with emergency department visit | 180 | 28.8% | 33 | 30.0% | 147 | 28.5% |
| Members with psychotherapy | 335 | 53.5% | 65 | 59.1% | 270 | 52.3% |
| Follow-Up | | | | | | |
| Members with inpatient hospital visit | 16 | 2.6% | 2 | 1.8% | 14 | 2.7% |
| Members with emergency department visit | 148 | 23.6% | 22 | 20.0% | 126 | 24.4% |
| Members with psychotherapy | 334 | 53.4% | 68 | 61.8% | 266 | 51.6% |
| Change | | | | | | |
| Members with inpatient hospital visit | -17 | -2.7% | -5 | -4.5% | -12 | -2.3% |
| Members with emergency department visit | -32 | -5.1% | -11 | -10.0% | -21 | -4.1% |
| Members with psychotherapy | -1 | -0.2% | 3 | 2.7% | -4 | -0.8% |

Table 7. Healthcare resource utilization – total number of service days

| | All | | By Diagnosis | | | |
|---------------------------------|------|--------|--------------------------|--------|-----------------------------|--------|
| | | | Evidence-based diagnosis | | No evidence-based diagnosis | |
| | 626 | | 110 | | 516 | |
| Baseline | Mean | Median | Mean | Median | Mean | Median |
| Inpatient hospital days | 13.2 | 6 | 18.3 | 16 | 11.8 | 6 |
| Emergency department visit days | 2.0 | 1 | 2.0 | 1 | 2.0 | 1 |
| Psychotherapy days | 12.0 | 8 | 15.2 | 10 | 11.2 | 7.5 |

| Follow-Up | | | | | | |
|---------------------------------|------|------|-------|-------|------|------|
| Inpatient hospital days | 6.8 | 5 | 1.5 | 1.5 | 7.5 | 5.5 |
| Emergency department visit days | 2.0 | 1 | 1.6 | 1.5 | 2.1 | 1 |
| Psychotherapy days | 12.9 | 9 | 18.1 | 11 | 11.5 | 8 |
| Change | | | | | | |
| Inpatient hospital days | -6.4 | -1.0 | -16.8 | -14.5 | -4.3 | -0.5 |
| Emergency department visit days | 0.0 | 0.0 | -0.3 | 0.5 | 0.1 | 0.0 |
| Psychotherapy days | 0.9 | 1.0 | 2.9 | 1.0 | 0.3 | 0.5 |

Table 8. Healthcare resource utilization – costs

| | All | | | Evidence-based diagnosis | | | No evidence-based diagnosis | | |
|----------------------------------|------------|----------|----------|---------------------------------|---------|-----------|------------------------------------|----------|----------|
| | Mean | StDev | Median | Mean | StDev | Median | Mean | StDev | Median |
| Baseline | | | | | | | | | |
| Inpatient hospital costs | \$13,126 | \$11,854 | \$8,621 | \$12,587 | \$8,256 | \$16,739 | \$13,271 | \$12,782 | \$8,340 |
| Emergency department visit costs | \$975 | \$1,541 | \$537 | \$732 | \$986 | \$447 | \$1,029 | \$1,638 | \$592 |
| Psychotherapy costs | \$1,598 | \$3,487 | \$712 | \$1,993 | \$3,123 | \$775 | \$1,503 | \$3,568 | \$708 |
| Pharmacy costs | \$880 | \$2,716 | \$70 | \$1,110 | \$3,391 | \$69 | \$826 | \$2,537 | \$71 |
| Follow-Up | | | | | | | | | |
| Inpatient hospital costs | \$12,133 | \$11,190 | \$6,457 | \$6,217 | \$812 | \$6,217 | \$12,978 | \$11,759 | \$7,262 |
| Emergency department visit costs | \$890 | \$1,453 | \$561 | \$779 | \$609 | \$625 | \$910 | \$1,555 | \$536 |
| Psychotherapy costs | \$1,764 | \$3,202 | \$719 | \$2,405 | \$3,919 | \$886 | \$1,600 | \$2,978 | \$622 |
| Pharmacy costs | \$909 | \$2,692 | \$81 | \$834 | \$2,180 | \$84 | \$925 | \$2,793 | \$79 |
| Change | | | | | | | | | |
| Inpatient hospital costs | -\$993 | | -\$2,164 | -\$6,370 | | -\$10,521 | -\$293 | | -\$1,079 |
| Emergency department visit costs | -\$84 | | \$23 | \$47 | | \$178 | -\$119 | | -\$56 |
| Psychotherapy costs | \$166 | | \$7 | \$412 | | \$111 | \$97 | | -\$86 |
| Pharmacy costs | \$29 | | \$11 | -\$276 | | \$15 | \$99 | | \$8 |

Limitations:

- Information based on medical claims may be inaccurate or capture incomplete information. This includes information for diagnoses, provider type, demographics, and psychotherapy visits. We attempted to exclude members with an ADHD diagnosis. However, we only evaluated diagnoses over a 6-month period which may not accurately categorize all members.

