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Committee Approvals/Dates:
Clinical Knowledge Management (CKM) Council (10/23/2014)

Release Date: October 2014

Next Review Date: October 2016
**Executive Summary**

**Guideline Overview**
This guideline is primarily based upon the 2007 American Academy of Child and Adolescent Psychiatry and 2011 American Academy of Pediatrics guidelines.

**Key Practice Recommendations**
2. Initiate a systematic evaluation to assess symptoms and impairment if indicated.
3. Systematically gather data from schools, families, patients and/or other caretakers including a validated measure of symptoms and impairment.
4. Perform relevant clinical examinations and consider co-morbid or alternative diagnoses as indicated during review of the data.
5. Perform routine surveillance for symptoms of ADHD in children and adolescents in primary care settings based on a synthesis of a variety information sources.
6. Provide education and recommendations for behavioral therapy and/or psychotherapy to families and patients.
7. Manage this chronic condition with periodic preventive follow-up to maintain control of symptoms throughout development, monitor treatment efficacy, and limit or address potential side effects.

**Companion Documents**
1. Pediatric ADHD Algorithm
2. Pediatric ADHD Medication Algorithm
3. Pediatric Medication Charts
4. Non Medication Approaches for Children With ADHD

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

**External Resources**
1. Wisconsin Prescription Drug Monitoring Program (PDMP)
2. Wisconsin Uniform Controlled Substances Act
3. Schoolpsychiatry.org
4. The Psychology and Research Training Clinic
5. Wisconsin Institute for Learning Disabilities/Dyslexia, Inc.
6. Learning Disabilities Association of Wisconsin

**Patient Resources**
1. Healthwise: ADHD (Attention Deficit Hyperactivity Disorder): Adult
2. Healthwise: ADHD (Attention Deficit Hyperactivity Disorder): Pediatric
3. Healthwise: ADHD: Adults: General Info
4. Healthwise: Attention Deficit Hyperactivity Disorder (ADHD): After Your Child’s Visit
5. Health Information: ADHD (Attention Deficit/Hyperactivity Disorder)
6. Health Information: ADHD and Hyperactivity
7. Health Information: ADHD Medicines: Suicide Warning for Strattera
8. Health Information: ADHD Myths and Facts
9. Health Information: ADHD: Helping Your Child Get the Most From School
10. Health Information: ADHD: Helping Your Child Get Things Done
11. Health Information: Impulsivity and Inattention
12. Health Information: Other Conditions With Similar Symptoms
13. Health Information: Should My Child Take Medicine for ADHD?
14. Health Information: Social Skills Training
15. Health Information: Taking Care for Yourself When Your Child Has ADHD
16. Health Information: Tests for Other Disorders
17. Lexicomp: Attention Deficit Hyperactivity Disorder (ADHD)
18. Lexicomp: Attention Deficit Hyperactivity Disorder (ADHD) Discharge Instructions
19. Lexicomp: Medicines for Attention Deficit Hyperactivity Disorder (ADHD)
20. Lexicomp: Methylphenidate (Pediatric)
21. Lexicomp: Dexmethylphenidate (Pediatric)
22. Lexicomp: Dextroamphetamine (Pediatric)
23. Lexicomp: Dextroamphetamine and Amphetamine (Pediatric)
24. Lexicomp: Lisdexamfetamine (Pediatric)
25. Lexicomp: Nortriptyline (Pediatric)
26. Lexicomp: Bupropion (Pediatric)
27. Lexicomp: Atomoxetine (Pediatric)
28. Lexicomp: Clonidine (Pediatric)
29. Lexicomp: Guanfacine (Pediatric)

Scope
Disease/Condition(s):
Attention deficit and hyperactivity disorder (ADHD)

Clinical Specialty:
Family Medicine, Neurology, Pediatrics, Psychiatry, and Psychology

Intended Users:
Primary Care Physicians, Advanced Practice Providers, Psychiatrists, Psychologists

CPG objective(s):
To provide evidence-based recommendations for the effective diagnosis and treatment of pediatric patients with ADHD.

Target Population:
Children (age 4-10 years) and adolescent (age 11-17 years) patients.

Major Outcomes Considered:
1. Incidence of comorbid disorders
2. Effectiveness of treatment
3. Adverse effects of medication

Guideline Metrics:
Meaningful Use:
- Percentage of children who had one follow-up visit with a practitioner with prescribing authority during the 30-day initiation phase.
• Percentage of children, who remained on ADHD medication for at least 210 days and who, in addition to the visit in the Initiation Phase, had at least 2 additional follow-up visits within 270 days after the Initiation Phase ended.

Methodology
Methods Used to Collect/Select the Evidence: Evidence was selected using hand searches of published literature and electronic databases.

Methods Used to Assess the Quality and Strength of the Evidence and Recommendations: Recommendations developed by external organizations (such as the American Academy of Pediatrics) maintained the evidence grade assigned within the guidance document(s) and were adopted for use at UW Health. Recommendations developed during workgroup meetings used the modified Grading of Recommendations Assessment, Development and Evaluation (GRADE) developed by the American Heart Association and American College of Cardiology to establish evidence grades for each piece of literature and/or recommendation.

Rating Schemes for the Strength of the Evidence and Recommendations: See Appendix A for grading schemes.

Methods Used to Formulate the Recommendations: Recommendations developed by external organizations were adopted while others were developed via group consensus through discussion of the literature evidence and expert experiences.

