Pharmacotherapy of Pediatric Attention-Deficit/Hyperactivity Disorder

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KEYWORDS

• ADHD • Pharmacotherapy • Methylphenidate • Amphetamine • Atomoxetine
• Guanfacine • Clonidine

KEY POINTS

- Pharmacotherapy for attention-deficit/hyperactivity disorder (ADHD) has a robust literature supporting its role as a first-line treatment.
- Methylphenidate, amphetamine, atomoxetine, clonidine, and guanfacine have all demonstrated acceptable risk/benefit profiles in the treatment of ADHD.
- The Multimodal Treatment Study of Children with ADHD (MTA) and Preschool ADHD Treatment Study (PATS) helped define the role of pharmacotherapy in the treatment of ADHD.
- Clinicians should be aware of potential growth and cardiovascular effects of the ADHD pharmacotherapies, educating patients and families as to these risks as well as assessing the risks before and throughout treatment.
- ADHD pharmacotherapy should be individualized for each patient, assessing the dose response and duration of action as well as tolerability when initiating and optimizing treatment.
- Due to the long-term nature of disorder for many individuals, it is important to engage the patients and families and involve them in the treatment plan while actively monitoring the effectiveness and tolerability of the treatment over time.

EMPIRIC EVIDENCE FOR ADHD PHARMACOTHERAPY

The role of pharmacotherapy as a first-line treatment of ADHD is strongly supported in the literature (**Table 1**).[1] The stimulant medications have decades of efficacy data from

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Table 1
ADHD pharmacotherapies and FDA approval status

	FDA Approval Status		
Medication	**Age**	**Mono- or Adjunctive Therapy**	**Maximum Dose**
Short-acting stimulants			
• Methylphenidate (Ritalin)	Children ≥6 y	Monotherapy	60 mg QD
• Methylphenidate (Methylin)	Children ≥6 y	Monotherapy	Lesser of 2 mg/kg or 60 mg QD
• D-Methylphenidate (Focalin)	Children and adolescents 6–17	Monotherapy	Lesser of 1 mg/kg or 20 mg QD
• Mixed amphetamine salts (Adderall)	Children ≥3 y	Monotherapy	Lesser of 1 mg/kg or 40 mg
• Amphetamine (Dexedrine)	Children ≥3 y	Monotherapy	40 mg QD
• Amphetamine (Dextrostat)	Children ≥6 y	Monotherapy	40 mg QD
Long-acting stimulants			
• Methylphenidate (Ritalin SR; pulse)	Children ≥6 y	Monotherapy	60 mg QD
• Methylphenidate (Metadate ER; pulse)	Children ≥6 y	Monotherapy	Lesser of 2 mg/kg or 60 mg QD
• Methylphenidate (Methylin ER; pulse)	Children ≥6 y	Monotherapy	60 mg QD
• Methylphenidate (Metadate CD; pearls)	Children ≥6 y	Monotherapy	Lesser of 2 mg/kg or 60 mg
• Methylphenidate (Ritalin LA; pearls)	Children ≥6 y	Monotherapy	60 mg QD
• D-Methylphenidate (Focalin XR; pearls)	Children ≥6 y	Monotherapy	Lesser of 1 mg/kg or 30 mg QD
• Methylphenidate (Concerta; pump)	Children ≥6 y and adults	Monotherapy	Lesser of 2 mg/kg or 72 mg QD
• Methylphenidate (Daytrana; patch)	Children ≥6 y	Monotherapy	Lesser of 1 mg/kg or 30 mg
• Mixed amphetamine salts (pearls)	Children 6–12 y	Monotherapy	Lesser if 1 mg/kg or 30 mg
• Amphetamine (Dexedrine Spansule; pearls)	Children ≥6 y	Monotherapy	Lesser than 1 mg/kg or 40 mg
• Lisdexamfetamine (Vyvanse; prodrug)	Children ≥6 y	Monotherapy	Lesser than 1 mg/kg or 70 mg
	Children 6–12 y and Adults	Monotherapy	
Nonstimulants			
• Atomoxetine (Strattera)	Children ≥6 y Adolescents	Monotherapy	Lesser of 1.4 mg/kg or 100 mg
• Guanfacine ER (Intuniv)	and adults	Monotherapy and adjunctive	4 mg QD
• Clonidine ER (Kapvay)	Children 6–17 y	Monotherapy and adjunctive	0.2 mg BID
	Children 6–17 y		