

Hawai'i Health Partners Webinar

ADHD: Oh, the Thinks You Can Think! (When You Never Stop Thinking!)

Thursday, March 13, 2025
12:30pm—1:30pm via Zoom

**HAWAI'I
PACIFIC
HEALTH**

HAWAI'I
HEALTH
PARTNERS

Disclosures

- Except as noted below, the planners and presenters of this activity report no relationships with companies whose products or services (may) pertain to the subject matter of this meeting:

HHP Webinars

ADHD: Oh the Thinks You Can Think! (When you Never Stop Thinking!)

CONFERENCE INFORMATION

GENERAL OBJECTIVES

This offering is intended for physicians and other health care professionals.

By the end of the course, the participant will be able to:

- Summarize the neurobiology of ADHD
- Accurately diagnose ADHD.
- List at least 3 medications used to treat ADHD
- Recommend 4 lifestyle modifications to benefit those with ADHD

CONTINUING EDUCATION



In support of improving patient care, Hawai'i Pacific Health is jointly accredited by the Accreditation Council for Continuing Medical Education (ACCME), the Accreditation Council for Pharmacy Education (ACPE), and the American Nurses Credentialing Center (ANCC), to provide continuing education for the healthcare team.

For Physicians we are offering CME

Hawai'i Pacific Health designates this live activity for a maximum of 1.0 *AMA PRA Category 1 Credits*™ for physicians. Physicians should only claim credit commensurate with the extent of their participation in the activity.

For Nurses we are offering ANCC Contact Hours

Hawai'i Pacific Health designates this live activity for 1.0 contact hour for nurses. Nurses should only claim credit commensurate with the extent of their participation in the activity.

Please note that in order to receive continuing education credits for this offering, you must:

- Claim credit commensurate with the extent of your participation in the activity.
- Complete and submit the evaluation survey that will be emailed to you within one week of the offering.
- Speakers cannot claim credit for their own presentations.
- Your CE certificate will be immediately available to you upon completion of your evaluation.

Webinar Information

- You have been automatically muted
 - You cannot unmute yourself
- You will be able to submit questions via the Q&A section
- As a friendly reminder, per 2025 HQIP measure, “HHP Network Engagement”, this webinar counts for HQIP credit



Virginia Hatch-Pigott,
MD, FAAP, MSW
Private Practice

HAWAI'I
PACIFIC
HEALTH

HAWAI'I
HEALTH
PARTNERS

ADHD: Oh, the Thinks You Can Think! (When You Never Stop Thinking!)



Virginia Hatch-Pigott, MD, FAAP, MSW

Hawai'i Health Partners

OVERVIEW

- What is ADHD?
- Impact of ADHD
- Incidence and Prevalence of ADHD
- Causes of ADHD
- Symptoms and Diagnosis of ADHD
- Treatment of ADHD
- Future Directions



DEFINITIONS

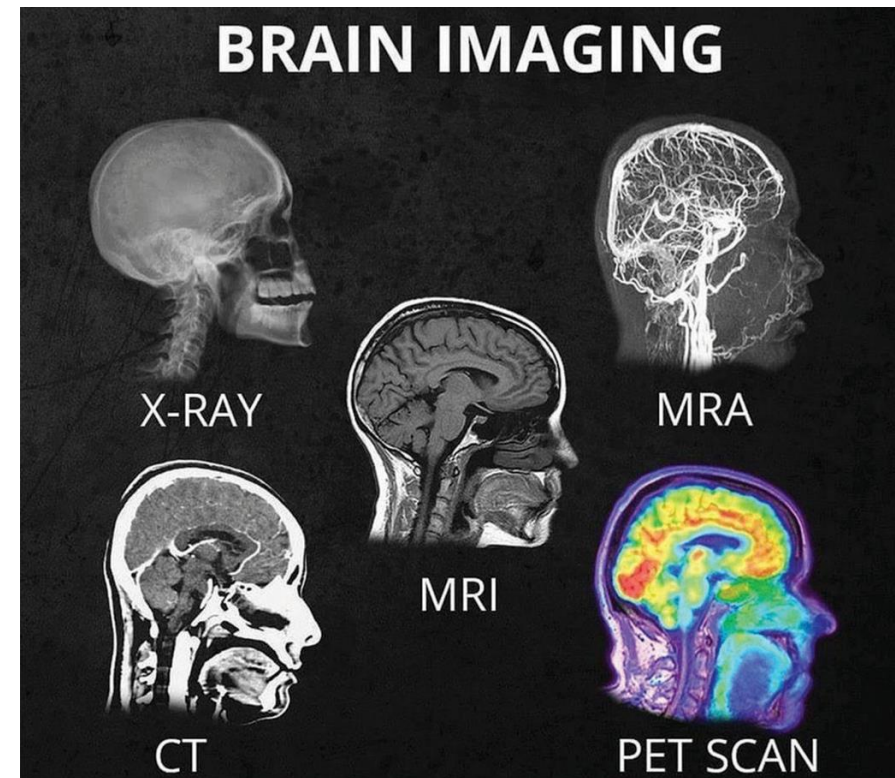
- **Epigenetics**

- The study of how our environment and our behaviors change the way our genes are expressed and used by cells.

- **Neuroplasticity**

- The ability of the brain to reorganize and form synaptic connections. It is a complex process that involves the formation of new neural connections, the strengthening of existing connections, and the pruning of unused connections. Neuroplasticity is essential for learning, memory, and recovery from injury.

- **Structural vs Functional Neuroimaging**



WHAT is ADHD?

Characteristics of ADHD

ADHD is a neurobiological disorder of the prefrontal cortex that results in time agnosia, problems with object permanence, memory cognitive load and task initiation.

ADHD exists on a spectrum and frequently has comorbidities such as learning disabilities, depression, anxiety, OCD and autism. Individuals with comorbidities have more severe ADHD.

