Attention Deficit and Hyperactivity Disorder (ADHD): Screening, Referral and Treatment – Adult – Ambulatory Clinical Practice Guideline

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Introduction

Attention Deficit Hyperactivity Disorder (ADHD), originally thought to occur just in childhood, is now widely understood as persisting into adulthood. In long-term follow-up studies, between 40 to 60 percent of children diagnosed with ADHD continued to have symptoms of inattention, distractibility and impulsivity into adulthood.[1] This guideline is designed to provide primary care clinicians with a structure, tools and referral criteria for diagnosis and treatment of adults with symptoms typical of ADHD.

Scope

Intended User(s): Physicians, Advanced Practice Providers, Registered Nurses, Psychologists, Pharmacists

Objective(s):

- To inform primary care clinicians on the appropriate methods for evaluating attention deficit hyperactivity disorder (ADHD) symptoms and establishing a diagnosis in adults
- To provide guidance on treatment and management options for ADHD in adults
- To educate clinicians on available resources to provide to patients and thresholds for when to refer to specialty care

Target Population: Adult patients age 18 years or older with a suspected or confirmed diagnosis of attention deficit and hyperactivity disorder (ADHD)

Clinical Questions Considered:

- Does ADHD present differently in adults compared to children?
- What is the recommended first line treatment for adults?
- What are the suggested starting doses (including max dosages) for medication therapy?
- How often should a patient with an established diagnosis be reassessed, and with what assessment tool?
- Are there non-pharmacologic interventions to treat ADHD in adults?
- How effective are complementary alternative therapies?

Recommendations

PRESENTATION

Presentation of ADHD in adults differs from presentation during childhood; a greater decrease in symptoms of hyperactivity than in symptoms of inattention has been demonstrated.[1] Diminishing symptoms of hyperactivity may present as restlessness, whereas difficulty with inattention may manifest as trouble carrying out tasks (e.g., meeting deadlines, attending appointments) or additional consequences including employment, financial difficulties, interpersonal problems, and coexisting psychiatric disorders (e.g., depression, anxiety).[1] Adults with potential ADHD may present with a self-diagnosis, at the suggestion of a family member, friend, employer or therapist or with other behavioral or psychological problems. There may or may not be a previous childhood or adult diagnosis of ADHD.

Adult ADHD is commonly characterized by poor executive functioning. Indicators of ADHD symptoms may include:

- Inattention or distractibility[2]
- Restlessness[2]
- Inability to relax[2]

- Over talkativeness[2]
- Excessive fidgeting or inability to sit still for long in situations where it is socially expected (e.g., at the table, in a movie theatre, at church)[2]
- Forgetfulness
- Disorganization[2]
- Impulsive behaviors/often impatient[2]
- Poor planning or being late[2]
- Increased risk of driving and other accidents
- Family and relationship difficulties[2]
- Difficulties with parenting
- Frequent employment changes[2]

High risk behaviors, failed relationships, legal difficulties, substance abuse and recurrent job loss are common. Physical hyperactivity diminishes in severity with age, but inattentive symptoms become more prominent and may be perceived as incompetence. Some adults compensate by finding a spouse/partner who organizes them or a job which is very active, highly absorbing, or stimulating.

CLINICAL EVALUATION

New Diagnosis

Evaluation of adults presenting with ADHD symptoms in primary care typically requires at least two office visits. As well as allowing for a thorough evaluation, two visits allows the clinician to collect collateral and historical information, assess persistence of symptoms and dysfunction, and the likelihood for alternative diagnoses.

To diagnose ADHD, the clinician should determine that Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5) criteria have been met (see Appendix A) using clinical information obtained from patients (self-report) as well as any corroborating informants.[3] *(UW Health Moderate quality evidence, strong recommendation)*

Note: Although some literature suggests there may be an adult syndrome which may exhibit similar symptoms as ADHD (termed adult onset ADHD), the data is too premature to discern which treatments may be effective and further publications must occur before establishing an evidence-based approach.[4-6] Childhood onset is part of the DSM-5 diagnostic criteria; therefore, if there is no objective evidence of childhood symptoms and impairment, a diagnosis of adult ADHD is not possible under current diagnostic criteria.[3] *(UW Health Moderate quality evidence, strong recommendation)*

History of Present Illness/Symptoms

- The history of present symptoms should be evaluated and include a through description of the behaviors of concern, including age of onset, duration, and degree of functional impairment in the past six months.[7] *(UW Health Moderate quality evidence, strong recommendation)* The circumstances in which the behaviors occur should be assessed, as well as the interventions which have been tried (if any).
- Supporting information related to current behavior and symptoms should be obtained from a partner, family member, close friend, or even an employer.[3] *(UW Health Moderate quality evidence, strong recommendation)*
- Symptoms of ADHD in adults should be judged with reference to developmentally appropriate norms.[7] *(UW Health Moderate quality evidence, strong recommendation)*

- In order to meet diagnostic criteria, symptoms and functional impairment need to have been present in patients prior to age 12 years.[3] A retrospective description of childhood symptoms may be compromised in adults with ADHD, with under reporting found to be a common problem due to difficulties with accurate recall.[2] Instead of self-report, corroborating information related to childhood history should be gathered by review of medical records, school report cards or other academic materials, and interviews with parents or other relatives either in person or via a phone call.[3,7] *(UW Health Moderate quality evidence, strong recommendation)*

Past Medical and Family History

- Consider family history as a strong predictor for ADHD in adults such as having a parent, sibling, or child with ADHD.[2] *(UW Health Low quality evidence, strong recommendation)*
- It is common to have a positive family psychiatric history (see below).[7,8] Inquire particularly about learning disabilities, behavior problems, legal difficulties, and substance abuse. *(UW Health Low quality evidence, strong recommendation)*
- It is important to identify comorbid disorders (e.g., medication-induced attentional difficulties, sleep disorders, hearing impairment, thyroid disease, lead toxicity, hepatic disease) because they can mimic ADHD.[7] *(UW Health Low quality evidence, conditional recommendation)*

