Prescribing Guidelines for Attention Deficit/Hyperactivity Disorder (ADHD)

ADHD Pathway

Assessment Tools:

Diagnostic Guidance

Prescription Options:

Stimulants

Non-Stimulants

Side Effect Management

Resources

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 is generally reflective of FDA approved indications and recommendations. It is designed to help primary care practitioners provide timely and effective treatment for children with mental health disorders. Information on cost is provided to aid in decision-making when appropriate. This document should not be considered a substitute for sound clinical judgment. 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.

PARTNERS FOR KIDS | NATIONWIDE CHILDREN'S

When your child needs a hospital, everything matters.

Initial Outpatient Evaluation and Management of Attention Deficit Hyperactivity Disorder

Diagnosis

Concern for symptoms of inattention, hyperactivity, or impulsivity.

Yes → **Administer Vanderbilt assessment:** click here for more assessment details click below for the Vanderbilt download

No → Consider Differential diagnosis

Vanderbilt Download:
Use evaluation page
Complete scales in two settings (home/school) if possible

Criteria met, and dysfunction present?

Yes → Initiate Treatment (start with patient age question) and Follow-up using the respective sections below

No → Consider Differential diagnosis

Treatment

Ask the caregiver:
1. Are behavioral interventions not available or failed?
2. Is there moderate or severe disturbance in more than just the home?

Both answers are no → Behavioral Therapy (Skills) Options

One or both answers are yes → **Patient Age ≥ 6?**

No → Ask the caregiver

Yes → Select from medication class and/or behavioral therapy then use follow-up recommendations below.
Patients waiting to be connected to Behavioral Therapy will need monthly follow up.

Behavioral Therapy (Skills) Options

- CDC: Parent Training in Behavior Management
- CDC: ADHD in the classroom, helping children succeed in school
- Additional resources **BH-TIPS, BH Directory**

Pharmacologic Therapy (Pills) Options

- First-Line Stimulants
- Second-Line Stimulants
- Third-Line Non-Stimulants

Medication Resources

- Duration of Action and Dosing Guide
- Patients with Difficulty Swallowing
- Dose Comparison Table

Each medication failure prompts restarting with 1 month follow-ups and escalation to the next line of ADHD medication

Follow-Up

New therapy started?

No → Continue routine follow up

Yes → Follow-up in 1 month to determine therapy effect

Was a therapy adjustment needed?

Yes → Continue with monthly follow-ups until stable

No → Dose stable: follow-up every 3-6 months

Follow-Up Recommendations

- 1 month follow-up recommendations
- Side Effect Management
- Titration and dose switching recommendations
- Cardiac monitoring recommendations

LEGEND = Decision point | Workflow Segment / Link to New Page | Outside Scope of ADHD Pathway | External Link or Reference | Description/ Clarification

Diagnostic Criteria

Concern for symptoms of inattention, hyperactivity, or impulsivity.

Vanderbilt Download:
Use evaluation page
Complete scales in two settings (home/school) if possible

Score both home and school Vanderbilt assessments using the scoring instructions on page 10 of the downloaded scale

Parent Assessment Scale	Teacher Assessment Scale
Predominantly Inattentive subtype ■ Must score a 2 or 3 on 6 out of 9 items on questions 1–9 AND ■ Score a 4 or 5 on any of the Performance questions 48–55	**Predominantly Inattentive subtype** ■ Must score a 2 or 3 on 6 out of 9 items on questions 1–9 AND ■ Score a 4 or 5 on any of the Performance questions 36–43
Predominantly Hyperactive/Impulsive subtype ■ Must score a 2 or 3 on 6 out of 9 items on questions 10–18 AND ■ Score a 4 or 5 on any of the Performance questions 48–55	**Predominantly Hyperactive/Impulsive subtype** ■ Must score a 2 or 3 on 6 out of 9 items on questions 10–18 AND ■ Score a 4 or 5 on any of the Performance questions 36–43
ADHD Combined Inattention/Hyperactivity ■ Requires the above criteria on both inattention and hyperactivity/impulsivity	**ADHD Combined Inattention/Hyperactivity** ■ Requires the above criteria on both inattention and hyperactivity/impulsivity
Oppositional-Defiant Disorder Screen ■ Must score a 2 or 3 on 4 out of 8 behaviors on questions 19–26 AND ■ Score a 4 or 5 on any of the Performance questions 48–55	**Oppositional-Defiant/Conduct Disorder Screen** ■ Must score a 2 or 3 on 3 out of 10 items on questions 19–28 AND ■ Score a 4 or 5 on any of the Performance questions 36–43
Conduct Disorder Screen ■ Must score a 2 or 3 on 3 out of 14 behaviors on questions 27–40 AND ■ Score a 4 or 5 on any of the Performance questions 48–55	**Anxiety/Depression Screen** ■ Must score a 2 or 3 on 3 out of 7 items on questions 29–35 AND ■ Score a 4 or 5 on any of the Performance questions 36–43
Anxiety/Depression Screen ■ Must score a 2 or 3 on 3 out of 7 behaviors on questions 41–47 AND ■ Score a 4 or 5 on any of the Performance questions 48–55	

- The Vanderbilt assessment is the best evidence-based tool to screen and monitor progress of therapy in patients with ADHD
- Other tools may be utilized, and if validated, scores from other tools such as the Connor Questionnaire may be utilized in place of a Vanderbilt Assessment
- ADHD may occur alongside other conditions, there are a few resources that briefly describe other common comorbidities below
- A Vanderbilt from one setting may be the only tool available for some patients. Consider impact to the patient's activities of daily life or consider consult with BH-TIPs

Positive ADHD scores in both settings?

No → Review the scores for the other possible diagnoses per Vanderbilt scoring

Yes → Several symptoms were present before age 12 or patient is currently under 12 years of age

Yes → Several symptoms are present in two or more settings (such as home, school, with friends, or other activities)

Yes → Clear evidence that symptoms interfere with or reduce the quality of social, school or other functioning

Yes → The symptoms are not better explained by another disorder.

Yes → **Diagnosis of ADHD**
return to main pathway and identify appropriate treatment

No (from Positive ADHD scores in both settings?)
No (from Review the scores for the other possible diagnoses per Vanderbilt scoring)
No (from Several symptoms were present before age 12 or patient is currently under 12 years of age)
No (from Several symptoms are present in two or more settings (such as home, school, with friends, or other activities))
No (from Clear evidence that symptoms interfere with or reduce the quality of social, school or other functioning)
No (from The symptoms are not better explained by another disorder.)
No (from Diagnosis of ADHD)

Differential Diagnosis Tools

- Differential diagnosis grid
- CDC- other concerns and conditions
- Florida International University Tools