Lifelong Condition

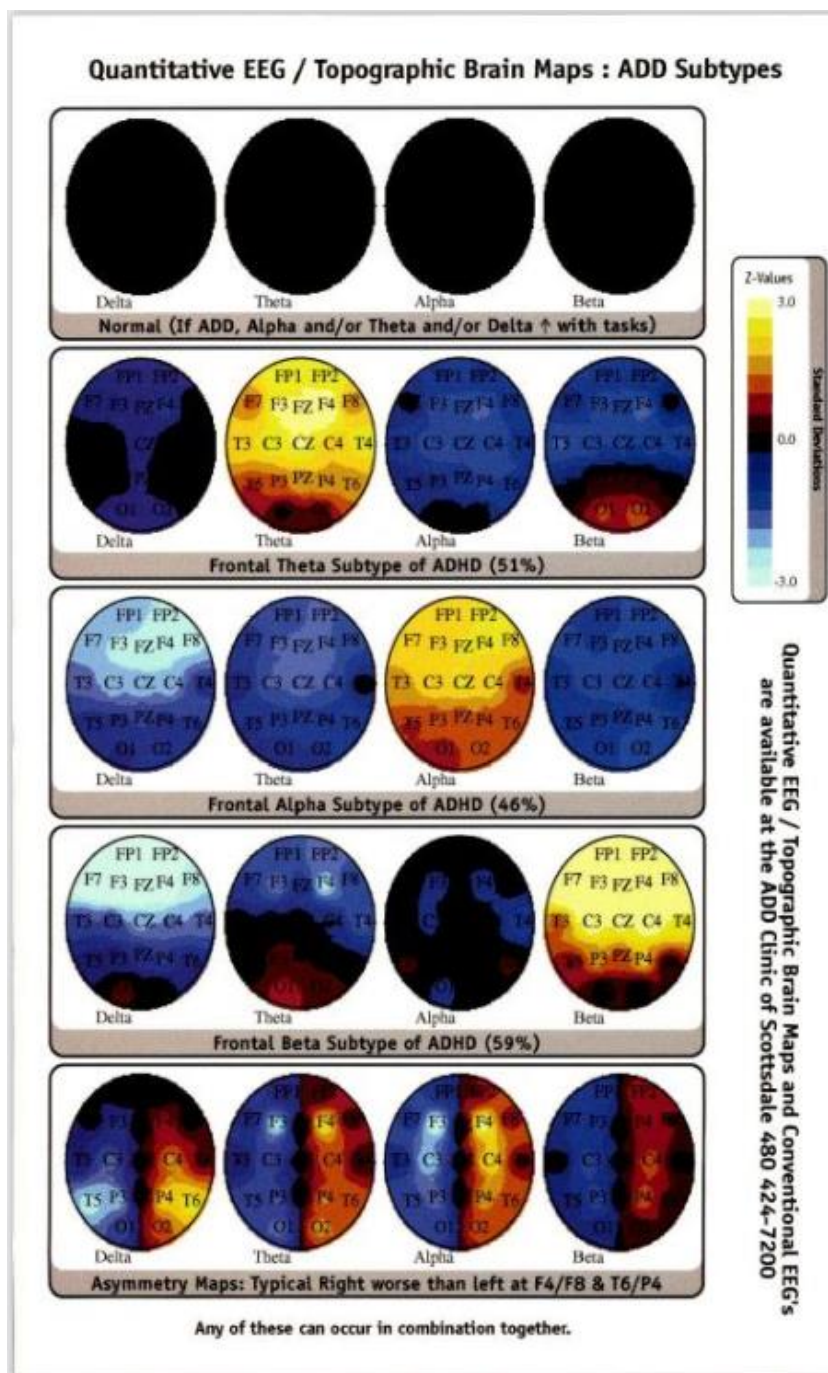
ADHD is recognized as a lifelong condition, but recent studies show that persistence rates are about 65%. (Faraone et al., 2005)



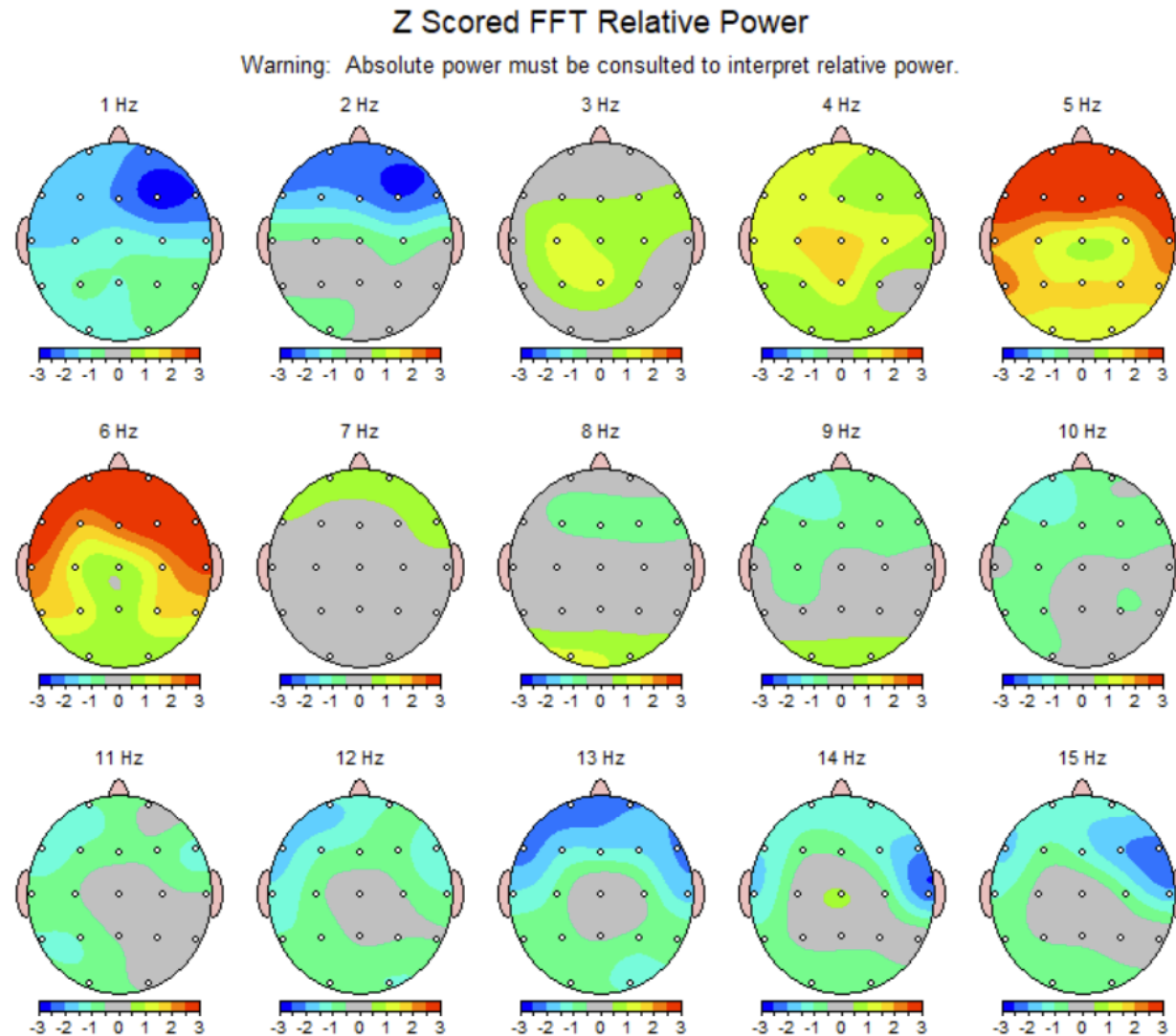
Structural and Functional Findings in ADHD-Affected Individuals

(Gurnee, R, 2000; Bong & Kim, 2021)

CREATING A HEALTHIER HAWAI‘I



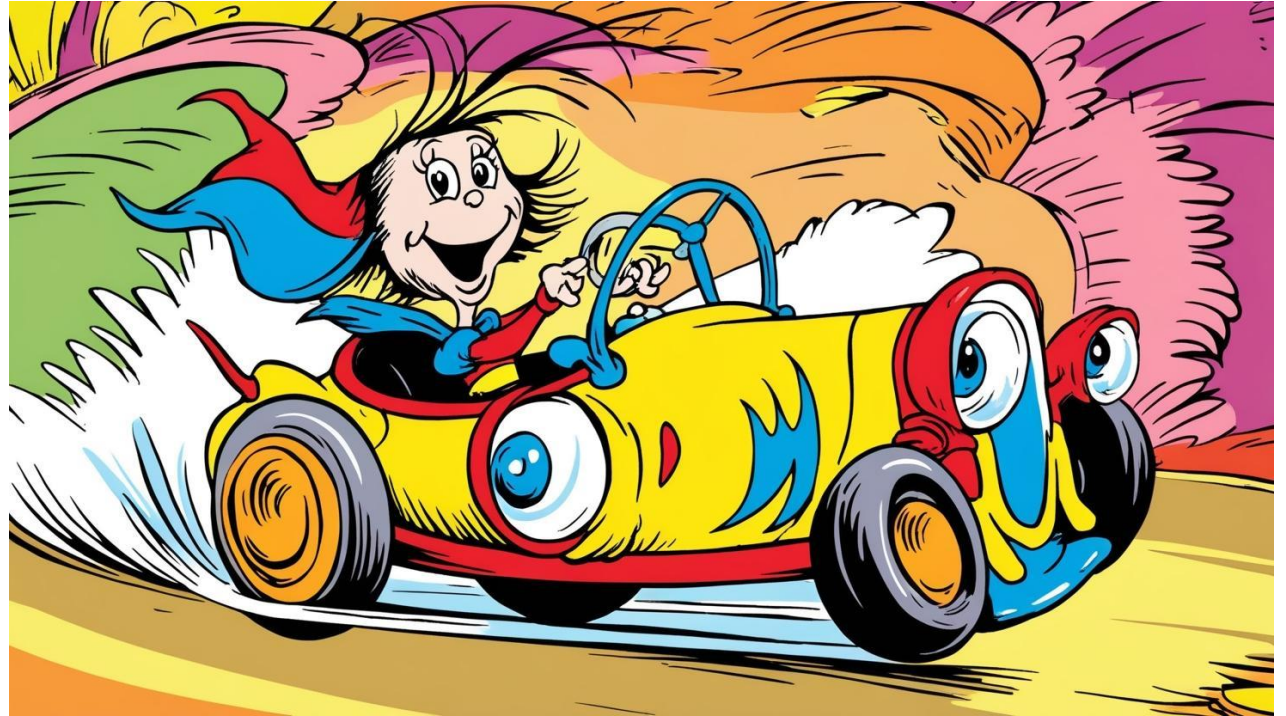
Structural and Functional Findings in ADHD-Affected Individuals