History of Educational Issues

- A review of academic background should reveal areas of impairment or concern. A review of report cards often indicates behavior problems, lack of expected achievement, incomplete work, or inadequate effort. Look for drop outs, failures, learning disability, special evaluations or classes, suspensions/expulsions, and focused problems in areas such as reading, writing, penmanship or math. *(UW Health Very low quality evidence, conditional recommendation)*

Physical Exam

- Screen for medical and psychological conditions which would influence choice of medication.[9] *(UW Health Moderate quality evidence, strong recommendation)* The presence of any medical condition should be established to inform treatment selection as certain medical conditions (e.g., liver disease, seizures, hypertension, glaucoma) are relative contraindications to certain ADHD medications (see tables in Appendix B and Appendix C).
- Current or new use of ADHD medications in adults has not been associated with an increased risk of serious cardiovascular events.[10,11] Therefore, routine universal electrocardiography (ECG or EKG) screening prior to prescribing stimulant therapy is not recommended. *(UW Health Very low quality evidence, conditional recommendation)* When considering a stimulant , the provider should perform a cardiovascular risk evaluation. If the history and exam are not suggestive of cardiac disease, pharmacotherapy can be initiated without additional evaluation.[12] *(UW Health Very low quality evidence, conditional recommendation)*
- Establish baseline vital signs: weight, blood pressure, pulse.[7] *(UW Health Very low quality evidence, conditional recommendation)*
- Laboratory testing should be limited only to areas of concern (e.g., thyroid studies, liver function tests, lead levels).[7] *(UW Health Very low quality evidence, conditional recommendation)*

Consider Comorbid or Alternative Psychiatric Diagnoses

- A number of conditions have symptoms similar to those of ADHD and should be considered in the differential diagnosis.[7] *(UW Health Moderate quality evidence, strong recommendation)*

- Psychiatric disorders can cause inattentive symptoms or can influence the course of treatment.[7] Presence of another psychiatric diagnosis does not preclude a diagnosis of adult ADHD, but it does make diagnosis and treatment more confusing. In the literature, 75% of adult patients with ADHD had at least one other disorder, and the mean number of psychiatric comorbidities was three.[2]
- Significant physical, verbal or emotional abuse/neglect can contribute to symptoms characteristic of ADHD.[13-15]
- Depression, Post-Traumatic Stress Disorder (PTSD), bipolar disorder, anxiety disorder, personality disorders, substance abuse, and other psychiatric disorders should be considered as a part of the evaluation.[7] *(UW Health Moderate quality evidence, strong recommendation)*
    - The Generalized Anxiety Disorder (GAD-2 and GAD-7) can be used to support symptom assessment for anxiety.
    - For recommendations related to assessment for depression, reference the UW Health Depression – Adult – Guideline.
    - For assessment of tobacco and alcohol use, reference the UW Health Tobacco – Pediatric/Adult – Inpatient/Ambulatory Guideline or UW Health Alcohol – Pediatric/Adult – Ambulatory Guideline.
    - Referral to Psychiatry should be considered for clinical suspicion of PTSD, obsessive compulsive disorder (OCD), bipolar disorder, personality disorders, or other co-occurring psychiatric disorders.
- Consider evaluation for drug-seeking behavior with multiple pharmacies or prescribing providers using the Wisconsin Prescription Drug Monitoring Program and Illinois Prescription Drug Monitoring Program.

Transition to Adulthood or New Patients with an Existing Diagnosis

General core recommendations for completing the transition between pediatric- to adult-oriented health care can be found in the UW Health Transition of Pediatric Patients with Special Health Care Needs to Adult Health Care – Adult/Pediatric – Ambulatory Clinical Practice Guideline.

For patients with ADHD undergoing a transition (e.g., from high school to additional educational or vocational opportunities, from pediatric-oriented to adult-oriented care) it is suggested to reassess symptoms before and after the transition to establish the need for continuing treatment. *(UW Health Very low quality evidence, conditional recommendation)* For example, assessment could occur around the time of high school graduation and repeated 1-2 months into the start of college or a new job.

In patients with a diagnosis established during childhood, it is important to periodically assess (e.g., every 1-2 years) the need for continued treatment using a clinical interview and self-report information obtained via the Adult ADHD Self Report Scale (ASRS- v1.1), as ADHD manifests differently as a patient ages. *(UW Health Very low quality evidence, conditional recommendation)* A trial discontinuation of medication therapy can be considered as children age into adulthood to assess the ongoing benefit of therapy.[16] *(UW Health Very low quality evidence, conditional recommendation)* Patients may be transitioned completely off of medication therapy if it is determined that symptoms have remitted to the point where the symptoms no longer interfere with daily function.

Referral to Specialty Care

Referral to psychiatrists and/or additional behavioral health providers is suggested if the patient exhibits any of the following presentations and/or co-conditions *(UW Health Low quality evidence, conditional recommendation)*:

- Extreme dysfunction
- Suicidality or homicidality
- Psychosis
- Extreme psychosocial stressors
- Previous treatment failures
- Unclear psychiatric status and/or clinical suspicion of psychiatric disorders such as PTSD, bipolar disorder, or personality disorders
- Substance abuse or dependence
- Unable to confirm childhood diagnosis

EVALUATION OF SYMPTOMS

In children and adolescents, assessment of symptoms using the long form NICHQ Vanderbilt Assessment Scale is recommended, however, it is important to recognize that new screening tools which are age-appropriate and align with adult ADHD should be used instead as adolescent patients grow into adulthood.[17] *(UW Health Very low quality evidence, conditional recommendation)*

In adult patients, self-assessment of symptoms using the 18-item Adult ADHD Self-Report Scale (ASRS-v1.1) Symptom Checklist is recommended.[18-22] *(UW Health Very low quality evidence, conditional recommendation)* It is important to recognize that the ASRS-v1.1 is **not intended for diagnostic evaluation**. Part A of the tool can be used in screening for symptoms during the diagnostic process in conjunction with information obtained via a clinical interview. Part B can be used to help assess the current manifestation of ADHD symptoms, particularly during ongoing follow-up and evaluation of treatment response.

