3D ECHO

ADHD and Learning Disabilities

Child Psychiatry Clinic

May 18, 2022 | Dr. Eric Arzubi

Quality Improvement Organizations
Sharing Knowledge. Improving Health Care.
CENTERS FOR MEDICARE & MEDICAID SERVICES
Mountain-Pacific Quality Health

Project ECHO®

FRONTIER PSYCHIATRY

Disclosure Statement

The following planners and presenters listed below have disclosed that they have a relevant financial relationship with an ineligble company(ies) with which they have a relevant financial relationship(s). All relevant relationships have been mitigated.

Name	*Nature of Relationship*	*Name of Commercial Interest*
Eric Arzubi, MD	*Owner/Cofounder*	*Frontier Psychiatry*
Reza Hosseini Ghomi, MD	*Stocks/Honorarium*	*BrainCheck, Frontier Psychiatry, Biogen*
Amber Rogers, RN, MSN	*Stockholder*	*GW Pharmaceutical, Johnson & Johnson, Pfizer Inc*

The following planners of this activity have no relevant financial relationships with ineligible companies to disclose: Sarah Porter-Osen, BA; Sharon Phelps, RN BSN; Mary Argones.

The subject matter experts presenting evidence-based content and providing case feedback are not promoting the use of Frontier Psychiatry within this webinar. Ongoing monitoring for monitoring of program integrity is reviewed by the nurse planner to ensure program is free of bias.

Learning Outcomes

During this child psychiatry clinic, you will:

1. Learn how to describe the epidemiology of child psychiatric disorders
2. Discuss the approaches to assessing and diagnosing childhood psychiatric disorders
3. Determine specific best practices to implement in the treatment of childhood psychiatric disorders, including pharmacological and non-pharmacological approaches

Different Thinking Style vs. ADHD/LD

We need to celebrate different thinking styles.

Risk-taking and innovation are valuable traits when applied to problem-solving.

Our job is to **help children function as brain controls mature**.

Diagnosis

- Before 12yo, 6mos duration in 2 or more settings
- Clinically significant impairment
- Not better explained by other d/o
- 3 types of ADHD
- 6 symptoms of inattention, hyperactivity, or both
- DSM-5 updates
  - 5 symptoms for adults
  - Relevant examples to dx across the lifespan

Inattention

- Lacks attention to detail/careless mistakes
- Difficulty sustaining attention
- Does not seem to listen when spoken to
- Poor follow-through
- Difficulty organizing
- Avoiding tasks that require sustained mental effort
- Losing things
- Easily distracted
- Forgetful

Hyperactivity/Impulsivity

- Blurts out answers before question completed
- Runs/climbs excessively (restlessness in adolescents)
- Difficulty staying seated
- Difficulty engaging in quiet activities
- Constantly “on the go”
- Talks excessively
- Interrupts frequently
- Difficulty awaiting turn
- Fidgets

Origins

Executive function deficit
Dysregulation in dopaminergic and noradrenergic circuits
76% heritability
Associated with low birth weight (even in full-term infants)
Substance exposure in utero
Brain injury
Early deprivation
Preterm birth
Exposure to organophosphate pesticides

Big Picture

6-9% **prevalence**: boys >> girls

Many symptoms **persist into adulthood**, though may not meet all criteria

Long-term consequences

- Higher rates of accidents (traffic, etc.), marital problems, unemployment, criminal behavior, obesity
- Lower household income
- Higher rates of attempted and completed suicide

Adolescent females

- Underreported and undertreated

Comorbidities

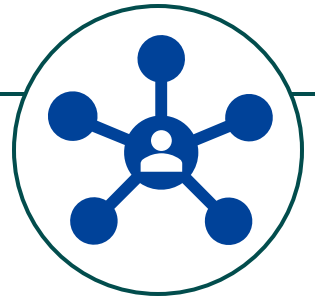
- Language or learning problems (25-35%)
- ODD (55-85%)
- SUDs (20-40%)
- Conduct d/o (10-20%)
- Anxiety (33%)
- Tic disorders
- Mood disorders
- Sleep problems

Differential Diagnosis

Other disruptive behavior disorders	Anxiety disorders	Mood disorders	Adjustment disorders
Developmental speech or language disorders	Reactive attachment disorder	SUDs	Exposure to chronic, toxic stress (ACEs)

