Management of ADHD in Children

Risk Factors

8.9% of US children 3 to 17 yo (2019-2020 National Survey of Children's Health)

Genetic risk - 76% in twin studies

Suspect DA and 5-HT receptor/protein gene contribution

Intrauterine exposure to alcohol, tobacco, opioid use

Premature birth, low birthweight, birth complications

Early childhood exposure to lead, organophosphate, PCB's

Association with genetic, neurologic, neurodevelopmental d/o

Boys twice as likely as girls to be diagnosed

Source: Rajaprakash. ADHD. Peds in Review. 2022.

Diagnosis

<16 yo, 6 out of 9 for hyperactive, inattentive or combination sx

>17 yo, 5 out of 9 for hyperactive, inattentive or combination sx

Present for more than 6 months

Initial signs and symptoms manifest before 12 yo

Present in 2 or more settings (home, school, work, with relatives or friends)

Reduce quality of social, academic, occupational functioning

Source: DSM-V TR. 2022.

Presentation

Hyperactivity/impulsivity in less structured settings (cafeteria, gym), high-risk behaviors

Inattention/distractibility when academic demands increase

In adolescents, hyperactivity often wanes while impulsivity and inattention persist

Hyperactivity or impulsivity
• Fidgeting or tapping hands or feet or squirming in seat
• Standing up when expected to remain seated
• Running about or climbing (mostly in children) or subjective feelings of restlessness (mostly in adolescents and adults)
• Inability to play quietly
• Often “on the go”, “driven by a motor”
• Inappropriate talkativeness
• Blurting out answers before a question has been finished
• Difficulty waiting their turn in games or activities
• Interrupting others or intruding

Inattention
• Difficulty paying attention to details and consequent careless mistakes
• Difficulty sustaining attention in tasks or activities
• Struggling to listen when spoken to
• Struggling to accomplish and to finish tasks or activities
• Difficulty organizing tasks and activities
• Avoidance of tasks that need more mental effort
• Misplacing objects needed to perform tasks or activities
• Distractibility by external stimuli
• Forgetfulness about daily activities

IACAPAP Textbook of Child and Adolescent Mental Health. ADHD. 2020.

Assessment

Self-report (if <12 yo, may not be as helpful)

Collateral (parents and teachers)

Psych (anxiety, mood, trauma, substance)

Neurodev (intellectual disability, ASD, learning disability, language disorder)

Medical (particularly cardiac, neuro, sleep, vision/hearing, thyroid)

If medical history unremarkable, additional labs/consults not indicated

Table 3. Comorbid Conditions

COMORBIDITY	UNIQUE FEATURES	FREQUENCY IN ADHD (%)[a]
Behavioral and mental health disorders		
Oppositional defiant disorder	Argumentative or defiant behavior, annoys others, and is spiteful but can sustain attention when interested	20–30
Anxiety	Excessive worry and decreased energy lasting for >6 mo	30–40
Major depressive disorder	Low mood and decreased energy levels and psychomotor retardation for >2 wk	14–18
Conduct disorder	Deliberate rule-breaking behavior that often includes aggression toward people and animals, destruction of property; lack of guilt, remorse, or empathy	2–10
Developmental disorders		
Developmental coordination disorder	Difficulty specifically in coordinated motor tasks manifested by clumsiness and fine motor difficulties soft neurologic examination findings, including poor motor coordination, overflow movements, and low appendicular tone	45–50
Learning disabilities	Academic underachievement; behaviors are isolated to particular academic demands (eg, reading)	45–56
Autism spectrum disorder	Lack of joint attention, imaginative play, and reciprocal communication evident in the early developmental period; stereotyped repetitive behaviors and fixed interests	0.4–14
Language disorders	Evidence of misunderstanding, word-finding difficulty, pragmatic difficulties	40–90
Intellectual disability	Neuropsychological assessment reveals low IQ levels	2–4
Other conditions		
Tourette syndrome	Evidence of vocal and motor tics	1–6
Substance use	Abrupt emergence in adolescent years; symptoms due to tolerance and withdrawal from substance use	1–4

ADHD=attention-deficit/hyperactivity disorder.

[a]Sources: Danielson et al, (8) Mohammed-Reza et al, (36) Belanger et al, (37) and Redmond. (38)

Rating Scales for Core and Broad Features

For children, Vanderbilts

For adults, Adult ADHD Self-Report Scale (ASRS) (developed by WHO)

Treatment

For preschool age, behavioral and parent management strategies

For school age, stimulant medication and/or behavioral therapy

For adolescents, stimulant medication

AACAP Consensus Statement - medications are effective

Behavioral Management

Positive reinforcement (effective praise, token economy)

Effective commands

Antecedent management

Selective ignoring

Punishment

Caregiver Inventory

Parenting style

Cultural expectations

What is going well

What are most bothersome behaviors? What do you want child to do more?

