Prescribing Guidelines for Attention Deficit/ Hyperactivity Disorder (ADHD)

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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) PSY-OHIO OR (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

Pharmacogenomic Testing for Attention Deficit/Hyperactivity Disorder

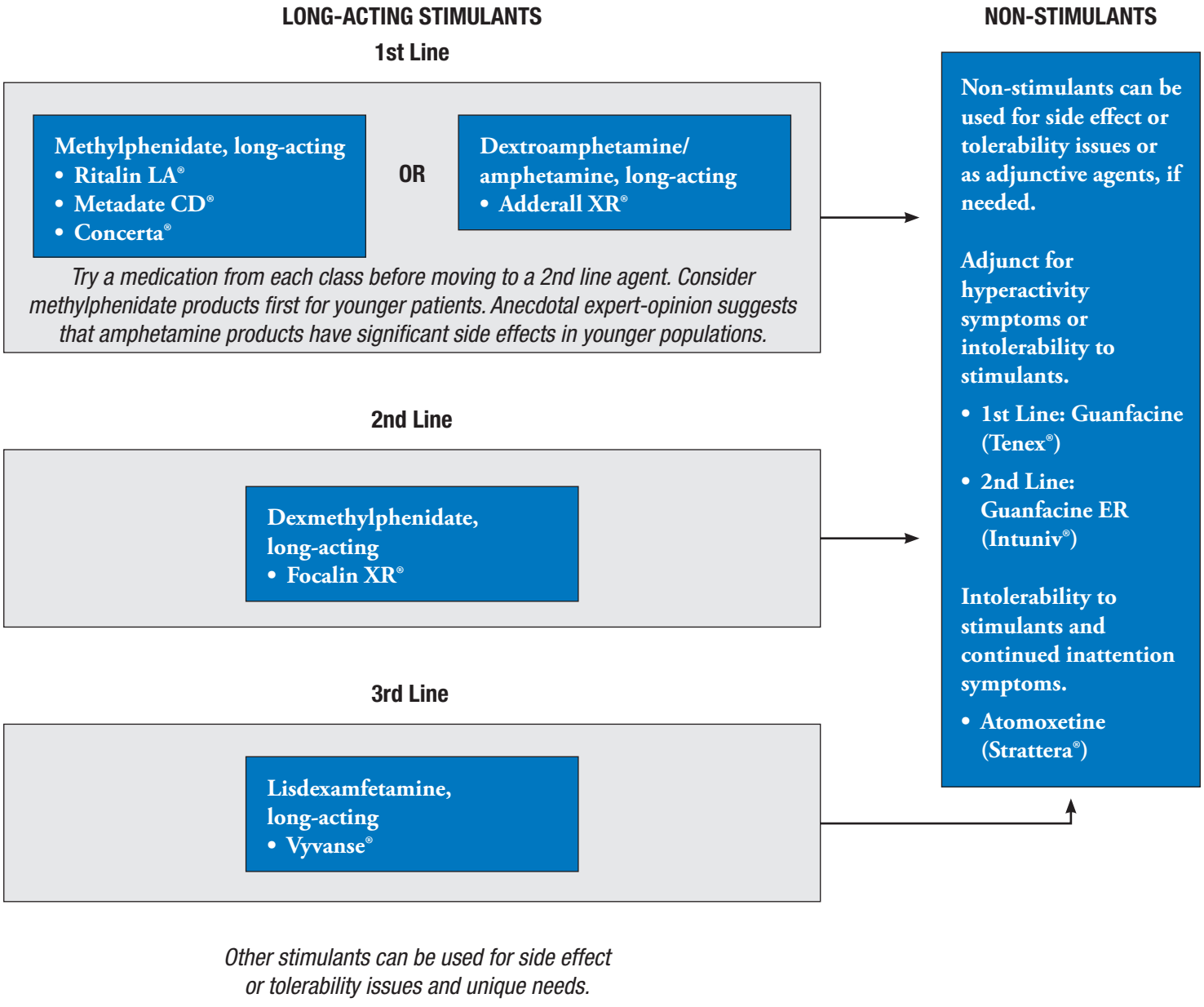
- Pharmacogenomics is an evolving field in the health care industry. At this time, there is still much to be learned about what specific role an individual's 200,000+ genes play in their health and medication response.
- Many factors are taken into consideration when initiating a medication for a patient. Knowing a patient's metabolism status of specific CYP pathways is helpful, but only one factor in the decision-making process.

