**Key Points**

- ADHD is a clinical diagnosis requiring evaluation of behavior across multiple settings (e.g., family, academic, social). There is no laboratory “test” for ADHD.
- ADHD is a chronic condition that may persist into adulthood, extends across developmental phases, and presents different challenges during each phase.
- Clinician interviews of parents/caregiver/teacher are the core of ADHD assessment process.
- Core patient ADHD deficits include:
  - Impairment of rule-governed behavior across a variety of settings
  - Lack of inhibition of impulsive responses to internal wishes/needs and/or external stimuli
- Therapeutic alliance with patient/parents/caregiver/teacher is crucial to treatment planning/implementation.
- Important role of educational system in patient treatment/monitoring distinguishes ADHD from many other chronic conditions.
- Treatment plans should:
  - Be individualized
  - Consider patient strengths and target symptoms identified in assessment process
  - Provide periodic, systematized follow-up focused on targeted outcomes and adverse effects based on input from parents, teachers, and patient
  - Anticipate long-term treatment and frequent monitoring
- Treatment goals should be realistic, attainable, and measurable:
  - Improved relationships with parents, siblings, teachers, peers
  - Decreased disruptive/setting-inappropriate behaviors
  - Improved academic performance
  - Increased independence by self-monitoring and completion of assigned activities
  - Improved self-esteem
  - Enhanced safety in recreational activities in community
- Decision to treat with medication should be based on persistent target symptoms across at least 2 settings sufficiently severe to cause functional impairment and on continuing efficacy of medication.
- Limitations in pharmacologic and behavioral treatments arise from lack of maintenance if treatment is discontinued and/or failure in settings where treatment has not been well applied.
- Medication should be continued when target symptoms re-emerge whenever medication is discontinued and when the ratio of therapeutic benefit to side effects is acceptable.
Patient presents with parent/caregiver/teacher concerns about impairments in school, family, or peer domains and/or specific behaviors

AND/OR

Clinician assessment of these situations during office visit:
- Inattentive—poor concentration/doesn’t seem to listen/daydreams
- Hyperactive—can’t sit still
- Impulsive—acts without thinking
- Behavior problems
- Academic underperformance

Assessment of patient includes:
- Standard history and physical exam
- Screening neurological exam
- History from parents/caregivers, including documentation of:
  - Inattention/hyperactivity/impulsivity
  - Multiple settings
  - Age of onset
  - Duration of symptoms
  - Degree of functional impairment

Information from school, including documentation of:
- Inattention/hyperactivity/impulsivity
- Classroom behavior and intervention
- Learning and attendance
- Degree of functional impairment
- Examples of school work
- Report card/teacher evaluation

Patient meets DSM-IV-TR criteria for ADHD* (see Table 1), including parent and school reports?

Evidence of developmental variation/problem or alternative condition(s); e.g., pervasive developmental disorder?

Reassess parent/caregiver/teacher concerns

Assess for associated/comorbid conditions, including:
- Impaired vision/hearing
- Learning/speech/language disorders
- Seizures, sequelae of head trauma, tics, migraine
- Medical illness, malnutrition, primary sleep disorder
- Medications, lead intoxication, pica, substance abuse (adolescents)
- Anxiety, realistic fear, depression, sequelae of abuse/neglect
- Psychiatric disorders (e.g., oppositional defiant/intermittent explosive/conduct/mood/anxiety/disorders)

Confirm coexistence of associated/comorbid condition(s)?