Multimodal Treatment of ADHD Study (MTA)

600 children, 7-9yo



Different arms

- Intensive med management (methylphenidate TID +/- other meds)
- Intensive behavioral treatment alone (home- and school-based interventions, summer program)
- Combination treatment
- Routine community care

MTA Outcomes at 14mos

Combination **treatment and medication management** arms were superior to behavioral management and community care

Combination treatment was better in certain areas

- Oppositional/ aggressive sx, anxiety, reading achievement, parent-child relations, social skills

4% of patients **stopped meds** d/t adverse effects

Combination treatment arm had lower medication doses than medication management arm

- 32.3mg/d vs. 28.7mg/d

MTA Outcomes at 8yrs

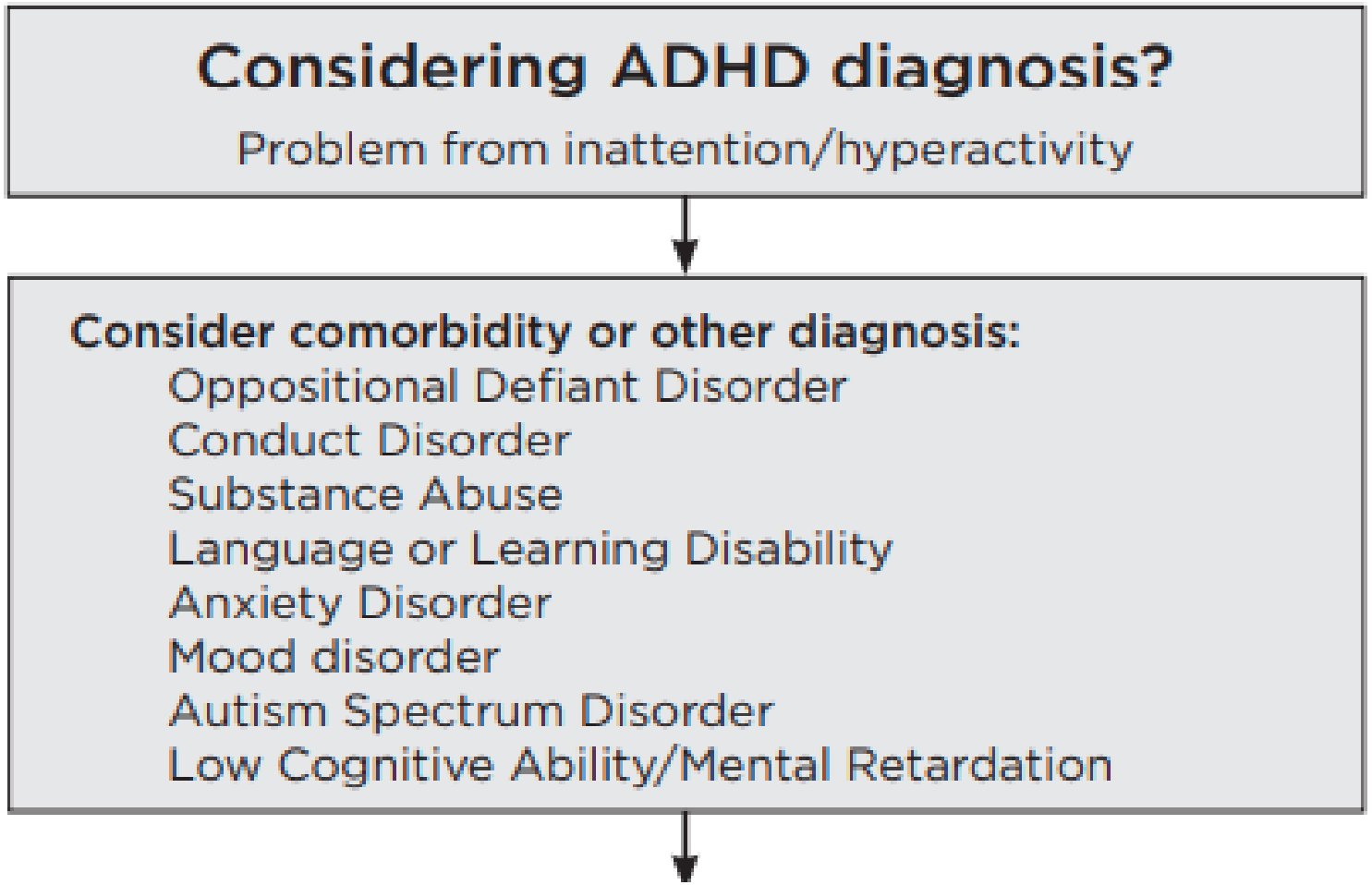
- Patients returned to community care after 14mos of treatment
- No outcome difference among original treatment groups at 8yrs
- MTA group was able to maintain improvement but was functioning less well than non-ADHD classmate sample
  - Improvement possible, but not “normalization”
- Best prognosis:
  - Children with behavioral, socio-economic and intellectual advantages
  - Best response to treatment