PROVIDE TREATMENT

Although stimulant therapy is typically used as first line treatment in adults, treatment can also consist of a variety of approaches including behavioral therapy, psychoeducation, non-stimulant medications, as well as educational/vocational accommodations.[9]

Behavioral Therapy, Psychoeducation and Coaching

Cognitive behavioral therapy (CBT) is a psychological model focusing on the use of cognitive and/or emotional strategies which work towards higher-level organization and planning, behavioral skills training, and cognitive restructuring.[26,27] This therapy can be provided individually or in group sessions.[27] CBT has demonstrated efficacy in reducing ADHD symptoms and can be included as part of the treatment plan.[25,28-30] *(UW Health High quality evidence, conditional recommendation)* It may be particularly useful in patients whose impairments from executive dysfunction are not optimally addressed with medications.[26] *(UW Health Low quality evidence, conditional recommendation)*

A randomized controlled trial comparing mindfulness (combination of stress reduction program and mindfulness-based CBT) and psychoeducation did not illustrate a preferred treatment approach, as both interventions demonstrated efficacy in reducing symptoms in adults with ADHD.[31] Therefore, psychoeducation or coaching may also be used as non-pharmacologic

interventions for adults with ADHD.[2] *(UW Health Low quality evidence, conditional recommendation)* Psychoeducation provides the patient with information related to the causes, symptoms, and treatment options for ADHD as well as organizational skills, stress management techniques, and improving self-esteem.[2,31]

Patient Resources:
- Behavioral Strategies
- ADHD Social Skills Training
- ADHD Individual Counseling and Coaching Resources (Wisconsin)
- Children and Adults with Hyperactivity Attention Deficit Disorder (CHADD) Resource Directory (Wisconsin and Illinois)
- russellbarkley.org

Vocational/Educational Accommodations
Students with disabilities, including those with ADHD, have legal protections regarding public education and vocational accommodations. Consider vocational and/or educational accommodations and inform patients of the eligibility for services under Section 504 of the Rehabilitation Act of 1974. *(UW Health Moderate quality evidence, conditional recommendation)* Special services or educational accommodations are not needed by all students with ADHD; however, it is important for all patients to develop a constructive working relationship with their school/university or employer.

Patient Resources:
- Wisconsin Department of Workforce Development (DVR)
- Illinois Department of Human Services – Vocational Rehabilitation
- UW-Madison McBurney Disability Resource Center
- Suggest new students go to the university website and search “disability services”

Complementary and Alternative Therapies (CAT)
Many patients express interest in using complementary and alternative therapies to treat ADHD. For some, it is because medication and/or behavioral therapies have been ineffective, while others have concerns about side effects and/or the safety of long-term medication use. Behavioral therapies may also be difficult to access for some families. Examples of CAT modalities used to treat ADHD include restricted diets, nutritional supplements, and mind-body therapies such as meditation, massage, acupuncture, neurofeedback, and working memory training.

Robust evidence to support the effectiveness of CAT therapies is lacking. Some studies show modest benefit, however many of these studies are not methodologically strong. Due to the lack of consistent supporting empirical evidence, CAT modalities are not recommended.[7] *(UW Health Low quality evidence, conditional recommendation)* Discussion of CAT modalities with patients should include possible harms (e.g., restricted diet), personal burden on patients and families (e.g., financial risk), and establishing patient and family values and interests. Patients should be encouraged to instead follow basic healthy lifestyle factors (e.g., structured sleep schedule, exercise, nutritious diet) which are supported by literature. *(UW Health Very low quality evidence, conditional recommendation)*

Medication Therapy
Selection of a medication therapy should be individualized based upon co-morbid conditions, risk of substance abuse/misuse, medication specific contraindications, precautions and side-

effects, pharmacokinetics, patient values and out of pocket costs. *(UW Health Very low quality evidence, conditional recommendation*)

ADHD medication use in the 3 months before conception through the end of pregnancy does occur occasionally.[32] Data on the possible effects of ADHD medication use in pregnancy and with breast-feeding are limited.[33] Clinicians should use regularly updated references for information to inform decisions surrounding medication use in the setting of pregnancy and breastfeeding. *(UW Health Very low quality evidence, strong recommendation)*

Pregnancy and Breastfeeding Resources

- Briggs Drugs in Pregnancy and Lactation https://online.lexi.com/lco/action/index/dataset/fc_briggs
- National Library of Medicine Drug and Lactation Database (LactMed) https://toxnet.nlm.nih.gov/newtoxnet/lactmed.htm
- National Library of Medicine DailyMed for FDA label (package inserts) https://dailymed.nlm.nih.gov/dailymed/index.cfm
- Mothertobaby.org

Prescription of Controlled Substances & Risk For Diversion

Prescribers are expected to understand federal and state laws and rules surrounding the prescribing of controlled substances. *(UW Health Low quality evidence, strong recommendation)* Despite common perceptions across providers, any patient being prescribed a stimulant is at risk for diversion of medication, especially patients of college age/near college campus given the prevalence of non-medical use of prescription stimulants on college campuses for cognitive enhancement.[34-38] The Coalition to Prevent ADHD Medication Misuse (CPAMM) provides resources and references for providers (e.g., information sheets, infographics, research) which can be accessed at http://www.cpamm.org/resources/physicians/.

