Piedmont WellStar HealthPlans, Inc.
ATTENTION – DEFICIT HYPERACTIVITY DISORDER CLINICAL GUIDELINE

Relevance to Population:

Attention-deficit hyperactivity disorder (ADHD) is the most common neurobehavioral disorder of childhood and can profoundly affect the academic achievement, well-being, and social interactions of children. In addition, ADHD can result in an overall decrease in quality of life and has a considerable economic impact. [1] In the United States the current prevalence rate is 5.5 % to 9.3 % for youth 4 to 17 years of age (US CDC, 2010). 11 % of children ages 4 to 17 were diagnosed with ADHD according to parent report from the CDC preliminary data released in 2013.

Clinical Practice Guidelines:

Clinical practice guidelines are available to assist practitioners by providing a framework for the evaluation and treatment of patients with ADHD. Guidelines support the practitioners in making objective treatment plans, by means of evidence based practices. The diagnosis, evaluation, and treatment of ADHD in children and adolescents are supported by American Academy of Pediatrics (AAP), DSM 5, American Academy of Child and Adolescent Psychiatry and National Initiative for Children's Healthcare Quality (NICHQ). ADHD Clinical Practice Guidelines are updated annually and are located at: http://www.pwplans.org/providers.

Population Covered by Guideline:

American Academy of Pediatrics released clinical practice guidelines in 2011 that expanded the age of coverage from 6-12 years of age to 4-18 years of age.

Clinical Indicators Measured by Piedmont WellStar HealthPlans, Inc.:

The percentage of children newly prescribed attention-deficit / hyperactivity disorder medication that had at least three follow-up visits within a 10-month period, one of which was within 30 days of when the first ADHD medication was dispensed. HEDIS®

1. **Initiation Phase:** The percentage of members 6-12 years of age with an ambulatory prescription dispensed for ADHD medication, who had one follow-up visit with a practitioner with prescribing authority during the 30 day Initiation Phase. HEDIS®
2. **Continuation and Maintenance Phase:** The percentage of members 6-12 years of age with an ambulatory prescription dispensed for ADHD medication, who remained on the medication for at least 210 days and who, in addition to the visit in the Initiation Phase, had at least two follow-up visits with a practitioner within 270 days (9 months) after the Initiation Phase ended. HEDIS®

ADHD Treatment Guidelines Based on Clinical Practice Guidelines Established by the American Academy of Pediatrics and the American Academy of Child and Adolescent Psychiatry: [2,5]

1. Primary care practitioners should initiate an evaluation with consideration of ADHD for any child 4 through 18 years of age who presents with academic or behavioral problems and symptoms of inattention, hyperactivity, or impulsivity.

2. The diagnosis of ADHD requires that a child meets DSM-5 criteria. Note in DSM-5 the subtypes have been replaced by specifying the current presentation: combined presentation, predominately inattentive, or predominately hyperactive/impulsive presentation. DSM-5 will be published in May 2013. The major changes from DSM IV-TR and the criteria are reviewed in Tables1-5. One major change in DSM 5 is that ADHD is no longer clustered with disruptive disorders (oppositional defiant disorder and conduct disorder). ADHD is clustered under neurodevelopmental disorders. It is essential to rule out other disorders presenting with core ADHD symptoms.

3. Collaboration with parents, caregivers, and teachers are needed to assess symptoms of ADHD. The Vanderbilt Assessment Scale for parents and teachers is one scale which may be utilized for screening. Vanderbilt screening tools are found at: http://www.nichq.org/adhd_tools.html. Other common scales include Conners' Teacher and Parent Scale- Revised, SNAP-IV, Child Behavior Checklist; a list of common behavior rating scales used in the assessment of ADHD may be found in http://www2.massgeneral.org/schoolpsychiatry/screening_adhd.asp#ACTeRS

4. Consideration of the child's growth, social and medical history, and his/her family's social and medical history is an essential part of evaluation.

5. Evaluate the child for other conditions that might coexist with ADHD, including emotional or behavioral (e.g., anxiety, depressive, oppositional defiant, and conduct disorders), developmental (e.g., learning and language disorders or neurodevelopmental disorders), physical (e.g., tics, sleep apnea) conditions.