Stimulants

Start with either methylphenidate or amphetamine product

- Amphetamines FDA-approved for 3+ yo
- Methylphenidate FDA-approved for 6+ yo

Similar efficacy


Considering ADHD diagnosis?
Problem from inattention/hyperactivity
Consider comorbidity or other diagnosis:
Oppositional Defiant Disorder
Conduct Disorder
Substance Abuse
Language or Learning Disability
Anxiety Disorder
Mood disorder
Autism Spectrum Disorder
Low Cognitive Ability/Mental Retardation

Diagnosis:

Preschoolers have some normal hyperactivity/impulsivity: recommend skepticism if diagnosing ADHD in this group. (Note that Medicaid may require a medication review if prescribing and child age <5).

If rapid onset symptoms, note this is not typical of ADHD.

Use DSM-5 criteria:

Must have symptoms present in more than one setting

Symptoms rating scale strongly recommended from both home and school

- Vanderbilt ADHD Scale (many others available, for a fee)

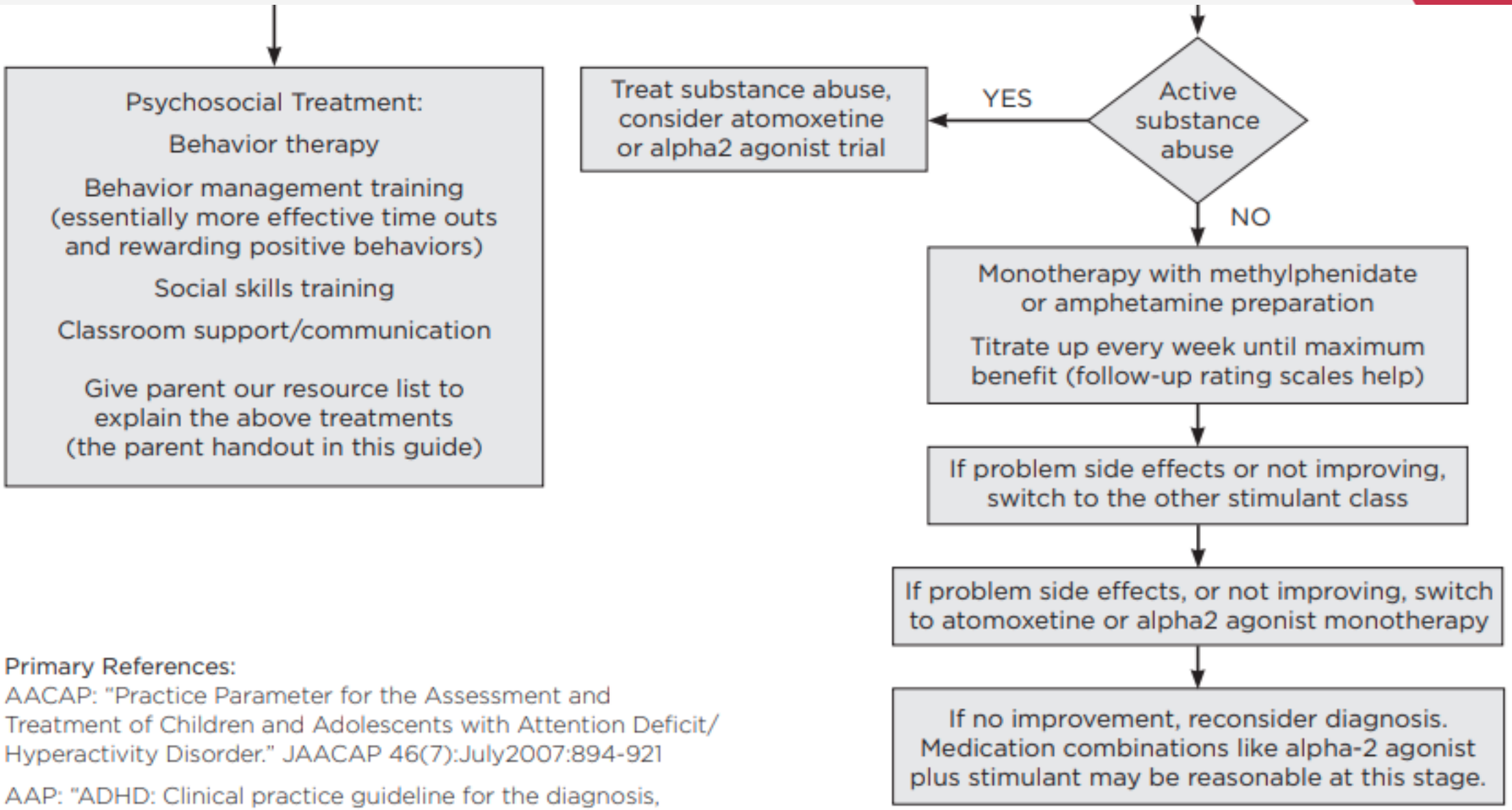
If unremarkable medical history, neuro image and lab tests are not indicated.