Gurnee, R.

IMPACT

The symptoms of ADHD can significantly impact daily functioning, affecting work, school, and relationships. Individuals live shorter and over all less healthy lives.



(O’Nions et al.,2025)

CREATING A HEALTHIER HAWAI’I

**HAWAI’I
PACIFIC
HEALTH** | HAWAI’I
HEALTH
PARTNERS

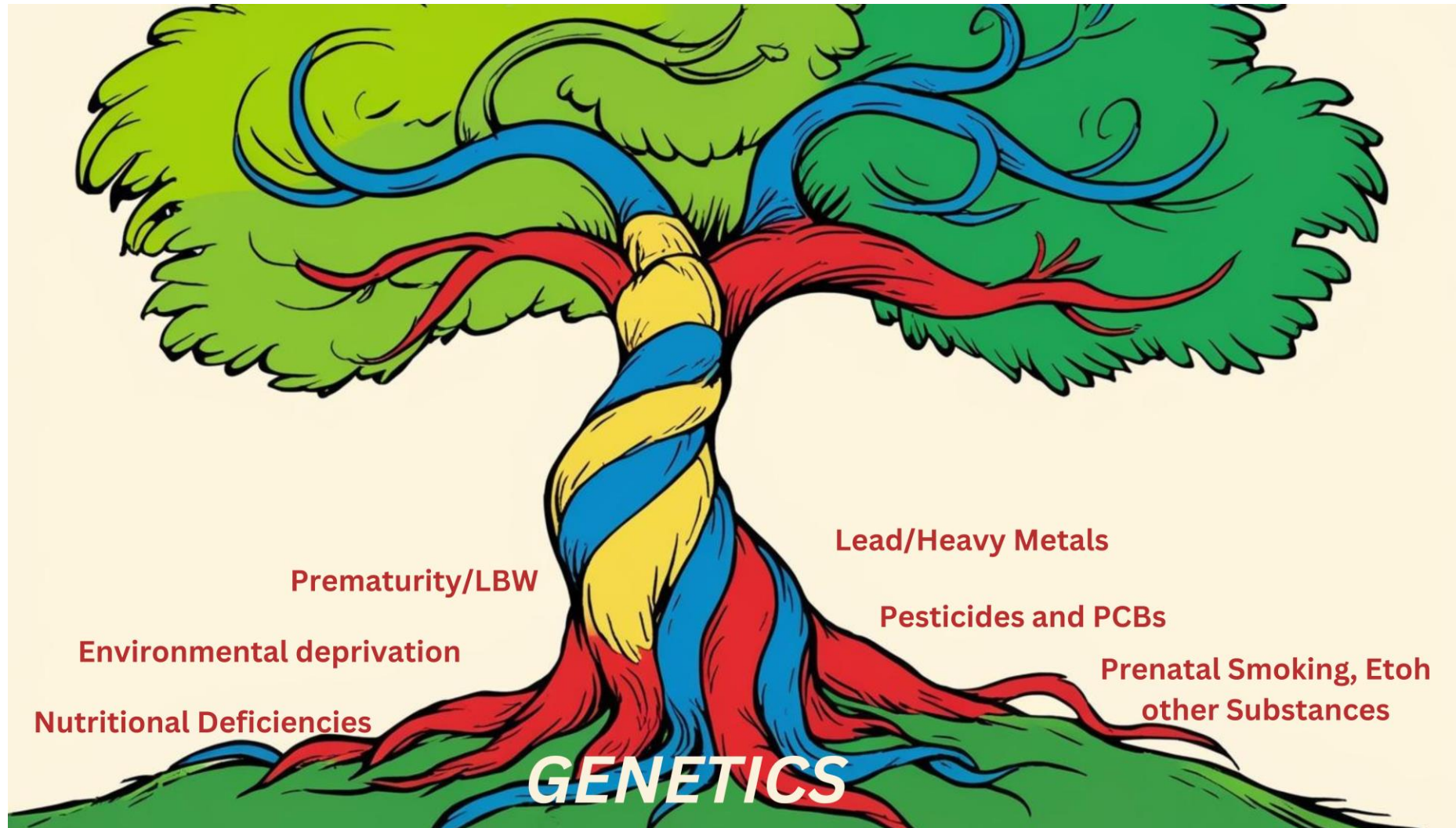
PREVELENCENCE



- An estimated 7 million (11.4%) U.S. children aged 3–17 years have ever been diagnosed with ADHD, according to a national survey of parents using data from 2022. This up from 6% in the 1990's. (4.4% of American Adults.)
- Among children with current ADHD, the study found 58.1% had moderate or severe ADHD and 77.9% had at least one co-occurring disorder.
- Boys (15%) were more likely to be diagnosed with ADHD than girls (8%).
- Black children and White children were more often diagnosed with ADHD (both 12%) than Asian children (4%). American Indian/Alaska Native children (10%) were also more often diagnosed with ADHD than Asian children.
- Approximately 6% of Native Hawaiian/Pacific Islander children were diagnosed with ADHD.
- Overall, non-Hispanic children (12%) were diagnosed with ADHD more often than Hispanic children (10%).

(Reuben, 2024)

CAUSES of ADHD



SYMPTOMS & DIAGNOSIS

Diagnostic Criteria (DSM-5)

ADHD Diagnostic Criteria

DSM-5 outlines specific criteria for diagnosing ADHD, including symptoms, duration, and age of onset.



