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 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.

Additional resources can be found at the Behavioral Health Treatment Insights and Provider Support (BH-TIPS) line. The BH-TIPS line allows community providers to consult with a Nationwide Children's Hospital psychiatrist via a virtual appointment. Further details and appointment scheduling can be found at the links below:

www.NationwideChildrens.org/BHTIPS

BHOfficeHours@NationwideChildrens.org

Project ECHO (Extension for Community Healthcare Outcomes) is another resource that providers may enroll in. The Behavioral Health Primary Care ECHO series supports primary care providers in the assessment and management of behavioral health concerns for their patients. Sessions include short didactic presentations on commonly seen conditions in primary care, including depression, anxiety, ADHD, trauma, gender issues, substance use, and eating disorders, followed with behavioral health and pharmacological guidance through interactive, case-based learning.

To register for Project ECHO follow the link below and fill out the form:

https://www.NationwideChildrens.org/for-medical-professionals/education-and-training/echo/series/behavioral-health

For questions regarding enrollment in ECHO, please send an email to the address below:

BHPrimaryCareECHO@NationwideChildrens.org

Physician Direct Connect (PDC) is a service that offers 24-hour physician/provider consult-transfers, managed by experienced RNs who can assist in caring for your patients by being a single point of contact for numerous requests. They can transfer and transport requests, referrals from local and regional physicians, ED referrals, admissions, physician-to-physician consultation requests.

Physician Direct Connect (PDC) (NationwideChildrens.org)

Attention Deficit/Hyperactivity Disorder Overview

- ADHD is one of the most common pediatric behavioral health disorders affecting 8.4% of children and is characterized by hyperactivity, attention difficulties, and executive function deficits.
- Medication therapy is indicated for patients age 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 parent and teacher assessment versions for initial diagnosis, and the parent and teacher follow-up versions to monitor clinical response and adverse effects associated with medication and use clinical findings 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 ADHD

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

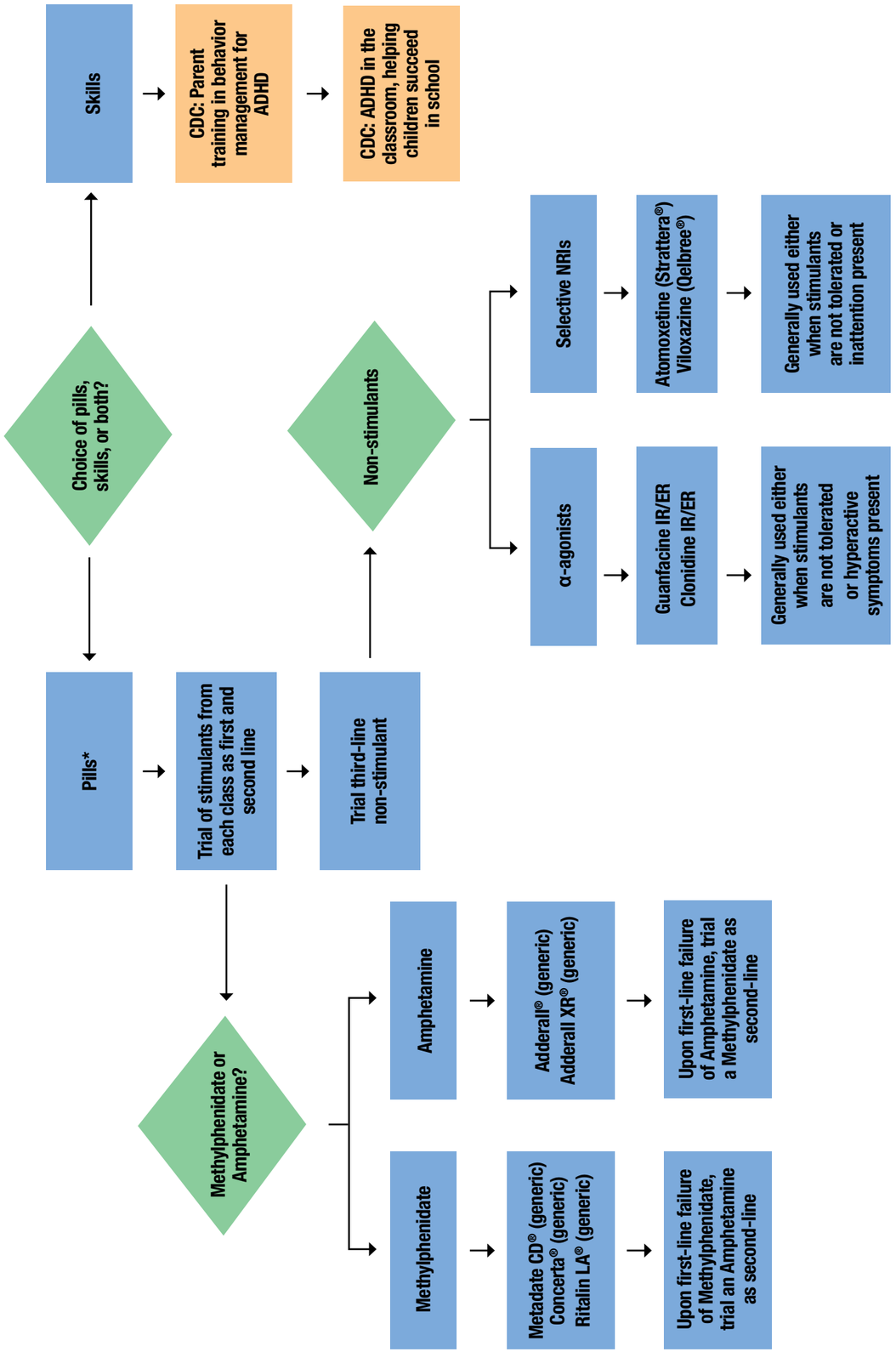
Treating Attention Deficit/Hyperactivity Disorder