6. Consider psychosocial and pharmacologic interventions most indicated for the child you are evaluating. If recommending stimulant medication to improve target symptoms, begin with a low dose of medication and titrate upward, given the marked variability in response to stimulant medications. Do not prescribe above the manufacturer's recommended dosages. Doses should be titrated until there is little or no room for improvement or the patient experiences unacceptable adverse effects. The scheduling of dosages should be based on the severity and time course of target symptoms. See Table 6 for stimulant medications.

7. Initially, the patient should be evaluated monthly to monitor symptom improvement, side effects and treatment adherence until the patient is stable. Monitor every three (3) months thereafter.

8. Blood pressure, pulse, height and weight should be obtained before treatment and monitored regularly; given the possibility that medications may affect these measures.

9. Monitoring should also include information gathered from parents/guardians, teachers, and child. Checklists rating scales can be especially useful given their time and efficiency. Check lists can be found at http://www.nichq.org/adhd_tools.html .

10. When treatment response has not met targeted goals, the clinician should evaluate the original diagnosis, the selected treatment modalities, adherence with treatment, barriers to implementation of the treatment plan, and presence of coexisting conditions. If any stimulant medication has not been effective at the highest feasible dose, it should be replaced by a medication from another stimulant class. Individuals may not respond to one of the stimulants, but may respond to or tolerate another.

Table 1. Major Changes in DSM 5

1. Age of onset changed to 12 years
2. For those over the age of 17, they only need five symptoms instead of six from inattentive or hyperactive/impulsive category
3. Having Autism or Autism Spectrum Disorder is no longer an exclusionary diagnosis for ADHD
4. More developmentally appropriate examples of symptoms for individuals in the over 12 year old age groups

Table 2 A1. ADHD- Inattentive Symptoms

A. 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 impact directly on social and academic/occupational activities.

Note: For adults (ages 17 and older), only five symptoms are required. The symptoms are not due to oppositional behavior, defiance, hostility, or a 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. For example, overlooks or misses details, work is inaccurate.
b. Often has difficulty sustaining attention in tasks or play activities. For example, has difficulty remaining focused during lectures, conversations, or reading lengthy writings.
c. Often does not seem to listen when spoken to directly. Mind seems elsewhere, even in the absence of any obvious distraction.
d. Frequently does not follow through on instructions. Starts tasks but quickly loses focus and is easily sidetracked, fails to finish schoolwork, household chores, or tasks in the workplace.
e. Often have difficulty organizing tasks and activities. Has difficulty managing sequential tasks and keeping materials and belongings in order. Work is messy and disorganized. Has poor time management and tends to fail to meet deadlines.
f. Characteristically avoids, seems to dislike, and is reluctant to engage in tasks that require sustained mental effort. Such as schoolwork or homework or for older adolescents and adults, preparing reports, completing forms, or reviewing lengthy papers.
g. Frequently loses objects necessary for tasks or activities. For example, school assignments, pencils, paperwork, eyeglasses, or mobile telephones.

h. Is often easily distracted by extraneous stimuli. For older adolescents and adults, it may include unrelated thoughts.
i. Is often forgetful in daily activities, chores, and running errands. For older adolescents and adults, returning calls, paying bills, and keeping appointments.

Table 3 A2 Hyperactivity/ Impulsivity

Six (or more) of the following symptoms have persisted for at least six months to a degree that is inconsistent with developmental level and that impact directly on social and academic/occupational activities.
Note: For older adolescents and adults (ages 17 and older), only five symptoms are required.
The symptoms are not due to oppositional behavior, defiance, hostility, or a failure to understand tasks or instructions.

a. Often fidgets, taps hands or feet, or squirms in seat.
b. Is often restless during activities when others are seated. May leave his or her place in the classroom, office, or other workplace, or in other situations that require remained seated.
c. Often runs about or climbs on furniture and moves excessively in inappropriate situations. In adolescents or adults, may be limited to feeling restless or confined.
d. Is often excessively loud or noisy during play, leisure, or social activities.
e. Is often "on the go", acting as if "driven by a motor". Is uncomfortable being still for an extended time, as in restaurants, meetings, etc. Seen by others as being restless and difficult to keep up with.
f. Often talks excessively.
g. Often blurts out an answer before a question has been completed. Older adolescents or adults may complete others' sentences.
h. Has difficulty waiting his or her turn or waiting in line.
i. Often interrupts or intrudes on others. Frequently butts into conversations, games or activities; may start using other people's things without asking or receiving permission, adolescents may intrude into or take over what others are doing.