Develop house rules

Parent Management

Focus on behaviors, not child as a whole

Focus on what you want child to do, not stop doing

Effective implementation takes times

Kids copy what they see

Preparation and consistency are key

Multimodal Treatment Study of Children with ADHD (1999)

Relative effectiveness of different treatment strategies over 14 months

579 children 7 to 9.9 yo with ADHD combined type

Compared: 1) med management, 2) intensive behavioral treatment, 3) combination, 4) standard care in community

Med management showed greatest improvement

Combination had some modest advantages over med management

Preschool ADHD Treatment Study (2006)

Effectiveness and safety of MPH IR

303 children from 3 to 5.5 yo with ADHD

Mean optimal MPH total daily dose was 14.2 mg/day

Starting dose of 3.75 mg/day (1.25 mg TID), did not decrease symptoms

Effect size of 0.4 to 0.8, although smaller than for school age children

Stimulants

MPH and AMPH are mainstays; neither shown to be more effective for core sx

65-75% initial response, although increases to 85% if both MPH and AMPH tried

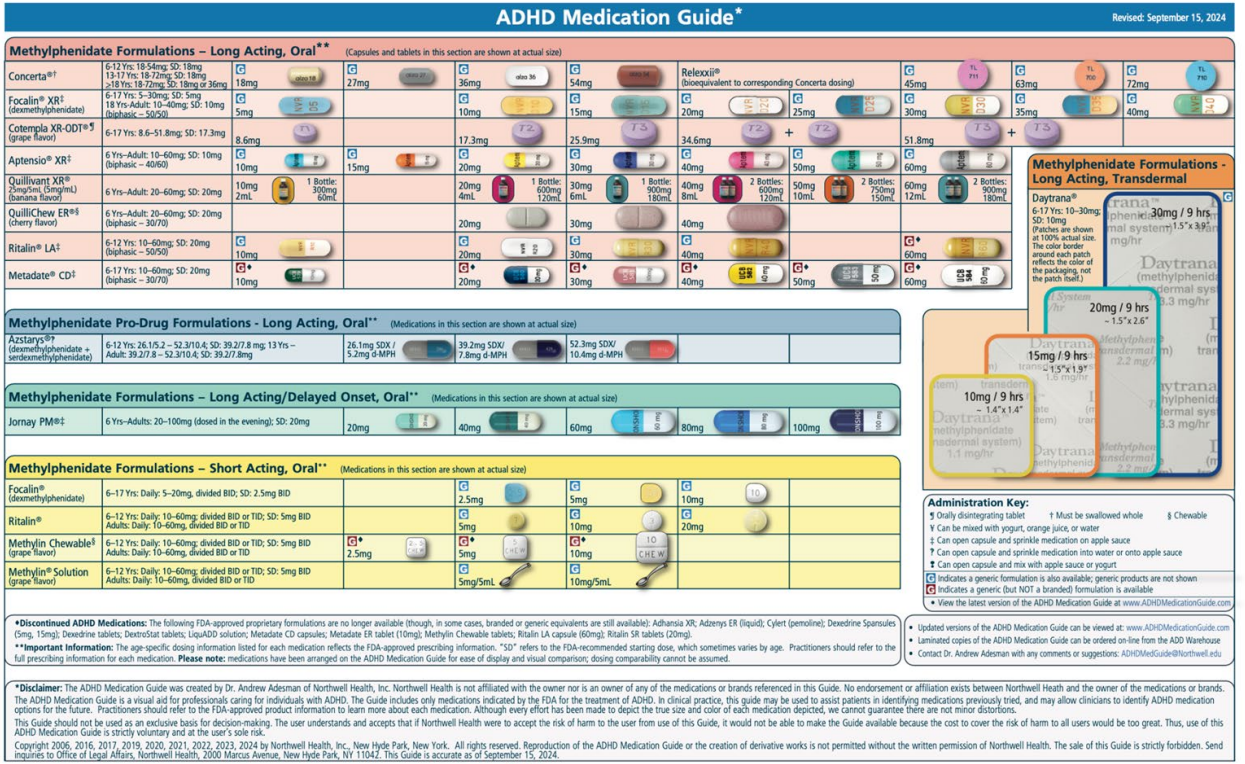
For preschool age, consider MPH (low dose and small titrations)

For school age, consider long-acting preparation for school and homework

For adolescents, consider adding short-acting preparation in late afternoon

Source: AACAP Practice Parameters for Assessment and Treatment of Children and Adolescents with ADHD. 2007.