A medication agreement is a tool which establishes clear expectations between the patient and provider, and avoids reliance on physician judgement, suspicion, or bias to address risk of substance abuse or diversion. Consider establishing a written Controlled Substances Medication Agreement for all patients with ADHD prescribed a controlled substance.[7] At a minimum the medication agreement should be reviewed with the patient at least once every 3 years, however expectations may need to be readdressed at earlier intervals if warranted (e.g., requests for early refill). *(UW Health Very low quality evidence, conditional recommendation)* Periodic drug screening (at least annually) may be conducted as part of an ongoing treatment plan to assess compliance with the medication agreement.[7] *(UW Health Very low quality evidence, conditional recommendation)*

Suggested Resources for Prescribing Controlled Substances (include but are not limited to):

- Title 21 Code of Federal Regulations, Part 1300-END https://www.deadiversion.usdoj.gov/21cfr/cfr/index.html
- Drug Enforcement Agency Practitioner's Manual https://www.deadiversion.usdoj.gov/pubs/manuals/pract/
- DEA frequently asked questions, issuance of multiple prescriptions for Schedule II controlled substances https://www.deadiversion.usdoj.gov/faq/mult_rx_faq.htm
- Wisconsin Uniformed Controlled Substance Act, Chapter 961 https://docs.legis.wisconsin.gov/statutes/statutes/961
- Wisconsin Administrative Code Phar 8, Requirements for Controlled Substances https://docs.legis.wisconsin.gov/code/admin_code/phar/8

- Wisconsin Administrative Code CSB 4, Prescription Drug Monitoring Program https://docs.legis.wisconsin.gov/code/admin_code/csb/4
- Illinois Department of Financial and Professional Regulation Controlled Substances https://www.idfpr.com/profs/contsub.asp

COMPLETE FOLLOW-UP CARE

The main goals of treatment are for patients to improve symptoms, optimize functional performance, and remove behavioral obstacles.[8,26] Unlike other psychiatric disorders such as major depression or bipolar disorder, response and remission in ADHD are not clearly defined by rating scale thresholds and consensus is not apparent in the literature.[8] As with diagnosis, obtaining collateral information is essential to assessing treatment response.[8,9] *(UW Health Low quality evidence, strong recommendation)*

During follow-up appointments or telephone contacts, the following should be evaluated and/or reviewed.[9] *(UW Health Very low quality evidence, conditional recommendation):*

- ADHD symptoms and effect on function
    a. Patient self-report,
    b. Information reported by informants (e.g., family members, partners, close friends, employers),
    c. Diurnal variation in symptoms (as this informs recommendations for change in timing/formulation of the medications prescribed),
    d. Job/educational performance
    e. Relationship issues
- Presence and/or impact of comorbid conditions
- Medication side effects/toxicity
- Vital signs (e.g., changes in heart rate, blood pressure, weight)
- Medication compliance established via patient interview or urine drug screening.

New Diagnosis and/or Uncontrolled Symptoms

Adults with a new diagnosis or a change in medication(s) should be seen within 30 days by a clinician who can assess for side effects and further adjust treatment if needed.[9] *(UW Health Very low quality evidence, conditional recommendation)*

Monthly telephone contacts or office visits should be routine in patients with uncontrolled symptoms until functionality is significantly improved.[9] *(UW Health Very low quality evidence, conditional recommendation)*

Established Diagnosis and Controlled Symptoms

Visit frequency should be individualized. Follow-up in patients with chronically stable, controlled symptoms who do not have co-morbid conditions or other clinical concerns requiring closer monitoring may be appropriate for annual follow-up. More frequent follow-up every three to six months is recommended in situations where there are relevant co-morbid conditions or other concerns. [9] *(UW Health Very low quality evidence, conditional recommendation)*

Disclaimer
Clinical practice guidelines assist clinicians by providing a framework for the evaluation and treatment of patients. This guideline outlines the preferred approach for most patients. It is not intended to replace a clinician's judgment or to establish a protocol for all patients. It is understood that some patients will not fit the clinical condition contemplated by a guideline and that a guideline will rarely establish the only appropriate approach to a problem.

Methodology

Development Process
Each guideline is reviewed and updated a minimum of every 3 years. All guidelines are developed using the guiding principles, standard processes, and styling outlined in the UW Health Clinical Practice Guideline Resource Guide. This includes expectations for workgroup composition and recruitment strategies, disclosure and management of conflict of interest for participating workgroup members, literature review techniques, evidence grading resources, required approval bodies, and suggestions for communication and implementation.

Methods Used to Collect the Evidence:
The guideline author(s) and workgroup members conducted electronic database searches of PubMed, Cochrane Library and hand-searching journals and external guidelines using the search terms of "ADHD presentation in adults", "ADHD treatment", "CBT", "psychosocial ADHD treatment" "adult ADHD and primary care" "psychoeducation and adult ADHD" "ADHD coaching" "stimulant diversion and college" "non-medical use of stimulant prescription" and "behavioral parent training" to collect evidence for review. All publications were published between 2000 and 2018.