Table 4 ADHD B-E Criteria

B. Several noticeable inattentive or hyperactive-impulsive symptoms were present by age 12.
C. The symptoms are apparent in two or more settings. For example at home, school or work, with friends or relatives, or in other activities.
D. There must be 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 accounted for by another mental disorder. For example, mood disorder, anxiety disorder, dissociative disorder, or a personality disorder) , Pervasive developmental disorder (PDD)/Autism Spectrum Disorder (ASD) exclusion removed.

Table 5 ADHD: Specify Based on Current Presentation
Combined Presentation: If both Criterion A1 (Inattention) and Criterion A2 (Hyperactivity-Impulsivity) are met for the past six months.
Predominately Inattentive Presentation: If Criterion A1 (Inattention) is met but Criterion A2 (Hyperactivity-Impulsivity) is not met for the past six months.
Predominately Hyperactive/Impulsivity Presentation: If Criterion A2 (Hyperactivity-Impulsivity) is met and Criterion A1 (Inattention) is not met for the past six months.

Treatment Options for ADHD:
Primary care practitioners must treat ADHD as a chronic condition. The special health care needs should follow the principles of the patient centered medical home (PCMH). ADHD is a condition that may persist into adulthood and needs followed just as diligently as any other chronic condition.
The optimal goals for treatment of ADHD are to improve function and behavioral of the child. Primary care practitioners can institute behavior therapy, medication therapy, or integrate both behavioral and medication therapy. There is support in the literature particularly for the use of stimulants as first line treatment. Both the MTA and the PATS studies have addressed the use of behavioral therapy, medication alone, and combined behavioral therapy and medication. In the MTA study pharmacotherapy and combined treatment had better responses than behavioral therapy alone. Combined therapy was not superior to medication alone on core ADHD symptoms; however combining behavioral interventions did impact parent and teacher satisfaction with treatment, social skills improvement as well as other effects and in general resulted in lower medication doses. These findings are reviewed along with an update on pharmacotherapy of ADHD in a recent article[2].

Recommendations for treatment of children and youth with ADHD vary depending on the patient's age: [2]

- For *preschool-aged children (4–5 years of age)*, the primary care clinician should prescribe evidence-based parent and/or teacher behavior therapy as the first line of treatment and may prescribe methylphenidate if the behavior interventions do not provide significant improvement and there is moderate-to-severe continuing disturbance in the child's function. Although only mixed amphetamine salts are FDA approved for children ages 3-5 years, clinical practice favors the use of methylphenidate (MPH) in preschool children and the Preschool ADHD Treatment Study (PATS) found MPH to be safe and effective in preschoolers.3 The PATS found an optimal dose of 0.7 +/- 0.4 mg/kg/day which is lower than the 1.0 mg/kg/day for school age children.

Based on the PATS finding it is recommended that preschool children be started on 2.5 mg BID of MPH with very careful titration. The pharmacokinetic study done as part of the PATS found preschoolers metabolized PMH more slowly than did school age children.

- The guidance provided in Table 5 does not address the use of MPH in preschoolers. The Supplementary material from AAP discusses special considerations for preschoolers.[3] For *elementary school–aged children (6–11 years of age)*; the primary care clinician should prescribe US Food and Drug Administration–approved medications for ADHD and/or evidence-based parent and/or teacher behavior therapy as treatment for ADHD, preferably both.
- For *adolescents (12–18 years of age)*, the primary care clinician should prescribe Food and Drug Administration–approved medications for ADHD with the assent of the adolescent and may prescribe behavior therapy as treatment for ADHD, preferably both.

Behavioral Therapy:
Behavioral therapy teaches a set of principles to help manage and control behavior, and to improve social skills, peer interactions, and coping skills. Parents and teachers need to be active participants with behavioral therapy, and are taught the reward/consequences system to help achieve desired behavior from the child.

Medication Therapy:
The goals of medication treatment for individuals with ADHD are to reduce symptoms and help with maintaining a functional life style related to school, home, social interactions, and well-being.

Informed Consent:
Obtain informed consent, after providing education about the disorder as well as potential benefits, risks, and alternatives of recommended treatment and expected treatment course.