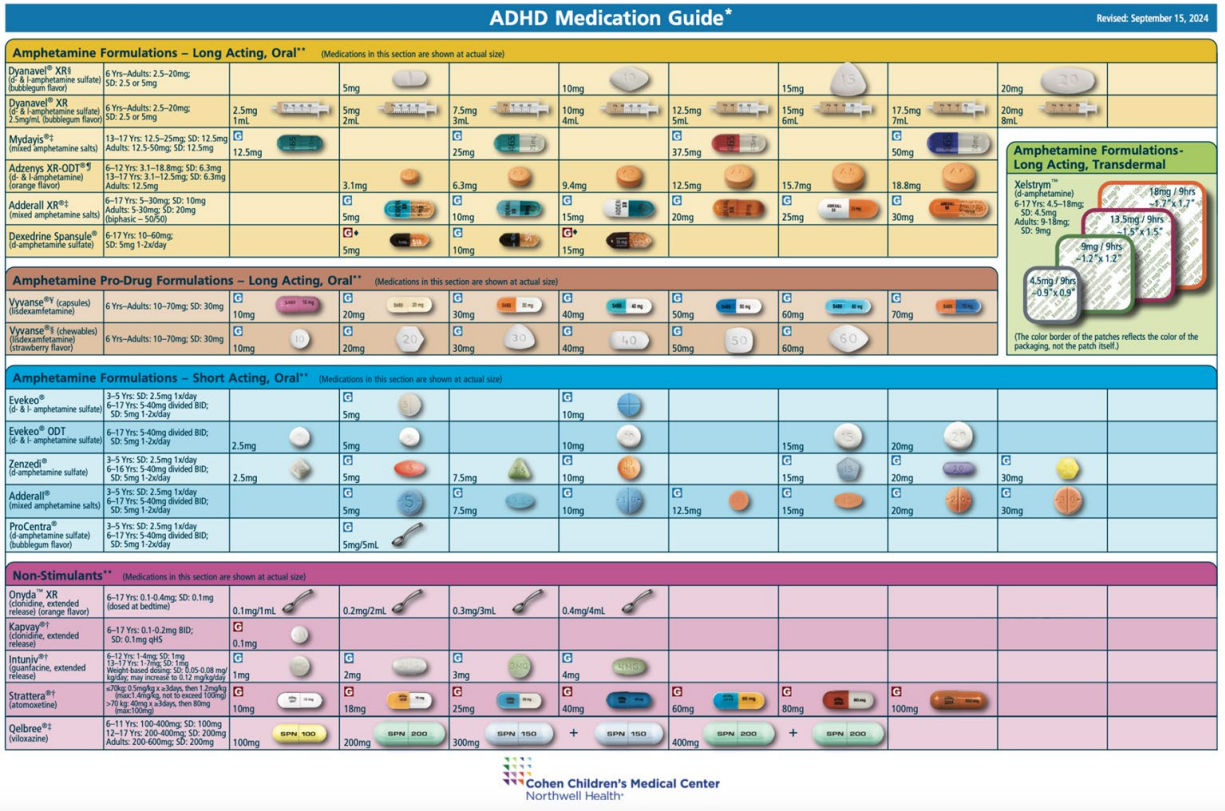
ADHD Medication Guide



Cohen Children's Medical Center
Northwell Health

http://www.adhdmedicationguide.com/

ADHD Medication Guide



http://www.adhdmedicationguide.com/

AACAP ADHD Parents' Medication Guide

FAQs: Medication Use in Children and Adolescents with ADHD

I have been told that my child may have ADHD. What are the next steps?

Parents of children who might have ADHD should discuss their concerns with their child's primary care practitioner, primary teacher, developmental pediatrician, and/or mental health specialist, such as a child and adolescent psychiatrist or psychologist, and seek guidance in obtaining a comprehensive evaluation.

Who can treat children and adolescents with ADHD?

Children and adolescents with ADHD can benefit from careful medication management by a child and adolescent psychiatrist, pediatrician, child neurologist, or advanced practice nurse with experience in treating ADHD. Children and families may benefit from psychotherapy for behavioral, emotional, and academic issues, which can be conducted by a licensed mental health practitioner.

What do I do if my child doesn't think anything is wrong?

Many children and adolescents with ADHD do not think they have a problem that requires treatment. Adolescents may have some insight into their problems but may not believe that they need medication. Some children or adolescents blame others for their problems. For those who deny that they have a problem, a frank, non-accusatory discussion about the difficulties your child is experiencing may help. You may also turn to online sources of information such as the CHADD or AACAP websites (see *Resources* section on page 17).

What if my child refuses to take medication?

Some children and adolescents can't explain why they refuse to take medication. You can explore what they think might happen if they take medicine. Some kids fear that medication may change their brains, while others think that taking medicine means that there is something wrong with them, and still others may resent taking something that may control or change them. For those who are taking medication, ask them about any side effects (including a belief that they are not as social or as much fun to be with) and work with the child's prescriber to minimize side effects.