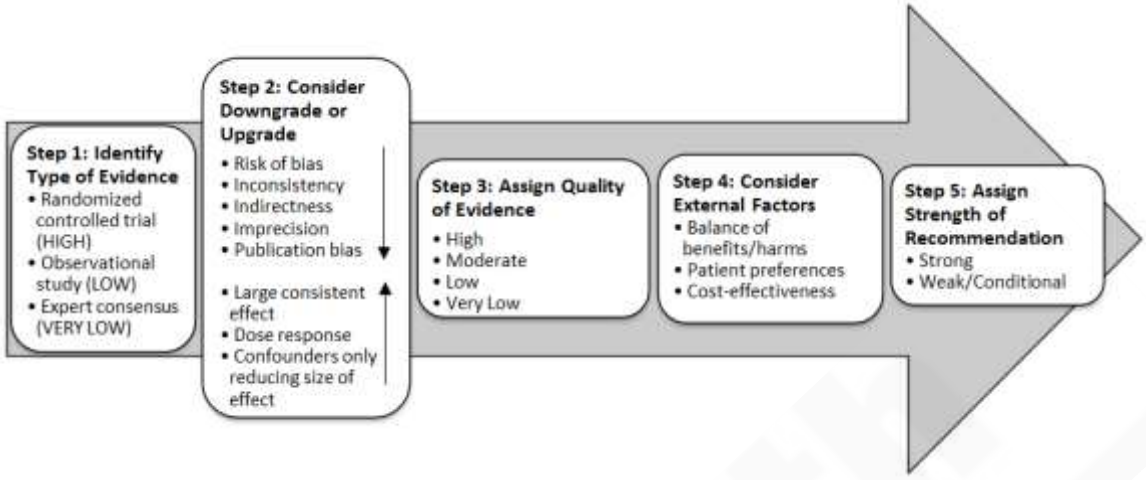
Methods to Select the Evidence:
Chosen literature had to be published in English and conducted in adolescent and adult patients.

Methods Used to Formulate the Recommendations:
The workgroup members agreed to adopt recommendations developed by external organizations and/or created recommendations internally via a consensus process using discussion of the literature and expert experience/opinion. If issues or controversies arose where consensus could not be reached, the topic was escalated appropriately per the guiding principles outlined in the UW Health Clinical Practice Guideline Resource Guide.

Methods Used to Assess the Quality of the Evidence/Strength of the Recommendations:
Recommendations developed by external organizations maintained the evidence grade assigned within the original source document and were adopted for use at UW Health.

Internally developed recommendations, or those adopted from external sources without an assigned evidence grade, were evaluated by the guideline workgroup using an algorithm adapted from the Grading of Recommendations Assessment, Development and Evaluation (GRADE) methodology (see **Figure 1**).

Figure 1. GRADE Methodology adapted by UW Health



Rating Scheme for the Strength of the Evidence/Recommendations:

GRADE Ranking of Evidence

High	We are confident that the effect in the study reflects the actual effect.
Moderate	We are quite confident that the effect in the study is close to the true effect, but it is also possible it is substantially different.
Low	The true effect may differ significantly from the estimate.
Very Low	The true effect is likely to be substantially different from the estimated effect.

GRADE Ratings for Recommendations For or Against Practice

Strong	The net benefit of the treatment is clear, patient values and circumstances are unlikely to affect the decision.
Conditional	Recommendation may be conditional upon patient values and preferences, the resources available, or the setting in which the intervention will be implemented.

Recognition of Potential Health Care Disparities: Language, cultural, and economic barriers must be considered in the care for Hispanic adults with ADHD. Clinicians should be sensitive to a patient's proficiency in English and cultural background, especially when asking assessment questions. Frequent follow-up visits are effective for assessing progress and building rapport, which is particularly important to the Hispanic community.[40]

Collateral Tools & Resources

The following collateral tools and resources support staff execution and performance of the evidence-based guideline recommendations in everyday clinical practice.

Metrics

- Rate of completion and documentation of the ASRSv1.1 in Health Link
- % of adults with a new ADHD diagnosis who had a follow-up office visit within 30 days
- % of adults who had a follow-up contact (office visit or telephone contact) at least every 6 months
- More appropriate referrals from Primary Care to Psychiatry (subjective assessment per providers)

Clinical Practice Guidelines

1. UW Health Alcohol – Adult/Pediatric – Ambulatory Guideline
2. UW Health Tobacco – Adult/Pediatric – Inpatient/Ambulatory Guideline
3. UW Health Depression – Adult/Pediatric – Ambulatory Guideline

Order Sets & Smart Sets

ADD/ADHD [73]

Patient Resources

1. Healthwise: ADHD (Attention Deficit Hyperactivity Disorder): Adult
2. Healthwise: ADHD: Adults: General Info
3. Health Information: ADHD (Attention Deficit/Hyperactivity Disorder)
4. Health Information: ADHD and Hyperactivity
5. Health Information: ADHD Medicines: Suicide Warning for Strattera
6. Health Information: ADHD Myths and Facts
7. Health Information: Impulsivity and Inattention
8. Health Information: Other Conditions With Similar Symptoms
9. Health Information: Social Skills Training
10. Health Information: Tests for Other Disorders
11. Lexicomp: Attention Deficit Hyperactivity Disorder (ADHD)
12. Lexicomp: Attention Deficit Hyperactivity Disorder (ADHD) Discharge Instructions
13. Lexicomp: Medicines for Attention Deficit Hyperactivity Disorder (ADHD)

Questionnaires

Adult Self Report Scale (ASRSv1.1) Symptom Checklist

Registries

ADHD Registry (PL)
ADHD Registry (POSSIBLE)

Appendix A. DSM-5 Diagnostic Criteria

DSM-5 Diagnostic Criteria[3]

A. A persistent pattern of inattention and/or hyperactivity-impulsivity that interferes with functioning or development, as characterized by (1) and/or (2):

1. **Inattention:** Five (or more) of the following symptoms have persisted for at least 6 months to a degree that is inconsistent with developmental level and that negatively impacts directly on social and academic/occupational activities:

   Note: The symptoms are not solely a manifestation of oppositional behavior, defiance, hostility, or failure to understand tasks or instructions.

   a. Often fails to give close attention to details or makes careless mistakes in schoolwork, at work, or during other activities (e.g., overlooks or misses details, work is inaccurate).
   b. Often has difficulty sustaining attention in tasks or play activities (e.g., has difficulty remaining focused during lectures, conversations, or lengthy reading).
   c. Often does not seem to listen when spoken to directly (e.g., mind seems elsewhere, even in the absence of any obvious distraction).
   d. Often does not follow through on instructions and fails to finish schoolwork, chores, or duties in the workplace (e.g., starts tasks but quickly loses focus and is easily sidetracked).
   e. Often has difficulty organizing tasks and activities (e.g., difficulty managing sequential tasks; difficulty keeping materials and belongings in order; messy, disorganized work; has poor time management; fails to meet deadlines).
   f. Often avoids, dislikes, or is reluctant to engage in tasks that require sustained mental effort (e.g., schoolwork or homework; for older adolescents and adults, preparing reports, completing forms, reviewing lengthy papers).
   g. Often loses things necessary for tasks or activities (e.g., school materials, pencils, books, tools, wallets, keys, paperwork, eyeglasses, mobile telephones).
   h. Is often easily distracted by extraneous stimuli (for older adolescents and adults, may include unrelated thoughts).
   i. Is often forgetful in daily activities (e.g., doing chores, running errands; for older adolescents and adults, returning calls, paying bills, keeping appointments).