Table6. First Line Drug Therapy for ADHD – Stimulants and Non-Stimulants
ADHD Medication guides for each of these medications are available from the U.S. Food and Drug Administration

Stimulants: Short-Acting (Immediate-Release)			
Generic Name-Brand Name, Dosage Strength	**Onset of Action (minutes)**	**Duration (hours)**	**Usual Prescribing Schedule**
Methylphenidate Ritalin® 5, 10, 20mg Methylin® 5, 10, 20mg	20 to 30	3 to 6	5-20mg BID-TID. Increase dose by 5-10mg/day weekly, maximum 60mg/day. (6 to 17 years old)
Dexmethyphenidate Focalin® 2.5, 5, 10mg	30	3 to 6	2.5 – 10mg BID. Increase dose by 2.5 – 5mg/day weekly, maximum 20mg/day. (6 to 17 years old)
Mixed Amphetamine Salts	30	5 to 7	5 – 15 mg BID or 5 – 10mg TID. (For patients 3 to 5 years old, begin

Adderall® 5, 7.5, 10, 12.5, 20, 30mg			with 2.5mg daily). Increase dose by 2.5mg/day (3 to 5 years old) or 5mg/day (6 to 12 years old) weekly, maximum 40mg/day.
Dextroamphetamine Dexedrine® 5mg	20 to 60	4 to 6	5 – 15mg BID or 5 – 10mg TID. (For patients 3 to 5 years old, begin with 2.5mg daily). Increase dose by 2.5mg day (3 to 5 years old) or 5mg day (6 to 12 years old) weekly, maximum 40mg day.
Stimulants: Intermediate – Acting (Sustained – Extended Release			
Generic Name-Brand Name, Dosage Strength	**Onset of Action (minutes)**	**Duration (hours)**	**Usual Prescribing Schedule**
Methylphenidate Ritalin-SR® 20 mg Methylin® ER 20mg Metadate® ER 20mg	60 to 90	3 to 8	20 – 40mg daily or 40 mg in am and 20 mg in early afternoon. Increase dose by 20mg/day weekly, maximum 60mg/day.
	60 to 90	highly variable	
	60 to 180	highly variable	
Dextroamphetamine Dexedrine Spansules® 5, 10, 15mg	60 to 90	6 – 10 highly variable	5 – 30mg daily or 5 – 15mg BID. (For patients 3 – 5 years old, begin with 2.5mg daily). Increase dose by 2.5mg /day (3 – 5 years old) or 5mg/day (6 – 12 years old) weekly, maximum 40mg/day.
Transdermal Patch (once daily)			
Transdermal Patch Daytrana 10, 15, 20, 30mg	Apply 2 hours before an effect is needed.	10-12 hours (9 hours applied + up to three hours after removal)	Transdermal Patch: 10mg/9 hours (1.1 mg/hr), 15mg/9 hours (1.6 mg/hr), 20mg/9 hours (2.2 mg/hr), 30mg/9 hours (3.3 mg/hr) (6-17 years old).
Stimulants: Long-Acting (once daily)			
Generic Name-Brand Name, Dosage Strength	**Onset of Action (minutes)**	**Duration (hours)**	**Usual Prescribing Schedule**
Methylphenidate:			
Ritalin® LA, 10, 20, 30, 40mg	1.8 hours	7 to 9	20 -60 mg. Increase dose by 10mg/day weekly, maximum 60mg/day.
Metadate® CD 10, 20, 30mg	90	7 to 9	20 -60 mg. Increase dose by 20mg/day weekly, maximum 60mg/day.
Concerta® 18, 27, 36, 54mg	30 to 60	8 to 12	18 – 72 mg daily. Increase dose by 18mg/day at weekly intervals,

			maximum 54mg/daily. (> 6 years old)
Mixed Amphetamine Salts Adderall XR® 5, 10, 15, 20, 25, 30mg	30	8	10 – 30 mg daily. Increase dose by 5 - 10 mg/day weekly, maximum 30mg/daily. (6-17 years old)
Vyvanse 20, 30, 40, 50, 60, 70mg	30-60	10 to 12	30 mg once daily in the morning is the recommended dose. Adjusted in increments of 10 mg or 20 mg at approximately weekly intervals. The maximum recommended dose is 70 mg/day (6 to 17 years old).
Non-Stimulants			
Generic Name-Brand Name, Dosage Strength	**Onset of Action (minutes or minutes)**	**Duration (hours)**	**Usual Prescribing Schedule**
Atomoxetine Strattera® 10, 18, 25, 40, 60mg	Slow onset	24	Weight bases see medication guidelines. Not recommended for children < 6 years old.
Intuniv ER 1, 2, 3, 4mg	5 hours	18	The recommended initial dose is a single tablet once daily. If switching from immediate-release Guanfacine, discontinue that treatment, and titrate with Intuniv according to the following recommended schedule: Begin at a dose of 1 mg/day, and adjust in increments of no more than 1 mg/week. Maintain the dose within the range of 1-4 mg once daily, depending on clinical response and tolerability. (ages 6 to 17 years)
Kapvay (clonidine extended release), 0.1 mg 3-5 hours	3-5 hours	12-16	Can be used as a monotherapy or adjunctive therapy to a stimulant. Recommended to initiate with 0.1 mg at bedtime and adjust in increments of no more than 0.1mg/week. Dose should be taken twice a day, with either an equal or higher split dosage given at bedtime. Doses higher than 0.4 mg /day are not recommended.