If significant concern for cognitive impairment, get neuropsychological/learning disability testing.

Treatment: If diagnose ADHD

Mild Impairment,
or no medication trial per family preference

Significant Impairment,
or psychosocial treatments not helping



Primary References:

AACAP: "Practice Parameter for the Assessment and Treatment of Children and Adolescents with Attention Deficit/ Hyperactivity Disorder." JAACAP 46(7):July2007:894-921

AAP: "ADHD: Clinical practice guideline for the diagnosis, evaluation, and treatment of ADHD in children and adolescents." Prediatrics 128(5), November, 2011:1007-1022

ADHD Stimulant Medications

Short Acting Stimulants

Drug Name	Duration	Dosages	Stimulant Class	Usual Starting Dose	FDA Max Daily Dose
Methylphenidate (Ritalin, Methylin)	4-6 hours	2.5, 5, 10, 20 mg 5 mg/mL, 10 mg/mL	Methyl.	5mg BID 1/2 dose if 3-5yr	60mg
Dexmethylphenidate (Focalin)	4-6 hours	2.5, 5, 10 mg	Methyl.	2.5mg BID	20mg
Dextroamphetamine (Dexedrine, Dextro Stat, Pro Centra, Zenzedi)	4-6 hours	2.5, 5, 10 mg tabs	Dextro.	5mg QD-BID 1/2 dose if 3-5yr	40mg
Amphetamine Salt Combo (Adderall)	4-6 hours	5, 7.5, 10, 12.5, 15, 20, 30 mg	Dextro.	5mg QD-BID 1/2 dose if 3-5yr	40mg
d and l-amphetamine sulfate (Evekeo/Evekeo ODT)	4-6 hours	5, 10 mg (tab); 5, 10, 15, 20 mg (disintegrating tab)	Dextro.	5 mg QD-BID, 1/2 dose if 3-5 yr	40mg

ADHD Stimulant Medications (cont.)

Extended Release Stimulants

Drug Name	Duration	Dosages	Stimulant Class	Usual Starting Dose	FDA Max Daily Dose	Editorial Comments
Metadate ER	4-8 hours	10, 20mg tab	Methyl.	10mg QAM	60mg	Generic available. Uses wax matrix. Variable duration of action
Concerta	10-12 hours	18, 27, 36, 54 mg	Methyl.	18mg QAM	72mg	Generic available. Osmotic pump capsule
Adderall XR	8-12 hours	5, 10, 15, 20, 25, 30 mg	Dextro.	5mg QD	30mg	Generic available. Beads in capsule can be sprinkled
Metadate CD (30% IR) -8 hours	-8 hours	10, 20, 30, 40, 50, 60 mg capsules	Methyl.	10mg QAM	60mg	Generic available. Beads in capsule can be sprinkled
Ritalin LA (50% IR) -8 hours	-8 hours	10, 20, 30, 40 mg capsules	Methyl.	10mg QAM	60mg	Generic available. Beads in capsule can be sprinkled
Focalin XR	10-12 hours	5 to 40mg in 5 mg steps	Methyl.	5mg QAM	30mg	Beads in capsule can be sprinkled
Daytrana patch	Until 3-5 hours after patch removal	10, 15, 20, 30 mg Max 30mg/9hr	Methyl.	10mg QAM	30mg	Rash can be a problem, slow AM startup, has an allergy risk, peeling off patch a problem with young kids