2. **Hyperactivity and impulsivity:** Five (or more) of the following symptoms have persisted for at least 6 months to a degree that is inconsistent with developmental level and that negatively impacts directly on social and academic/occupational activities:

   Note: The symptoms are not solely a manifestation of oppositional behavior, defiance, hostility, or a failure to understand tasks or instructions.

   a. Often fidgets with or taps hands or feet or squirms in seat.
   b. Often leaves seat in situations when remaining seated is expected (e.g., leaves his or her place in the classroom, in the office or other workplace, or in other situations that require remaining in place).
   c. Often runs about or climbs in situations where it is inappropriate. (**Note:** In adolescents or adults, may be limited to feeling restless.)
   d. Often unable to play or engage in leisure activities quietly.
   e. Is often “on the go,” acting as if “driven by a motor” (e.g., is unable to be or uncomfortable being still for extended time, as in restaurants, meetings; may be experienced by others as being restless or difficult to keep up with).

f. Often talks excessively.
g. Often blurts out an answer before a question has been completed (e.g., completes people's sentences; cannot wait for turn in conversation).
h. Often has difficulty waiting his or her turn (e.g., while waiting in line).
i. Often interrupts or intrudes on others (e.g., butts into conversations, games, or activities; may start using other people's things without asking or receiving permission; for adolescents and adults, may intrude into or take over what others are doing).

B. Several inattentive or hyperactive-impulsive symptoms were present prior to age 12 years.
C. Several inattentive or hyperactive-impulsive symptoms are present in two or more settings (e.g., at home, school, or work; with friends or relatives; in other activities).
D. There is clear evidence that the symptoms interfere with, or reduce the quality of, social, academic, or occupational functioning.
E. The symptoms do not occur exclusively during the course of schizophrenia or another psychotic disorder and are not better explained by another mental disorder (e.g., mood disorder, anxiety disorder, dissociative disorder, personality disorder, substance intoxication or withdrawal).

DSM-5 Diagnosis
Specify whether: **Combined presentation**: If both Criterion A1 (inattention) and Criterion A2 (hyperactivity-impulsivity) are met for the past 6 months. **Predominantly inattentive presentation**: If Criterion A1 (inattention) is met but Criterion A2 (hyperactivity-impulsivity) is not met for the past 6 months. **Predominately hyperactive/impulsive presentation**: If Criterion A2 (hyperactivity-impulsivity) is met and Criterion A1 (inattention) is not met for the past 6 months. *Specify* if: **In partial remission**: When full criteria were previously met, fewer than the full criteria have been met for the past 6 months, and the symptoms still result in impairment in social, academic, or occupational functioning. *Specify* current severity: **Mild**: Few, if any, symptoms in excess of those required to make the diagnosis are present, and symptoms result in no more than minor impairments in social or occupational functioning. **Moderate**: Symptoms or functional impairment between "mild" and "severe" are present. **Severe**: Many symptoms in excess of those required to make the diagnosis, or several symptoms that are particularly severe, are present, or the symptoms result in marked impairment in social or occupational functioning.

Appendix B. Adult ADHD Treatment: Non-Stimulant Medications

Drug	Indications	Formulations	Adult Dosing and Administration	Contraindications	Warnings and Precautions	Use in Specific Populations
Atomoxetine Strattera®[41]	• Treatment of ADHD	10, 18, 25, 40, 60, 80, 100 mg capsules	• Initiate at a total daily dose of 40 mg and increase after a minimum of 3 days to a target total daily dose of approximately 80 mg administered either as a single daily dose in the morning or as evenly divided doses in the morning and late afternoon/early evening. After 2 to 4 additional weeks, the dose may be increased to a maximum of 100 mg in patients who have not achieved an optimal response. • Dosing adjustments are recommended for hepatically impaired patients and when used with strong CYP2D6 inhibitors or patients who are known to be CYP2D6 poor metabolizers.	• Monoamine Oxidase Inhibitors • Narrow angle glaucoma • Pheochromocytoma • Severe cardiovascular disorders	• Suicidal ideation • Severe liver injury • Sudden death, stroke, myocardial infarction • Effects on blood pressure and heart rate • Emergence of new psychotic or manic symptoms • Screening for bipolar disorder • Aggressive behavior or hostility • Effects on urine outflow from the bladder • Priapism • Effects on growth	• Tics with comorbid Tourette's Disorder • Anxiety with comorbid anxiety disorders
Guanfacine ER Intuniv®[42]	• Treatment of Attention Deficit Hyperactivity Disorder (ADHD) as monotherapy and as adjunctive therapy to stimulant medications	1, 2, 3, 4 mg extended-release tablets	• Begin at a dose of 1 mg/day, and adjust in increments of no more than 1 mg/week. Weight / Target dose range (0.05-0.12 mg/kg/day) 41.5-49.4 kg: 3-5 mg/day 49.5-58.4 kg: 3-6 mg/day 58.5-91 kg: 4-7 mg/day >91 kg: 5-7 mg/day • Dosing adjustments are recommended with concomitant use of CYP3A4 inhibitors or inducers		• Hypotension and bradycardia • Sedation and somnolence • Rebound hypertension • Cardiac conduction abnormalities	• Renal impairment and hepatic impairment dosing • Safety and efficacy in geriatric patients has not been established