Introduction
ADHD is a clinical diagnosis which extends across developmental phases and may extend into adulthood. Core symptoms include hyperactivity, impulsivity and distractibility resulting in academic, social and personal underachievement. While the strongest risk factor is genetic; the disorder is thought to result from complex interactions between genetic, psychosocial, environmental and biologic factors. ADHD is a common behavioral diagnosis in primary care with substantial burden in terms of number of visits, cost of medication, behavioral management and additional service costs (i.e. injury costs, etc.). ADHD requires evaluation of behavior across multiple settings, consideration of alternative causes for the problems presented and a multimodal management plan involving both family and school. Early recognition, diagnostic accuracy, optimal management, including family and educational support contribute to improved short and long term functioning for both the child and his or her parents.

This guideline is meant to address children ages 4 – 17. Consider referral for further evaluation to mental health or neurology for children younger than 4 who present with behavior problems inconsistent with developmental level. Persons aged 18 and up can be evaluated using the recommendations within the UW Health ADHD – Adult - Ambulatory Clinical Practice Guideline.
# Recommendations

## Pediatric ADHD Algorithm (ages 4-17 years)

### Suspect ADHD

- Hyperactive, can’t sit still and/or
- Lack of attention, poor concentration, daydreams, doesn’t listen and/or
- Acts without thinking/impulsive and/or
- Leading to functional impairment at home and school

### Family and Child Assessment

1. History of present illness (HPI), including specific behaviors of concern, age of onset, duration, parental expectations, degree of functional impairment, settings and previous interventions.
2. Past medical history, including prenatal, childhood development, general temperament and substance abuse.
3. Family history, especially learning disorders, alcohol and other drug issues (AODA), conduct disorders, ADHD, sudden death and cardiac problems.
4. Physical exam with particular attention to vision, hearing, sleep, genetics, and neurologic disorders.
5. Consider lead screen, TSH, CBC/serum ferritin if history suggestive.
6. Social history, including family organization, living arrangements, significant stressors.
7. Social history, including number of schools, need for special help, evaluations.

### Gather Information

1. Parents and other caregivers complete structured/standardized assessment tool
2. Teachers complete structured/standardized assessment tool
3. School evaluations (including IEP)
4. Report cards to document academic and social impairment and attendance patterns
5. Information from other clinicians (behavioral health, specialists, tutors, etc.)

### Consider Co-morbid and Confounding Disorders

1. Normal developmental variation or unrealistic parental or school expectations
2. Obsessive compulsive disorder (OCD)
3. Affective disorders (i.e., depression, anxiety)
4. Oppositional defiant/intermittent explosive/conduct disorder
5. Developmental disorders, including Autism Spectrum disorders
6. Situational stressors, chaotic household (parental discord, parent with ADHD or parent/child relational disturbance
7. Sequelae of abuse/trauma
8. Undiagnosed cognitive or learning disorder

### Determine Diagnosis

1. Meet DSM-5 criteria.

### Treatment

1. Family and patient education regarding diagnosis
2. Parenting strategies for behavior management
3. Educational planning and accommodations
4. Refer for family therapy or counseling and management training if needed
5. Medications

### Follow-up

1. Review target symptoms and home behavior
2. Discuss parent concerns/questions
3. Review school performance using standardized assessment tool completed by teachers
4. Monitor height, weight, pulse and blood pressure at each visit. Inquire about sleep and appetite
5. Reconsider co-morbid and/or confounding disorders as needed
6. Monitor for drug adverse effects

### Consider Referral

1. Neurological disorder
2. Extreme family or child dysfunction
3. Significant psychiatric disorders
4. Possibility of undiagnosed learning disorder

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For revisions, contact CCKM.

ADHD - Pediatric – Ambulatory Guideline
1. PRESENTATION AND SCREENING

Evaluation for ADHD should be initiated in any child age 4-18 years who presents with academic or behavioral problems with symptoms of inattention, hyperactivity, or impulsivity. *(Grade B, Strong recommendation)*

Parents may request evaluation because of their own concerns or at the suggestion of teacher, therapist or other caretaker. The following behaviors are consistent with ADHD if they are present and inconsistent with developmental level, and result in functional impairment:

- Can’t sit still / hyperactive.
- Lack of attention / poor concentration / doesn’t seem to listen / daydreams.
- Doesn’t finish tasks / lacks organization / dislikes tasks which require sustained mental effort.
- Acts without thinking / impulsive.

2. CLINICAL ASSESSMENT

Initial evaluations can usually be done in the primary care office, reserving referrals for those situations where the diagnosis is uncertain or family situation is complicated. Evaluation should consist of clinical interviews with the parent and patient, obtaining information about the patient’s school or daycare functioning, evaluation for comorbid psychiatric disorders, and review of the patient’s medical, social, and family histories. *(Grade MS)* Data collection prior to a clinic visit is typically helpful, and more than one visit may be needed to perform the entire clinical assessment (i.e., parents may come without their children). The following areas are important to review during the evaluation:

A. The history of present illness is a thorough description of the behaviors of concern, including age of onset, duration, and degree of functional impairment. *(Grade MS)*

- Behaviors need to be considered within the context of normal developmental variation and parental expectations.
- General temperament is variable but children with hyperactivity patterns can be described as difficult, disruptive and irregular in routine.
- Inquiring about where and under what circumstances the behaviors occur and what interventions have been tried helps to complete the picture.
- Neuropsychological and psychology tests should be performed if the patient’s history suggests low general cognitive ability or low achievement in language or mathematics relative to the patient’s intellectual ability. *(Grade OP)* This testing may not be covered by insurance and a referral to Patient Relations may be considered. Some community resources for testing may include:
  - The Psychology and Research Training Clinic
  - Wisconsin Institute for Learning Disabilities/Dyslexia, Inc.
  - Learning Disabilities Association of Wisconsin