I am afraid of using medications for my child.

Many parents would rather not use medication to treat their child's ADHD or any other mental health problem. It is important to note the problems associated with *leaving ADHD untreated into adulthood*: more academic, work-related and social problems, as well as higher risks for injuries, concussions, depression, suicidality, criminality, nicotine and substance use disorders compared to those treated for their ADHD. It is important to recognize that along with educational planning and accommodations, medications for children and adolescents with ADHD are well-studied, effective, and safe. There are no unexpected long-term side effects of stimulants that one does not see in the short term. For example, a lowered appetite seen soon after beginning stimulants may continue longer term. With careful coordination with your child's provider, most side effects can be managed with little to no long-term problems related to the medication.

What if my child with ADHD also has motor tics?

About one-third of children with ADHD will have spasm-like movements in the face, mouth, or upper body. Changes in tics may occur naturally, or may be related to medication for ADHD (sometimes causes increases or decreases in tics). Close monitoring of your child for a couple of weeks after a change in dose or introduction of a new medication is advised.

Are there differences between generic and brand name medications?

Brand name medications are the types of medications that are approved by the FDA and have been tested in research. These medications are made in a very consistent way and are generally preferred by patients because they work well and do not have serious side effects. Also available at pharmacies are generic medications, which are similar to brand name medications in several important ways. For example, they enter the bloodstream almost as much as the brand medication (at least 80% as much), and are effective, well tolerated, and less expensive. But, some generic medications are not as good as the brand name medication that they are copying. This has to do with differences in the way that the medication is released from the form it comes in (for example, a tablet or a capsule form) and how much the tablets are affected by different conditions such as humidity and light, as well as differences in side effects. Unfortunately, many pharmacies frequently switch among generic products so that you may be receiving a different generic preparation with each prescription. Some may be better than others.

https://www.aacap.org/App_Themes/AACAP/docs/resource_centers/resources/med_guides/ADHD_Medication_Guide-web.pdf

Methylphenidate

Short Acting

Ritalin IR - Tablets taken typically 2-3 times per day, duration of 3-4 hours

Long Acting

Concerta - Capsules taken once per day, duration of 12 hours

22% IR, 78% delayed

Metadate CD - Capsules taken once per day, duration of 8 hours

30% IR, 70% delayed

Dexmethylphenidate

Pharmacologically active enantiomer of racemic methylphenidate

Short Acting

Focalin IR - Tablets taken 2-3 times per day, duration of 4-5 hours

Long Acting

Focalin XR - Capsules taken once per day, duration of 10-12 hours

50% IR, 50% delayed

Amphetamine

Adderall

- Tablets taken 1-2 times per day, duration of 6 hours

Adderall XR

- Capsules taken once per day, duration of 12 hours
- 50% IR, 50% delayed

Vyvanse

- Prodrug of dextroamphetamine
- Capsules taken once per day, duration of 12-14 hours

Managing Side Effects

Appetite suppression

Insomnia

Mood change

Headache

Abdominal pain

Tics

Growth effects

Non-Stimulants

Atomoxetine (Strattera)

Noradrenergic reuptake inhibitor

First FDA-approved non-stimulant; not as effective as stimulants

Consider for ADHD with substance use, comorbid tics

Less appetite cessation, more nausea and sedation

Black box warning for suicidal ideations

Guanfacine

IR (Tenex), ER (Intuniv)

Alpha 2a agonist

FDA-approved for monotherapy and adjunctive to stimulant

Less sedating than clonidine

Clonidine

IR (Catapres), ER (Kapvay)

Alpha 2 agonist

FDA-approved for monotherapy and adjunctive to stimulant

Taper to avoid rebound hypertension

Substance Abuse

Consider longer-acting

Monitoring for safety (misuse, diversion) and responsible prescribing practices

School Interventions

Individuals with Disabilities Education Act (IDEA)

Section 504 of Rehabilitation Act

Classroom Accommodations

ADHD Letter

Thank you!

References

Rajaprakash. ADHD. Peds in Review. 2022.

IACAPAP Textbook of Child and Adolescent Mental Health. ADHD. 2020.

AACAP Practice Parameters for Assessment and Treatment of Children and Adolescents with ADHD. 2007.

ADHD Medication Guide (http://www.adhdmedicationguide.com/)

AACAP Parents' ADHD Medication Guide (https://www.aacap.org/App_Themes/AACAP/docs/resource_centers/resources/med_guides/ADHD_Medication_Guide-web.pdf)

Massachusetts General Hospital Psychiatry Academy (https://mghcme.org/app/uploads/2022/03/New-Stim-TX-Ped-ADHD-2022-Spencer.pdf)