Prescribing Guidelines for Attention Deficit/Hyperactivity Disorder (ADHD)
Prescribing for Attention Deficit/Hyperactivity Disorder
This document was developed by Nationwide Children’s Hospital in conjunction with Partners For Kids using evidence-informed clinical guidelines and expert opinion, where evidence is lacking, and are generally reflective of FDA approved indications and recommendations. It is designed to help primary care practitioners and behavioral health providers provide timely and effective treatment for children with attention deficit/hyperactivity disorder (ADHD). Information on cost is provided to aid in decision-making when appropriate. This document should not be considered a substitute for sound clinical judgment, and clinicians are encouraged to seek additional information if questions arise as well as refer to or consult with specialty behavioral health if therapeutic response is inadequate. Additional resources can be found at Pediatric Psychiatry Network [https://ppn.mh.ohio.gov/] or by calling (877) 779-6446, Nationwide Children’s Hospital PCTC at (614) 355-0221 or (877) 355-0221.

Attention Deficit/Hyperactivity Disorder Overview
- ADHD is one of the most common pediatric behavioral health disorders affecting 9.4% of children and is characterized by hyperactivity, attention difficulties, and executive function deficits.
- Medication therapy is indicated for patients aged 6 years or older. Behavioral therapy is recommended as first line treatment of pre-school aged children with ADHD (ages 4-5 years old).
- Behavioral therapy and, when indicated, academic support, should be considered in conjunction with medication therapy for patients greater than 6 years of age.

Screening for Attention Deficit/Hyperactivity Disorder
- The Vanderbilt Assessment Scales is one of the most commonly used tools to diagnose and monitor ADHD in children and adolescents.
- The assessment asks parents and teachers about the child’s behaviors within the past 6 months.
- Scoring exists for each section to reflect diagnosis of ADHD, oppositional-defiant disorder, conduct disorder, mood concerns, academic performance and classroom behavioral performance.
- Providers are encouraged to use the assessment for initial diagnosis, follow up to monitor response to medication, and use objective data to optimize medication use for pediatric ADHD.
- Vanderbilt Assessment Scales are found at: [https://www.nichq.org/resource/nichq-vanderbilt-assessment-scales](https://www.nichq.org/resource/nichq-vanderbilt-assessment-scales)

Pharmacogenomic Testing for Attention Deficit/Hyperactivity Disorder
- Pharmacogenomics is an evolving field in the health care industry. At this time, there is still much to be learned about what specific role an individual’s 200,000+ genes play in their health and medication response.
- Many factors are taken into consideration when initiating a medication for a patient. Knowing a patient’s metabolism what specific role an individual’s 200,000+ genes play in their health and medication response.
- Providers are encouraged to use the assessment for initial diagnosis, follow up to monitor response to medication, and use objective data to optimize medication use for pediatric ADHD.
- Vanderbilt Assessment Scales are found at: [https://www.nichq.org/resource/nichq-vanderbilt-assessment-scales](https://www.nichq.org/resource/nichq-vanderbilt-assessment-scales)


table

<table>
<thead>
<tr>
<th>LONG-ACTING STIMULANTS</th>
<th>1st Line</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methylphenidate, long-acting</td>
<td></td>
</tr>
<tr>
<td>* Ritalin LA®</td>
<td></td>
</tr>
<tr>
<td>* Metadate CD&lt;sup&gt;®&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>* Concerta&lt;sup&gt;®&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>Dextroamphetamine/amphetamine, long-acting</td>
<td></td>
</tr>
<tr>
<td>* Adderall XR&lt;sup&gt;®&lt;/sup&gt;</td>
<td></td>
</tr>
</tbody>
</table>

Try a medication from each class before moving to a 2nd line agent. Consider methylphenidate products first for younger patients. Anecdotal expert-opinion suggests that amphetamine products have significant side effects in younger populations.