- Drugs for ADHD have been studied for a variety of conditions and symptoms. However, this analysis primarily focused on behavioral health conditions and diagnoses for physical health conditions may have been missed. For example, we did not evaluate fatigue associated with cancer, multiple sclerosis, or post-COVID symptoms for which stimulant may be prescribed.
- Medical utilization was evaluated in the 6 months before and after the initial prescription for an ADHD drug. However, this analysis did not control for potential confounding factors. While trends in inpatient hospitalizations were observed, differences are attributable to only a small number of members and it is unclear if these trends were related to medication prescribing. We did not categorize visits by diagnosis to identify if they were related to behavioral health or categorize members based on duration of use for the ADHD drug.

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Appendix 1: Drug Coding

Table A1. PICOS

| | |
|---------------|---|
| Population: | members with continuous Medicaid eligibility and without ADHD diagnosis in the 6 months before or after the index event |
| Intervention: | <i>new start</i> of an ADHD drug (first paid claim) in evaluation window |
| Comparator: | before first claim (no treatment) vs. after first claim |
| Outcome: | healthcare resource utilization (days and costs) for hospitalizations, ER visits, psychotherapy, and mental health drugs (type and costs) |

Table A2. Evidence-based diagnoses

| ICD Code | Description |
|----------|--|
| F81x | Learning disorder |
| F7x | Intellectual disability |
| F840 | Autistic disorder |
| F91x | Conduct and oppositional defiant disorders |
| F95x | Tic disorders |
| F6381 | Intermittent explosive disorder |
| F50x | Eating disorders |
| G474x | Narcolepsy and cataplexy |

Table A3. Provider taxonomy groups for mental health providers

| Taxonomy | Taxonomy Description | Category |
|------------|---|--------------|
| 2080P0006X | PHYSICIAN-PEDIATRICS-DEVELOPMENTAL BEHAVIORAL PEDIATRICS | Psychiatrist |
| 2080P0008X | PHYSICIAN-PEDIATRICS-NEURODEVELOPMENTAL DISABILITIES | Psychiatrist |
| 2084A0401X | PSYCHIATRY & NEUROLOGY, ADDICTION MEDICINE | Psychiatrist |
| 2084B0002X | PHYSICIAN-PSYCHIATRY&NEUROLOGY-BARIATRIC MEDICINE | Psychiatrist |
| 2084B0040X | BEHAVIORAL NEUROLOGY & NEUROPSYCHIATRY | Psychiatrist |
| 2084D0003X | PHYSICIAN-PSYCHIATRY&NEUROLOGY-DIAGNOSTIC NEUROIMAGING | Psychiatrist |
| 2084F0202X | PHYSICIAN-PSYCHIATRY&NEUROLOGY-FORENSIC PSYCHIATRY | Psychiatrist |
| 2084H0002X | PHYSICIAN-PSYCHIATRY&NEUROLOGY-HOSPICE AND PALLIATIVE MEDICINE | Psychiatrist |
| 2084N0008X | PHYSICIAN-PSYCHIATRY&NEUROLOGY-NEUROMUSCULAR MEDICINE | Psychiatrist |
| 2084N0400X | PHYSICIAN-PSYCHIATRY&NEUROLOGY-NEUROLOGY | Psychiatrist |
| 2084N0402X | PHYSICIAN-PSYCHIATRY&NEUROLOGY-NEUROLOGY WITH SPECIAL QUAL IN CHILD NEUROLO | Psychiatrist |
| 2084N0600X | PHYSICIAN-PSYCHIATRY&NEUROLOGY-CLINICAL NEUROPHYSIOLOGY | Psychiatrist |
| 2084P0005X | PHYSICIAN-PSYCHIATRY&NERUOLOGY-NEURODEVELOPMENTAL DISABILITIES | Psychiatrist |
| 2084P0015X | PHYSICIAN-PSYCHIATRY&NEUROLOGY-PSYCHOSOMATIC MEDICINE | Psychiatrist |
| 2084P0800X | PHYSICIAN-PSYCHIATRY&NEUROLOGY-PSYCHIATRY | Psychiatrist |

| | | |
|------------|---|--------------------------------------|
| 2084P0802X | PHYSICIAN-PSYCHIATRY&NEUROLOGY-ADDICTION PSYCHIATRY | Psychiatrist |
| 2084P0804X | PHYSICIAN-PSYCHIATRY&NEUROLGY-CHILD&ADOLESCENT PSYCHIATRY | Psychiatrist |
| 2084P0805X | PHYSICIAN-PSYCHIATRY&NEUROLGY-GERIATRIC PSYCHIATRY | Psychiatrist |
| 2084P2900X | PHYSICIAN-PSYCHIATRY&NEUROLOGY-PAIN MEDICINE | Psychiatrist |
| 2084S0010X | PHYSICIAN-PSYCHIATRY&NEUROLOGY-SPORTS MEDICINE | Psychiatrist |
| 2084S0012X | PHYSICIAN-PSYCHIATRY&NEUROLOGY-SLEEP MEDICINE | Psychiatrist |
| 2084V0102X | PHYSICIAN-PSYCHIATRY&NEUROLOGY-VASCULAR NEUROLOGY | Psychiatrist |
| 103T00000X | PSYCHOLOGIST | Non-physician Mental Health Provider |
| 103TA0400X | PSYCHOLOGIST - ADDICTION (SUBSTANCE USE DISORDER) | Non-physician Mental Health Provider |
| 103TC0700X | PSYCHOLOGIST - CLINICAL | Non-physician Mental Health Provider |
| 103TC2200X | PSYCHOLOGIST - CLINICAL CHILD & ADOLESCENT | Non-physician Mental Health Provider |
| 163WP0807X | REGISTERED NURSE - PSYCHIATRIC/MENTAL HEALTH | Non-physician Mental Health Provider |
| 163WP0808X | REGISTERED NURSE - PSYCHIATRIC/MENTAL HEALTH | Non-physician Mental Health Provider |
| 163WP0809X | REGISTERED NURSE - PSYCHIATRIC/MENTAL HEALTH | Non-physician Mental Health Provider |
| 1835P1300X | PHARMACIST - PSYCHIATRIC | Non-physician Mental Health Provider |
| 363LP0808X | NURSE PRACTITIONER - PSYCHIATRIC/MENTAL HEALTH | Non-physician Mental Health Provider |
| 364SP0807X | CLINICAL NURSE SPECIALIST - PSYCHIATRIC/MENTAL HEALTH | Non-physician Mental Health Provider |
| 364SP0808X | CLINICAL NURSE SPECIALIST - PSYCHIATRIC/MENTAL HEALTH | Non-physician Mental Health Provider |
| 364SP0809X | CLINICAL NURSE SPECIALIST - PSYCHIATRIC/MENTAL HEALTH | Non-physician Mental Health Provider |