Drug	Indications	Formulations	Adult Dosing and Administration	Contraindications	Warnings and Precautions	Use in Specific Populations
Clonidine ER Kapvay®[43]	• Off-label for adult ADHD • Treatment of Attention Deficit Hyperactivity Disorder (ADHD) **in children** as monotherapy and as adjunctive therapy to stimulant medications	0.1 mg extended-release tablets	• Initiated with one 0.1 mg tablet at bedtime, and the daily dosage should be adjusted in increments of 0.1 mg/day at weekly intervals until the desired response is achieved. Doses should be taken twice a day, with either an equal or higher split dosage being given at bedtime. Doses higher than 0.4 mg/day (0.2 mg twice daily) were not evaluated in clinical trials for ADHD and are not recommended.		• Hypotension and bradycardia • Sedation and somnolence • Rebound hypertension • Cardiac conduction abnormalities	• Renal impairment dosing
Bupropion Wellbutrin® SR and XL[44,45]	Off label for ADHD	SR: 100, 150, 200 mg XL: 150, 300 mg	*Sustained release (SR):* 100 mg once daily in the morning; increase weekly in 100 mg/day increments based on response and tolerability up to 200mg twice daily *Extended release (XL):* 150 mg once daily in the morning for 1 week; increase to 300 mg once daily for 3 weeks; may further increase dose based on response and tolerability up to 450mg once daily.	• Seizure disorder • Bulimia • Anorexia nervosa • Abrupt disontinuation of alcohol, benzodiazepines, barbituates and antiepileptics • Monoaminie oxidase inhibitors	• Suicidal thoughts • Seizure • Hypertension • Activation of mania/hypomania • Psychosis • Angle-closure glaucoma •	• Renal impairment and hepatic impairment dosing
Desipramine Norpramin®[46]	Off-label for ADHD	10, 25, 50, 75, 100, 150 mg	Begin at a dose of 25 mg at bedtime; increase at weekly intervals in 25 mg/day increments up to a maximum dose of 25 mg four times daily (100 mg/day)	Monoamine oxidase inhibitors Recent myocardial infarction	• Suicide Risk • Mania/hypomania • Serotonin Syndrome • Cardiovascular disease • Seizure disorder • Bone marrow suppression • Unmasking of Brugada Syndrome • Angle-Closure glaucoma • Anticholinergic effects	• Diabetes, may alter glucose regulation • Geriatrics
Nortriptyline Pamelor®[47]	Off-label for ADHD	10, 25, 50, 75 mg 10 mg/5mL solution	0.5 mg/kg/day; may increase by 0.5 mg/kg/day increments at weekly intervals; can consider splitting dose to twice daily			

Appendix C. Adult ADHD Treatment: Stimulant Medications

(This appendix contains summary level information and the reader should consult full references for full details)

Potential absolute or relative contraindications for stimulant use

- Severe hypertension, angina pectoris, cardiac arrhythmias, heart failure, recent myocardial infarction, advanced arteriosclerosis
- Use may aggravate pre-existing anxiety, tension, or agitation
- Monoamine oxidase inhibitors (MAOIs)
- Glaucoma
- Motor tics or family/patient history of Tourette's syndrome
- Hyperthyroidism or thyrotoxicosis
- History of substance abuse or concern for diversion

Warnings and precautions for stimulant use

- Sudden deaths, stroke, and myocardial infarction have been reported in adults taking stimulant drugs at usual doses for ADHD. Adults have a greater likelihood of having serious structural cardiac abnormalities, cardiomyopathy, serious heart rhythm abnormalities, coronary artery disease, or other serious cardiac problems
- Stimulant medications may cause a modest increase in average blood pressure (about 2-4 mmHg) and average heart rate (about 3-6 bpm), and individuals may have larger increases.
- Pre-existing psychosis or bipolar illness or the emergence of new psychotic or manic symptoms
- Appearance of or worsening of aggressive behavior or hostility
- Pre-existing seizure disorder
- Priapism, usually after some time on the drug but also during periods of drug withdrawal
- Peripheral vasculopathy, including Raynaud's phenomenon
- Visual disturbances (difficulties with accommodation and blurred vision)
- Phenylketonuria, some chewable products have phenylalanine

Potential Harms/Side Effects

- Common side effects include headache, weight loss, anxiety, lack of appetite, insomnia, dry mouth or abdominal pain.
- Less common but serious side effects include:
    - Signs of severe cerebrovascular disease (change in strength on one side is greater than the other, trouble speaking or thinking, change in balance, or change in eyesight)
    - Signs of serotonin syndrome (dizziness, severe headache, agitation, hallucinations, tachycardia, abnormal heartbeat, flushing, tremors, sweating a lot, change in balance, severe nausea, or severe diarrhea)
    - Signs of liver problems (dark urine, fatigue, lack of appetite, nausea, abdominal pain, light-colored stools, vomiting, or jaundice)
    - Angina, severe dizziness, passing out, vision changes, shortness of breath, joint pain, purple patches on skin or mouth, blurred vision, tachycardia, bradycardia, abnormal heartbeat, severe headache, severe nausea, vomiting, seizures, chills, pharyngitis, tremors, abnormal movements, sweating a lot, severe loss of strength and energy, change in color of hands or feet from pale to blue or red, burning or numbness of hands or feet, cold sensation of extremities, wounds on fingers or toes, change in amount of urine passed, urinary retention, muscle pain, muscle weakness, libido changes, priapism, skin discoloration, severe skin irritation, signs of depression (suicidal ideation, anxiety, emotional instability, or confusion), hallucinations, mood changes, or behavioral changes