B. Past medical history should include any prenatal, birth, or childhood medical insults (seizures, head trauma, stroke, encephalitis, maternal smoking,
substance abuse, premature or difficult birth, etc.) which could contribute to the behavioral concerns.  (Grade MS)

C. Consider family history for disease.
- Children with ADHD often have a positive family history for learning problems, ADHD and conduct disorders.
- A family history of sudden death or early cardiac problems should prompt review prior to using medications.
- Family members or caregivers with alcohol and other drug issues raise concerns about diversion of medication.
- Chaotic home situations can produce behavior problems similar to ADHD or make treatment of a child with ADHD more difficult.
- Information from other clinicians including: mental health, specialists, etc. should be reviewed.

D. All children being evaluated for ADHD should have annual well child checks.  (Class I, LOE C) A physical exam, including review of systems, should be performed if the patient has not had a well child check within the previous year. If a patient’s medical history is unremarkable, laboratory testing or neurological testing is not indicated.  (Grade NE)
- Vision or hearing deficits, sleep inadequacy, migraines, pica or lead poisoning could all contribute to difficulty in function.
- Physical conditions such as tics, sleep apnea, or absence seizures should be considered as confounding disorders.
- Lab work, such as lead screen, CBC, ferritin, TSH, is not needed unless the history and physical exam indicate specific areas of concern.
- EKG may be considered prior to initiation of stimulant therapy if indicated by risk factors determined by family or individual history or during review of systems.

E. Social history should include current living arrangement and parenting patterns.  (Grade MS)
- Significant stressors, including family disruption, divorce, frequent moves, significant losses, history of abuse or neglect should be assessed.

F. History of educational issues should be reviewed.  (Grade MS)
- Inquire whether behaviors occur in specific classes or at certain times of the day.
- What kind of evaluations has the school done and/or has any special help or classroom accommodation been provided?
- Report cards can be used to document performance as well as behavioral concerns. Attendance problems can indicate school avoidance due to anxiety, physical problems, or chaotic parenting.

G. When appropriate, screen older children or family members for substance abuse.  (Class I, LOE C)
- Substance abuse can result in similar symptoms to ADHD or can represent a consequence of inadequate treatment. For assessment of tobacco or alcohol use, reference the UW Health Tobacco –
Pediatric/Adult – Inpatient/Ambulatory Guideline or UW Health Alcohol – Pediatric/Adult – Ambulatory Guideline.

- Consider evaluation for drug-seeking behavior with multiple pharmacies or prescribing providers using the Wisconsin Prescription Drug Monitoring Program.

GATHER ADDITIONAL INFORMATION (Class I, LOE C)
A. Validated Structured Assessment Form - Use of a structured tool is highly recommended. The NICHQ Vanderbilt Assessment Scale for both parent and teacher informant is attached to this document; however, any specific ADHD checklist or rating scale can be used which will help the clinician understand the breadth and severity of symptoms. The Vanderbilt is easily scored and is not proprietary. Parents and current teachers should complete the structured form. It is common to get variations in response both in the number of concerns and their severity. Information on assessment tool is provided later on in the document.

B. School Assessment - Current teachers should complete structured assessment form. Any school evaluations, including an Individual Education Program (IEP) evaluation, should be reviewed.

COMORBID AND/OR CONFOUNDING DISORDERS
ADHD is a clinical diagnosis made after consideration of other disorders which can also cause hyperactivity or inattentive behaviors. The clinician should evaluate the patient for other conditions that might coexist with ADHD, including emotional or behavioral, developmental, and physical conditions. (Grade B, Strong recommendation) Some of the comorbid and/or confounding disorders that can cause these symptoms include:
- Normal developmental variation or unrealistic parental or school expectations
- Obsessive compulsive disorder (OCD)
- Affective disorders (i.e., depression, anxiety)
- Oppositional defiant/intermittent explosive/ conduct disorder
- Developmental disorders, including Autism Spectrum disorders
- Situational stressors, chaotic household (parental discord, parent with ADHD) or parent/child relational disturbance
- Sequela of abuse/trauma
- Undiagnosed cognitive or learning disorder

Usually the complete assessment described above will lead to consideration of an alternative diagnosis when needed.

CONSIDER REFERRAL (Class IIa, LOE C)
Referral to psychiatrists and additional providers is always at the discretion of the provider. Psychiatric evaluation is indicated for concern regarding any significant psychiatric or mood disorder, listed above in Comorbid and/or Confounding Disorders section.
Families with histories of or with ongoing abuse, high stress levels or dysfunctional parenting may benefit from referral to Behavioral Health.

Learning disorders are frequently a comorbid or alternative diagnosis. Referral to the school for further evaluation is appropriate, especially if the behaviors are limited to one area of academic functioning, such as math or reading, or there is concern about comprehension. Children with learning disabilities often have difficulty understanding directions thus impairing follow-through, while children with ADHD understand directions but get distracted in the follow-through process.