Inattentive Type Diagnosis Criteria

- Displays poor listening skills
- Loses and/or misplaces items needed to complete activities or tasks
- Sidetracked by external or unimportant stimuli
- Forgets daily activities
- Diminished attention span
- Lacks ability to complete schoolwork and other assignments or to follow instructions
- Avoids or is disinclined to begin homework or activities requiring concentration
- Fails to focus on details and/or makes thoughtless mistakes in schoolwork or assignments



Hyperactive/ Impulsive Type Diagnosis Criteria

Hyperactive Symptoms:

- Squirms when seated or fidgets with feet/hands
- Marked restlessness that is difficult to control
- Appears to be driven by “a motor” or is often “on the go”
- Lacks ability to play and engage in leisure activities in a quiet manner
- Incapable of staying seated in class
- Overly talkative

Impulsive Symptoms:

- Difficulty waiting turn
- Interrupts or intrudes into conversations and activities of others
- Impulsively blurts out answers before questions completed



Additional Requirements for Diagnosis

- Symptoms present prior to age 12 years
- Symptoms not better accounted for by a different psychiatric disorder (exclusively e.g., mood disorder, anxiety disorder) and do not occur during a psychotic disorder (e.g., schizophrenia)
- Symptoms not exclusively a manifestation of oppositional behavior



Diagnostic Work-up

ADHD DIAGNOSIS	AMA	AAP	AAFP	AACAP
Clinical History				
MSE of the Child				
Developmental Testing				
Cognitive Testing				
ADHD Rating Scales				
Direct Observations				
School Reports				
Exclusion of Alternative Diagnoses				
Vision/Hearing Screen				
KEY: Dark green squares—Recommended; Pink squares—Suggested but not required; AMA—American Medical Association; AAP—American Academy of Pediatrics; AAFP—American Academy of Family Practice; AACAP—American Academy of Child & Adolescent Psychiatry; MSE—Mental Status Examination				

(Gualtieri & Johnson, 2005)
CREATING A HEALTHIER HAWAII

NICHQ Vanderbilt Assessment Scale—PARENT Informant

Today's Date: _____ Child's Name: _____
Parent's Name: _____ Parent's Ph: _____

Directions: Each rating should be considered in the context of what is appropriate for your child's age and sex.
When completing this form, please think about your child's behavior over the past 6 months.

is this evaluation based on a time when the child

Symptoms	Notes
1. Does not pay attention to details or makes careless mistakes with, for example, homework	
2. Has difficulty keeping attention to what needs to be done	
3. Does not seem to listen when spoken to directly	
4. Does not follow through when given directions and fails to finish activities (not due to refusal or failure to understand)	
5. Has difficulty organizing tasks and activities	
6. Avoids, dislikes, or does not want to start tasks that require ongoing mental effort	
7. Loses things necessary for tasks or activities (toys, assignments, pencils, or books)	
8. Is easily distracted by noises or other stimuli	
9. Is forgetful in daily activities	
10. Fidgets with hands or feet or squirms in seat	
11. Leaves seat when remaining seated is expected	
12. Runs about or climbs too much when remaining seated is expected	
13. Has difficulty playing or beginning quiet play activities	
14. Is "on the go" or often acts as if "driven by a motor"	
15. Talks too much	
16. Blurts out answers before questions have been completed	
17. Has difficulty waiting his or her turn	
18. Interrupts or intrudes in others' conversations and/or activities	
19. Argues with adults	
20. Loses temper	
21. Actively defies or refuses to go along with adults' requests or rules	
22. Deliberately annoys people	
23. Blames others for his or her mistakes or misbehaviors	
24. Is touchy or easily annoyed by others	
25. Is angry or resentful	
26. Is spiteful and wants to get even	
27. Bullies, threatens, or intimidates others	
28. Starts physical fights	
29. Lies to get out of trouble or to avoid obligations (ie, "come" others)	
30. Is truant from school (skips school) without permission	
31. Is physically cruel to people	
32. Has stolen things that have value	

The information contained in this publication should not be used as a substitute for the medical care and advice of your practitioner. There may be variations in treatment that your practitioner may recommend based on individual facts and circumstances.

Copyright ©
Blackwell ©
All rights reserved

Revised - 11/01



NICHQ Vanderbilt Assessment Scale—PARENT Informant

Today's Date: _____ Child's Name: _____ Date of Birth: _____
Parent's Name: _____ Parent's Phone Number: _____

Symptoms (continued)	Never	Occasionally	Often	Very Often
33. Deliberately destroys others' property	0	1	2	3
34. Has used a weapon that can cause serious harm (hat, knife, brick, gun)	0	1	2	3
35. Is physically cruel to animals	0	1	2	3
36. Has deliberately set fires to cause damage	0	1	2	3
37. Has broken into someone else's home, business, or car	0	1	2	3
38. Has stayed out at night without permission	0	1	2	3
39. Has run away from home overnight	0	1	2	3
40. Has forced someone into sexual activity	0	1	2	3
41. Is fearful, anxious, or worried	0	1	2	3
42. Is afraid to try new things for fear of making mistakes	0	1	2	3
43. Feels worthless or inferior	0	1	2	3
44. Blames self for problems, feels guilty	0	1	2	3
45. Feels lonely, unwanted, or unloved; complains that "no one loves him or her"	0	1	2	3
46. Is sad, unhappy, or depressed	0	1	2	3
47. Is self-conscious or easily embarrassed	0	1	2	3

Performance	Somewhat of a Problem				
	Excellent	Above Average	Average	Problem	Problematic
40. Overall school performance	1	2	3	4	5
41. Reading	1	2	3	4	5
50. Writing	1	2	3	4	5
51. Mathematics	1	2	3	4	5
52. Relationship with parents	1	2	3	4	5
53. Relationship with siblings	1	2	3	4	5
54. Relationship with peers	1	2	3	4	5
55. Participation in organized activities (eg, teams)	1	2	3	4	5

Comments:

For Office Use Only

Total number of questions scored 2 or 3 in questions 1-9: _____
 Total number of questions scored 2 or 3 in questions 10-11: _____
 Total Symptom Score for questions 1-18: _____
 Total number of questions scored 2 or 3 in questions 19-26: _____
 Total number of questions scored 2 or 3 in questions 27-40: _____
 Total number of questions scored 2 or 3 in questions 41-47: _____
 Total number of questions scored 4 or 5 in questions 48-55: _____
 Average Performance Score: _____

D4 NICHQ Vanderbilt Assessment Scale—TEACHER Informant

Teacher's Name: _____ Class Time: _____ Class Name/Period: _____
Today's Date: _____ Child's Name: _____ Grade Level: _____

Directions: Each rating should be considered in the context of what is appropriate for the age of the child you are rating and should reflect that child's behavior since the beginning of the school year. Please indicate the number of weeks or months you have been able to evaluate the behaviors: _____.

Is this evaluation based on a time when the child ☐ was on medication ☐ was not on medication ☐ not sure?

Symptoms	Never	Occasionally	Often	Very Often
1. Fails to give attention to details or makes careless mistakes in schoolwork	0	1	2	3
2. Has difficulty sustaining attention to tasks or activities	0	1	2	3
3. Does not seem to listen when spoken to directly	0			
4. Does not follow through on instructions and fails to finish schoolwork (not due to oppositional behavior or failure to understand)	0			
5. Has difficulty organizing tasks and activities	0			
6. Avoids, dislikes, or is reluctant to engage in tasks that require sustained mental effort	0			
7. Loses things necessary for tasks or activities (school assignments, pencils, or books)	0			
8. Is easily distracted by extraneous stimuli	0			
9. Is forgetful in daily activities	0			
10. Fidgets with hands or feet or squirms in seat	0			
11. Leaves seat in classroom or in other situations in which remaining seated is expected	0			
12. Runs about or climbs excessively in situations in which remaining seated is expected	0			
13. Has difficulty playing or engaging in leisure activities quietly	0			
14. Is "on the go" or often acts as if "driven by a motor"	0			
15. Talks excessively	0			
16. Blurts out answers before questions have been completed	0			
17. Has difficulty waiting in line	0			
18. Interrupts or intrudes on others (e.g., butts into conversations/games)	0			
19. Loses temper	0			
20. Actively defies or refuses to comply with adult's requests or rules	0			
21. Is angry or resentful	0			
22. Is spiteful and vindictive	0			
23. Bullies, threatens, or intimidates others	0			
24. Initiates physical fights	0			
25. Lies to obtain goods for favors or to avoid obligations (e.g., "sneak" others)	0			
26. Is physically cruel to people	0			
27. Has stolen items of nontrivial value	0			
28. Deliberately destroys others' property	0			
29. Is fearful, anxious, or worried	0			
30. Is self-conscious or easily embarrassed	0			
31. Is afraid to try new things for fear of making mistakes	0			

D4
NICHQ Vanderbilt

Teacher's Name: _____
Today's Date: _____ Child's Name: _____

Symptoms (continued)
32. Feels worthless or inferior
33. Blames self for problems, feels guilty
34. Feels lonely, unwanted, or unloved
35. Is sad, unhappy, or depressed

Performance
Academic Performance
36. Reading
37. Mathematics
38. Written expression

Classroom Behavioral Performance
39. Relationship with peers
40. Following directions
41. Disrupting class
42. Assignment completion
43. Organizational skills

Comments:

Please return this form to: _____
Mailing address: _____

The recommendations in this publication do not indicate an exclusive course of treatment or serve as a standard of medical care. Variations, taking into account individual circumstances, may be appropriate.