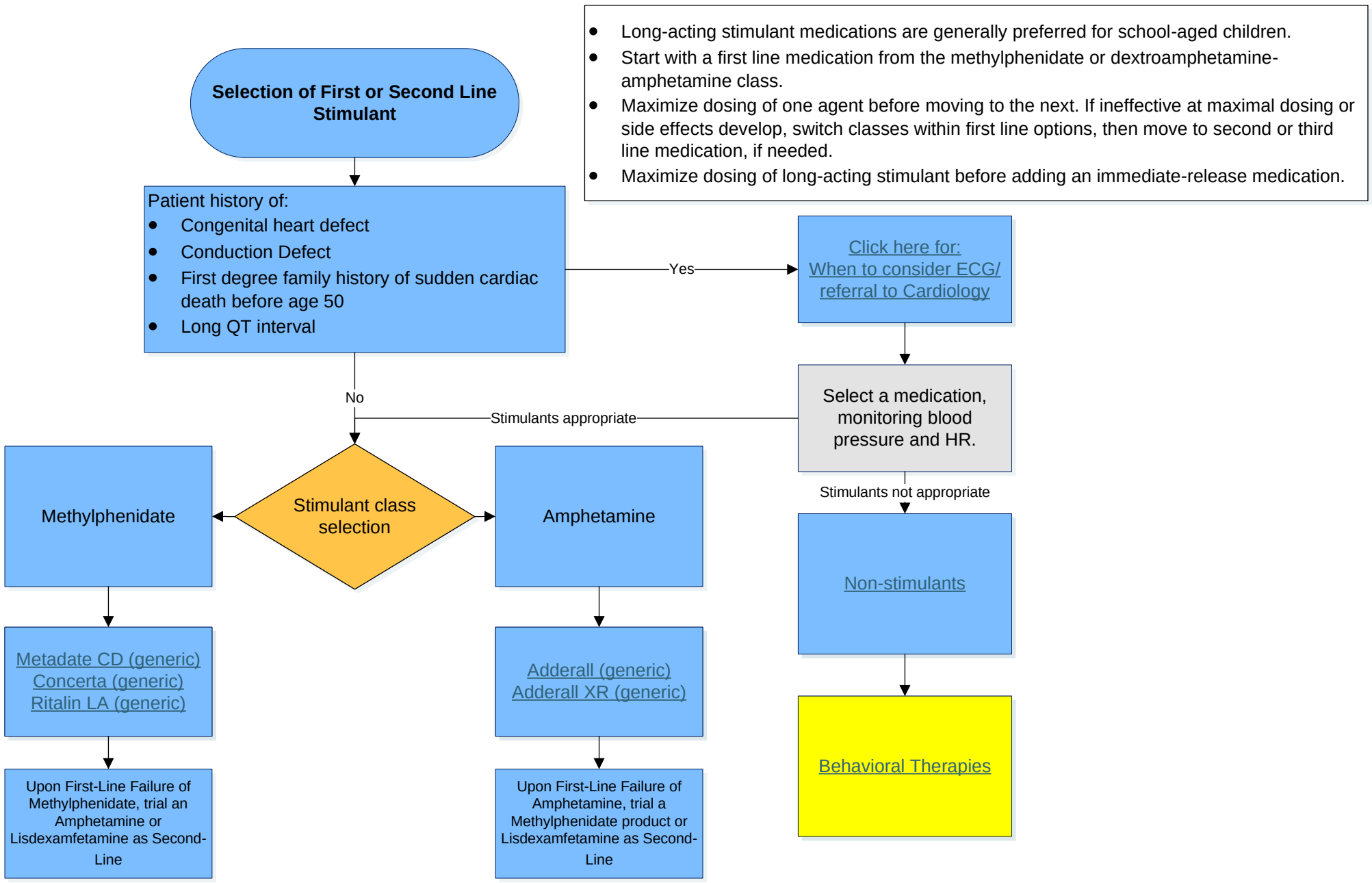
Return to Pathway

Diagnosis	Shared ADHD Symptoms and Features	Differential Symptoms and Features	Screening and Assessment Tools
Anxiety	- Fidgeting - Inattention	- Elevated worry - Avoidance activities that elicit worry/fear - Physical symptoms	- SCARED - GAD-7
Depression	- Inattention - Difficulty completing tasks - Low motivation - Sleep disruption	- Low mood - Anhedonia - Sadness - Appetite change	- PHQ-8/9
Specific Learning Disorder	- Academic difficulties - Difficulty completing academic work	- Difficulty with specific academic skills (e.g., learning to read) as opposed to global academic concerns - Symptoms only present with educational activities	- Psychoeducational evaluation - Consultation with School
Autism	- Inattention - Interruption - Talkativeness - Fidgeting like movements - Social difficulties	- Lack of interest in social interaction - Difficulty with reading social cues - Movements are repetitive	- Autism Spectrum Rating Scale - ASD evaluation
Intellectual Disability	- Inattention - Academic difficulties - Hyperactivity - Disruptive behaviors	- Significantly low cognitive abilities and adaptive functioning (ADLs)	- Psychoeducational evaluation
Oppositional Defiant Disorder	- Difficulty following instructions - Noncompliance - Hyperactivity - “Annoying” behaviors - Aggression	- Intentional and often planful defiance, rather than impulsivity or distraction - “Annoying” behaviors are deliberate - Arguing - Blaming others - Seeking revenge	- Vanderbilt Comorbidity Scale* w/ Interview
Pediatric Bipolar	- Impulsivity - Hyperactivity - Excessive Talking - Rapid thinking - Not finishing tasks	- Mania is a sudden onset - Marked change from typical functioning - Alternates with depressive states opposed to a persistent state of symptoms from an early age with ADHD	- Child Mania Rating Scale for Parents** - Mood/Symptom monitoring
Substance Use	- Fidgeting - Inattention/concentration difficulty - Emotion dysregulation	- Difficulty quitting a substance - Tolerance - Dependence - Shared symptoms are associated with substance use or withdrawal	- CRAFFT
PTSD	- Fidgeting / Restless - Inattention - “Zoning out” - Emotional outbursts - Sleep disruption	- Exposure to potentially traumatic events - Nightmares - Flashbacks - Increased negative emotions - Avoidance of tasks associated with trauma	- Child PTSD Symptom Scale - Childhood and Adolescent Trauma Screen (CATS) - Trauma Symptom Checklist for Children (TSCC)

*The Vanderbilt ODD comorbidity overidentifies children with ADHD. A positive score warrants further interview, a negative score effectively rules out.
**Positive score on the Childhood Mania Rating Scale indicates need for further assessment, negative score can often effectively rule-out mania.
Adapted from: American Academy of Family Physicians, National Research Network (2019)

Return to Pathway

Stimulant Medication Selection Guidance



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Medicaid Unified Preferred Drug List (UPDL) Generic Stimulant Options:

Drug	Initial Daily Dose[1]	Titration Recommendation[2]	Max Daily Dose	Strengths Available	Average Cost Per Script[3]	Clinical Pearls
Dextroamphetamine-Amphetamine Immediate Release (Adderall®)	Age 3-5: 2.5 mg daily Age ≥6: 5 mg once or twice daily	Age 3-5: Increase daily dose by 2.5 mg weekly Age ≥6: Increase daily dose by 5 mg weekly	40 mg	5; 7.5; 10; 12.5; 15; 20; 30 mg tablet	$36	3:1 ratio dextro- to levo-amphetamine ratio.[4] Tablet can be crushed. Duration 4-6 hours.
Dextroamphetamine-Amphetamine Long-Acting (Adderall XR®)	Age 6-12: 5-10 mg Age 13-17: 10-20 mg	Increase daily dose by 5-10 mg weekly	30mg	5; 10; 15; 20; 25; 30 mg capsule	$35	3:1 ratio dextro- to levo-amphetamine ratio.[4] Capsule can be opened and sprinkled. Duration 8-12 hours.
Methylphenidate Immediate Release (Ritalin®)	Age ≥6: 5 mg twice daily	Increase daily dose by 5-10 mg weekly	60 mg	Tablet: 5; 10; 20 mg Liquid: 5 mg/5 mL, 10 mg/5mL	$22 Tablets $31 Liquid	Tablet can be crushed. Duration 3-5 hours.
Methylphenidate Long-Acting (Ritalin LA®)	Age ≥ 6: 10-20 mg	Increase daily dose by 10 mg weekly	60 mg	Brand: 10; 20; 30; 40 mg capsule Generic: 10; 15; 20; 30; 40; 50; 60 mg capsule	$78	50% is immediate release and 50% is extended release. Capsule can be opened and sprinkled. Duration 6-8 hours.
Methylphenidate Long-Acting (Concerta®)	Age ≥ 6: 18 mg	Increase daily dose by 18 mg weekly	54 mg (<13y) 72 mg (>13y)	18; 27; 36; 54 mg tablet	$47	22% is immediate release and 78% is extended release. Tablet cannot be crushed or split. Lower abuse potential due to osmotic method of drug delivery. Due to delivery mechanism patient may see undigested capsule in stool, counsel patient that does not impact drug safety or efficacy. Duration 8-12 hours.
Methylphenidate Long-Acting (Metadate CD®)	Age ≥ 6: 20 mg	Increase daily dose by 10-20 mg weekly	60 mg	10; 20; 30; 40; 50; 60 mg capsule	$57	30% is immediate release and 70% is extended release. Capsule can be opened and sprinkled. Duration 6-8 hours.
Dexmethylphenidate (Focalin®)	Age ≥ 6: 2.5 mg	Increase daily dose by 2.5 mg-5 mg weekly	20 mg	2.5; 5; 10 mg tablet	$24	Tablet can be crushed. Duration 3-5 hours.
Dexmethylphenidate Long-Acting (Focalin XR®)	Age ≥ 6: 5 mg	Increase daily dose by 5 mg weekly	30 mg	5; 10; 15; 20; 25; 30; 35; 40 mg capsule	$57	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.

Bolded medications are available generically.

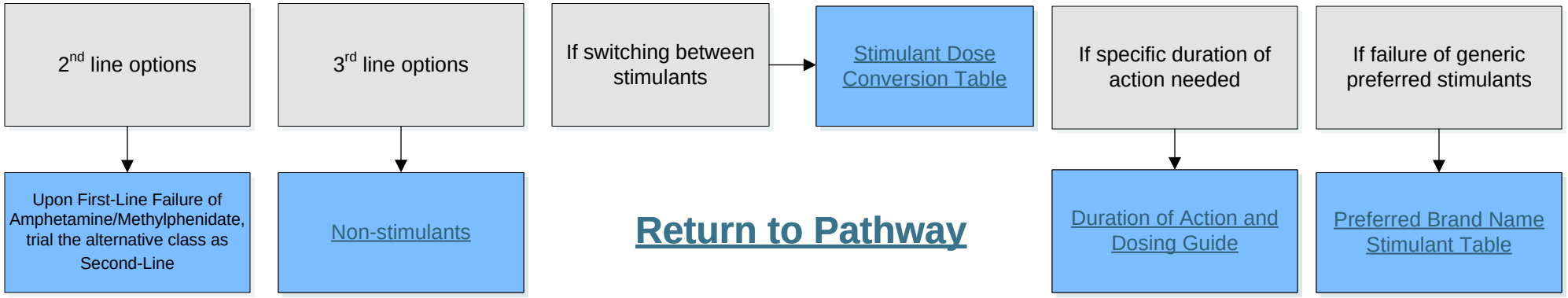
[1]Dosing is for school-aged children. Medication treatment in preschool-aged children should be considered after a trial of behavioral intervention.

[2]Generally, stimulant medications may be discontinued without a taper period. In patients where withdrawal symptoms are a concern, patients may follow the same schedule as the dose titration schedule. If significant withdrawal symptoms are present, the taper schedule may be slowed.

[3]Cost based on generic drug when available using average 30-day strength and dosing without insurance.

[4]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.

More information in difficulty swallowing



Medicaid Unified Preferred Drug List (UPDL) Brand Stimulant Options:

Drug	Initial Daily Dose[1]	Titration Recommendation[2]	Max Daily Dose	Strengths Available	Average Cost Per Script[3]	Clinical Pearls
Methylphenidate Long-Acting (Quillivant XR®)	Age ≥ 6: 20 mg	Increase daily dose by 10-20 mg weekly	60 mg	25 mg/5mL as 60; 120; 150; 180mL liquid	$421	Long-acting oral suspension. Duration up to 12 hours. Shake bottle for at least 10 seconds before administering. Suspension expires four months after reconstitution. Store at room temperature.
Methylphenidate Long-Acting (QuilliChew ER®)	Age ≥ 6: 20 mg	Increase daily dose by 10, 15, or 20 mg weekly	60 mg	20; 30; 40 mg chewable tablet	$461	Long-acting chewable tablet. 30:70 mixture of immediate:delayed release. Duration 8 hours. 20mg and 30mg tablets may be split in half
Lisdexamfetamine (Vyvanse®)	Age ≥ 6: 20-30 mg	Increase daily dose by 10-20 mg 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	$457	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 8-14 hours.
Amphetamine Long-Acting (Dyanavel XR®)	Age ≥ 6: 2.5 mg-5 mg	Increase daily dose by 2.5 mg-10 mg at 4-7 day intervals	20 mg	tablet: 5; 10; 15; 20 mg liquid: 2.5 mg/mL (464 mL)	$332	Liquid and tablet formulations both available and interchangeable. The tablet may be chewed and retains long action. The 5mg dose is scored to allow for accurate dosing down to 2.5mg. Duration up to 13 hours.
Dextroamphetamine IR liquid (Procentra ®)	3-5 y/o: 2.5 mg once daily	Increase by 2.5 mg daily every week	40 mg	5 mg/mL (473 mL) liquid	$122	Liquid formulation allows for flexible dosing. Available as both brand and generic on the Medicaid Unified Preferred Drug list. Duration 4-6 hours. Normally dosed multiple times per day.
	6+ y/o: 5 mg once or twice daily	Increase by 5 mg daily every week				

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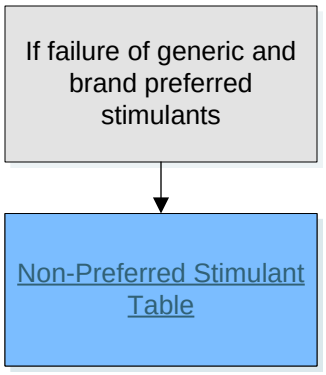
[2]Generally, stimulant medications may be discontinued without a taper period. In patients where withdrawal symptoms are a concern, patients may follow the same schedule as the dose titration schedule. If significant withdrawal symptoms are present, the taper schedule may be slowed.
[3]Cost based on generic drug when available using average 30-day strength and dosing without insurance.
[4]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.