3. ESTABLISH DIAGNOSIS

To diagnose ADHD, the clinician should determine that DSM-5 criteria have been met. Information should be obtained primarily from reports from parents, teachers, and other school or mental health clinicians during the initial evaluation. The clinician should also rule out any alternative causes. (Grade B, Strong recommendation)

**DSM-5 Diagnostic Criteria**

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:** Six (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. **For older adolescents and adults (age 17 and older), at least five symptoms are required.**
   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:** Six (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. For older adolescents and adults (age 17 and older), at least five symptoms are required.

   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.

### 4. PROVIDE TREATMENT

Treatment consists of a variety of approaches including family and parenting support, educational accommodations, behavioral therapy, and medication. Recommendations for treatment vary depending on patient age.

**Children (4-5 years)**: The first line of treatment should be evidence-based parent and/or teacher-administered behavior therapy. *(Grade A, Strong recommendation)* Providers may prescribe stimulant medication if the behavior interventions do not provide significant improvement and there is moderate-to-severe continuing disturbance in function. *(Grade B, Recommendation)*

**Children (6-11 years)**: Prescription of FDA-approved medications for ADHD *(Grade A, Strong recommendation)* and/or evidence-based parent and/or teacher-administered behavior therapy should be completed for treatment. It is preferred to prescribe both medication and behavioral therapy. *(Grade B, Strong recommendation)*

**Adolescents (12-18 years)**: FDA-approved medications for ADHD should be prescribed with the patient assent. *(Grade A, Strong recommendation)* Behavioral therapy may be prescribed, as treatment using both methodologies is preferred. *(Grade C, Recommendation)*

**Family Support and Education**

This type of behavioral treatment may include any or all of the following, dependent upon need of the family:

A. Psychological support and psychoeducational opportunities for the parent and child.

B. Information about the chronicity and patterns of ADHD.
C. Information about the benefits of multimodal treatment.
D. Information about the components of treatment and follow-up (need for medication trials to find best response and dose, need for systematic monitoring at home and school, need for biannual follow-up).
E. Availability of community and other educational resources.
F. Parenting strategies:
   (1) A structured household and routine supports growth of organizational skills.
   (2) Clear expectations and follow through improve on task behavior and success, thereby contributing to positive self-esteem.
   (3) Frequent positive feedback for desired behaviors and structuring the environment to promote success reduce the risk of low self-esteem and lowered self expectations.
   (4) A child with ADHD may achieve independence (safe decision making without adult supervision) later than their peers and thus may require supervision at older ages after school or during school vacations.

**Self-Control and Behavioral Management**
Behavior management can be learned through family counseling, parent support groups, self-education or clinician visits. Inquiring about behavioral management plans during primary care follow-up stresses its importance in the total treatment plan. As the child gets older, individual self-control training can be taught. The basics of behavior therapy are listed as follows:
A. Select specific behavior for improvement and provide a clear, measurable description for child, family or school (i.e., turns in math homework on the day it is due).
B. Count behavior as it occurs over a specified time period prior to treatment (i.e., 0 days with math homework done over 2 week interval).
C. Establish goal for target behavior and reward for success that is meaningful to the child.
D. Help child learn skills that will lead to desired behavior (i.e., child learns to put math homework in backpack as soon as it is completed).
E. Make sure child, parents and teacher all understand process and plan.
F. Monitor success and modify target behavior, rewards and/or support as needed.

**Educational Accommodations**
Students with disabilities, including those with ADHD, have legal protections which guarantee an education (Many children with ADHD will not require special services or educational accommodations; however, all parents should develop a constructive working relationship with their child’s teacher and school. Specifically:
A. Parents should be informed about strategies for developing a therapeutic alliance with the school (see handout, Working with Your Child’s School).
B. Parents should expect the school to develop and monitor an educational plan which maximizes the child’s academic functioning and achievement.
C. Parents may request or be offered additional educational assessments or special services as needed. Additional resources and information may be obtained from schoolpsychiatry.org.

**Medication Therapy**

Medication therapy is often a very effective tool in treating children with ADHD. It can take several attempts to find the most efficacious medication with the least side effects. Medication success is based on reduction of target symptoms without problematic side-effects. When medication therapy is effective, then treatment effect does not persist following discontinuation. Consider the following when forming and evaluating the medication plan:

A. When evaluating effectiveness of medication, also consider other components of the treatment plan.
   1. Assess for adherence to the medication regimen. Missed doses are common both at home and school.
   2. Determine if behavior therapy is being implemented.
   3. Determine if more educational support is needed.

B. In situations where there is an increased risk of substance abuse or diversion by the patient or their family members, non-stimulant preparations or slow-release stimulants are preferred. When crushed, they more closely resemble immediate-release preparations in terms of onset and effect.

C. Longer-acting stimulants are usually preferable and can be used to initiate treatment. The patch formulation exists for children and adolescents who do not tolerate oral therapy. If patients can’t swallow tablets, capsules may be sprinkled on food.

D. Combination therapy of longer and short-acting stimulants may be used. Sometimes a short-acting stimulant is needed in addition to the long-acting dose. This often occurs during the afternoon hours in order to extend the duration of treatment. *(Class I, LOE C)*

E. Most children will respond to one or more of the stimulant medications; therefore, consider referral for children who do not respond after several medication trials or who experience severe side effects.

F. Consider referral at any stage for children with unusual responses or whenever the clinician has concerns about further evaluation and treatment.

G. Consider insurance coverage and costs of therapy when prescribing medication.

H. Medication should be periodically re-evaluated in order to assess the recurrence of symptoms with regard to attention and concentration.