Medication

- Long-acting stimulant medications are generally preferred for school-age children.
- Start with a first line medication from the methylphenidate or dextroamphetamine-amphetamine class.
- Maximize dosing of one agent before moving to the next. If ineffective at maximal dosing 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.
- 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.

Behavioral Therapy

- Parent Training in Behavioral Management: Parent Training in Behavior Management for ADHD | CDC
- Classroom Training: ADHD in the Classroom | CDC
- Effective behavioral management strategies can be referenced here:
  - https://effectivechildtherapy.org/concerns-symptoms-disorders/disorders/inattention-and-hyperactivity-adhd/



*Refer to medication charts at the end of the guideline 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

At times, prescribers 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 judgment, and all patients should be monitored closely for clinical and adverse effects. Little specific guidance is available in literature for switching from amphetamine mixed salts to methylphenidate at direct doses. Consider switching at half of the methylphenidate dose shown or beginning from the new stimulant's starting dose, particularly if adverse events are a concern. Dosage increases may occur every seven days if the new medication is well tolerated and increase is needed to improve symptom control.

General Recommendation:

- 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®)	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		30 mg	70 mg	60 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

The table below contains options covered on the Unified Preferred Drug List (UPDL) by Ohio Medicaid Managed Care Plans.

Stimulants

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	Age 3-5: Increase by 2.5 mg weekly	40 mg	5; 7.5; 10; 12.5; 15; 20; 30 mg	$36	3:1 ratio dextro- to levo-amphetamine ratio.[4] Tablet can be crushed. Duration 4-6 hours.
	Age ≥6: 5 mg	Age ≥6: Increase by 5 mg weekly				
Dextroamphetamine-Amphetamine Long-Acting (Adderall XR®)	Age 6-12: 5-10 mg	Increase by 5-10 mg weekly	30 mg	5; 10; 15; 20; 25; 30 mg	$35	3:1 ratio dextro- to levo-amphetamine ratio.[4] Capsule can be opened and sprinkled. Avoid taking with acidic food or juices. Duration 8-12 hours.
	Age 13-17: 10 mg					
Methylphenidate Immediate Release (Ritalin®)	5 mg twice daily before breakfast and lunch	Increase by 5-10 mg/day weekly	60 mg	5; 10; 20 mg; 5mg/5mL-10mg/5mL	$22	Tablet can be crushed. Administer 30-45 minutes before meals. Duration 3-5 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	$78	50% is immediate release and 50% is extended release. Capsule can be opened and sprinkled. Duration 6-8 hours.
Methylphenidate Long-Acting (Concerta®)	18 mg	Increase by 18 mg weekly	54 mg (<13y) 72 mg (≥13y)	18; 27; 36; 54 mg	$47	22% is immediate release and 78% is extended release. Tablet cannot be crushed or split. Encourage patients to stay well hydrated. Duration 8-12 hours.
Methylphenidate Long-Acting (Metadate CD®)	20 mg in the morning before breakfast	Increase by 10-20 mg/day weekly	60 mg	10; 20; 30; 40; 50; 60 mg	$57	30% is immediate release and 70% is extended release. Capsule can be opened and sprinkled. Duration 6-8 hours.
Dexmethylphenidate (Focalin®)	2.5 mg	Increase daily dose by 2.5mg-5mg weekly	20 mg	2.5; 5; 10 mg	$24	Tablet can be crushed. Duration 3-5 hours.
Dexmethylphenidate Long-Acting (Focalin XR®)	5 mg	Increase by 5 mg/day weekly	30 mg	5; 10; 15; 20; 25; 30; 35; 40 mg	$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.
Methylphenidate Long-Acting (Quillivant XR®)	20 mg	Increase by 10-20 mg/day weekly	60 mg	25 mg/ 5mL as 60; 120; 150; 180mL bottles	$421	Long-acting oral suspension. Duration up to 12 hours. Shake bottle for at least 10 seconds before administering. Suspension expires four months after reconsitution. Store at room temperature.
Methylphenidate Long-Acting (QuilliChew ER®)	20 mg	Increase by 10, 15, or 20 mg/day weekly	60 mg	20; 30; 40 mg	$461	Long-acting chewable tablet. 30:70 mixture of immediate:delayed release. Duration 8 hours. 20 mg and 30 mg tablets may be split in half.
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	$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. The brand name is preferred by Medicaid.