Copyright © 2002 Jones
Bartlett Publishers, Inc.
All rights reserved.

Revised: 01/01/01

**American Academy
of Pediatrics**

DEDICATED TO THE HEALTH OF ALL CHILDREN



NICHQ
National Institute of
Children's Health Qual

D4 NICHQ Vanderbilt Assessment Scale—TEACHER Informant, continued

Teacher's Name: _____ Class Time: _____ Class Name/Period: _____
Today's Date: _____ Child's Name: _____ Grade Level: _____

Symptoms (continued)	Never	Occasionally	Often	Very Often
32. Feels worthless or inferior	0	1	2	3
33. Blames self for problems; feels guilty	0	1	2	3
34. Feels lonely, unwanted, or unloved; complains that "no one loves him or her"	0	1	2	3
35. Is sad, unhappy, or depressed	0	1	2	3

Performance	Somewhat of a Problem				
	Excellent	Above Average	Average	Problem	Problematic
36. Reading	1	2	3	4	5
37. Mathematics	1	2	3	4	5
38. Written expression	1	2	3	4	5

Classroom Behavioral Performance	Teacher Rating				
	Excellent	Above Average	Average	Somewhat of a Problem	Problematic
39. Relationship with peers	1	2	3	4	5
40. Following directions	1	2	3	4	5
41. Disrupting class	1	2	3	4	5
42. Assignment completion	1	2	3	4	5
43. Organizational skills	1	2	3	4	5

Comments:

Please return this form to: _____
Mailing address: _____

Fax number: _____

For Office Use Only

Total number of questions scored 2 or 3 in questions 1-9: _____

Total number of questions scored 2 or 3 in questions 10-18: _____

Total Symptom Score for questions 1-18: _____

Total number of questions scored 2 or 3 in questions 19-28: _____

Total number of questions scored 2 or 3 in questions 29-35: _____

Total number of questions scored 4 or 5 in questions 36-43: _____

Average Performance Score: _____



Commercially Available CPTs

The Conners CPT (www.mhs.com ): Visual stimuli (letters), 14 minutes long. \$495 for unlimited use (norms for children >6 yrs); \$675 for a version normed for younger children.

IVA—Integrated Visual & Auditory CPT (www.braintrain.com ): Auditory and visual stimuli, 13' long. Normed from age 6–96 (sic). \$295 for the first ten tests, \$99 for each subsequent set of 10 tests; or \$598 for the first 10 tests and \$89 for each subsequent set of 10 tests).

ACPT—Auditory CPT (www.psychcorp.com ): Auditory stimuli, 10' long. Norms, age 6–11. \$109 for the kit and 12 forms, \$16 for 12 additional forms.

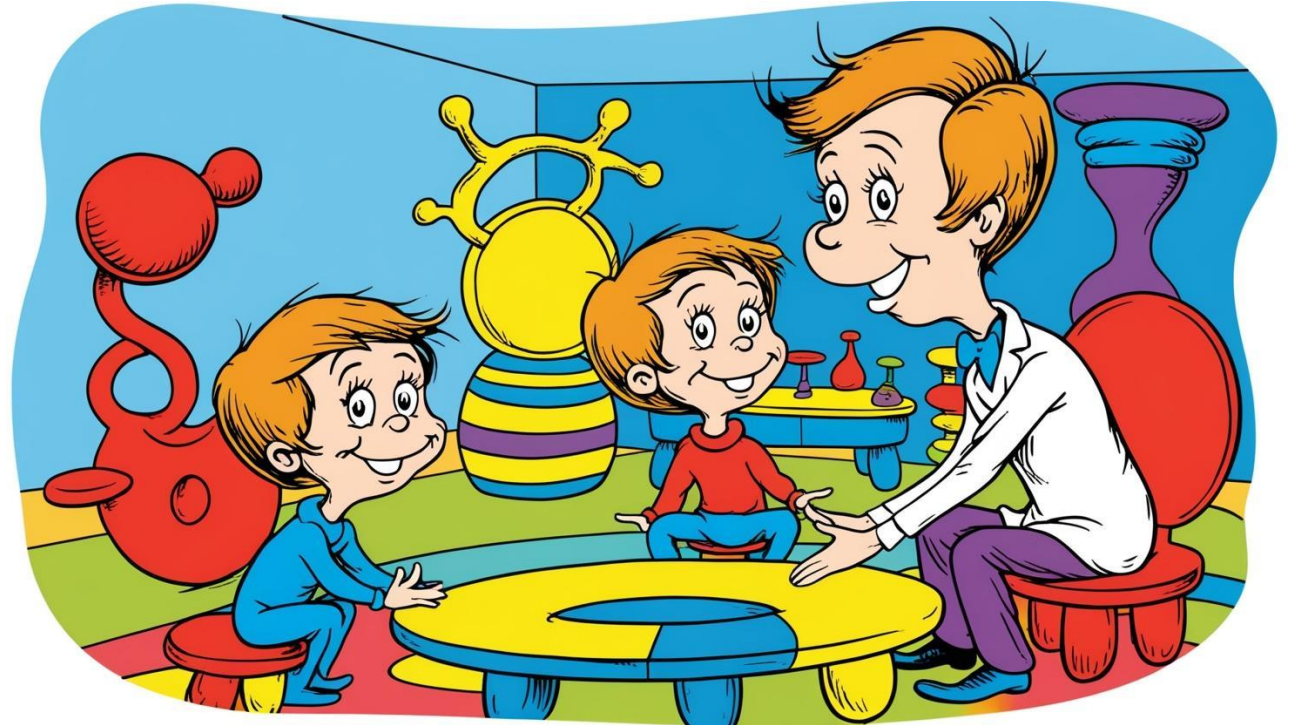
TOVA (Tests of Variables of Attention) (www.ADHDwarehouse.com ): Visual stimuli (geometric patterns), 21.8' long. Norms for children >6 yrs. \$395 (plus \$100 annual fee or \$10 per test).

Gordon Diagnostic System (www.gsi-ADHD.com ): Visual stimuli (numbers) on a free-standing, microprocessor-based machine that is portable. Cost \$1595, unlimited administrations.



TREATMENT OPTIONS

- Behavior Therapy
 - ALL CHILDREN
- Stimulant Medications
- Non-stimulant Medications
- Non-pharmacologic Approaches



Behavior Therapy



(Murray et al., 2008)

CREATING A HEALTHIER HAWAII

Medications:

Stimulant Medications

- Methylphenidate
Dexmethylphenidate
- Dextroamphetamine
- Amphetamine Salt Combo
- D- and L-Amphetamine Salt

Non-stimulant Medications

- Atomoxetine
- Clonidine
- Guanfacine



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



(Care Guides and Resources - Partnership Access Line, Seattle Children’s, n.d.)