The medication treatment protocol *(Appendix B)* reviews initial treatment choices and management of common side effects. The medication chart *(Appendix C)* includes product names, usual duration of action, available strengths, usual dosing, and contraindications/precautions.

Medications must be prescribed in accordance with *Wisconsin Chapter 961* for controlled substances:

1. Prescription must be written for legitimate medical indication.
2. Sign/date prescription on date of issue with:
   a. Patient full name/address.
   b. Drug name, strength, dosage form, quantity, directions for use.

3. Up to 3 monthly prescriptions may be given to patients.
   a. The date of issue (date of prescription is written) must be on all three
      prescriptions.
   b. The prescriber writes “fill on or after XX/XX/XXXX” for two prescriptions to be
      filled at a later date.
   c. A prescription for a CII controlled substance cannot be dispensed more than
      60 days after the date of issue on the prescription order.

5. COMPLETE FOLLOW-UP CARE

   Children with a new diagnosis, uncontrolled symptoms or change in medication should
   be seen within 30 days by a clinician who can assess for side effects and adjust
   medication if needed. Monthly contacts or visits should be routine until functionality is
   significantly improved. Once functionality is improved, follow-up appointments should
   occur at least twice a year. Consider a visit at the beginning of the new school year and
   a visit prior to summer vacation. Parents may complete a structured form prior to follow-
   up visits. Teachers may submit formal evaluation feedback or complete a structured
   evaluation form. Feedback should be encouraged from parents and teachers if child is
   not doing well at home or school. Additional feedback should be requested using the
   Vanderbilt Assessment follow-up form, notes, or report cards.

   At each follow-up visit:
   1. Review target symptoms and home behavior.
   2. Discuss parent concerns and questions. Review success of parenting strategies
      and educational needs.
   3. Review school performance including success of educational plan
   4. Monitor for drug adverse effects to medications including effects on appetite and
      sleeping patterns.
   5. Reconsider comorbid and/or confounding disorders, particularly when treatment
      goals are not achieved.
   6. Periodic physical assessment including height, weight, pulse and blood pressure.
      Consistent use of stimulant medication can be associated with mild growth
      suppression. It is unclear to what extent drug holidays (i.e., discontinuing
      medications on weekends or summer vacations) ameliorate this effect or the
      extent to which recovery can be expected with discontinuation.
   7. Adjust medication therapy as needed.

   NOTE: Following diagnosis, patients are subject to follow requirements established by
   the Healthcare Effectiveness Data and Information Set (HEDIS) for treatment. For more
   information, see Appendix D.
UW Health Implementation

Potential Benefits:
Appropriate assessment and treatment of children and adolescents with attention-deficit/hyperactivity disorder.

Potential Harms: Drug toxicity.

Qualifying Statements
The listed practice parameters are developed to assist clinicians in psychiatric decision making. These parameters are not intended to define the standard of care, nor should they be deemed inclusive of all proper methods of care or exclusive of other methods of care directed at obtaining the desired results. The ultimate judgment regarding the care of a particular patient must be made by the clinician in light of all of the circumstances presented by the patient and his or her family, the diagnostic and treatment options available, and available resources.

Implementation Plan/Tools
1. Guideline will be housed on U-Connect in a dedicated folder for CPGs.
2. Release of the guideline will be advertised in the Clinical Knowledge Management Corner within the Best Practice newsletter.
3. Links to this guideline will be updated and/or added in appropriate Health Link or equivalent tools, including:
   - ADD/ADHD [73]

Disclaimer
CPGs are described to assist clinicians by providing a framework for the evaluation and treatment of patients. This Clinical Practice 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.

References
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19. Perrin, J., Friedman, R., Knilans, T. Cardiovascular Monitoring and Stimulant Drugs for Attention-Deficit/Hyperactivity Disorder. Pediatrics 2008; 122 (Number 2)
Appendix A

Figure 1. American Academy of Pediatrics Grading Scheme (2011)

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<thead>
<tr>
<th>Evidence Quality</th>
<th>Preponderance of Benefit or Harm</th>
<th>Balance of Benefit and Harm</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Well-designed RCTs or diagnostic studies on relevant population</td>
<td>Strong recommendation</td>
<td>Option</td>
</tr>
<tr>
<td>B. RCTs or diagnostic studies with minor limitations; overwhelmingly consistent evidence from observational studies</td>
<td>Recommendation</td>
<td>Option</td>
</tr>
<tr>
<td>C. Observational studies (case-control and cohort design)</td>
<td>Option</td>
<td>No Rec</td>
</tr>
<tr>
<td>D. Expert opinion, case reports, reasoning from first principles</td>
<td>Strong recommendation</td>
<td>Recommendation</td>
</tr>
<tr>
<td>X. Exceptional situations in which validating studies cannot be performed and there is a clear preponderance of benefit or harm</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**[MS]** Minimal Standard is applied to recommendations that are based on rigorous empirical evidence (e.g., randomized controlled trials) and/or overwhelming clinical consensus. Minimal standards apply more than 95% of the time (i.e., in almost all cases).

**[CG]** Clinical Guideline is applied to recommendations that are based on strong empirical evidence (e.g., nonrandomized controlled trials) and/or strong clinical consensus. Clinical guidelines apply approximately 75% of the time (i.e., in most cases).

**[OP]** Option is applied to recommendations that are acceptable based on emerging empirical evidence (e.g., uncontrolled trials or case series/reports) or clinical opinion, but lack strong empirical evidence and/or strong clinical consensus.