<table>
<thead>
<tr>
<th>2nd Line</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dexamphetamine, long-acting</td>
</tr>
<tr>
<td>* Focalin XR®</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>3rd Line</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lisdexamfetamine, long-acting</td>
</tr>
<tr>
<td>* Vyvanse®</td>
</tr>
</tbody>
</table>

Other stimulants can be used for side effect or tolerability issues and unique needs.

Treating Attention Deficit/Hyperactivity Disorder
- Long-acting stimulant medications are generally preferred for school-age children.
- Start with a first line medication from the methylphenidate or dextroamphetamine-amphetamine class, depending on patient’s age and ability to swallow solid dosage forms.
- Maximize dosing of one agent before moving to the next. If ineffective or side effects develop, switch classes within first line options, then move to second or third line medication, if needed.
- Maximize dosing of long-acting stimulant before adding an immediate release formulation medication. It is important to recognize that increasing the dose of the long-acting stimulant does not increase duration of action, but rather tempers symptomatology.
- Before considering a stimulant medication, obtain cardiac history, including sudden cardiac death in first degree relative under age 50, history of congenital heart defect, or conduction defect.

Refer to medication chart at end of these guidelines for a listing of preferred and non-preferred agents and clinical pearls, including information regarding alternative formulations such as crushable tablets, capsules to be opened, liquids or patch.
**Long-acting Stimulant Conversion Guide**

Prescribers, at times, may need to switch patients from one stimulant to another due to various reasons including patient tolerability and insurance preference/formulary changes. This guide serves as a resource to aid in decision-making for stimulant dose conversions. This guide should not be considered a substitute for clinical judgement, and all patients should be monitored closely for clinical and adverse effects.

**General Recommendations:**
- Insufficient evidence exists for switching methylphenidate to amphetamines. Consider switching from methylphenidate to amphetamines at half of the dose.
- When switching dexamphetamine to methylphenidate, the methylphenidate dose should be twice the dexamphetamine dose.
- Concerta® (methylphenidate ER) and Vyvanse® (lisdexamfetamine) are uniquely dosed. The table below provides an initial dose which may require additional titration.

### Patient-related Considerations for ADHD Medication

<table>
<thead>
<tr>
<th>Patient-related Considerations</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appetite suppression</td>
<td>• Eat protein rich breakfast prior to administration</td>
</tr>
<tr>
<td></td>
<td>• Schedule meals and provide regular snacks and drinks</td>
</tr>
<tr>
<td></td>
<td>• Monitor height and weight</td>
</tr>
<tr>
<td>Difficulty swallowing</td>
<td>• Consider alternate medication form:</td>
</tr>
<tr>
<td></td>
<td>- Capsule (refer to medication table to determine which can be opened and sprinkled)</td>
</tr>
<tr>
<td></td>
<td>- Chewable tablet</td>
</tr>
<tr>
<td></td>
<td>- Liquid</td>
</tr>
<tr>
<td>Insomnia</td>
<td>• If long duration of stimulant action, ensure early morning administration or change to shorter duration stimulant</td>
</tr>
<tr>
<td></td>
<td>• Encourage good sleep hygiene habits</td>
</tr>
<tr>
<td>Abdominal pain</td>
<td>• Take with meals</td>
</tr>
<tr>
<td>Headache</td>
<td>• Increase hydration</td>
</tr>
<tr>
<td></td>
<td>• Schedule meals</td>
</tr>
<tr>
<td>Tachycardia and chest pain</td>
<td>• Consider dose reduction</td>
</tr>
<tr>
<td></td>
<td>• Switch to a different stimulant or a non-stimulant</td>
</tr>
<tr>
<td></td>
<td>• Consider cardiology consult with EKG</td>
</tr>
<tr>
<td>Concern for abuse and/or diversion</td>
<td>• Consider a prodrug form of a stimulant, tamper resistant stimulant, or non-stimulant</td>
</tr>
<tr>
<td>Flat affect or mood lability</td>
<td>• Consider dose reduction</td>
</tr>
<tr>
<td></td>
<td>• Switch to a different stimulant or non-stimulant</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dextroamphetamine/amphetamine ER (Adderall® XR)</th>
<th>Methylphenidate ER (Ritalin® LA or Metadate® CD)</th>
<th>Methylphenidate ER (Concerta®)</th>
<th>Dexmethylphenidate (Focalin XR®)</th>
<th>Lisdexamfetamine (Vyvanse®)</th>
</tr>
</thead>
<tbody>
<tr>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>5 mg</td>
<td>10 mg</td>
<td>N/A</td>
<td>5 mg</td>
<td>10 mg</td>
</tr>
<tr>
<td>10 mg</td>
<td>20 mg</td>
<td>18 mg</td>
<td>10 mg</td>
<td>30 mg</td>
</tr>
<tr>
<td>15 mg</td>
<td>30 mg</td>
<td>36 mg</td>
<td>15 mg</td>
<td>40 mg</td>
</tr>
<tr>
<td>20 mg</td>
<td>40 mg</td>
<td>54 mg</td>
<td>20 mg</td>
<td>50 mg</td>
</tr>
<tr>
<td>25 mg</td>
<td>50 mg</td>
<td>72 mg</td>
<td>25 mg</td>
<td>60 mg</td>
</tr>
<tr>
<td>30 mg</td>
<td>60 mg</td>
<td>N/A</td>
<td>30 mg</td>
<td>70 mg</td>
</tr>
</tbody>
</table>