Table A4. CPT codes for psychotherapy

| CPT Code | Description |
|----------|--|
| 90785 | Psychiatric Services Complicated By Communication Factor |
| 90832 | Psychotherapy, 30 Minutes |
| 90833 | Psychotherapy With Evaluation And Management Visit, 30 Minutes |
| 90834 | Psychotherapy, 45 Minutes |
| 90836 | Psychotherapy With Evaluation And Management Visit, 45 Minutes |
| 90837 | Psychotherapy, 1 Hour |
| 90838 | Psychotherapy With Evaluation And Management Visit, 1 Hour |
| 90839 | Psychotherapy For Crisis, First Hour |
| 90840 | Psychotherapy For Crisis, Each Additional 30 Minutes |
| 90846 | Family Psychotherapy Without Patient, 50 Minutes |
| 90847 | Family Psychotherapy With Patient, 50 Minutes |
| 90849 | Multiple-Family Group Psychotherapy |
| 90853 | Group Psychotherapy |

- 90876 Psychophysiological Therapy Incorporating Biofeedback Training With Psychotherapy, 45 Minutes
- 90899 Other Psychiatric Service Or Procedure
- 96158 Treatment Of Behavior Impacting Health, Initial 30 Minutes
- 96159 Treatment Of Behavior Impacting Health, Each Additional 15 Minutes
- 96167 Treatment Of Behavior Impacting Health With Family And Patient, Initial 30 Minutes
- 96168 Treatment Of Behavior Impacting Health With Family And Patient, Each Additional 30 Minutes
- 97153 Adaptive Behavior Treatment By Technician Using An Established Plan, Each 15 Minutes
- 97154 Adaptive Behavior Treatment By Technician With Multiple Patients Using An Established Plan, Each 15
- 97155 Adaptive Behavior Treatment By Professional Using An Established Plan, Each 15 Minutes
- 97156 Adaptive Behavior Treatment By Professional With Family Using An Established Plan, Each 15 Minutes
- 0362T Behavior Identification Supporting Assessment For Patient Exhibiting Destructive Behavior, Each 15 M
- 0373T Adaptive Behavior Treatment With Protocol Modification For Patient Exhibiting Destructive Behavior,
- G0177 Training And Educational Services Related To The Care And Treatment Of Patient'S Disabling Mental He
- G0410 Group Psychotherapy Other Than Of A Multiple-Family Group, In A Partial Hospitalization Setting, App
- H0004 Behavioral Health Counseling And Therapy, Per 15 Minutes
- H0036 Community Psychiatric Supportive Treatment, Face-To-Face, Per 15 Minutes
- H0037 Community Psychiatric Supportive Treatment Program, Per Diem
- H0038 Self-Help/Peer Services, Per 15 Minutes
- H0039 Assertive Community Treatment, Face-To-Face, Per 15 Minutes
- H2014 Skills Training And Development, Per 15 Minutes
- H2018 Psychosocial Rehabilitation Services, Per Diem
- H2027 Psychoeducational Service, Per 15 Minutes
- S9480 Intensive Outpatient Psychiatric Services, Per Diem

Table A5. Residential area based on Zip Code. Based on the Oregon Office of Rural Health Geographic Definitions¹⁶