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Non-Preferred Stimulant Options (UPDL) Stimulant Options:

Drug	Initial Daily Dose[1]	Titration Recommendation[2]	Max Daily Dose	Strengths Available	Average Cost Per Script[3]	Clinical Pearls
Dextroamphetamine-Amphetamine Long-Acting (Mydayis®)	Age ≥13: 12.5 mg	Increase daily dose by 12.5 mg weekly	25 mg	12.5; 25; 37.5; 50 mg capsules	$421	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®)	Age ≥6: 5 mg	Increase daily dose by 5mg weekly	40 mg	5; 10; 15 mg capsules	$858	Extended release capsule. Swallow capsule whole. Duration 4-6 hours.
Dextroamphetamine Immediate Release (Zenzedi®)	Age 3-5: 2.5 mg Age ≥6: 5 mg	Age 3-5: Increase daily dose by 2.5mg weekly Age ≥6: Increase daily dose by 5mg weekly	40 mg	Brand: 2.5; 5; 7.5; 10; 15; 20; 30 mg tablets Generic: 5; 10 mg tablets	$543	Immediate release tablet. Can be crushed. Duration 4-6 hours. Generic available in only 5 mg and 10 mg strengths
Methylphenidate Long-Acting (Aptensio XR®)	Age ≥6: 10 mg	Increase daily dose by 10 mg weekly	60 mg	10; 15; 20; 30; 40; 50; 60 mg capsules	$314	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®)	Age ≥6: 17.3 mg	Increase daily dose by 8.6mg or 17.3 mg weekly	51.8 mg	8.6; 17.3; 25.9 mg orally disintigrating tablets	$601	Long-acting orally disintegrating tablet. Duration roughly 8 hours.
Methylphenidate Long-Acting (Daytrana®)	Age ≥6: 10 mg	Increase to next transdermal patch size no more frequently than every week	30 mg	10; 15; 20; 30 mg patches	$570	Transdermal system. Apply 2 hours before desired onset, leave on for up to 9 hours. Strength of patch is how much medicine is delivered in a day. Avoid in patients with adhesive allergy. Apply only to hip. Duration 11-12 hours. May cause skin irritation.
Methylphenidate Long-Acting (Jornay PM®)	Age ≥6: 20 mg	Increase daily dose by 20 mg weekly	100 mg	20; 40; 60; 80; 100mg capsules	$535	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 on applesauce. Consume immediately if sprinkled.

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]Generally, stimulant medications may be discontinued without a taper period. In patients where withdrawal symptoms are a concern, patients may follow the same schedule as the dose titration schedule. If significant withdrawal symptoms are present, the taper schedule may be slowed.
[3]Cost based on generic drug when available using average 30-day strength and dosing without insurance.
[4]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.

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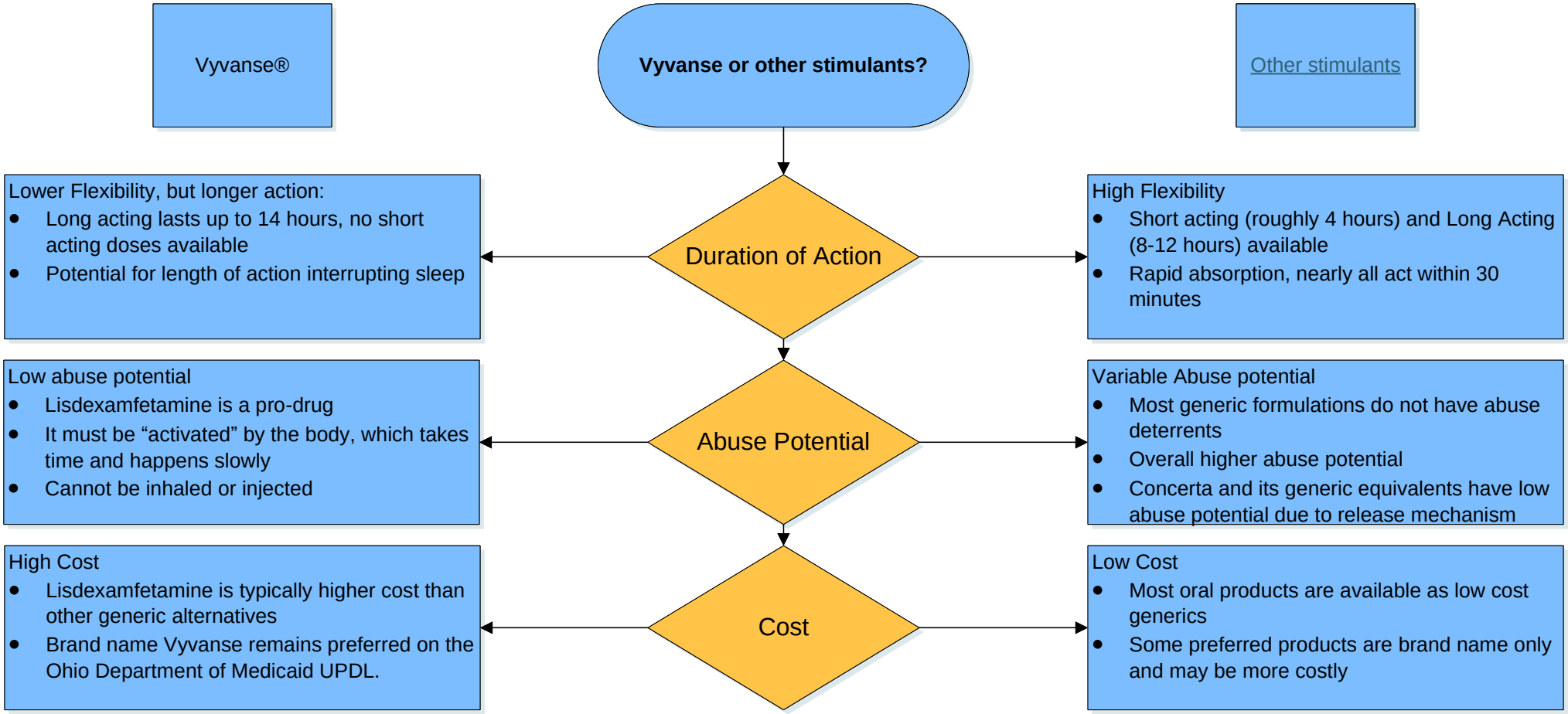
Vyvanse comparison quick guide

Drug	Initial Daily Dose[1]	Titration Recommendation[2]	Max Daily Dose	Strengths Available	Average Cost Per Script[3]	Clinical Pearls
Lisdexamfetamine (Vyvanse®)	Age ≥ 6: 20-30 mg	Increase daily dose by 10-20 mg 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	$457	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 8-14 hours.

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]Generally stimulant medications may be discontinued without a taper period. In patients where withdrawal symptoms are a concern, patients may follow the same schedule as the dose titration schedule. If significant withdrawal symptoms are present, the taper schedule may be slowed.
[3]Cost based on generic drug when available using average 30-day strength and dosing without insurance.