Although tests are available and covered by some insurers, there is limited clinically relevant data to support its use in determining medication and dosage selections, and therefore, not recommended as part of standard care.

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.



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

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 dexmethylphenidate to methylphenidate, the methylphenidate dose should be twice the dexmethylphenidate dose.
- Concerta® (methylphenidate ER) and Vyvanse® (lisdexamfetamine) are uniquely dosed. The table below provides an initial dose which may require additional titration.

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

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

Stimulant and Non-Stimulant Medications for Treatment of Attention Deficit/Hyperactivity Disorder

Medication List for Medicaid Plans

Drug	Initial Daily Dose[1]	Titration Recommendation	Max Daily Dose	Strengths Available	Clinical Pearls
Preferred Stimulants					
Dextroamphetamine-Amphetamine Immediate Release (Adderall®)	2.5-5 mg	Increase by 2.5-5 mg weekly	40 mg	5; 7.5; 10; 12.5; 15; 20; 30 mg	3:1 ratio dextro- to levo-amphetamine ratio.[2] Tablet can be crushed. Duration 4-6 hours.
Dextroamphetamine-Amphetamine Long-Acting (Adderall XR®)	5-10 mg	Increase by 5-10 mg weekly	30-60 mg	5; 10; 15; 20; 25; 30 mg	3:1 ratio dextro- to levo-amphetamine ratio.[2] Capsule can be opened and sprinkled. Duration 10-12 hours.
Methylphenidate Immediate Release (Ritalin®)	5 mg	Increase by 5-10 mg/day weekly	60 mg	5; 10; 20 mg	Tablet can be crushed. Duration 4 hours.
Methylphenidate Long-Acting (Ritalin LA®)	10-20 mg	Increase by 10 mg/day weekly	60 mg	Brand: 10; 20; 30; 40 mg Generic: 10; 15; 20; 30; 40; 50; 60 mg	50% is immediate release and 50% is extended release. Capsule can be opened and sprinkled. Duration 8-10 hours.
Methylphenidate Long-Acting (Concerta®)	18 mg	Increase by 18 mg weekly	54 mg (<13y) 72 mg (≥13y)	18; 27; 36; 54 mg	22% is immediate release and 78% is extended release. Tablet cannot be crushed. Duration 10-12 hours.
Methylphenidate Long-Acting (Metadate CD®)	20 mg	Increase by 10-20 mg/day weekly	60 mg	10; 20; 30; 40; 50 mg	30% is immediate release and 70% is extended release. Capsule can be opened and sprinkled. Duration 8-10 hours.
Preferred Non-Stimulants					
Guanfacine Immediate Release (Tenex®)	0.5 mg	Increase by 0.5 mg/day every 3-4 days	4 mg	1; 2 mg	Monitor blood pressure. Taper when discontinuing.
Guanfacine Extended Release (Intuniv®)	1 mg	Increase by 1 mg/day weekly	4 mg	1; 2; 3; 4 mg	Not equivalent to immediate-release guanfacine. 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.

Non-Preferred Stimulants					
Amphetamine Extended Release Dispersable Tablet (Adzenys XR-ODT®)	3.1 mg	Increase in 3.1 mg or 6.3 mg increments weekly	18.8 mg for 6-12y; 12.5 mg for ≥13y	3.1; 6.3; 9.4; 12.5; 15.7; 18.8 mg	Extended-release orally disintegrating tablet. 3:1 ratio of dextro- and levo-amphetamine.[2] Duration 10-12 hours. See package insert for mg conversion to mixed amphetamine salts.
Amphetamine Extended Release Suspension (Dyanavel XR®)	2.5 mg	Increase in 2.5-10 mg/day increments every 4-7 days	20 mg	2.5 mg/mL	Long acting oral suspension. 3:1 ratio of dextro- and levo-amphetamine.[2] Duration 12 hours. This product is not equivalent to other amphetamine-dextroamphetamine products.
Amphetamine Long-Acting (Evekeo®)	5 mg	Increase by 2.5 mg/day weekly	40 mg	5; 10 mg	Immediate release tablet. 1:1 ratio of dextro- and levo-amphetamine.[2] Duration 10 hours.
Dexmethylphenidate Immediate Release (Focalin®)	2.5 mg	Increase by 2.5-5 mg/day weekly	20 mg	2.5; 5; 10 mg	Tablet can be crushed. Duration 4 hours. When switching from methylphenidate, reduce dose by half.
Dexmethylphenidate Long-Acting (Focalin XR®)	5 mg	Increase by 5 mg/day weekly	30 mg	5; 10; 15; 20; 25; 30; 35; 40 mg	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.
Dextroamphetamine-Amphetamine Long-Acting (Mydayis®)	12.5 mg	Increase by 12.5 mg increments weekly	25 mg	12.5; 25; 37.5; 50 mg	Approved for children 13 years and older. Capsule can be opened and sprinkled. Duration 16 hours. See package insert for mg conversion to mixed amphetamine salts.
Dextroamphetamine Extended Release (Dexedrine® Spansule®)	5 mg	Increase by 5mg/day weekly	40 mg	5; 10; 15 mg	Extended release capsule. Swallow capsule whole. Duration 3-5 hours.
Dextroamphetamine Immediate Release (Zenzedi®)	5 mg	Increase by 2.5-5mg/day weekly	40 mg	Brand: 2.5; 5; 7.5; 10; 15; 20; 30 mg Generic: 5; 10 mg	Immediate release tablet. Can be crushed. Duration 4-6 hours. Generic available in only 5 mg and 10 mg strengths.
Dextroamphetamine Immediate Release (ProCentra®)	5 mg	Increase by 2.5-5mg/day weekly	40 mg	5 mg/mL	Short acting oral solution. Duration 4-6 hours.