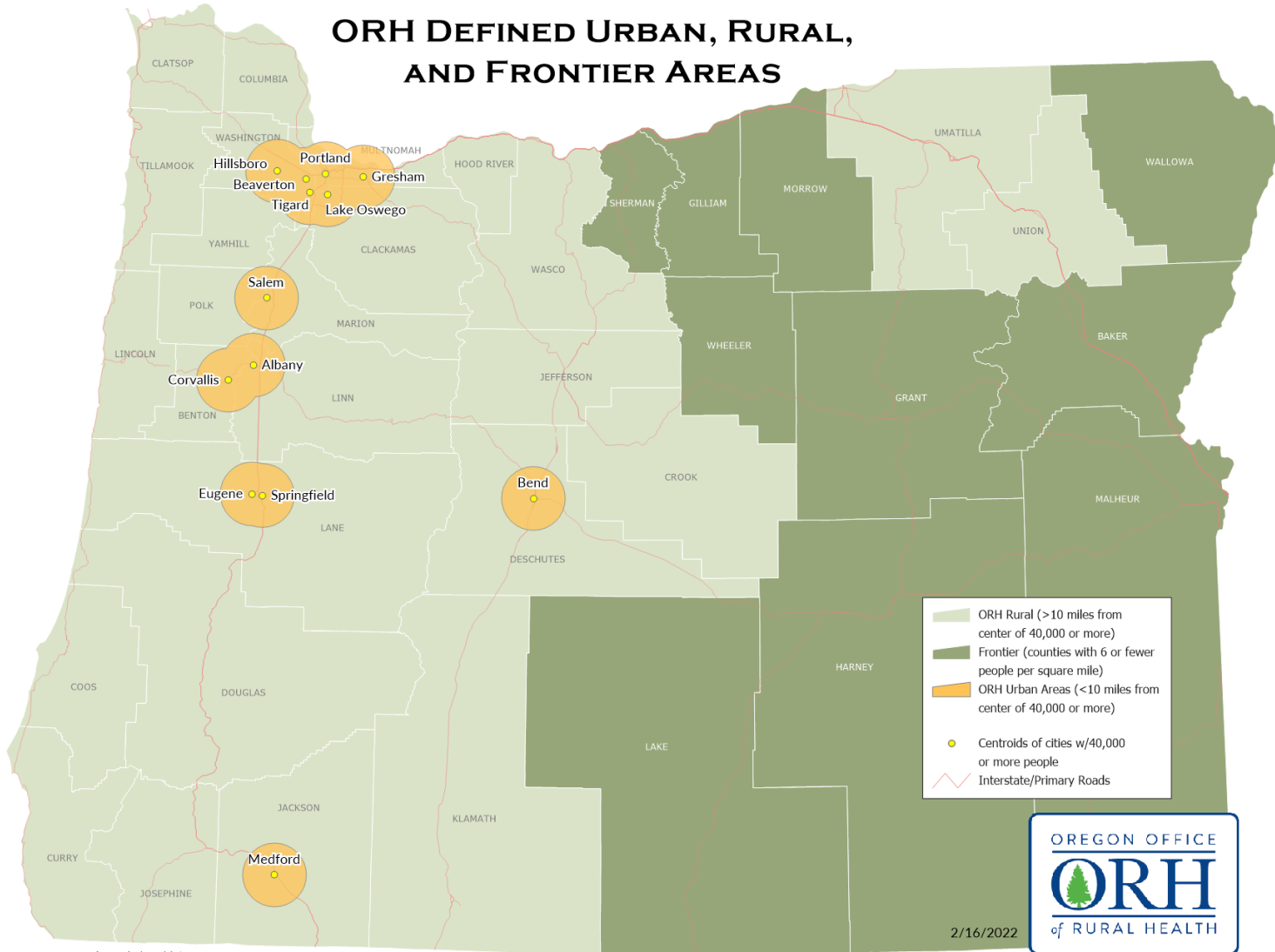
| Zip Code | Designation | 97009 | Urban | 97020 | Rural | 97031 | Rural | 97041 | Rural |
|----------|-------------|-------|-------|-------|----------|-------|----------|-------|----------|
| | | 97010 | Rural | 97021 | Rural | 97032 | Rural | 97042 | Rural |
| 97001 | Rural | 97011 | Rural | 97022 | Rural | 97033 | Frontier | 97044 | Rural |
| 97002 | Rural | 97013 | Rural | 97023 | Rural | 97034 | Urban | 97045 | Urban |
| 97003 | Urban | 97014 | Rural | 97024 | Urban | 97035 | Urban | 97048 | Rural |
| 97004 | Rural | 97015 | Urban | 97026 | Rural | 97036 | Urban | 97049 | Rural |
| 97005 | Urban | 97016 | Rural | 97027 | Urban | 97037 | Rural | 97050 | Frontier |
| 97006 | Urban | 97017 | Rural | 97028 | Rural | 97038 | Rural | 97051 | Rural |
| 97007 | Urban | 97018 | Rural | 97029 | Frontier | 97039 | Frontier | 97053 | Rural |
| 97008 | Urban | 97019 | Rural | 97030 | Urban | 97040 | Rural | 97054 | Rural |