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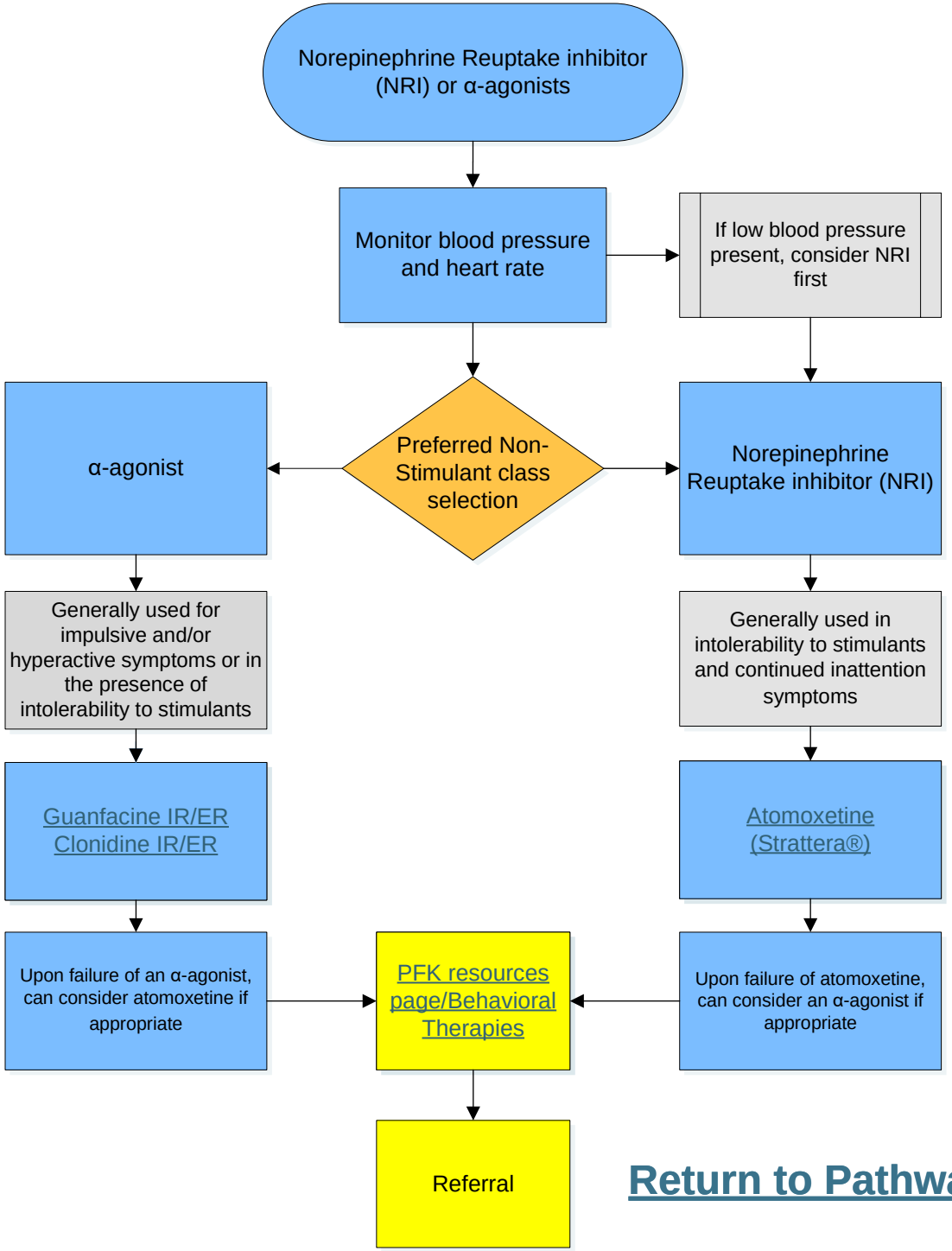
Non-Stimulant Medication Selection Guidance



- Non-stimulant medications have been found in trials to be useful in the treatment of ADHD, but their evidence is less robust than stimulant medications.
- Non-stimulants are best used when stimulants have been trialed and failed, or when other conditions indicate a stimulant may cause increased harm.
- Because norepinephrine reuptake inhibitors (NRIs) increase availability of norepinephrine, there may be increased heart rate, blood pressure and other stimulating side effects.
- Alpha (α) agonists were first used to lower high blood pressure, but were found to improve ADHD symptoms. As such, decreases in heart rate and sedation are two considerable side effects of the α-agonists.
- A-agonists typically work better on impulsive and/or hyperactivity symptoms than they do inattention, and may be combined with stimulants or NRIs.
- Non-stimulants should not be used “as needed” they must be scheduled.

Preferred Stimulant Table

Non-Preferred Non-Stimulant Table

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Medicaid Unified Preferred Drug List (UPDL) Non-Stimulant Medication Options:

Drug	Mechanism of Action	Initial Daily Dose[1]	Titration Recommendation[2]	Max Daily Dose	Strengths Available	Average Cost Per Script[3]	Clinical Pearls
Atomoxetine (Strattera®)	Selective Norepinephrine Reuptake Inhibitor	≤70kg: 0.5 mg /kg	≤70kg: increase after a minimum of 3 days to ~1.2 mg/kg/day	<70 kg: 1.4 mg/kg or 100 mg (lesser of the two)	10; 18; 25; 40; 60; 80; 100 mg capsules	$72	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.
		>70kg: 40 mg once daily or in divided doses	>70kg: increase after a minimum of 3 days to ~80 mg daily	>70 kg: 100mg/day			
Guanfacine Extended Release (Intuniv®)	α-agonist	Age ≥6: 1 mg daily	Increase daily dose by 1 mg weekly	Age 6-12: 4 mg	1; 2; 3; 4 mg tablets	$20	Take at the same time each day. Swallow whole with water or milk; do not administer with high fat meals. Tablet cannot be opened or crushed. Monitor blood pressure. Use as monotherapy or adjunctive therapy. Taper when discontinuing. Target dose of 0.05-0.12 mg/kg/day. Not equivalent to immediate-release guanfacine.
				Age 13-17: 7 mg			
Clonidine Extended Release (Kapvay®)	α-agonist	Age ≥ 6: 0.1 mg	Increase daily dose by 0.1 mg weekly	0.4 mg	0.1 mg tablets	$16	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.
Guanfacine Immediate Release (Tenex®)	α-agonist	0.5 mg	Increase by 0.5 mg/day every 3-4 days	4mg	1; 2 mg tablets	$44	Monitor blood pressure. Taper when discontinuing.
Clonidine (Catapres®)	α-agonist	≤45kg: 0.05 mg	<45kg: increase every 3-7 days in 0.05 mg increments	27–40.5 kg: 0.2 mg/day; >40.5 – 45 kg: 0.3 mg/day	0.1; 0.2; 0.3 mg tablets	$16	May cause sedation; sometimes used as sleep aid. Monitor blood pressure. Taper when discontinuing.
		>45kg: 0.1 mg	>45kg: increase every 3-7 days in 0.1 mg increments	> 45 kg: 0.4 mg/day			

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]Generally stimulant medications may be discontinued without a taper period. In patients where withdrawal symptoms are a concern, patients may follow the same schedule as the dose titration schedule. If significant withdrawal symptoms are present, the taper schedule may be slowed.
[3]Cost based on generic drug when available using average 30-day strength and dosing without insurance.

Non-Preferred
Non-Stimulant Table

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Relative Dose Comparisons of Stimulant Medications

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, but some references suggest that amphetamines are dosed at about half the methylphenidate dose. **Upon switching between classes, consider using the starting dose of the new medication particularly if side effects are a concern.**
- This guide may be utilized by comparing current dosages of medication to the equivalent dosages of other medications.
- Concerta® (methylphenidate ER) and Vyvanse® (lisdexamfetamine) are uniquely dosed. The table above 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®)	Methylphenidate XR liquid (Quillivant XR®)
N/A	N/A	N/A	N/A	10 mg	N/A
5 mg	10 mg	N/A	5 mg	20 mg	10 mg
10 mg	20 mg	18 mg	10 mg	30 mg	20 mg
15 mg	30 mg	27 mg	15 mg	40 mg	30 mg
20 mg	40 mg	36 mg	20 mg	50 mg	40 mg
25 mg	50 mg	54 mg	25 mg	60mg	50 mg
30 mg	60 mg	72 mg (36 mg x 2)	30 mg	70 mg	60 mg

*The 72mg strength of Methylphenidate ER is non-preferred and requires a prior authorization. Formulary option for 72mg dose is two 36mg tablets once daily.

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Difficulty Swallowing: Products Able to be Crushed or Sprinkled

The medications in the chart above are both available on the UPDL and are suitable options in the case of patients with difficulty swallowing medications.

- For patients with needs for a short acting product, several medications can be crushed and taken with food. Additionally, some of the long-acting products can be opened and sprinkled onto food.