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

Other Stimulant Medications

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.
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.
Xelstryl 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 remove within 9 hours.

The above charts do not contain all available stimulant brands.

(Care Guides and Resources - Partnership Access Line, Seattle Children's, n.d.)

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

(Care Guides and Resources - Partnership Access Line, Seattle Children's, n.d.)

Non-pharmaceutical or “Integrative” Approaches

Mediterranean Diet (Darabi et al., 2021)

Exercise (Chan et al., 2021)

Sleep (Sunj & Sunj, 2023)

Supplements

Magnesium (Villagomez & Ramtekkar, 2014)

Vitamin D (Villagomez & Ramtekkar, 2014)

Iron (Villagomez & Ramtekkar, 2014)

Zinc (Villagomez & Ramtekkar, 2014)

Omega-3 PUFA (Kiliaan & Koenigs, 2016)

Saffron (Pazoki et al, 2022)

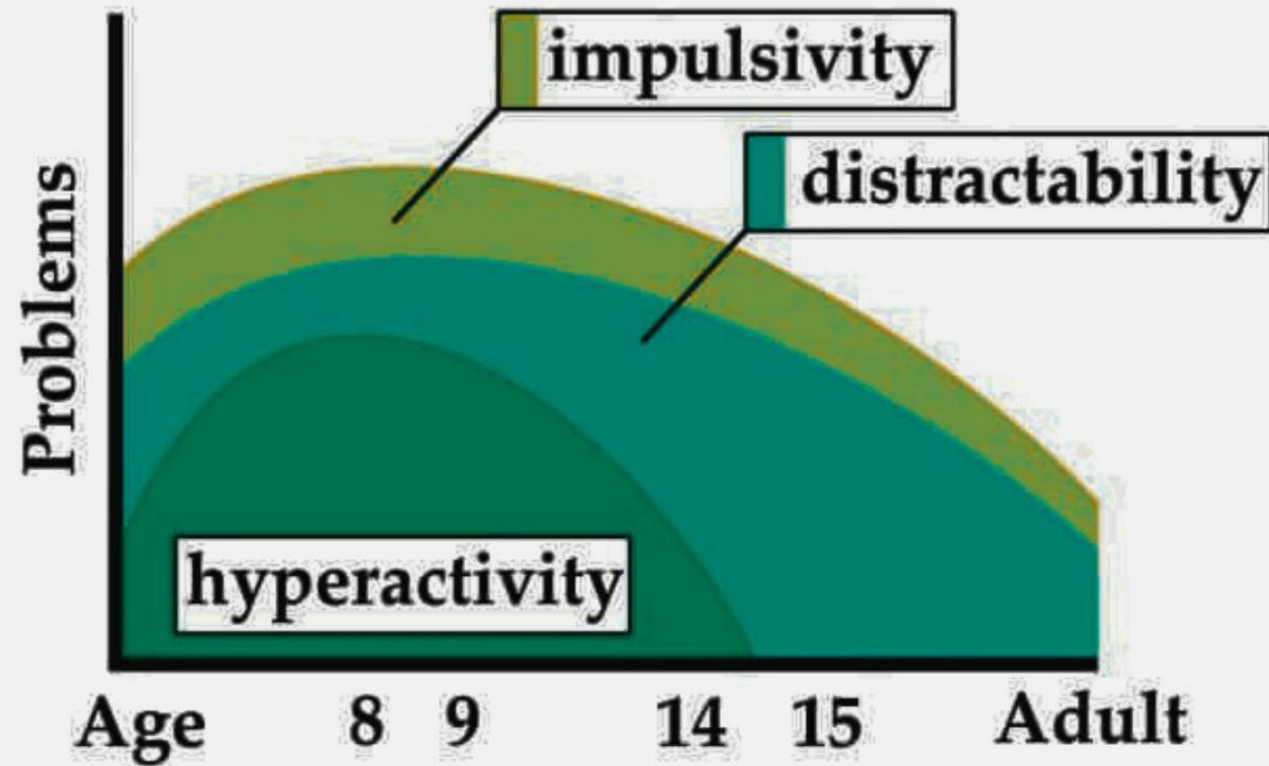
Limit Screen Time (Meng et al., 2024)

Classical Music (Azmi et al., 2023)

Games (Rodrigo-Yanaguas et al., 2023)

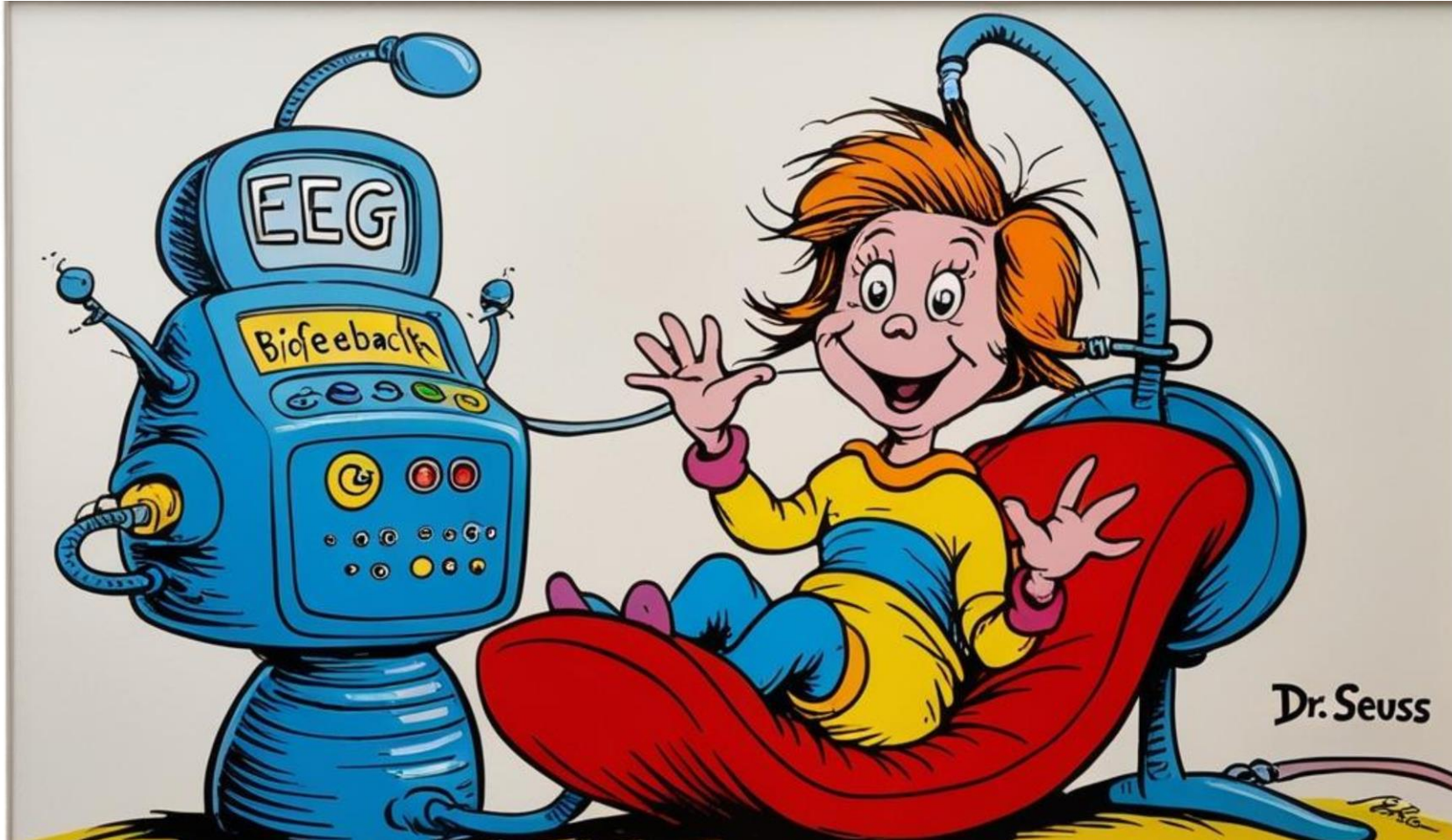


Attention Deficit Hyperactivity Disorder (ADHD)