| | | | | | | | | | |
|-------|----------|-------|-------|-------|-------|-------|-------|-------|-------|
| 97055 | Rural | 97118 | Rural | 97209 | Urban | 97280 | Urban | 97336 | Rural |
| 97056 | Rural | 97119 | Rural | 97210 | Urban | 97281 | Urban | 97338 | Rural |
| 97057 | Rural | 97121 | Rural | 97211 | Urban | 97282 | Urban | 97339 | Urban |
| 97058 | Rural | 97122 | Rural | 97212 | Urban | 97283 | Urban | 97341 | Rural |
| 97060 | Urban | 97123 | Urban | 97213 | Urban | 97286 | Urban | 97342 | Rural |
| 97062 | Urban | 97124 | Urban | 97214 | Urban | 97290 | Urban | 97343 | Rural |
| 97063 | Rural | 97125 | Rural | 97215 | Urban | 97291 | Urban | 97344 | Rural |
| 97064 | Rural | 97127 | Rural | 97216 | Urban | 97292 | Urban | 97345 | Rural |
| 97065 | Frontier | 97128 | Rural | 97217 | Urban | 97293 | Urban | 97346 | Rural |
| 97067 | Rural | 97130 | Rural | 97218 | Urban | 97294 | Urban | 97347 | Rural |
| 97068 | Urban | 97131 | Rural | 97219 | Urban | 97296 | Urban | 97348 | Rural |
| 97070 | Urban | 97132 | Rural | 97220 | Urban | 97298 | Urban | 97350 | Rural |
| 97071 | Rural | 97133 | Rural | 97221 | Urban | 97301 | Urban | 97351 | Urban |
| 97075 | Urban | 97134 | Rural | 97222 | Urban | 97302 | Urban | 97352 | Urban |
| 97076 | Urban | 97135 | Rural | 97223 | Urban | 97303 | Urban | 97355 | Rural |
| 97077 | Urban | 97136 | Rural | 97224 | Urban | 97304 | Urban | 97357 | Rural |
| 97078 | Urban | 97137 | Rural | 97225 | Urban | 97305 | Urban | 97358 | Rural |
| 97080 | Urban | 97138 | Rural | 97227 | Urban | 97306 | Urban | 97359 | Urban |
| 97086 | Urban | 97140 | Urban | 97228 | Urban | 97307 | Urban | 97360 | Rural |
| 97089 | Urban | 97141 | Rural | 97229 | Urban | 97308 | Urban | 97361 | Rural |
| 97101 | Rural | 97143 | Rural | 97230 | Urban | 97309 | Urban | 97362 | Rural |
| 97102 | Rural | 97144 | Rural | 97231 | Urban | 97310 | Urban | 97364 | Rural |
| 97103 | Rural | 97145 | Rural | 97232 | Urban | 97312 | Urban | 97365 | Rural |
| 97106 | Urban | 97146 | Rural | 97233 | Urban | 97317 | Urban | 97366 | Rural |
| 97107 | Rural | 97147 | Rural | 97236 | Urban | 97321 | Urban | 97367 | Rural |
| 97108 | Rural | 97148 | Rural | 97238 | Urban | 97322 | Urban | 97368 | Rural |
| 97109 | Rural | 97149 | Rural | 97239 | Urban | 97324 | Rural | 97369 | Rural |
| 97110 | Rural | 97201 | Urban | 97240 | Urban | 97325 | Rural | 97370 | Urban |
| 97111 | Rural | 97202 | Urban | 97242 | Urban | 97326 | Rural | 97371 | Urban |
| 97112 | Rural | 97203 | Urban | 97256 | Urban | 97327 | Rural | 97372 | Rural |
| 97113 | Urban | 97204 | Urban | 97258 | Urban | 97329 | Rural | 97373 | Rural |
| 97114 | Rural | 97205 | Urban | 97266 | Urban | 97330 | Urban | 97374 | Rural |
| 97115 | Rural | 97206 | Urban | 97267 | Urban | 97331 | Urban | 97375 | Rural |
| 97116 | Urban | 97207 | Urban | 97268 | Urban | 97333 | Urban | 97376 | Rural |
| 97117 | Rural | 97208 | Urban | 97269 | Urban | 97335 | Rural | 97377 | Rural |