Click this link for pre-made liquid/chewable options, however, these are **generally reserved for failure** of other options due to cost as well as inflexibility in length of action.

Drug	Mechanism/ Place in Therapy	General Dosing strategy	Crush or Sprinkle instructions
Dextroamphetamine-Amphetamine Immediate Release (Adderall®)	Stimulant First-Line	Dose in the afternoon after a morning dose of the XR formulation to get through the rest of the day.	Can be crushed, mix in liquid or soft food. Consume immediately.
Dextroamphetamine-Amphetamine Long-Acting (Adderall XR®)	Stimulant First-Line	Dose in the morning, usually prior to school.	Capsule can be **opened** and **sprinkled** on to a spoonful of applesauce; consume immediately. Do **NOT** crush or chew the sprinkles.
Methylphenidate Immediate Release (Ritalin®)	Stimulant First-Line	Dose in the afternoon after a morning dose of the XR formulation to get through the rest of the day.	Can be crushed, mix in liquid or soft food. Consume immediately.
Methylphenidate Long-Acting (Ritalin LA®)	Stimulant First-Line	Dose in the morning, usually prior to school.	Capsule can be **opened** and **sprinkled** on to a spoonful of applesauce; consume immediately. Do **NOT** crush or chew the sprinkles.
Methylphenidate Long-Acting (Metadate CD®)	Stimulant First-Line	Dose in the morning, usually prior to school.	Capsule can be **opened** and **sprinkled** on to a spoonful of applesauce; consume immediately. Do **NOT** crush or chew the sprinkles.
Dexmethylphenidate (Focalin®)	Stimulant First-Line	Dose in the afternoon after a morning dose of the XR formulation to get through the rest of the day.	Can be crushed, mix in liquid or soft food. Consume immediately.
Dexmethylphenidate ER (Focalin XR®)	Stimulant First-Line	Dose in the morning, usually prior to school.	Capsule can be **opened** and **sprinkled** on to a spoonful of applesauce; consume immediately. Do **NOT** crush or chew the sprinkles.

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Difficulty Swallowing: Liquid and Chewable Products

Drug	Initial Daily Dose[1]	Titration Recommendation[2]	Max Daily Dose	Strengths Available	Average Cost Per Script[3]	Clinical Pearls
Methylphenidate Long-Acting (Quillivant XR®)	Age ≥ 6: 20 mg	Increase daily dose by 10-20 mg weekly	60 mg	25 mg/5mL as 60; 120; 150; 180 mL	$421	Long-acting oral suspension. Duration up to 12 hours. Shake bottle for at least 10 seconds before administering. Suspension expires four months after reconstitution. Store at room temperature.
Methylphenidate Long-Acting (QuilliChew ER®)	Age ≥ 6: 20 mg	Increase daily dose by 10, 15, or 20 mg weekly	60 mg	20; 30; 40 mg chewable tablets	$461	Long-acting chewable tablet. 30:70 mixture of immediate:delayed release. Duration 8 hours. 20mg and 30mg tablets may be split in half
Amphetamine Long-Acting (Dyanavel XR®)	Age ≥ 6: 2.5 mg-5 mg	Increase daily dose by 2.5 mg-10 mg at 4-7 day intervals	20 mg	Tablet: 5; 10; 15; 20 mg Liquid: 2.5 mg/mL (464 mL)	$332	Liquid and tablet formulations both available and interchangeable. The tablet may be chewed and retains long action. The 5mg dose is scored to allow for accurate dosing down to 2.5mg. Duration up to 13 hours.

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]Generally stimulant medications may be discontinued without a taper period. In patients where withdrawal symptoms are a concern, patients may follow the same schedule as the dose titration schedule. If significant withdrawal symptoms are present, the taper schedule may be slowed.
[3]Cost based on generic drug when available using average 30-day strength and dosing without insurance.

More information in difficulty swallowing

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Stimulant Duration of Action

Drug	Mechanism/Place in Therapy	Duration of Action	General Dosing strategy
Dextroamphetamine-Amphetamine Immediate Release (Adderall®)	Stimulant First-Line	4-6 hours	Dose in the morning and afternoon. Can be dosed in the afternoon with an XR formulation to get through the rest of the day.
Dextroamphetamine-Amphetamine Long-Acting (Adderall XR®)	Stimulant First-Line	8-12 hours	Dose in the morning, usually prior to school.
Methylphenidate Immediate Release (Ritalin®)	Stimulant First-Line	3-5 hours	Dose in the morning and afternoon. Can be dosed in the afternoon with an XR formulation to get through the rest of the day.
Methylphenidate Long-Acting (Ritalin LA®)	Stimulant First-Line	6-8 hours	Dose in the morning, usually prior to school.
Methylphenidate Long-Acting (Concerta®)	Stimulant First-Line	8-12 hours	Dose in the morning, usually prior to school.
Methylphenidate Long-Acting (Metadate CD®)	Stimulant First-Line	6-8 hours	Dose in the morning, usually prior to school.
Dexmethylphenidate Long-Acting (Focalin XR®)	Stimulant First-Line	9-12 hours	Dose in the morning, usually prior to school.
Lisdexamfetamine (Vyvanse®)	Stimulant Second-Line	8-14 hours	Dose in the morning, usually prior to school.
Methylphenidate Long-Acting (Quillichew ER®)	Stimulant Third-Line (Brand Only)	Up to 8 hours	Dose in the morning, usually prior to school.
Methylphenidate Long-Acting (Quillivant XR®)	Stimulant Third-Line (Brand Only)	Up to 12 hours	Dose in the morning, usually prior to school.
Amphetamine Long-Acting (Dyanavel XR®)	Stimulant Third-Line (Brand Only)	Up to 13 hours	Dose in the morning, usually prior to school.

Bolded medications are available as generics on Ohio Medicaid UPDL

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Efficacy and Safety Monitoring of ADHD Treatment

Efficacy

Efficacy and Safety Principles:

- After dosage or medication changes, validated tools and a comprehensive review of side effects are preferred when completing follow up evaluations.
- Stable doses may be evaluated more quickly by ensuring continued positive benefits and manageable side effects, when appropriate.
- This treatment algorithm does not take into account patient specific complexities. Exercise clinical judgment when making treatment decisions.
- There is no guideline standard for “resolution of symptoms”. Reviewing each patient for both objective and subjective improvements in symptoms and school/home/social functioning is recommended. The 3 step scale below is provided as an example of what our experts find as a reasonable guideline.

Assess improvements across all settings (school, home, work, etc.) with goal of improvement in 2 settings

Validated Tools and comparisons to previous scores are preferred if available

Vanderbilt Homepage

Notable improvements in daily functioning?

1. If yes across multiple settings, adjusting therapy is not necessary
2. If yes but room for improvement, consider adjusting therapy or medications
3. If no, consider adjusting therapy or medications

Safety

Evaluate for side effects using the common side effects chart- as well as management of side effects

If Side Effects are acceptable, counsel on management strategies.

If unacceptable, reduce dose or switch medications

Evaluate Cardiac Side effects utilizing the cardiac monitoring recommendations

1. If no cardiac side effects are detected, maintain or increase dose as needed.
2. If side effects unacceptable, reduce dose or switch medications.