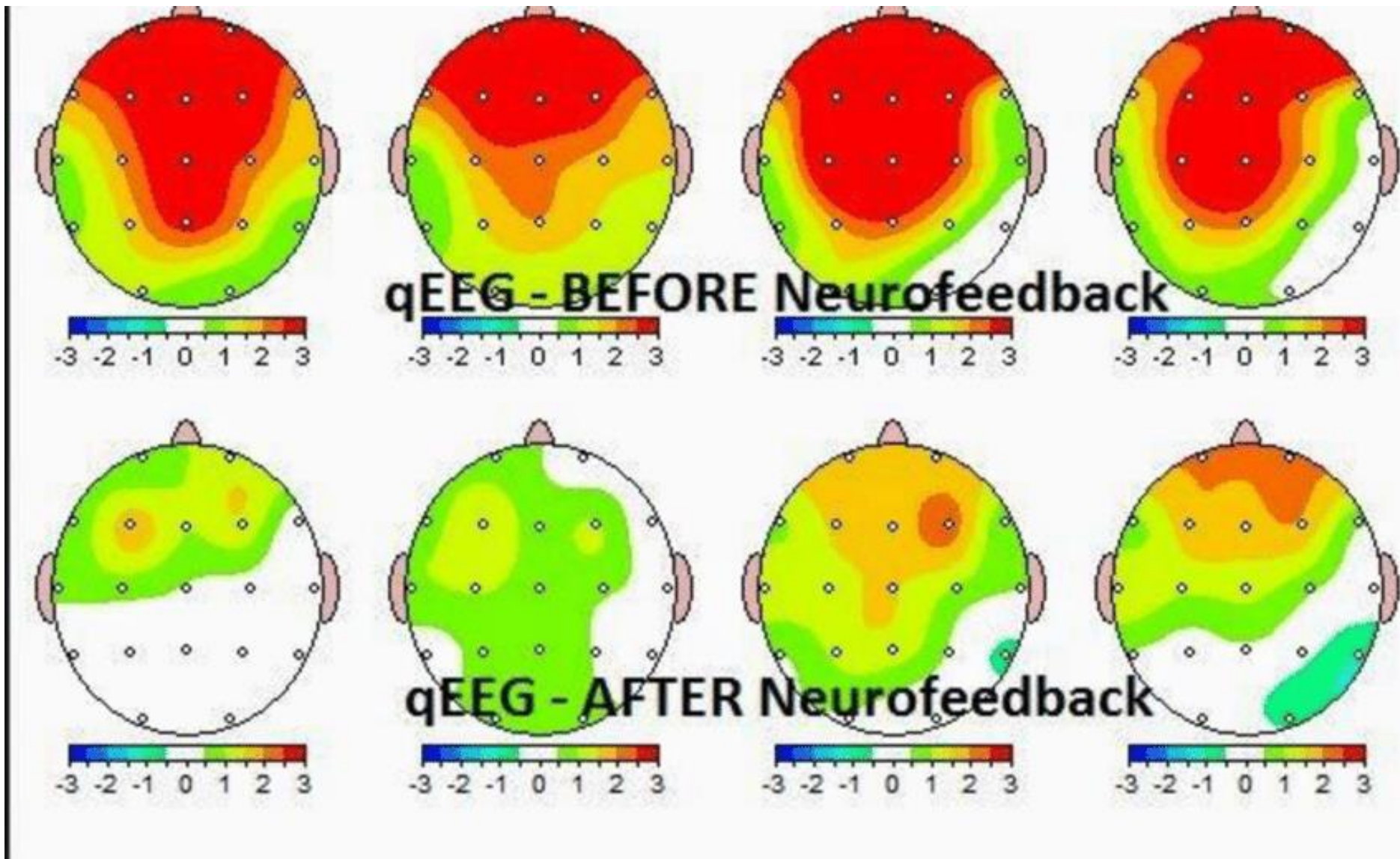


(Hope, 2023)

Future directions: EEG Biofeedback



(Arns, et al, 2009; Steiner et al., 2014; Bong & Kim, 2021)



(De Abreu Rodrigues, 2020)

References

- Abdelgadir, I. S., Gordon, M. A., & Akobeng, A. K. (2018). Melatonin for the management of sleep problems in children with neurodevelopmental disorders: a systematic review and meta-analysis. *Archives of Disease in Childhood*, 103(12), 1155–1162. <https://doi.org/10.1136/archdischild-2017-314181>
- Affects focus, attention and behavior and can make learning challenging (n.d.). Learning Disabilities Association of America. Retrieved Dec. 17, 2024 from <https://ldaamerica.org/disabilities/adhd/>
- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Arlington, VA: American Psychiatric Publishing.
- Arns, M., De Ridder, S., Strehl, U., Breteler, M., & Coenen, A. (2009). Efficacy of Neurofeedback Treatment in ADHD: The Effects on inattention, impulsivity and Hyperactivity: A Meta-Analysis. *Clinical EEG and Neuroscience*, 40(3), 180–189. <https://doi.org/10.1177/155005940904000311>
- Ázmi, M. T. F. B. K., Kian, N. T., & Rashid, F. N. (2023). Music Matters: The role of background music in improving students' attention and learning outcomes. *International Journal of Membrane Science and Technology*, 10(3), 1898–1908. <https://doi.org/10.15379/ijmst.v10i3.1849>
- Barkley, R.A. (2014). *Attention-Deficit Hyperactivity Disorder: A Handbook for Diagnosis and Treatment* (4th ed.). The Guilford Press.
- Barkley, R.A. (2015). *Taking charge of ADHD: The complete, authoritative guide for parents* (3rd ed.). New York: The Guilford Press.
- Bong, S. H., & Kim, J. W. (2021). The role of quantitative electroencephalogram in the diagnosis and subgrouping of Attention-Deficit/Hyperactivity Disorder. *Journal of Korean Academy of Child and Adolescent Psychiatry*, 32(3), 85–92. <https://doi.org/10.5765/jkacap.210010>
- Blasco-Fontecilla, H., Moyano-Ramírez, E., Méndez-González, O., Rodrigo-Yanguas, M., Martín-Moratinos, M., & Bella-Fernández, M. (2022). Effectivity of Saffron Extract (Saffr'Activ) on Treatment for Children and Adolescents with Attention Deficit/Hyperactivity Disorder (ADHD): A Clinical Effectivity Study. *Nutrients*, 14(19), 4046. <https://doi.org/10.3390/nu14194046>
- *Care Guides and Resources - Partnership Access Line*. (n.d.). Seattle Children's Hospital. <https://www.seattlechildrens.org/healthcare-professionals/community-providers/pal/resources/>
- Centers for Disease Control and Prevention (Nov. 19, 2024). Data and Statistics on ADHD. Centers for Disease Control and Prevention. Retrieved Jan. 23, 2025, from https://www.cdc.gov/adhd/data/?CDC_AAref_Val=https://www.cdc.gov/ncbddd/adhd/ata.htm