| | | | | | | | | | |
|-------|-------|-------|-------|-------|-------|-------|----------|-------|----------|
| 97378 | Rural | 97425 | Rural | 97464 | Rural | 97522 | Rural | 97633 | Rural |
| 97380 | Rural | 97426 | Urban | 97465 | Rural | 97523 | Rural | 97634 | Rural |
| 97381 | Rural | 97428 | Rural | 97466 | Rural | 97524 | Rural | 97635 | Frontier |
| 97383 | Rural | 97429 | Rural | 97467 | Rural | 97525 | Rural | 97636 | Frontier |
| 97384 | Rural | 97430 | Rural | 97469 | Rural | 97526 | Rural | 97637 | Frontier |
| 97385 | Rural | 97431 | Rural | 97470 | Rural | 97527 | Rural | 97638 | Frontier |
| 97386 | Rural | 97432 | Rural | 97471 | Rural | 97528 | Rural | 97639 | Rural |
| 97388 | Rural | 97434 | Rural | 97473 | Rural | 97530 | Rural | 97640 | Frontier |
| 97389 | Urban | 97435 | Rural | 97475 | Urban | 97531 | Rural | 97641 | Frontier |
| 97390 | Rural | 97436 | Rural | 97476 | Rural | 97532 | Rural | 97701 | Urban |
| 97391 | Rural | 97437 | Rural | 97477 | Urban | 97533 | Rural | 97702 | Urban |
| 97392 | Urban | 97438 | Rural | 97478 | Urban | 97534 | Rural | 97703 | Urban |
| 97394 | Rural | 97439 | Rural | 97479 | Rural | 97535 | Urban | 97707 | Rural |
| 97396 | Rural | 97440 | Urban | 97480 | Rural | 97536 | Rural | 97708 | Urban |
| 97401 | Urban | 97441 | Rural | 97481 | Rural | 97537 | Rural | 97709 | Urban |
| 97402 | Urban | 97442 | Rural | 97484 | Rural | 97538 | Rural | 97710 | Frontier |
| 97403 | Urban | 97443 | Rural | 97486 | Rural | 97539 | Rural | 97711 | Rural |
| 97404 | Urban | 97444 | Rural | 97487 | Rural | 97540 | Urban | 97712 | Rural |
| 97405 | Urban | 97446 | Rural | 97488 | Rural | 97541 | Rural | 97720 | Frontier |
| 97406 | Rural | 97447 | Rural | 97489 | Rural | 97543 | Rural | 97721 | Frontier |
| 97407 | Rural | 97448 | Rural | 97490 | Rural | 97544 | Rural | 97722 | Frontier |
| 97408 | Urban | 97449 | Rural | 97491 | Rural | 97601 | Rural | 97730 | Rural |
| 97409 | Urban | 97450 | Rural | 97492 | Rural | 97602 | Rural | 97731 | Rural |
| 97410 | Rural | 97451 | Rural | 97493 | Rural | 97603 | Rural | 97732 | Frontier |
| 97411 | Rural | 97452 | Rural | 97494 | Rural | 97604 | Rural | 97733 | Rural |
| 97412 | Rural | 97453 | Rural | 97495 | Rural | 97620 | Frontier | 97734 | Rural |
| 97413 | Rural | 97454 | Rural | 97496 | Rural | 97621 | Rural | 97735 | Frontier |
| 97414 | Rural | 97455 | Urban | 97497 | Rural | 97622 | Rural | 97736 | Frontier |
| 97415 | Rural | 97456 | Rural | 97498 | Rural | 97623 | Rural | 97737 | Rural |
| 97416 | Rural | 97457 | Rural | 97499 | Rural | 97624 | Rural | 97738 | Frontier |
| 97417 | Rural | 97458 | Rural | 97501 | Urban | 97625 | Rural | 97739 | Rural |
| 97419 | Rural | 97459 | Rural | 97502 | Urban | 97626 | Rural | 97741 | Rural |
| 97420 | Rural | 97461 | Rural | 97503 | Urban | 97627 | Rural | 97750 | Frontier |
| 97423 | Rural | 97462 | Rural | 97504 | Urban | 97630 | Frontier | 97751 | Rural |
| 97424 | Rural | 97463 | Rural | 97520 | Rural | 97632 | Rural | 97752 | Rural |

| | | | | | |
|-------|----------|-------|----------|-------|----------|
| 97753 | Rural | 97845 | Frontier | 97910 | Frontier |
| 97754 | Rural | 97846 | Frontier | 97911 | Frontier |
| 97756 | Rural | 97848 | Frontier | 97913 | Frontier |
| 97758 | Frontier | 97850 | Rural | 97914 | Frontier |
| 97759 | Rural | 97856 | Frontier | 97917 | Frontier |
| 97760 | Rural | 97857 | Frontier | 97918 | Frontier |
| 97761 | Rural | 97859 | Rural | 97920 | Frontier |
| 97801 | Rural | 97861 | Frontier | | |
| 97810 | Rural | 97862 | Rural | | |
| 97812 | Frontier | 97864 | Frontier | | |
| 97813 | Rural | 97865 | Frontier | | |
| 97814 | Frontier | 97867 | Rural | | |
| 97817 | Frontier | 97868 | Rural | | |
| 97818 | Frontier | 97869 | Frontier | | |
| 97819 | Frontier | 97870 | Frontier | | |
| 97820 | Frontier | 97873 | Frontier | | |
| 97823 | Frontier | 97874 | Frontier | | |
| 97824 | Rural | 97875 | Rural | | |
| 97825 | Frontier | 97876 | Rural | | |
| 97826 | Rural | 97877 | Frontier | | |
| 97827 | Rural | 97880 | Rural | | |
| 97828 | Frontier | 97882 | Rural | | |
| 97830 | Frontier | 97883 | Rural | | |
| 97833 | Frontier | 97884 | Frontier | | |
| 97834 | Frontier | 97885 | Frontier | | |
| 97835 | Rural | 97886 | Rural | | |
| 97836 | Frontier | 97901 | Frontier | | |
| 97837 | Frontier | 97902 | Frontier | | |
| 97838 | Rural | 97903 | Frontier | | |
| 97839 | Frontier | 97904 | Frontier | | |
| 97840 | Frontier | 97905 | Frontier | | |
| 97841 | Rural | 97906 | Frontier | | |
| 97842 | Frontier | 97907 | Frontier | | |
| 97843 | Frontier | 97908 | Frontier | | |
| 97844 | Frontier | 97909 | Frontier | | |

ORH DEFINED URBAN, RURAL, AND FRONTIER AREAS



Appendix 2. Prior Authorization Criteria

Attention Deficit Hyperactivity Disorder (ADHD) Safety Edit

Goals:

- Cover medications used for ADHD and narcolepsy if diagnosis is funded by the OHP, and medication use is consistent with best practices.
- Promote care by a psychiatrist for patients requiring therapy outside of best practices.
- Promote preferred drugs in class.