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Side Effect Management

Patient-related Considerations for ADHD Drug Prescription	
Patient-related Considerations	**Recommendation**
Appetite suppression	Monitor height and weight growth. If falling behind, recommend: Eat protein rich breakfast prior to administration Schedule meals and provide regular snacks and drinks
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 Utilize the PFK Sleep Management reference linked below
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 stimulant (Lisdexamfetamine), tamper resistent stimulant, or a non-stimulant
Flat affect or mood lability	Consider dose reduction Switch to a different stimulant or a non-stimulant
New psychotic symptoms	Dose reduction to last dose where side effects were not occuring, or cessation of therapy if at minimum dose.
Paresthesias/ formication	Dose reduction to last dose where side effects were not occuring, or cessation of therapy if at minimum dose.

If Difficulty Swallowing: Click Here

Partners For Kids Insomnia Resource

If concern for abuse and/ or diversion

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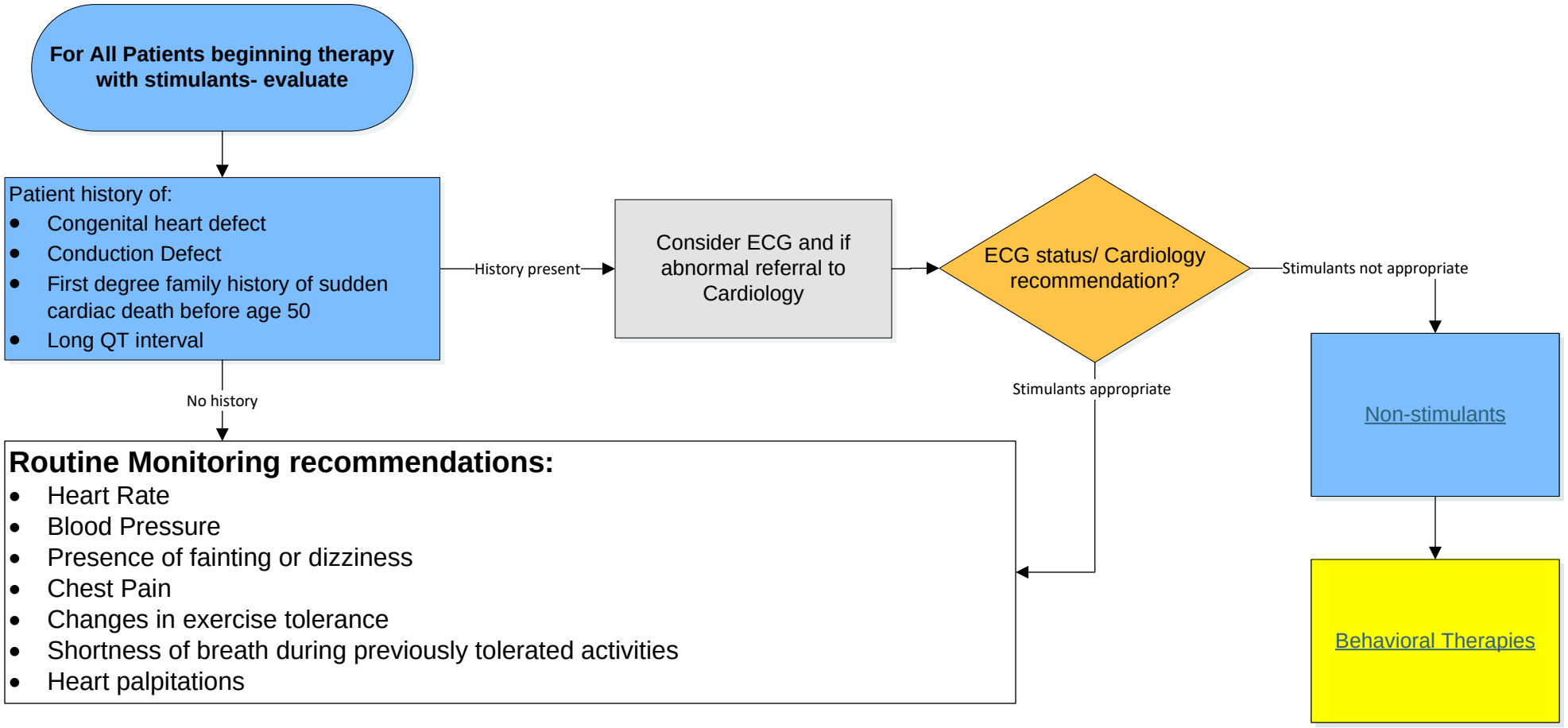
Cardiac Monitoring of ADHD Medications



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Partners For Kids Resources

The BH-TIPS line provides a consult with a Nationwide Children's Hospital psychiatrist via a virtual appointment.	The Behavioral Health Primary Care ECHO (Extension for Community Healthcare Outcomes) is a series of webinars with information on common behavioral health conditions in pediatrics .	The Behavioral Health resource page houses links to all resources that are available at the NCH Behavioral Health pavilion.	Physician Direct Connect (PDC) provides 24-hour telephonic physician/ provider consult.	PFK offers Care Coordination services which can help connect patients with local resources, transportation and other services.
BH-TIPS	BH-ECHO webpage	Behavioral Health Resource Page	PDC	PFK: Care Navigation

External Resources

This resource explains what Parent Training in Behavior Management is, as well as how parents can find a therapist.	This resource explains what classroom modifications exist for children with ADHD and how to pursue special education services.	Vanderbilt questionnaire for full evaluation and diagnosis of ADHD.	The CDC's homepage for ADHD. Provides details the DSM-5 criteria of ADHD.	Details on identifications of complications and comorbid factors commonly associated with ADHD.	Effective Child Therapy's website offers several resources including descriptions of ADHD, differential diagnoses and effective behavioral therapy options
CDC: Parent Training in Behavior Management	CDC: ADHD in the classroom, helping children succeed in school	Vanderbilt Homepage	CDC: Symptoms and Diagnosis of ADHD	CDC: Other Concerns and Conditions with ADHD	Effective Child Therapy: ADHD

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Medicaid Unified Preferred Drug List (UPDL) Non-Preferred Non-Stimulant Medication Options

Drug	Mechanism of Action	Initial Daily Dose[1]	Titration Recommendation[2]	Max Daily Dose	Strengths Available	Average Cost Per Script[3]	Clinical Pearls
Viloxazine (Qelbree®)	Selective Norepinephrine Reuptake Inhibitor	Age 6-11: 100mg	Age 6-11: increase daily dose by 100mg weekly	400 mg	100; 150; 200 mg capsules	$417	Must be taken daily. Takes 2 weeks to attain maximum efficacy. Cannot be crushed or chewed. Black box warning for an increased risk of suicidal ideation; balance risk with clinical need. Capsule can be opened and sprinkled.
		Age ≥ 12: 200mg	Age ≥ 12: increase daily dose by 200mg weekly				

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]Generally stimulant medications may be discontinued without a taper period. In patients where withdrawal symptoms are a concern, patients may follow the same schedule as the dose titration schedule. If significant withdrawal symptoms are present, the taper schedule may be slowed.
[3]Cost based on generic drug when available using average 30-day strength and dosing without insurance.