Lisdexamfetamine (Vyvanse)	~10 hours	10, 20, 30, 40 50, 60, 70mg	Dextro.	30mg QD	70mg	Conversion ratio from dextroamphetamine is not established. Chewable available
Dexedrine Spansule	8-10 hours	5, 10, 15 mg	Dextro.	5mg QAM	40mg	Beads in capsule can be sprinkled
Quillivant XR	10-12 hours	25mg/5ml 1 bottle = 300mg or 60ml	Methyl.	10mg QAM	60mg	Liquid banana flavor
Quillichew ER	6-8 hours	20, 30, 40 mg	Methyl.	20mg QAM	60mg	Chewable cherry-flavored tablets

ADHD Stimulant Medications (cont.)

Extended Release Stimulants (cont'd)

Drug Name	Duration	Dosages	Stimulant Class	Usual Starting Dose	FDA Max Daily Dose	Editorial Comments
Cotempla XR-ODT	10-12 hours	8.6, 17.3, 25.9 mg	Methyl.	17.3 mg QD	51.8 mg	Tablet should be allowed to disintegrate on tongue without chewing or crushing.
Aptensio XR	10-12 hours	10, 15, 20, 30, 40, 50, 60 mg	Methyl.	10 mg QD	60 mg	Beads in capsule can be sprinkled.
Adhansia XR	to 16 hours	25, 35, 45, 55, 70, 85 mg	Methyl.	25 mg QD	>70 mg associated with increased adverse effect	Beads in capsule can be sprinkled. Long-action may impact sleep.
Jornay PM	12 hours, after 10 hr delayed release	20, 40, 60, 80, 100 mg	Methyl.	20 mg QD in the PM	100 mg	Beads in capsule can be sprinkled.
Mydayis	to 16 hours	12.5, 25, 37.5, 50 mg	Dextro.	12.5 mg QD	25 mg	13 years and older. Beads in capsule can be sprinkled. Monitor for sleep impact.
Dyanavel XR	8-12 hours	2.5mg/mL	Dextro.	2.5-5mg QD	20 mg	Suspension
Adzenys ER/ Adzenys XR ODT	8-12 hours	3.1, 6.3, 9.4, 12.5, 15.7, 18.8 mg or 1.25 mg/mL	Dextro.	6.3 mg QD or 5 mL	6-12 yrs 18.8 mg (15 mL); 13-17 yrs 12.5 mg (10 mL)	Disintegrating tablet or suspension

Azstarys (dexmethylphenidate-serdexmethylphenidate)	10-12 hours	5.2 mg-26.1 mg, 7.8 mg-39.2 mg, 10.4 mg-52.3 mg	Methyl.	5.2 mg-26.1 mg	10.4 mg-52.3 mg	Capsule contents can be sprinkled into water or on applesauce.
Xelstrym patch	to 12 hours	4.5 mg, 9 mg, 13.5 mg, 18 mg	Dextro.	4.5 mg	18 mg	Apply 2 hours before effect is needed and and remove within 9 hours.

The above charts do not contain all available stimulant brands.