Length of Authorization:

- Up to 12 months

Requires PA:

- Non-preferred drugs on the enforceable preferred drug list.
- Regimens prescribed outside of standard doses and age range (Tables 1 and 2)
- Non-standard polypharmacy (Table 3)

Covered Alternatives:

- Current PMPDP preferred drug list per OAR 410-121-0030 at www.orpdl.org
- Searchable site for Oregon FFS Drug Class listed at www.orpdl.org/drugs/

Table 1. Age Range and Maximum Daily Doses for Drugs Approved for ADHD.

| Drug | Brand Name (or generic equivalents) | Min Age | Max Age | Max Daily Dose |
|----------------------|-------------------------------------|---------|---------|----------------|
| STIMULANTS | | | | |
| Amphetamine IR | Evekeo (tab) | 3 | NA | 40 mg |
| | Evekeo ODT (dist tab) | 3 | NA | 40 mg |
| Amphetamine ER | Adsensys ER (susp) and XR-ODT (tab) | 6 | 12 | 18.8 |
| | | 13 | NA | 12.5 mg |
| | Dyanavel XR (susp, tab) | 6 | NA | 20 mg |
| Dextroamphetamine IR | ProCentra (sol) | 3 | 16 | 40 mg |
| | Zenzedi (tab) | 3 | 16 | 40 mg |
| Dextroamphetamine ER | Dexedrine Spansule (cap) | 6 | 16 | 40 mg |
| | Xelstrym (transdermal patch) | 6 | NA | 18 mg/9 hour |

| | | | | |
|--|------------------------------|----|-------|--|
| Dextroamphetamine/ amphetamine salts IR | Adderall (tab) | 3 | NA | 40 mg |
| Dextroamphetamine/ amphetamine salts ER | Adderall XR (cap) | 6 | 12 | 30 mg |
| | | 13 | NA | 60 mg |
| | Mydayis (cap) | 13 | 17 | 25 mg |
| | | 18 | 55 | 50 mg |
| Dexmethylphenidate IR | Focalin (tab) | 6 | 17 | 20 mg |
| Dexmethylphenidate ER | Focalin XR (cap) | 6 | 17 | 30 mg |
| | | 18 | NA | 40 mg |
| Lisdexamfetamine | Vyvanse (cap; chew tab) | 6 | NA | 70 mg |
| Methamphetamine IR | Desoxyn (tab) | 6 | 17 | 25 mg |
| Methylphenidate IR | Methylin (sol) | 6 | NA | 60 mg |
| | Ritalin (tab) | 6 | NA | 60 mg |
| Methylphenidate ER | Adhansia XR (cap) | 6 | 17 | 85 mg |
| | | 18 | NA | 100 mg |
| | Aptensio XR (cap) | 6 | NA | 60 mg |
| | Concerta (tab) | 6 | 12 | 54 mg |
| | | 13 | 65 | 72 mg |
| | Cotempla XR-ODT (tab) | 6 | 17 | 51.8 mg |
| | Daytrana (transdermal patch) | 6 | 17 | 30 mg/9 hour |
| | Jornay PM (cap) | 6 | NA | 100 mg |
| | Metadate CD (tab) | 6 | NA | 60 mg |
| | QuilliChew ER (chew tab) | 6 | NA | 60 mg |
| | Quillivant XR (susp) | 6 | NA | 60 mg |
| | Relexxi (tab) | 6 | 12 | 54 mg |
| | | 13 | 65 | 72 mg |
| Ritalin LA (cap) | 6 | NA | 60 mg | |
| Serdexmethylphenidate/ dexmethylphenidate | Azstarys (cap) | 6 | NA | 52.3 mg/ 10.4 mg |
| NON-STIMULANTS | | | | |
| Atomoxetine | Strattera (cap) | 6 | 17 | ≤70 kg: lesser of 1.4 mg/kg or 100 mg |
| | | 18 | NA | >70 kg: 100 mg 100 mg |
| Clonidine ER | Kapvay (tab) | NA | NA | NA |
| Guanfacine ER | Intuniv (tab) | NA | NA | NA |

| | | | | |
|---|---------------|----|----|--------|
| Viloxazine ER | Qelbree (cap) | 6 | 17 | 400 mg |
| | | 18 | NA | 600 mg |
| Abbreviations: cap = capsule; chew = chewable; dist = disintegrating; ER = extended-release formulation; IR = immediate-release formulation; NA = not applicable; sol = solution; susp = suspension; tab = tablet. | | | | |

Table 2. Age Range and Maximum Daily Doses for Drugs Approved for Narcolepsy.

| Drug | Brand Name (or generic equivalents) | Min Age | Max Age | Max Daily Dose |
|--|-------------------------------------|---------|---------|----------------|
| STIMULANTS | | | | |
| Amphetamine IR | Evekeo (tab) | 6 | 12 | 40 mg |
| | | 13 | NA | 60 mg |
| Dextroamphetamine IR | ProCentra (sol) | 3 | 17 | 40 mg |
| | | 18 | NA | 60 mg |
| | Zenzedi (tab) | 3 | 17 | 40 mg |
| | | 18 | NA | 60 mg |
| Dextroamphetamine ER | Dexedrine (cap) | 6 | 17 | 40 mg |
| | | 18 | NA | 60 mg |
| Dextroamphetamine/amphetamine salts IR | Adderall (tab) | 6 | 17 | 40 mg |
| | | 18 | NA | 60 mg |
| Methylphenidate IR | Methylin (sol) | 6 | NA | 60 mg |
| | Ritalin (tab) | 6 | NA | 60 mg |
| Methylphenidate ER | Ritalin LA (cap) | 6 | 12 | 60 mg |
| Abbreviations: cap = capsule; ER = extended-release formulation; IR = immediate-release formulation; NA = not applicable; sol = solution; tab = tablet. | | | | |