ADHD Medication guides for each of these medications are available from the U.S. Food and Drug Administration

Piedmont Wellstar HealthPlans, Inc. Pharmacy Formulary Information: Please see the Pharmacy formularies and tables section for information about which ADHD medications are covered by Piedmont WellStar HealthPlans, Inc. http://www.pwplans.org/providers. **Piedmont Wellstar HealthPlans, Inc. strongly encourages the responsible use of generics to contain health care costs.**
Primary Care may choose to refer patients to a behavioral health practitioner for the following reasons:

- Poor response to 2 or 3 adequate stimulant medication trials.
- Significant anxiety or depressive symptoms
- Alcohol or substance abuse
- Oppositional Defiant or Conduct Disorder symptoms that are intractable to medication treatment
- A complicated or uncertain diagnosis
- Parents are having difficulty either coping with the ADHD illness or setting appropriate limits
- Complex social situations

Member Educational Materials: Recovery is often more successful when patients and their parents/guardians are active participants in treatment efforts. Educating patients and their significant others about ADHD, its treatment, and available resources can greatly aid in the recovery process. Excellent patient/family educational materials can be found at the National Initiative for Children's Healthcare Quality at http://www.nichq.org/resources/resources_for_parents.html and at the American Academy of Child and Adolescence Psychiatry Resource Center at http://www.aacap.org/cs/ADHD.ResourceCenter.

Scientific Evidence Sources:

1. Doshi JA, Hodgkins P, Kahle J. et al. Economic impact of childhood and adult attention-deficit/hyperactivity disorder in the United States. J Am Acad Child Adolesc Psychiatry. 2012;51(10): 990-1002.

2. Clinical Practice Guideline for the Diagnosis, Evaluation, and Treatment of Attention Deficit/Hyperactivity Disorder in Children and Adolescents. (2011, October 16). American Academy of Pediatrics. Located at http://pediatrics.aappublications.org/content/early/2011/10/14/peds.2011-2654.abstract?rss=1

3. Vaughan B, Kratochvil CJ. Pharmacotherapy of pediatric attention-deficit/hyperactivity disorder. Child and Adolescent Psychiatric Clinics North America.2012;21:941-955.

4. Greenhill L, Kollins S, Abikoff H et al. Efficacy and safety of immediate-release methylphenidate treatment for preschoolers with ADHD. J Am Acad Child Adolesc Psychiatry. 2006;45 (11):1284-1293

5. Supplemental Information Implementing the Key Statements: an algorithm and explanation for process of care for the evaluation, diagnosis, treatment, and monitoring of ADHD in children and adolescents (2011, October 16). American Academy of Pediatrics. http://pediatrics.aappublications.org/content/suppl/2011/10/11/peds.2011-2654.DC1.html

6. Practice Parameter for the Assessment and Treatment of Children and Adolescents with Attention-Deficit/Hyperactivity Disorder. (2007, July). American Academy of Child and Adolescent Psychiatry. http://www.aacap.org/galleries/PracticeParameters/JAACAP_ADHD_2007.pdf

7. American Psychiatric Association. Diagnostic and Statistical Manual of Mental Disorders: DSM-IV-TR. Washington: American Psychiatric Association, 2000.

8. National Initiative for Children's Healthcare Quality. Caring for Children with ADHD: A Resource Toolkit for Clinicians. Elk Grove Village, Illinois: American Academy of Pediatrics, 2002. http://www.nichq.org/adhd_tools.html

9. ADHD Data and Statistics. The Center for Disease Control and Prevention. http://www.cdc.gov/ncbddd/adhd/data.html