**[NE]** Not Endorsed is applied to practices that are known to be ineffective or contraindicated.

Figure 2. American Academy of Child and Adolescent Psychiatry Grading Scheme (2007)

Figure 3. AHA/ACC Modified GRADE Grading Scheme
Appendix B

Pediatric ADHD Medication Algorithm

Target Behaviors at Home and School Identified

Stimulant Medication
No particular advantage to either Methylphenidate or Amphetamine. Start with low dose. The use of a long-acting stimulant will promote continuous, stable therapy throughout the day. There is no need to start treatment with a short-acting agent first, prior to switching to a long-acting agent. Referral is appropriate for child with unusual responses or whenever a clinician has concerns about further treatment. See medication chart for precautions/contraindications.

Side effects present?

* Appetite loss – give with meal, snack late in the evening
* Insomnia – behavior problems vs. side effects vs. anxiety; lower dose; give last dose of day earlier
* Sadness – reevaluate diagnosis; reduce dose; switch to long acting (peak of short acting can cause sadness)
* Worsening behavior (rebound) – switch to long acting; overlap short and long acting; add other medication (bupropion)
* Irritability – if soon after dose, could be related to peak; switch to long acting; if late could be rebound – reduce dose

Switch to other stimulant class, if above is not successful, increasing dose until target behaviors and function improved or side effects redevelop

Improved target behaviors and function?

Yes

Increase dose until target behaviors and function improved or side effects develop

No

Side effects present?

Yes

Satisfactory response to treatment plan?

Yes

No

Patient on stimulant?

Yes

Dose maximized?

No

Yes

Switch to non-stimulant alternative (atomoxetine, bupropion, tricyclic, clonidine, or guanfacine)

Improve target behaviors and function?

No

Yes

Continue systematic follow-up at least twice yearly. Monitor height, weight, blood pressure and sleep.

Reconsider diagnosis of ADHD and assess for missed comorbid conditions. Consider psychiatry referral.

No

Yes

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Appendix C

Medications for Treatment of Attention-Deficit/Hyperactivity Disorder (Pediatric)

GENERAL CONSIDERATIONS FOR STIMULANTS

- Safety/effectiveness not studied in patients < 6 years
- Initiate therapy with a long acting stimulant to promote continuous, stable therapy throughout the day
- Consider duration of formulation with regard to interference with sleep
- Nonabsorbable tablet shell may be seen in stool (Concerta)
- Monitor patient weight and vital signs
- Swallow tablets whole with liquids. If patient is unable to swallow, capsules may be opened and sprinkled on food. Beads inside capsules should NOT be chewed.
- Consider cardiac risk factors prior to initiating therapy (e.g., cardiac hypertrophy, family history of ventricular arrhythmia, murmur, palpitations, near syncope)
- Use cautiously if history of tics, seizures, anorexia nervosa, anxiety, or history of substance misuse or diversion
- Most common side effects include appetite suppression, weight loss, insomnia or headache

Methylphenidate Products

<table>
<thead>
<tr>
<th>Product Name</th>
<th>Strengths Available</th>
<th>Duration of Action</th>
<th>Usual Dosing (titrate every 7 days, unless otherwise indicated)</th>
<th>Maximum Daily Dose</th>
</tr>
</thead>
<tbody>
<tr>
<td>methylphenidate tab^* (Ritalin)</td>
<td>5,10, 20 mg tab</td>
<td>≤ 4 hours</td>
<td>5-20 mg given 2-3 times daily Titrte by 5-10 mg every 7-14 days</td>
<td>FDA: 60 mg Off label: 100 mg if over 50 kg</td>
</tr>
<tr>
<td>methylphenidate ^* (Methylin) (equivalent to Ritalin)</td>
<td>2.5, 5, 10, 20 mg tab 5 mg/5mL, 10mg/5mL solution 2.5, 5, 10 mg chew tab</td>
<td>≤ 4 hours</td>
<td>5-20 mg given 2-3 times daily Titrte by 5-10 mg every 7-14 days</td>
<td>FDA: 60 mg Off label: 100 mg if over 50 kg</td>
</tr>
<tr>
<td>methylphenidate SR tab^* (Ritalin SR) Medadate ER and generics rated AB equivalent</td>
<td>20 mg tab</td>
<td>4 – 6 hours</td>
<td>20-60 mg (divided in 1-2 doses/day) (20-40 mg in morning, 20 mg in early afternoon) Titrte by 20 mg/day</td>
<td>FDA: 60 mg Off label: 100 mg if over 50 kg</td>
</tr>
<tr>
<td>methylphenidate^* (Methylin ER) equivalent to Ritalin SR</td>
<td>10,20 mg tablet</td>
<td>4 – 6 hours</td>
<td>10-60 mg daily</td>
<td>FDA: 60 mg Off label: 100 mg if over 50 kg</td>
</tr>
<tr>
<td>Methylphenidate tab^* (Metadate ER)</td>
<td>20 mg tablet</td>
<td>4 – 6 hours</td>
<td>20-60 mg daily (divided in 1-2 doses/day)</td>
<td>FDA: 60 mg Off label: 100 mg if over 50 kg</td>
</tr>
<tr>
<td>dexamethylphenidate^* (Focalin) tablet</td>
<td>2.5, 5, 10 mg tab</td>
<td>4 – 6 hours</td>
<td>2.5–10 mg given twice daily at least twice daily at 4 hours apart</td>
<td>FDA: 20 mg Off label: 50 mg</td>
</tr>
<tr>
<td>Intermediate acting 6-8 hours</td>
<td>Methylphenidate*^ (Metadate CD) cap (bimodal release with 30% immediate release and 70% delayed release) capsule</td>
<td>10, 20, 30, 40, 50, 60 mg capsule</td>
<td>6 – 8 hours</td>
<td>10-60mg daily Titration 10-20 mg</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>-------------------------------------------------</td>
<td>-----------------------------------</td>
<td>-------------</td>
<td>-------------------------------</td>
</tr>
<tr>
<td>methylphenidate ER*^§ (Ritalin LA) cap (bimodal release with 50% rapid onset and 50% delayed release)</td>
<td>10, 20, 30, 40 mg capsule</td>
<td>6 – 8 hours</td>
<td>20-60mg daily</td>
<td>FDA: 60 mg Off label: 100 mg if over 50 kg</td>
</tr>
<tr>
<td>Long acting</td>
<td>Dexmethylphenidate*^§ (Focalin XR) capsule</td>
<td>5, 10, 15, 20, 25, 30, 35, 40 mg capsule</td>
<td>10 - 12 hours 5-20 mg once daily</td>
<td>5-40 mg daily (titrate by 5 mg for children)</td>
</tr>
<tr>
<td>methylphenidate ^ (Daytrana) patch apply to hip for 9 hours</td>
<td>10, 15, 20, 30 mg patch</td>
<td>12 hours (with 2-3 hour delay)</td>
<td>10-30mg patch daily Titrate by next highest strength patch</td>
<td>FDA: 30 mg</td>
</tr>
<tr>
<td>methylphenidate **§ (Concerta) tabs (bimodal release with immediate onset and delayed release)</td>
<td>18, 27, 36, 54 mg tab</td>
<td>10 hours</td>
<td>18-54mg once daily (titrate by 18 mg)</td>
<td>FDA: 54 mg for children, 72 mg for adolescents and adults Off label: 72 mg (children ≤ 40 kg), 90 mg adolescents (&gt;40 kg)</td>
</tr>
</tbody>
</table>