Diagnosis of ADHD without associated/comorbid condition(s)
  - Educate parent/patient and treat
  - See ADHD Treatment Algorithm

Diagnosis of ADHD and associated/comorbid condition(s)
  - Educate parent/patient and treat
  - See ADHD Treatment Algorithm
  - Consider referral to appropriate specialist


*Children may have behaviors relating to inattention/hyperactivity/impulsivity that may not fully meet DSM-IV-TR criteria. A guide to more common behaviors seen in primary practice is The Classification of Child and Adolescent Mental Diagnoses in Primary Care: Diagnostic and Statistical Manual for Primary Care (DSM-PC), Child and Adolescent Version. Elk Grove, IL: American Academy of Pediatrics; 1996.
Clinician/parents/caregivers/teachers:
• Identify target behavior symptom(s)
• Collect previous treatment data:
  ° Target behavior, patient response, follow-up/monitoring
  ° Medication (e.g., dosage, duration, side effects/adverse events)
  ° Duration and acceptability of treatment
• Develop treatment plan that:
  ° Recognizes ADHD as chronic condition that may persist into adulthood
  ° Advocates therapeutic alliance of clinician/patient/parents/caregivers/teachers
  ° Includes therapeutic trials of stimulant medication (see Table 2) and/or behavior therapy (see Table 3)
  ° Provides systematic monitoring/follow-up

Patient response to treatment plan satisfactory?
YES

Periodic systematic follow-up to monitor:
• Target behavior outcomes
• Academic progress
• Adverse effects of medication

Patient response to treatment plan satisfactory?
NO

Reassess patient and seek appropriate treatment

Evaluate and treat

Reassess target behavior symptom(s)
• Reassess treatment plan

Target behavior symptom(s) appropriate?
YES

Original ADHD diagnosis correct?
YES

• Consider referral to appropriate specialist

Original ADHD diagnosis correct?
NO

• Consider second-line medications (see Table 2)
• Encourage behavior therapy (see Table 3)

Stimulant medications unsatisfactory?
AND/OR
• Response to behavior therapy unsatisfactory?

TREATMENT FAILURES
• Lack of response to stimulant formulations at maximum dose without side effects
  OR at any dose with intolerable side effects.
• Inability of behavior therapy alone, or in combination with medication, to control behavior.
• Interference by/from associated/comorbid condition(s).
• Failure of therapeutic alliance with patient/parents/caregiver/teacher.
• Lack of adherence to therapy is not equivalent of treatment failure. Clinicians should help find solutions to adherence problems.
### Table 1. Five Criteria for ADHD

1. **SYMPTOMS**

**Inattention:** ≥ 6 of following symptoms of *inattention* have persisted ≥ 6 mo to a degree that is maladaptive and inconsistent with developmental level:

- Often fails to pay close attention to details or makes careless mistakes in schoolwork, work, or other activities
- Often has difficulty in sustaining attention in tasks or play activities
- Often does not seem to listen when spoken to directly
- Often does not follow through on instructions and fails to finish schoolwork, chores, workplace duties (not due to oppositional behavior or failure to understand)
- Often has difficulty organizing tasks and activities
- Often avoids, dislikes, or reluctant to engage in tasks requiring mental effort (e.g., schoolwork, homework)
- Often loses things necessary for tasks or activities (e.g., written instructions, school assignments, textbooks, pencils, tools, toys)
- Often easily distracted by extraneous stimuli
- Often forgetful in daily activities

**AND/OR**

**Hyperactivity/Impulsivity:** ≥ 6 of following symptoms of *hyperactivity-impulsivity* have persisted ≥ 6 mo to a degree that is maladaptive and inconsistent with developmental level:

- **Hyperactivity**
  - Often fidgets with hands or feet and squirms in seat
  - Often leaves seat in classroom or other situations where remaining seated is expected
  - Often runs about or climbs excessively in situations where considered inappropriate (in adolescents/adults, may be limited to subjective feelings of restlessness)
  - Often has difficulty in playing or engaging in leisure activities quietly
  - Often “on the go” or acts as if “driven by a motor”
  - Often talks excessively

- **Impulsivity**
  - Often blurts answers before questions completed
  - Often has difficulty awaiting turn
  - Often interrupts/intrudes on others (e.g., butts into conversation, games)

*(table continued on reverse)*
Table 1. Five Criteria for ADHD (continued from reverse)