Non-Stimulant Medications

Drug Name	Dosages	Usual Starting Dose	FDA Max Daily Dose	Editorial Comments
Atomoxetine (Strattera)	10, 18, 25, 40 60, 80, 100mg	0.5mg/kg/day (1 to 1.2 mg/kg/d usual full dosage)	Lesser of 1.4mg/ kg/day or 100mg	Has GI side effects, takes weeks to see full benefit, do not open capsule — eye irritant
Clonidine (Catapres)	0.1, 0.2, 0.3mg	0.05mg QHS if <45kg, otherwise 0.1mg QHS Caution if <5 yr.	(Not per FDA) 27-40kg 0.2mg 40-45kg 0.3mg >45kg 0.4mg	Often given to help sleep, also treats tics, can have rebound BP effects
Clonidine XR (Kapvay)	0.1, 0.2 mg	0.1mg QHS	0.4mg daily	Lower peak blood level, then acts like regular clonidine (similar 1/2 life). Still is sedating. Approved for combo with stimulants
Guanfacine (Tenex)	1, 2 mg	0.5mg QHS if <45kg, otherwise 1mg QHS Caution if <5 yr.	(Not per FDA) 27-40kg 2mg 40-45kg 3mg >45kg 4mg	Often given to help sleep, also treats tics, can have rebound BP effects
Guanfacine XR (Intuniv)	1, 2, 3, 4 mg	1mg QD if over 6 years old (full dosage 0.05 to 0.12mg/kg)	Whichever is lower: a) 4mg/day 6-12 years old, 7mg/day 13-17 years old Or, b) 0.05-0.12 mg/kg/day	Lower peak blood level, then acts like regular Tenex (similar 1/2 life) Still is sedating. Approved for combo with stimulants
Viloxazine (Qelbree)	100 mg, 150 mg 200 mg	100 mg once daily	400 mg	May open and sprinkle capsule over applesauce

Reference: AACAP ADHD Practice Parameter (2007), Micromedex 2013

Signs of a Reading Disability: Preschool Years

- Trouble learning common nursery rhymes, such as "Jack and Jill"
- Difficulty learning (and remembering) the names of letters in the alphabet
- Seems unable to recognize letters in his/her own name
- Mispronounces familiar words; persistent "baby talk"
- Does not recognize rhyming patterns like *cat*, *bat*, *rat*
- A family history of reading and/or spelling difficulties (dyslexia often runs in families)

Signs of a Reading Disability: Years K-1

- Reading errors that show no connection to sounds of letters on the page—will say “puppy” instead of the written word “dog” on an illustrated page with a picture of a dog
- Does not understand words come apart
- Complains about how hard reading is; “disappears” when it is time to read
- History of reading problems in parents or siblings
- Cannot sound out even simple words like cat, map, nap
- Does not associate letters with sounds, such as the letter b with the “b” sound

Signs of a Reading Disability: Years 2-12

Reading

- Very slow acquiring reading skills; reading is slow and awkward
- Trouble reading unfamiliar words, often making wild guesses because he cannot sound out the word
- Does not seem to have strategy for reading new words
- Avoids reading out loud

Signs of a Reading Disability: Years 2-12

Speaking

- Searches for specific word and ends up using vague language, such as “stuff” or “thing” without naming the object
- Pauses, hesitates and/or uses lots of “um’s” when speaking
- Confuses words that sound alike, such as saying “tornado” for “volcano,” substituting “lotion” for “ocean”
- Mispronunciation of long, unfamiliar or complicated words
- Seems to need extra time to respond to questions

Signs of a Reading Disability: Years 2-12

School and Life

- Trouble remembering dates, names, telephone numbers, random lists
- Struggles to finish tests on time
- Extreme difficulty learning a foreign language
- Poor spelling
- Messy handwriting
- Low self-esteem that may not be immediately visible

Questions?

Supporting **Three Dimensions** of Health Care in Local Communities: Biological, Psychological and Social

Upcoming Sessions

May 18	ADHD and Learning Disabilities
June 1	Mood Disorders
June 15	Substance Use Disorders
July 20	Autism Spectrum Disorders
August 3	Adverse Childhood Experiences
August 17	Psychotic Disorders
September 7	Eating Disorders
September 21	Disruptive Behavior and Aggression
October 5	The Big Picture

All sessions start at:
1:00 PM MT | 11:00 AM AKT | 9:00 AM HST

3D ECHO

Thank you!

This material was prepared by Mountain-Pacific Quality Health, a Medicare Quality Innovation Network-Quality Improvement Organization (QIN-QIO), under contract with the Centers for Medicare & Medicaid Services (CMS), an agency of the U.S. Department of Health and Human Services (HHS). Views expressed in this material do not necessarily reflect the official views or policy of CMS or HHS, and any reference to a specific product or entity herein does not constitute endorsement of that product or entity by CMS or HHS. 12SOW-MPQHF-AS-CC-05/22-235

Quality Improvement Organizations
Sharing Knowledge. Improving Health Care.
CENTERS FOR MEDICARE & MEDICAID SERVICES
Mountain-Pacific Quality Health

Project ECHO®

FRONTIER PSYCHIATRY