N/A indicates not available.
Stimulant and Non-Stimulant Medications for Treatment of Attention Deficit/Hyperactivity Disorder

Medication List for Medicaid Plans

<table>
<thead>
<tr>
<th>Drug</th>
<th>Initial Daily Dose</th>
<th>Titratin Recommendation</th>
<th>Max Daily Dose</th>
<th>Strengths Available</th>
<th>Clinical Pearls</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Preferred Stimulants</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dextroamph-tamine-Aphet-amine Immediate Release (Adderall®)</td>
<td>2.5-5 mg</td>
<td>Increase by 2.5-5 mg weekly</td>
<td>40 mg</td>
<td>5; 7.5; 10; 12.5; 15; 20; 30 mg</td>
<td>3:1 ratio dextro- to levo-amphetamine ratio. Tablet can be crushed. Duration 4-6 hours.</td>
</tr>
<tr>
<td>Dextroamph-tamine-Aphet-amine Long-Acting (Adderall XR®)</td>
<td>5-10 mg</td>
<td>Increase by 5-10 mg weekly</td>
<td>30-60 mg</td>
<td>5; 10; 15; 20; 25; 30 mg</td>
<td>3:1 ratio dextro- to levo-amphetamine ratio. Capsule can be opened and sprinkled. Duration 10-12 hours.</td>
</tr>
<tr>
<td>Methylpheni-date Immediate Release (Ritalin®)</td>
<td>5 mg</td>
<td>Increase by 5-10 mg/day weekly</td>
<td>60 mg</td>
<td>5; 10; 20 mg</td>
<td>Tablet can be crushed. Duration 4 hours.</td>
</tr>
<tr>
<td>Methylphenidate Long-Acting (Ritalin LA®)</td>
<td>10-20 mg</td>
<td>Increase by 10 mg/ day weekly</td>
<td>60 mg</td>
<td>Brand: 10; 20; 30; 40 mg Generic: 10; 15; 20; 30; 40; 50; 60 mg</td>
<td>50% is immediate release and 50% is extended release. Capsule can be opened and sprinkled. Duration 8-10 hours.</td>
</tr>
<tr>
<td>Methylphenidate Long-Acting (Concerta®)</td>
<td>18 mg</td>
<td>Increase by 18 mg weekly</td>
<td>54 mg (&lt;13y) 72 mg (&lt;13y)</td>
<td>18; 27; 36; 54 mg</td>
<td>22% is immediate release and 78% is extended release. Tablet cannot be crushed. Duration 10-12 hours.</td>
</tr>
<tr>
<td>Methylphenidate Long-Acting (Metadate CD®)</td>
<td>20 mg</td>
<td>Increase by 10-20 mg/day weekly</td>
<td>60 mg</td>
<td>10; 20; 30; 40; 50 mg</td>
<td>30% is immediate release and 70% is extended release. Capsule can be opened and sprinkled. Duration 8-10 hours.</td>
</tr>
<tr>
<td><strong>Preferred Non-Stimulants</strong></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Guantaine Im-mediate Release (Teres®)</td>
<td>0.5 mg</td>
<td>Increase by 0.5 mg/ day every 3-4 days</td>
<td>4 mg</td>
<td>1; 2 mg</td>
<td>Monitor blood pressure. Taper when discontinuing.</td>
</tr>
<tr>
<td>Guantaine Extended Release (Intuniv®)</td>
<td>1 mg</td>
<td>Increase by 1 mg/ day weekly</td>
<td>4 mg</td>
<td>1; 2; 3; 4 mg</td>
<td>Not equivalent to immediate-release guantaine. Take at the same time each day. Do not administer with high-fat meal. Tablet cannot be opened or crushed. Monitor blood pressure. Taper when discontinuing.</td>