**PLUS:**

2. Some *inattention* or *hyperactivity-impulsive* symptoms causing impairment present before age 7
3. Some impairment from symptoms present in 2 or more settings (e.g., home, school/work, social)
4. Clear evidence of clinically significant impairment in social, academic, or occupational functioning
5. Symptoms do not occur exclusively during course of a pervasive developmental disorder, schizophrenia, or psychotic disorder and are not better accounted for by another mental disorder (e.g., mood disorder, anxiety disorder, dissociative disorder, personality disorder)

**Types of ADHD**

- ADHD, combined type: Symptom criteria for *inattention* AND *hyperactivity-impulsivity* met for past 6 mo (DSM-IV code 314.01; ICD-10 code F90.2)
- ADHD, predominantly inattentive type: Symptom criteria for *inattention* met but symptom criteria for *hyperactivity-impulsivity* NOT met for past 6 mo (DSM-IV code 314.00; ICD-10 code F90.0)
- ADHD, predominantly hyperactive-impulsive type: Symptom criteria for *hyperactivity-impulsivity* met but symptom criteria for *inattention* NOT met for past 6 mo (DSM-IV code 314.01; ICD-10 code F90.01)


**NOTE:**

- Symptoms may not be observable when patient is in highly structured or novel setting, engaged in interesting activity, receiving one-to-one attention or supervision, or in situation with frequent rewards for appropriate behavior.
- Symptoms typically worsen in situations that are unstructured, minimally supervised, boring, or require sustained attention or mental effort.
- In adolescents, symptoms include restlessness (rather than hyperactivity as seen in children), impaired academic performance, low self-esteem, poor peer relations, and erratic work record.

NOTE: Depending on provider plans, formulary restrictions and limitations on use of certain medications listed in this guideline may apply.

Table 2. Medications Used in Treatment of ADHD

<table>
<thead>
<tr>
<th>GENERIC CLASS</th>
<th>DOSAGE</th>
<th>RECOMMENDED USUAL DOSE</th>
<th>DURATION OF EFFECT</th>
<th>COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FIRST LINE</strong></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td><strong>Stimulants</strong> (High margin of safety. Many patients who fail to respond to one stimulant will respond to another.)</td>
<td></td>
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</tr>
<tr>
<td>METHYLPHENIDATE PREPARATIONS (Schedule II controlled substance)</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Short-acting</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| Focalin      | 2.5, 5, 10 mg tablets | INITIAL: 2.5 mg BID. MAX: 20 mg/d | 3–5 h | • Class contraindications, precautions, and side effects
| Methylin     | 5, 10, 20 mg tablets | INITIAL: 5 mg BID with/after breakfast and lunch. MAX: 60 mg/d |                   |          |
| Ritalin      | 5, 10, 20 mg tablets |                        |                   |          |
| generics     |        |                        |                   |          |
| Intermediate-acting |        |                        |                   |          |
| Metadate ER  | 10, 20 mg tablets | Corresponds to titrated 6–8 h dose of short-acting methylphenidate. MAX: 60 mg/d | 6–8 h | • Longer-acting stimulants may have greater problematic effects on evening appetite and sleep
| Methylin ER  | 10, 20 mg tablets |                        |                   |          |
| Ritalin SR   | 20 mg tablet    |                        |                   |          |
| generics     |        |                        |                   |          |
| Metadate CD  | 20 mg capsule (6 mg IR/14 mg ER) | 1 capsule QAM. MAX: 60 mg/d | 8 h | • Pellet/beaded capsule formulations may be opened and sprinkled on soft food
| Ritalin LA   | 20, 30, 40 mg capsules (1/2 IR/1/2 ER) | 1 capsule QAM. MAX: 60 mg/d | 8 h |          |
| Long-acting  |        |                        |                   |          |
| Concerta*    | 18, 27, 36, 54 mg tablets | 1 tablet QAM. MAX: 54 mg/d | 12 h | • Swallow whole with liquids
|             |        |                        |                   |          |
*Therapeutic trial:* Initiate at 5 mg BID; titrate weekly in 5 mg increments. 3rd (pm) dose may be added at clinician’s discretion.