Drug	Initial Daily Dose[1]	Titration Recommendation	Max Daily Dose	Strengths Available	Clinical Pearls
Non-Preferred Stimulants					
Lisdexamfetamine (Vyvanse®)	30 mg	Increase by 10-20 mg/day at 3-7 day intervals	70 mg	Capsule: 10; 20; 30; 40; 50; 60; 70 mg Chewable tablet: 10; 20; 30; 40; 50; 60 mg	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.
Methylphenidate Long-Acting (Aptensio XR®)	10 mg	Increase by 10 mg/day weekly	60 mg	10; 15; 20; 30; 40; 50; 60 mg	40% is immediate release and 60% is extended release. Capsule can be opened and sprinkled. Duration 8-12 hours.
Methylphenidate Long-Acting (Cotempla XR-ODT®)	17.3 mg	Increase by 17.3 mg/day weekly	51.8 mg	8.6; 17.3; 25.9 mg	Long-acting orally disintegrating tablet. Duration 8-12 hours.
Methylphenidate Long-Acting (Daytrana®)	10 mg	Increase to next transdermal patch size no more frequently than every week	30 mg	10; 15; 20; 30 mg	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.
Methylphenidate Long-Acting (Jornay PM®)	20 mg	Increase by 20 mg/day weekly	100 mg	20; 40; 60; 80; 100 mg	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.
Methylphenidate Long-Acting (QuilliChew ER®)	10-20 mg	Increase by 10,15, or 20 mg/day weekly	60 mg	20; 30; 40 mg	Long-acting chewable tablet. 30:70 mixture of immediate:delayed release. Duration 8 hours.
Methylphenidate Long-Acting (Quillivant XR®)	20 mg	Increase by 10-20 mg/day weekly	60 mg	25 mg/ 5 mL; 60; 120; 150; 180 mL	Long-acting oral suspension. Duration 12 hours.

Non-Preferred Non-Stimulants					
Atomoxetine (Strattera®)	≤70kg: 0.5 mg/kg >70kg: 40 mg	≤70kg: increase after a minimum of 3 days to ~1.2 mg/kg/day >70kg: increase after a minimum of 3 days to ~80 mg daily	1.4 mg/kg or 100 mg	10; 18; 25; 40; 60; 80; 100 mg	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.
Clonidine (Catapres®)	≤45kg: 0.05 mg >45kg: 0.1 mg	≤45kg: increase every 3-7 days in 0.05 mg increments >45kg: increase every 3-7 days in 0.1 mg increments	27 – 40.5 kg: 0.2 mg/day; 40.5 – 45 kg: 0.3 mg/day; > 45 kg: 0.4 mg/day	0.1; 0.2; 0.3 mg	May cause sedation; sometimes used as sleep aid. Monitor blood pressure. Taper when discontinuing.
Clonidine Extended Release (Kapvay®)	0.1 mg	Increase in 0.1 mg/day increments every 7 days	0.4 mg	0.1 mg	Doses higher than 0.1mg 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.

Bolded medications are available generically.

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

[2]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. More potent release of norepinephrine occurs with l-amphetamine, resulting in more symptom reduction for inattention, but less CNS excitation and more cardiovascular adverse effects.

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**

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