</tr>
<tr>
<td><strong>Non-Preferred Stimulants</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Amphetamine Extended Release Dispersable Tablet (Adzenys XR-ODT®)</td>
<td>3.1 mg</td>
<td>Increase in 3.1 mg or 6.3 mg increments weekly</td>
<td>18.8 mg for 6-12y; 12.5 mg for 13y</td>
<td>3.1; 6.3; 8.4; 12.5; 15; 17.8; 18.8 mg</td>
<td>Extended-release orally disintegrating tablet. 3:1 ratio of dextro- and levo-amphetamine. Duration 12 hours. See package insert for mg conversion to mixed amphetamine salts.</td>
</tr>
<tr>
<td>Amphetamine Extended Release Suspension (Dyanavel XR®)</td>
<td>2.5 mg</td>
<td>Increase in 2.5-10 mg/day increments every 4-7 days</td>
<td>20 mg</td>
<td>2.5 mg/mL</td>
<td>Long acting oral suspension. 3:1 ratio of dextro- and levo-amphetamine. Duration 12 hours. This product is not equivalent to other amphetamine-dextroamphetamine products.</td>
</tr>
<tr>
<td>Amphetamine Long-Acting (Evekeo®)</td>
<td>5 mg</td>
<td>Increase by 2.5 mg/ day weekly</td>
<td>40 mg</td>
<td>5; 10 mg</td>
<td>Immediate release tablet. 1:1 ratio of dextro- and levo-amphetamine. Duration 10 hours.</td>
</tr>
<tr>
<td>Dexamphetamine-Extended Release (Focalin®)</td>
<td>2.5 mg</td>
<td>Increase by 2.5-5 mg/day weekly</td>
<td>20 mg</td>
<td>2.5; 5; 10 mg</td>
<td>Tablet can be crushed. Duration 4 hours. When switching from methylphenidate, reduce dose by half.</td>
</tr>
<tr>
<td>Dexamphetamine-Long-Acting (Focalin XR®)</td>
<td>5 mg</td>
<td>Increase by 5 mg/ day weekly</td>
<td>30 mg</td>
<td>5; 10; 15; 20; 25; 30; 35; 40 mg</td>
<td>50% is immediate release and 50% is extended release. Capsule can be opened and sprinkled. Duration 10-12 hours. When switching from methylphenidate, reduce dose by half.</td>
</tr>
<tr>
<td>Dextroamphetamine-Amphetamine Long-Acting (Mydayis®)</td>
<td>12.5 mg</td>
<td>Increase by 12.5 mg increments weekly</td>
<td>25 mg</td>
<td>12.5; 25; 37.5; 50 mg</td>
<td>Approved for children 13 years and older. Capsule can be opened and sprinkled. Duration 12 hours. See package insert for mg conversion to mixed amphetamine salts.</td>
</tr>
<tr>
<td>Dextroamphetamine Extended Release (Dexedrine® Spanules®)</td>
<td>5 mg</td>
<td>Increase by 5mg/day weekly</td>
<td>40 mg</td>
<td>5; 10; 15 mg</td>
<td>Extended release capsule. Swallow capsule whole. Duration 3-5 hours.</td>
</tr>
<tr>
<td>Dextroamphetamine Immediate Release (Zenzedi®)</td>
<td>5 mg</td>
<td>Increase by 2.5-5mg/day weekly</td>
<td>40 mg</td>
<td>Brand: 2.5; 5; 7.5; 10; 15; 20; 30 mg Generic: 5; 10 mg</td>
<td>Immediate release tablet. Can be crushed. Duration 4-6 hours. Generic available in only 5 mg and 10 mg strengths.</td>