### AMPHETAMINES (Schedule II controlled substance)

#### Short-acting

<table>
<thead>
<tr>
<th>Generics</th>
<th>Dosage</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adderall</td>
<td>5, 7.5, 10, 12.5, 15, 20, 30 mg tablets</td>
<td>3–5 yr: 2.5 mg QD-BID, ≥ 6 yr: 5 mg QD-BID. MAX: 40 mg/d</td>
</tr>
<tr>
<td>Dextedrine</td>
<td>5 mg tablet</td>
<td>3–5 yr: 2.5 mg BID-TID, ≥ 6 yr: 5 mg BID-TID. MAX: 40 mg/d</td>
</tr>
<tr>
<td>Dextrostat</td>
<td>5, 10 mg tablets</td>
<td>3–5 yr: 2.5 mg BID-TID, ≥ 6 yr: 5 mg BID-TID. MAX: 40 mg/d</td>
</tr>
</tbody>
</table>

#### Intermediate-acting

<table>
<thead>
<tr>
<th>Generics</th>
<th>Dosage</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dexedrine Spansule</td>
<td>5, 10, 15 mg capsules</td>
<td>≥ 6 yr: 5–10 mg QD-BID. MAX: 40 mg/d 6–8 h</td>
</tr>
</tbody>
</table>

#### Long-acting

<table>
<thead>
<tr>
<th>Generics</th>
<th>Dosage</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adderall XR</td>
<td>5, 10, 15, 20, 25, 30 mg capsules</td>
<td>≥ 6 yr: 10 mg QD. MAX: 30 mg/d 10–12 h</td>
</tr>
</tbody>
</table>

*ADJUVANTS TO STIMULANTS*

#### α2-Adrenergic agonists (centrally acting antihypertensives useful for sleep disturbances due to stimulant rebound restlessness)

<table>
<thead>
<tr>
<th>Generics</th>
<th>Dosage</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Catapres</td>
<td>0.1, 0.2, 0.3 mg tablets</td>
<td>&lt; 45 kg: 0.05 mg QHS; titrate in 0.05 mg increments BID, TID, QID ≥ 45 kg: 0.1 mg QHS; titrate in 0.1 mg increments BID, TID, QID</td>
</tr>
<tr>
<td>Tenex</td>
<td>1, 2 mg tablets</td>
<td>&lt; 45 kg: 0.5 mg QHS; titrate in 0.5 mg increments BID, TID, QID ≥ 45 kg: 1 mg QHS; titrate in 1 mg increments BID, TID, QID</td>
</tr>
</tbody>
</table>

#### SECOND LINE

**Selective Norepinephrine Reuptake Inhibitor** (more experience needed before establishing as first-line therapy)

**ATOMOXETINE** (alternative for patients who have not responded to, have unacceptable side effects from, or have tic disorder worsened by stimulants, or who object to taking Schedule II drugs)

<table>
<thead>
<tr>
<th>Generics</th>
<th>Dosage</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strattera</td>
<td>10, 18, 25, 40, 60 mg capsules</td>
<td>INITIAL: 0.5 mg/kg QAM or BID in divided doses. Increase after min 3 d to 1.2 mg/kg QAM or BID in divided doses. MAX: lesser of 1.4 mg/kg/d or 100 mg/dInto evening or longer</td>
</tr>
</tbody>
</table>

#### THIRD LINE

**Antidepressants** (refer to psychiatric specialist)

<table>
<thead>
<tr>
<th>Generics</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bupropion (Wellbutrin, Zyban)</td>
<td>[lowers seizure threshold]</td>
</tr>
<tr>
<td>TRICYCLICS</td>
<td>[lowers seizure threshold]</td>
</tr>
<tr>
<td>Nortriptyline (Aventil, Pamelon)</td>
<td></td>
</tr>
<tr>
<td>Imipramine (Tofranil)</td>
<td></td>
</tr>
<tr>
<td>Desipramine (Norpramin)</td>
<td>[rarely used; associated with rare cases of sudden death at therapeutic doses]</td>
</tr>
</tbody>
</table>