Table 3. Standard Combination Therapy for ADHD

| Age Group | Standard Combination Therapy |
|----------------|---|
| Age <6 years | Combination therapy not recommended* |
| Age 6-17 years | 1 Stimulant Formulation (ER or IR) + Guanfacine ER* 1 Stimulant Formulation (ER or IR) + Clonidine ER* |
| Age ≥18 years | Combination therapy not recommended** |

Abbreviations: ER = extended-release; IR = immediate-release formulation.

* Recommended by the American Academy of Pediatrics. Wolraich ML, Hagan JF, Jr., Allan C, et al. Clinical Practice Guideline for the Diagnosis, Evaluation, and Treatment of Attention-Deficit/Hyperactivity Disorder in Children and Adolescents. Pediatrics. 2019;144(4).

**Identified by: Pharmacologic Treatments for Attention Deficit Hyperactivity Disorder: Drug Effectiveness Review Project, 2015.

| Approval Criteria | |
|-------------------------------------|--------------------|
| 1. What diagnosis is being treated? | Record ICD10 code. |

| Approval Criteria | | |
|--|--|--|
| 2. Is the drug being used to treat an OHP-funded condition? | Yes: Go to #3 | No: Current Age \geq 21 years: Pass to RPh. Deny; not funded by the OHP Current age < 21 years: go to #13. |
| 3. Is the requested for a preferred drug? | Yes: Go to #5 | No: Go to #4 |
| 4. Will the prescriber consider a change to a preferred agent? Preferred drugs reviewed for comparative effectiveness and safety by the Oregon Pharmacy & Therapeutics Committee. | Yes: Inform prescriber of preferred alternatives | No: Go to #5 |
| 5. Is the request for an ADHD diagnosis? | Yes: Go to #6 | No: Go to #9 |
| 6. Are the patient's age and the prescribed dose within the limits defined in Table 1? | Yes: Go to #7 | No: Go to #11 |
| 7. Is the prescribed drug the only stimulant or non-stimulant filled in the last 30 days? | Yes: Approve for up to 12 months | No: Go to #8 |
| 8. Is the multi-drug regimen a standard combination therapy, as defined in Table 3? | Yes: Approve for up to 12 months | No: Go to #11 |
| 9. Is the request for a narcolepsy diagnosis? | Yes: Go to #10 | No: Pass to RPh. Deny; medical appropriateness. |
| 10. Are the patient's age and the prescribed dose within the limits defined in Table 2? | Yes: Approve for up to 12 months | No: Go to #11 |
| 11. Was the drug regimen developed by or in consultation with a relevant specialist (e.g., psychiatrist, developmental pediatrician, psychiatric nurse practitioner, sleep specialist, pulmonologist, or neurologist)? | Yes: Document name and contact information of consulting provider and approve for up to 12 months | No: Go to #12 |

| Approval Criteria | | |
|--|--|--|
| <p>12. Was the current drug regimen <i>initiated</i> at doses and ages recommended in Tables 1-3 and has the provider assessed ongoing need for treatment in the past year?</p> | <p>Yes: Approve for up to 12 months</p> | <p>No: Pass to RPh. Deny; medical appropriateness.</p> <p>Ages or doses exceeding defined limits, or non-recommended multi-drug regimens, are only approved when prescribed by or in consultation with a mental health specialist. Specialist consultation is not required if patients age into a maximum age limit.</p> <p>May approve continuation of existing therapy once up to 90 days to allow time to consult with a mental health specialist.</p> |
| <p>13. Is there documentation that the condition is of sufficient severity that it impacts the patient's health (e.g., quality of life, function, growth, development, ability to participate in school, perform activities of daily living, etc)?</p> | <p>Yes: Go to #14</p> | <p>No: Pass to RPh. Deny; medical necessity.</p> |
| <p>14. Is the request for an FDA-approved indication?</p> | <p>Yes: Go to #15</p> | <p>No: Pass to RPh. Deny; medical appropriateness.</p> |
| <p>15. Is the request for a preferred product OR has the patient failed to have benefit with, or have contraindications or intolerance to, at least 2 preferred products?</p> <p>Message: Preferred products are evidence-based reviewed for comparative effectiveness and safety by the Oregon Pharmacy & Therapeutics Committee.</p> | <p>Yes: Approve for 12 months.</p> | <p>No: Pass to RPh. Deny; medical appropriateness.</p> <p>Inform prescriber of covered alternatives in class and process appropriate PA.</p> |

P&T Review: 6/24 (SS); 10/22 (DE);6/22; 8/20; 5/19; 9/18; 5/16; 3/16; 5/14; 9/09; 12/08; 2/06; 11/05; 9/05; 5/05; 2/01; 9/00; 5/00
Implementation: 7/1/24; 11/1/2018; 10/13/16; 7/1/16; 10/9/14; 1/1/15; 9/27/14; 1/1/10; 7/1/06; 2/23/06; 11/15/05