</tr>
<tr>
<td>Dextroamphetamine Immediate Release (ProCentra®)</td>
<td>5 mg</td>
<td>Increase by 2.5-5mg/day weekly</td>
<td>40 mg</td>
<td>5 mg/mL</td>
<td>Short acting oral solution. Duration 4-6 hours.</td>
</tr>
<tr>
<td>Drug</td>
<td>Initial Daily Dose</td>
<td>Titration Recommendation</td>
<td>Max Daily Dose</td>
<td>Strengths Available</td>
<td>Clinical Pearls</td>
</tr>
<tr>
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</tr>
<tr>
<td>Lisdexamfetamine (Vyvanse®)</td>
<td>30 mg</td>
<td>Increase by 10-20 mg/day at 3-7 day intervals</td>
<td>70 mg</td>
<td>Capsule: 10; 20; 30; 40; 50; 60; 70 mg Chewable tablet: 10; 20; 30; 40; 50; 60 mg</td>
<td>Pro-drug metabolized to 100% dextroamphetamine. Decreased risk of abuse. Available in capsule and chewable tablet, which are interchangeable on mg-mg basis. Capsule can be opened and dissolved in liquid, then immediately ingested. Duration 10-12 hours.</td>
</tr>
<tr>
<td>Methylphenidate Long-Acting (Aptensio XR®)</td>
<td>10 mg</td>
<td>Increase by 10 mg/day weekly</td>
<td>60 mg</td>
<td>10; 15; 20; 30; 40; 50; 60 mg</td>
<td>40% is immediate release and 60% is extended release. Capsule can be opened and sprinkled. Duration 8-12 hours.</td>
</tr>
<tr>
<td>Methylphenidate Long-Acting (Daytrana®)</td>
<td>17.3 mg</td>
<td>Increase by 17.3 mg/day weekly</td>
<td>51.8 mg</td>
<td>8.6; 17.3; 25.9 mg</td>
<td>Long-acting orally disintegrating tablet. Duration 8-12 hours.</td>
</tr>
<tr>
<td>Methylphenidate Long-Acting (Jornay PM®)</td>
<td>10 mg</td>
<td>Increase to next transdermal patch size no more frequently than every week</td>
<td>30 mg</td>
<td>10; 15; 20; 30 mg</td>
<td>Transdermal system. Apply for 9 hours. Strength of patch is how much medicine is delivered in a day. Duration 10-12 hours. May cause skin irritation.</td>
</tr>
<tr>
<td>Methylphenidate Long-Acting (QuilliChew®)</td>
<td>20 mg</td>
<td>Increase by 20 mg/day weekly</td>
<td>100 mg</td>
<td>20; 40; 60; 80; 100 mg</td>
<td>Take in the evening between 6:30-9:30pm. If converting from another methylphenidate formulation, discontinue previous formulation and titrate Jornay PM® using initial schedule. Capsules can be opened and sprinkled.</td>
</tr>
<tr>
<td>Methylphenidate Long-Acting (Quillivant XR®)</td>
<td>10-20 mg</td>
<td>Increase by 10.15, or 20 mg/day weekly</td>
<td>60 mg</td>
<td>20; 30; 40 mg</td>
<td>Long-acting chewable tablet. 30:70 mixture of immediate delayed release. Duration 8 hours.</td>
</tr>
<tr>
<td>Methylphenidate Long-Acting (Quillivant®)</td>
<td>20 mg</td>
<td>Increase by 10-20 mg/day weekly</td>
<td>60 mg</td>
<td>25 mg/5 mL; 60; 120; 150; 180 mL</td>
<td>Long-acting oral suspension. Duration 12 hours.</td>
</tr>
</tbody>
</table>