Table 3. Effective Behavior Management

<table>
<thead>
<tr>
<th>Technique</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive reinforcement</td>
<td>Rewards/prizes provided contingent upon meeting goals.</td>
</tr>
<tr>
<td>Time-out</td>
<td>Access to positive reinforcement removed, usually by returning a time-out token.</td>
</tr>
<tr>
<td>Response cost</td>
<td>Rewards/prizes withdrawn contingent upon meeting goals.</td>
</tr>
<tr>
<td>Token economy system</td>
<td>Combines positive reinforcement and response cost.</td>
</tr>
</tbody>
</table>

**Therapeutic trial**

- Review patient history, clinical assessment, treatment plan, and data from administration of standardized parent and teacher rating scales, such as:
  - Connors Global Index for Parents/Teachers
  - SNAP-IV (or similar) Rating Scale
  - Vanderbilt ADHD Diagnostic Teacher Rating Scale
- Educate parents/caregivers/patient about treatment plan and therapeutic trial.
- Select appropriate stimulant as first-line therapy, based on clinician experience and parents/caregiver/patient preference.
- Start (weekly) medication dosage trials on a Saturday, so parents/caregivers can observe first-hand the effect of drug and dosage on patient.
- At end of each dosage trial:
  - Office/telephone evaluation to assess medication efficacy and side effects
  - Administer and review data from brief parent and teacher rating scales
- At completion of each medication trial:
  - Office evaluation with parents/caregivers, patient
  - Repeat appropriate/applicable rating scale

**Some ADHD Online Resources**

- American Academy of Child & Adolescent Psychiatry (AACAP) [http://www.aacap.org](http://www.aacap.org)
- American Academy of Family Physicians (AAFP) [http://www.familydoctor.org/handouts](http://www.familydoctor.org/handouts)
- American Academy of Pediatrics (AAP) [http://www.aap.org](http://www.aap.org)
- American Medical Association (AMA) [http://www.ama-assn.org](http://www.ama-assn.org)
- Centers for Disease Control and Prevention (CDC) [http://www.cdc.gov](http://www.cdc.gov)
- American Academy of Family Physicians (AAFP) [http://www.familydoctor.org/handouts](http://www.familydoctor.org/handouts)
- American Academy of Child & Adolescent Psychiatry (AACAP) [http://www.aacap.org](http://www.aacap.org)
- American Academy of Pediatrics (AAP) [http://www.aap.org](http://www.aap.org)
- American Medical Association (AMA) [http://www.ama-assn.org](http://www.ama-assn.org)
- National Institute of Mental Health (NIMH) [http://www.nimh.nih.gov](http://www.nimh.nih.gov)
- National Institute of Mental Health (NIMH) [http://www.nimh.nih.gov](http://www.nimh.nih.gov)
- National Institute of Mental Health (NIMH) [http://www.nimh.nih.gov](http://www.nimh.nih.gov)
- Learning Disabilities Association (LDA) [http://www.ldanatl.org](http://www.ldanatl.org)
- Healthology [http://www.understandingadhd.com](http://www.understandingadhd.com)
- Children and Adults with Attention-Deficit/Hyperactivity Disorder (CHADD) [http://www.chadd.org](http://www.chadd.org)
- ADHD Online Resources [http://www.adhd.org](http://www.adhd.org)

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- See product labeling for complete prescribing information.
- Best dosage produces optimal efficacy with minimal side effects.
- Most side effects can be managed through adjustments in dosage or schedule.
- Prescription refills are an opportunity to assess efficacy of therapy, adherence to regimen, side effects.
Disclaimer

This Guideline attempts to define principles of practice that should produce high-quality patient care. It focuses on the needs of primary care practice but also is applicable to providers at all levels.

This Guideline should not be considered exclusive of other methods of care reasonably directed at obtaining the same results. The ultimate judgment concerning the propriety of any course of conduct must be made by the clinician after consideration of each individual patient situation.

Do not print this panel (panel 16).