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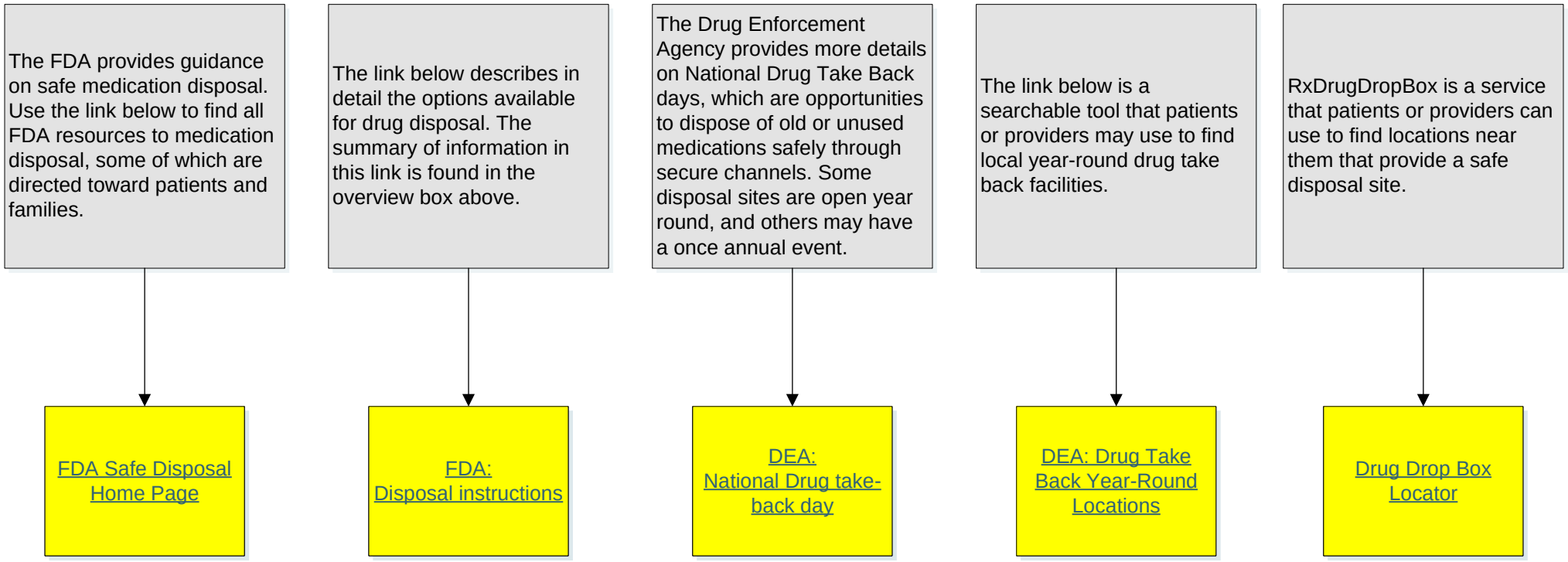
Medication Disposal Guidance

Patients or Caregivers may ask for guidance on medication disposal, especially if prescribed a stimulant as they are controlled substances. Nearly all prescriptions for ADHD can be disposed through either:

- Prescription take-back programs. Medications are taken to specific locations, usually pharmacies or police and fire stations.
- Disposed of in household trash. Mix unused medications with water and kitty litter/coffee grounds or something else unappealing and place in trash. This is the easiest and most accessible way, but taking to a drug take-back program ensures no one else accesses old medications.
- Below are links to FDA resources that can be used to find take-back events near a patient, or more details on drug disposal.
- Daytrana® (Methylphenidate)® patch is the only medication in this guideline that is on the FDA's "Flush list"- which is a product that must be flushed rather than disposed of in household trash.



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Drug Appendix 1 (Stimulants)

Stimulant Drug *colors/markings may vary by strength and manufacturer	Daily Dose (mg)			Duration (hours)	Clinical Pearls
	Initial	Titrate Weekly	Max		
 **Dextroamphetamine-Amphetamine Immediate Release (Adderall®)**	2.5-5	2.5-5	40	4-6	3:1 ratio dextro- to levoamphetamine ratio. Tablet can be split or crushed. Give in 1-2 divided doses, 4-6 hours apart.
 **Dextroamphetamine-Amphetamine Long-Acting (Adderall XR®)**	5-10	5-10	30	8-12	3:1 ratio dextro- to levo-amphetamine ratio. Capsule can be opened and sprinkled. Do not crush or chew.
 **Methylphenidate Immediate Release (Ritalin®)**	5	5-10	2 mg/kg up to 60 mg	4	Tablet can be split or crushed. Give in 2 divided doses, before breakfast and lunch.
 **Methylphenidate Long-Acting (Ritalin LA®)**	10-20	10	60	6-8	50% immediate release: 50% extended release. Capsule can be opened and sprinkled. Do not crush or chew.
 **Methylphenidate Long-Acting (Concerta®)**	18	18	54 (<13y) 72 (≥13y)	8-12	22% immediate release: 78% extended release. Tablet can NOT be split or crushed.
 **Methylphenidate Long-Acting (Metadate CD®)**	20	10-20	60	8-10	30% immediate release: 70% extended release. Capsule can be opened and sprinkled. Do not crush or chew.
 **Dexmethylphenidate Immediate Release (Focalin®)**	5	2.5-5	20	4	Give in 2 divided doses, ≥4 hours apart.
 **Dexmethylphenidate Long-Acting (Focalin XR®)**	5	5	30	10-12	50% immediate release: 50% extended release. Capsules can be opened and sprinkled. Do not crush or chew.

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Drug Appendix 2 (Non-Stimulants)

Non-Stimulant Drug	Dosing Age/Wt	Daily Dose (mg)			Clinical Pearls
		Initial	Titrate Weekly	Max	
 **Atomoxetine (Strattera®)**	<70 kg	0.5 mg/kg	0.7 mg/kg; max 40 mg	1.4 mg/kg	May titrate dose after 3 days. Must be taken daily, 2 weeks to max benefit. Give in 1-2 divided doses in the morning and late afternoon. Capsule can NOT be opened or crushed.
	>70 kg	40	40	100	
 **Guanfacine Immediate Release (Tenex®)**	27-40.5 kg	0.5	0.5	2	Initiate dosing at bedtime. Titrate dose as follows: 0.5-1 mg QD-> BID-> TID-> QID. Dosing different with autism spectrum disorder comorbidity.
	40.5-45 kg			3	
	>45 kg	1	1	4	
 **Guanfacine Extended Release (Intuniv®)**	6-12 yrs	1	1	4	Take at the same time each day. Do not give with a high-fat meal. Tablet can NOT be split or crushed. Monitor blood pressure. Taper when discontinuing. Not equivalent to immediate-release guanfacine.
	13-17 yrs			4 (if also taking stimulant); 7 (if mono therapy)	Target dose: 25 to 33.9 kg: 2 to 3 mg/day 34 to 41.4 kg: 2 to 4 mg/day 41.5 to 49.4 kg: 3 to 5 mg/day 49.5 to 58.4 kg: 3 to 6 mg/day 58.5 to 91 kg: 4 to 7 mg/day >91 kg: 5 to 7 mg/day
 **Clonidine Immediate Release (Catapres®)**	27-40.5 kg	0.05	0.05	0.2	Initiate dosing at bedtime. May titrate dose every 2-3 days as follows: 0.05-0.1 mg QD-> BID-> TID-> QID Taper over 1-2 weeks when stopping therapy.
	40.5-45 kg	0.05	0.05	0.3	
	>45 kg	0.1	0.1	0.4	
 **Clonidine Extended Release (Kapvay®)**		0.1	0.1	0.4	Initiate dosing at bedtime. Titrate dose QD -> BID Taper dose 0.1 mg every 3-7 days when stopping therapy.

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16. Note: Drug information is compiled from data at Lexicomp Online®, online.lexi.com, Micromedex® https://www.micromedexsolutions.com/, package inserts at DailyMed https://dailymed.nlm.nih.gov/ and clinical practice guidelines, in combination with psychiatry expert opinion where appropriate. Please refer to the specific medication's package insert for the most up to date information.

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