### Non-Preferred Stimulants

<table>
<thead>
<tr>
<th>Drug</th>
<th>Initial Daily Dose</th>
<th>Titration Recommendation</th>
<th>Max Daily Dose</th>
<th>Strengths Available</th>
<th>Clinical Pearls</th>
</tr>
</thead>
<tbody>
<tr>
<td>Atropine (Strattera®)</td>
<td>≤70 kg: 0.5 mg/kg &gt;70 kg: 40 mg</td>
<td>Increase after a minimum of 3 days to ~1.2 mg/kg/day &gt;70 kg: increase after a minimum of 3 days to ~80 mg daily</td>
<td>1.4 mg/kg or 100 mg</td>
<td>10; 18; 25; 40; 60; 80; 100 mg</td>
<td>Must be taken daily. Takes 2 weeks to attain maximum efficacy. Cannot be opened or crushed. Black box warning for an increased risk of suicidal ideation, balance risk with clinical need. Bolded warning of liver damage; decrease dose in hepatic impairment.</td>
</tr>
<tr>
<td>Clonidine (Catapres®)</td>
<td>≤45 kg: 0.05 mg &gt;45 kg: 0.1 mg</td>
<td>≥45 kg: increase every 3–7 days in 0.05 mg increments &gt;45 kg: increase every 3–7 days in 0.1 mg increments</td>
<td>27 – 40.5 mg/day; 40.5 – 45 mg; 0.3 mg/day; &gt; 45 kg: 0.4 mg/day</td>
<td>0.1; 0.2; 0.3 mg</td>
<td>May cause sedation; sometimes used as sleep aid. Monitor blood pressure. Taper when discontinuing.</td>
</tr>
<tr>
<td>Clonidine Extended Release (Kapvay®)</td>
<td>0.1 mg</td>
<td>Increase in 0.1 mg/day increments every 7 days</td>
<td>0.4 mg</td>
<td>0.1 mg</td>
<td>Doses higher than 0.1 mg should be taken twice a day, with an equal or higher split dosage given at bedtime. Not equivalent to immediate release tablet. Tablet cannot be opened or crushed. Monitor blood pressure. Taper when discontinuing.</td>
</tr>
</tbody>
</table>

**Non-Preferred Non-Stimulants**

**Dosing is for school-aged children. Medication treatment in preschool-aged children should be considered after a trial of behavioral intervention.**

**Contains a combination of d-amphetamine and l-amphetamine. More potent release of dopamine occurs with d-amphetamine, resulting in more symptom reduction for hyperactivity/impulsivity, but more appetite suppression.**

**2 More potent release of norepinephrine occurs with l-amphetamine, resulting in more symptom reduction for hyperactivity/impulsivity, but more appetite suppression.**

**Bolded medications are available generically.**

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*Note: Drug information is compiled from data at Lexicomp Online at online.lexi.com. Please refer to the specific medication’s package insert for the most up-to-date information. For current drug pricing, please reference the Unified Preferred Drug List for Ohio Medicaid Plans coverage resource on the Partners For Kids’ Resources page under Prescribing Resources or Lexicomp Online.*
Referrals and Consultations

Online: NationwideChildrens.org
Phone: (614) 722-6600 or (877) 722-6220  |  Fax: (614) 722-4000
Physician Direct Connect Line for 24-hour urgent physician consultations:
(614) 355-0221 or (877) 355-0221