^ FDA approved for treatment of ADHD, * Generic product, §Oral long acting methylphenidate products have immediate release and extended release components. Vary by product

<table>
<thead>
<tr>
<th>Medications which can be sprinkled on food</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Methylphenidate (Ritalin LA)</td>
</tr>
<tr>
<td>- Methylphenidate (Metadate CD)</td>
</tr>
<tr>
<td>- Dexmethylphenidate (Dexedrine spansules)</td>
</tr>
<tr>
<td>- Amphetamine (Adderall)</td>
</tr>
</tbody>
</table>

Last revised/reviewed: 10/2014
ADHD – Pediatric – Ambulatory Guideline
Contact CCKM for revisions.
<table>
<thead>
<tr>
<th>Amphetamine Products</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Product Names</strong></td>
</tr>
<tr>
<td>----------------------</td>
</tr>
<tr>
<td>Short acting</td>
</tr>
<tr>
<td>Intermediate acting</td>
</tr>
<tr>
<td>Intermediate acting</td>
</tr>
<tr>
<td>Long acting</td>
</tr>
<tr>
<td>Long acting</td>
</tr>
</tbody>
</table>

GENERAL CONSIDERATIONS FOR NON-STIMULANTS

- Safety/effectiveness not studied in patients < 6 years
- Consider initiation with lower doses to improve tolerability
- Medication of choice if concern about abuse or diversion
- Monitor patient weight and vital signs
- Can be used in patients with history of tics or worsening of tics from stimulants
- Sedation can occur with nortriptyline, atomoxetine, clonidine and guanfacine
- Avoid bupropion if history of seizure disorders
- Taper off to avoid rebound hypertension for clonidine or guanfacine
- Consider cardiovascular risk factors before initiating tricyclics, atomoxetine, bupropion, guanfacine
- Monitor closely for behavioral side effects including suicidal ideation with atomoxetine, tricyclics and bupropion
- Guanfacine and clonidine may be used as adjunctive therapy with stimulants.

<table>
<thead>
<tr>
<th>Non-Stimulant Products</th>
<th>Product Names</th>
<th>Strengths Available</th>
<th>Duration of Action</th>
<th>Usual Dosing (titrate every 7 days, until otherwise indicated)</th>
<th>Maximum Dosing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anti-depressants</td>
<td>nortriptyline* (Pamelor, Aventyl)</td>
<td>10, 25, 50, 75 mg capsule, 10 mg/5 mL solution</td>
<td>8-24 hours</td>
<td>0.5 mg/kg/day (May divide dose to 2-3 times daily)</td>
<td>2 mg/kg or 100 mg (whichever is lowest)</td>
</tr>
<tr>
<td></td>
<td>bupropion* (Wellbutrin) tablet</td>
<td>75, 100 mg tab</td>
<td>4-5 hours</td>
<td>3-6 mg/kg/day (or 150 mg – 300 mg, whichever is lowest) Divide into 2 or 3 daily doses</td>
<td>6 mg/kg/day (or 300 mg Whichever is lowest) Divide into 2 or 3 daily doses</td>
</tr>
<tr>
<td></td>
<td>bupropion SR* (Wellbutrin SR) tablet</td>
<td>100, 150, 200 mg tab</td>
<td>12 hours</td>
<td>3-6 mg/kg/day (or 150 mg – 300 mg, whichever is lowest) Divide into 2 daily doses.</td>
<td>6 mg/kg/day (or 300 mg whichever is lowest) Divide into 2 daily doses.</td>
</tr>
<tr>
<td></td>
<td>bupropion XL* (Wellbutrin XL) tablet</td>
<td>150, 300 mg tab</td>
<td>24 hours</td>
<td>3-6 mg/kg/day (or 150 mg – 300 mg, whichever is lowest)</td>
<td>6 mg/kg/day (or 300 mg Whichever is lowest)</td>
</tr>
<tr>
<td>Norepinephrine reuptake inhibitor</td>
<td>atomoxetine^ (Strattera) capsule</td>
<td>10, 18, 25, 40, 60, 80, 100 mg capsule</td>
<td>At least 10-12 hours</td>
<td>0.5 mg/kg/day (≤ 70kg) or 40 mg/day (&gt;70 kg) to 1.4 mg/kg/day (≤ 70kg) or 100 mg/day (dose given once or twice daily) Titration: after 3-4 days</td>
<td>FDA: 1.4 mg/kg/d (≤ 70kg), children/adolescents; 100 mg/day (&gt;70kg)</td>
</tr>
</tbody>
</table>
### Alpha-agonists