Drug	Formulation(s)	Adult Dosing and Administration
Methylphenidate Preparations		
Short-acting		
Ritalin®[48]	5, 10, 20 mg tablet	Begin at a dose of 5 mg twice daily. Dose may be adjusted weekly in 5 to 10 mg increments to a maximum of 60 mg/day (in 2 to 3 divided doses)
Methylin®[49,50]	5mg/5mL, 10mg/5mL oral solution 2.5, 5, 10 mg chew tablets	
Intermediate-acting		
Ritalin LA®[51]	10, 20, 30, 40 mg capsules*	Begin at a dose of 10 to 20 mg daily. Dose may be adjusted in weekly 10 to 20 mg increments to a maximum dose of 60mg/day.
Metadate CD®[52]	10, 20, 30, 40, 60 mg capsules*	
Ritalin SR®[48]	20 mg tablets	
Metadate ER®[53]	10, 20 mg tablets	
QuilliChew ER®[54]	20, 30, 40 mg chewable tablets (*10 mg and 15 mg doses can each be achieved by breaking in half the functionally scored 20 mg and 30 mg tablets, respectively)*	
Cotempla XR-ODT® (not FDA labeled for adults)[55]	8.6, 17.3, 25.9 mg extended release oral disintegrating tablet	Begin at a dose of 17.3 mg daily. Dose may be adjusted by 8.6mg in weekly intervals to a maximum dose of 51.8 mg/day. Place the whole tablet on the tongue and allow it to disintegrate without chewing or crushing.
Long-acting		
Aptensio XR®[56]	10, 15, 20, 30, 40, 50, 60 mg capsule*	Begin at a dose of 10 mg daily. Dose may be adjusted in 10mg increments weekly to a maximum dose of 60mg/day.
Concerta®[57]	18, 27, 36, 54, 72 mg tablet	Begin at a dose of 18mg or 36mg daily. Dose may be adjusted by 18mg at weekly intervals to a maximum dose of 72mg/day. Nonabsorbable tablet shell may be seen in stool (Concerta) and is normal, may also appear on x-ray.
Daytrana®[58]	10, 15, 20, 30 mg transdermal patch	Begin at a dose of 10 mg daily. Dose may be adjusted by to the next patch size at weekly intervals to a maximum dose of 30 mg/day. Patch should be applied to the hip area 2 hours before an effect is needed and should not be worn greater than 9 hours after application. Transdermal patch absorption can increase if body temperature increases. Patients should avoid long, hot baths or sunbathing or use of heat sources (such as sunlamps, tanning beds, heating pads, electric blankets, heat lamps, saunas, hot tubs, heated waterbeds)
Quillivant XR®[59]	25 mg/5mL oral suspension	Begin at a dose of 20 mg daily. Dose may be adjusted in 10 to 20 mg increments weekly to a maximum dose of 60mg/day. Before administering the dose, vigorously shake the bottle of for at least 10 seconds, to ensure that the proper dose is administered

Drug	Formulation(s)	Adult Dosing and Administration
Dexmethylphenidate Preparations		
Short-acting		
Focalin®[60]	2.5, 5, 10 mg tablets	Begin at a dose of 5 mg daily (2.5 mg twice daily). Dose may be adjusted in 2.5-5 mg increments weekly to a maximum dose of 20mg/day (10 mg twice daily). Doses should be administered at least 4-hours apart. In general, dexmethylphenidate immediate-release (IR) dosage forms are dosed at one-half the dosage of methylphenidate IR formulations
Long-acting		
Focalin XR®[60]	5, 10, 15, 20, 25, 30, 35, 40 mg capsules*	Begin at a dose of 10 mg daily. Dose may be adjusted in 5-10 mg increments weekly to a maximum dose of 40mg/day.
Amphetamine Preparations *When transitioning a patient from one amphetamine product to another, milligram-for-milligram substitution should be avoided. For example, patients need to be reinitiated on and titrated to an optimal dosage when changing from amphetamine base formulations to mixed-salt amphetamines*		
Short-acting		
Mixed amphetamine salts Adderall®[61]	5, 7.5, 10, 12.5, 15, 20, 30 mg tablets	Begin at a dose of 5 mg once or twice daily. Dose may be adjusted in 5 mg increments weekly to a maximum dose of 40mg/day. Doses should be administered at least 4-hours apart.
Dextroamphetamine Dexedrine® (off-label for adults)[62]	5,10 mg tablets	
Dextroamphetamine Procentra®[63] (off-label for adults)	5mg/mL oral solution	
Long-acting		
Adderall XR®[64]	5, 10, 15, 20, 25, 30 mg capsules*	Begin at a dose of 20 mg once daily. Dose may be adjusted in 5 to 10 mg increments weekly to a maximum dose of 40mg/day.
Dextroamphetamine Dexedrine Spansules® (off-label for adults)[65]	5, 10, 15 mg capsules*	Begin at a dose of 5 mg once or twice daily. Dose may be adjusted in 5 mg increments weekly to a maximum dose of 40mg/day.
Mixed amphetamine salts Mydayis®[66]	12.5, 25, 37.5, 50 mg capsules*	Begin at a dose of 12.5 mg once daily. Dose may be adjusted in 12.5 mg increments weekly to a maximum dose of 50mg/day. Do not substitute for other amphetamine products on a milligram-per-milligram basis.
Lisdexamfetamine Vyvanse®[67]	10, 20, 30, 40, 50, 60, 70 mg capsules* 10, 20, 30, 40, 50, 60 mg tablets	Begin at a dose of 30 mg once daily. Dose may be adjusted in 10-20 mg increments weekly to a maximum dose of 50mg/day.

*Capsules may be carefully opened and the beads sprinkled over a spoonful of applesauce and given immediately **without chewing**, and not stored for future use.

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