Non-Stimulants

Guanfacine Extended Release (Intuniv®)	1 mg	Increase by 1 mg/day weekly	Age 6-12: 4 mg	1; 2; 3; 4 mg	$20	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. Guanfacine and other alpha-agonists should be tapered slowly when discontinuing.
			Age 13-17: 7 mg			
Atomoxetine (Strattera®)	≤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	10; 18; 25; 40; 60; 80; 100 mg	$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. Adjust for CYP2D6 poor metabolizers.
	>70kg: 40 mg	>70kg: Increase after a minimum of 3 days to ~80 mg daily	>70 kg: 100 mg			

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.

The table below contains information on options not currently covered on the Ohio Medicaid Unified Preferred Drug List (UPDL), and as such, these medications will require a prior authorization or step therapy request.

Stimulants						
Drug	**Initial Daily Dose[1]**	**Titration Recommendation**	**Max Daily Dose**	**Strengths Available**	**Avg Cost Per Script[2]**	**Clinical Pearls**
Dextroamphetamine-Amphetamine Long-Acting (Mydayis®)	12.5 mg	Increase by 12.5 mg increments weekly	25 mg	12.5; 25; 37.5; 50 mg	$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®)	5 mg	Increase by 5 mg/day weekly	40 mg	5; 10; 15 mg	$858	Extended release capsule. Swallow capsule whole. Duration 6-8 hours.
Dextroamphetamine Immediate Release (Zenzedi®)	5 mg	Increase by 2.5-5 mg/day weekly	40 mg	Brand: 2.5; 5; 7.5; 10; 15; 20; 30 mg Generic: 5; 10 mg	$543	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 2.5-5 mg/day weekly	40 mg	5 mg/mL	$123	Short acting oral solution. Duration 4-6 hours.
Methylphenidate Long-Acting (Aptensio XR®)	10 mg	Increase by 10 mg/day weekly	60 mg	10; 15; 20; 30; 40; 50; 60 mg	$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®)	17.3 mg	Increase by 17.3 mg/day weekly	51.8 mg	8.6; 17.3; 25.9 mg	$601	Long-acting orally disintegrating tablet. Duration roughly 8 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	$570	Transdermal system. Apply for 9 hours. Strength of patch is how much medicine is delivered in a day. Duration 11-12 hours. May cause skin irritation.
Methylphenidate Long-Acting (Jornay PM®)	20 mg	Increase by 20 mg/day weekly	100 mg	20; 40; 60; 80; 100mg	$535	Take in the evening between 6:30-9:30 p.m. If converting from another methylphenidate formulation, discontinue previous formulation and titrate Jornay PM® using initial schedule. Capsules can be opened and sprinkled for immediate consumption. Onset roughly 10 hours. Duration 12-14 hours post onset.

Non-Stimulants						
Viloxazine (Qelbree®)	6yo-11yo: 100 mg >12yo: 200 mg	6-11yo: increase by 100 mg/day weekly >12yo: increase by 200 mg/day weekly	400 mg	100; 150; 200 mg	$417	Must be taken daily. Takes 2 weeks to attain maximum efficacy. Can be opened and sprinkled. Black box warning for an increased risk of suicidal ideation; balance risk with clinical need.

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.

The BH TIPS service can be utilized as a resource for provider to provider consult with a psychiatrist to assist with the medication approach if questions or concerns arise. The link is provided on page two.

References:

1. Subcommittee on Attention-Deficit/Hyperactivity Disorder, Steering Committee on Quality Improvement and Management; ADHD: Clinical Practice Guideline for the Diagnosis, Evaluation, and Treatment of Attention-Deficit/Hyperactivity Disorder in Children and Adolescents. Pediatrics November 2011; 128 (5): 1007–1022. 10.1542/peds.2011-2654
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3. Parent Training in Behavioral Management for ADHD. Parent Training in Behavior Management for ADHD | CDC. 01/14/2022
4. ADHD in the Classroom: Helping Children Succeed in School. ADHD in the Classroom | CDC. 01/14/2022
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7. Micromedex Solutions. Truven Health Analitics Inc. Ann Arbor, MI. Available at http://www.micromedexsolutions.com. Accessed January, 2023.
8. Sharma A, Couture J. A review of the pathophysiology, etiology, and treatment of attention-deficit hyperactivity disorder (ADHD). Ann Pharmacother. 2014;48(2):209-225. doi:10.1177/1060028013510699
9. 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.

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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