<table>
<thead>
<tr>
<th>Medication</th>
<th>Dose Form</th>
<th>Administration</th>
<th>Dosage Range</th>
<th>Titration</th>
</tr>
</thead>
<tbody>
<tr>
<td>clonidine tab ER^ (Kapvay)</td>
<td>0.1 mg tab</td>
<td>At least 10-12 hours</td>
<td>0.1-0.4 mg/day</td>
<td>0.1 mg</td>
</tr>
<tr>
<td>clonidine* (Catapres)</td>
<td>0.1, 0.2, 0.3 mg tab</td>
<td>At least 4-6 hours</td>
<td>0.05 mg at bedtime; 0.1 mg (≥ 45 kg)</td>
<td>Titrate by 0.05 mg (&lt;45 kg) or 0.1 mg (≥ 45 kg) increments to twice daily, three times daily, four times daily</td>
</tr>
<tr>
<td>guanfacine* (Tenex) tab</td>
<td>1, 2 mg tab</td>
<td>6-8 hours</td>
<td>0.5 mg at bedtime (&lt;45 kg), 1 mg at bedtime (≥ 45 kg)</td>
<td>Titrate by 0.5 mg (&lt;45 kg) or 1 mg (≥ 45 kg) increments to twice daily, three times daily, four times daily</td>
</tr>
<tr>
<td>guanfacine tab ER^* (Intuniv)</td>
<td>1, 2, 3, 4 mg tabs</td>
<td>At least 10-12 hours</td>
<td>1-4 mg once daily (or 0.05-0.12 mg daily)</td>
<td>Titration: 1 mg</td>
</tr>
</tbody>
</table>

*Generic product  
^ FDA Approved

### Potential Harms: Side Effects of Pharmacotherapy

- **Stimulants:** The most common side effects include appetite decrease, weight loss, insomnia, or headache. Less common side effects include tics and emotional lability/irritability, liver toxicity, hypertension, cardiac arrhythmia and psychosis.

- **Atomoxetine:** Side effects of atomoxetine that occurred more often than those with placebo include gastrointestinal distress, sedation, and decreased appetite.

- **The U.S. Food and Drug Administration (FDA) and its Pediatric Advisory Committee have reviewed data regarding psychiatric adverse events to medications for the treatment of attention deficit/hyperactivity disorder (ADHD). For each agent examined (all stimulants, atomoxetine), there were reports of rare events of psychotic symptoms, specifically involving visual and tactile hallucinations of insects. Symptoms of aggression, suicidality (but no completed suicides), and cardiovascular issues were also reported.**

- **Tricyclic Antidepressants (TCAs)** frequently cause anticholinergic side effects such as dry mouth, sedation, constipation, changes in vision, or tachycardia. Among the TCAs, desipramine should be used with extreme caution in children and adolescents because there have been reports of sudden death. For TCAs electrocardiography should be considered for patients at risk and be performed at baseline and after each dose increase. Once the patient is on a stable dose of the TCA, a plasma level should be obtained to ensure the level is not in the toxic range.

- **Alpha-agonists:** Side effects of alpha-agonists include sedation, dizziness, and possible hypotension. Abrupt discontinuations of alpha-agonist are to be avoided.

- **Combinations of Medications:** There have been four deaths reported to the FDA of children taking a combination of methylphenidate and clonidine, but there were many atypical aspects of these cases.
Appendix D

ADHD HEDIS Measure

Follow-Up Care for Children Prescribed ADHD Medications (ADD)

The percentage of children newly prescribed ADHD medication who had at least 3 follow-up care visits within a 10-month (300 day) period, one of which was within 30 days of when the first ADHD medication was dispensed. Two rates are reported:

- **Initiation Phase** – Percentage of members, 6-12 years of age, who had 1 follow-up visit with a prescribing practitioner within 30 days of starting the medication
- **Continuation and Maintenance (C&M) Phase** – Percentage of members, 6-12 years of age, who remained on the medication for at least 210 days (allowed 90 gap days, so look at 300 days total to find 210 days on Rx) and who had at least 2 additional follow-up visits with a practitioner within 270 days (9 months) after end of Initiation phase. One of these two contacts (during days 31-300) may be by telephone with an MD, PA or NP (not RN or LPN).

Member must not have filled a prescription for an ADHD medication within 120 days (4 months) prior to current prescription.

It is OK to switch between ADHD medications, as long as meets rules for continuous treatment, as noted above.