- Chan, Y., Jang, J., & Ho, C. (2021). Effects of physical exercise on children with attention deficit hyperactivity disorder. *Biomedical Journal*, 45(2), 265–270. <https://doi.org/10.1016/j.bj.2021.11.011>
- Colter, A. L., Cutler, C., & Meckling, K. A. (2008). Fatty acid status and behavioural symptoms of Attention Deficit Hyperactivity Disorder in adolescents: A case-control study. *Nutrition Journal*, 7(1). <https://doi.org/10.1186/1475-2891-7-8>
- Dalsgaard, S., Østergaard, S. D., Leckman, J. F., Mortensen, P. B., & Pedersen, M. G. (2015). Mortality in children, adolescents, and adults with attention deficit hyperactivity disorder: a nationwide cohort study. *The Lancet*, 385(9983), 2190–2196. [https://doi.org/10.1016/s0140-6736\(14\)61684-6](https://doi.org/10.1016/s0140-6736(14)61684-6)
- Darabi, Z., Vasmehjani, A. A., Darand, M., Sangouni, A. A., & Hosseinzadeh, M. (2021). Adherence to Mediterranean diet and attention-deficit/hyperactivity disorder in children: A case control study. *Clinical Nutrition ESPEN*, 47, 346–350. <https://doi.org/10.1016/j.clnesp.2021.11.014>
- De Abreu Rodrigues, F. (2020). BETTER MEMORIZATION TECHNIQUES: TAKING INTO ACCOUNT PERSONALITY NUANCES / TÉCNICAS PARA UMA MELHOR MEMORIZAÇÃO: LEVANDO EM CONSIDERAÇÃO AS NUANCES DA PERSONALIDADE. *Brazilian Journal of Development*, 6(12), 103674–103704. <https://doi.org/10.34117/bjdv6n12-754>
- Faraone, S. V., Biederman, J., & Mick, E. (2005). The age-dependent decline of attention deficit hyperactivity disorder: a meta-analysis of follow-up studies. *Psychological Medicine*, 36(2), 159–165. <https://doi.org/10.1017/s003329170500471x>
- Gualtieri, C. T., & Johnson, L. G. (2005, November 1). *ADHD: Is objective diagnosis possible?* <https://pmc.ncbi.nlm.nih.gov/articles/PMC2993524/#sec3>
- Hallowell, E. M., & Ratey, J. J. (2011). *Driven to distraction: Recognizing and coping with attention deficit disorder from childhood through adulthood* (rev. ed.). Anchor Books.
- Hope, P. (2023, July 10). Does ADHD Get Worse With Age? a Guide on What to Expect. *Prescription Hope*. <https://prescriptionhope.com/blog-adhd-get-worse-with-age/>
- Kiliaan, A., & Königs, A. (2016). Critical appraisal of omega-3 fatty acids in attention-deficit/hyperactivity disorder treatment. *Neuropsychiatric Disease and Treatment*, Volume 12, 1869–1882. <https://doi.org/10.2147/ndt.s68652>
- Kuntsi, J., McLoughlin, G., & Asherson, P. (2006). Attention deficit hyperactivity disorder. *NeuroMolecular Medicine*, 8(4), 461–484. <https://doi.org/10.1385/nmm:8:4:461>
- Meng, Z., Ao, B., Wang, W., Niu, T., Chen, Y., Ma, X., & Huang, Y. (2024). Relationships between screen time and childhood attention deficit hyperactivity disorder: a Mendelian randomization study. *Frontiers in Psychiatry*, 15. <https://doi.org/10.3389/fpsy.2024.1441191>
- Murray, D. W., Arnold, L. E., Swanson, J., Wells, K., Burns, K., Jensen, P., Hechtman, L., Paykina, N., Legato, L., & Strauss, T. (2008). A clinical review of outcomes of the Multimodal Treatment Study of Children with Attention-Deficit/Hyperactivity Disorder (MTA). *Current Psychiatry Reports*, 10(5), 424–431. <https://doi.org/10.1007/s11920-008-0068-4>
- Nadeau, K., Littman, E., & Quinn, P. O. (2015). *Understanding girls with ADHD: How they feel and why they do what they do*. Guilford Press.

- National Institute of Mental Health. (n.d.). Attention-deficit/hyperactivity disorder (ADHD). National Institute of Mental Health. Retrieved December 17, 2024, from <https://www.nimh.nih.gov/health/statistics/attention-deficit-hyperactivity-disorder-adhd>
- O’Nions, E., Baou, C. E., John, A., Lewer, D., Mandy, W., McKechnie, D. G., Petersen, I., & Stott, J. (2025). Life expectancy and years of life lost for adults with diagnosed ADHD in the UK: matched cohort study. *The British Journal of Psychiatry*, 1–8. <https://doi.org/10.1192/bjp.2024.199>
- Pazoki, B., Zandi, N., Assaf, Z., Moghaddam, H. S., Zeinoddini, A., Mohammadi, M. R., & Akhondzadeh, S. (2022). Efficacy and safety of saffron as adjunctive therapy in adults with attention-deficit/hyperactivity disorder: A randomized, double-blind, placebo-controlled clinical trial. *Advances in Integrative Medicine*, 9(1), 37–43. <https://doi.org/10.1016/j.aimed.2022.01.002>
- Rodrigo-Yanguas, M., Martín-Moratinos, M., González-Tardón, C., Sanchez-Sanchez, F., Royuela, A., Bella-Fernández, M., & Blasco-Fontecilla, H. (2023). Effectiveness of a personalized, Chess-Based Training serious video game in the treatment of adolescents and young adults with Attention-Deficit/Hyperactivity Disorder: randomized controlled trial. *JMIR Serious Games*, 11, e39874. <https://doi.org/10.2196/39874>
- Reuben, N. (2024). *Attention-Deficit/Hyperactivity Disorder in children ages 5-17 years: United States, 2020-2022*. <https://doi.org/10.15620/cdc/148043>
- Smith, T. E. C., Polloway, E. A., Patton, J. R., Dowdy, C. A. (2013). *Teaching Students with Special Needs in Inclusive Settings*. United Kingdom: Pearson.
- Steiner, N. J., Frenette, E. C., Rene, K. M., Brennan, R. T., & Perrin, E. C. (2014). In-School neurofeedback training for ADHD: Sustained improvements from a randomized control trial. *PEDIATRICS*, 133(3), 483–492. <https://doi.org/10.1542/peds.2013-2059>
- Suni, E., & Suni, E. (2023, November 10). *Mental health and sleep*. Sleep Foundation. <https://www.sleepfoundation.org/mental-health>
- Thapar, A., Cooper, M., Jefferies, R., & Stergiakouli, E. (2011). What causes attention deficit hyperactivity disorder? *Archives of Disease in Childhood*, 97(3), 260–265. <https://doi.org/10.1136/archdischild-2011-300482>
- Villagomez, A., & Ramtekkar, U. (2014). Iron, Magnesium, Vitamin D, and Zinc Deficiencies in Children Presenting with Symptoms of Attention-Deficit/Hyperactivity Disorder. *Children*, 1(3), 261–279. <https://doi.org/10.3390/children1030261>
- Wallace, J., Boers, E., Ouellet, J., Afzali, M. H., & Conrod, P. (2023). Screen time, impulsivity, neuropsychological functions and their relationship to growth in adolescent attention-deficit/hyperactivity disorder symptoms. *Scientific Reports*, 13(1). <https://doi.org/10.1038/s41598-023-44105-7>
- Wolraich, M. L., Hagan, J. F., Allan, C., Chan, E., Davison, D., Earls, M., Evans, S. W., Flinn, S. K., Froehlich, T., Frost, J., Holbrook, J. R., Lehmann, C. U., Lessin, H. R., Okechukwu, K., Pierce, K. L., Winner, J. D., & Zurhellen, W. (2019). Clinical Practice Guideline for the Diagnosis, evaluation, and Treatment of Attention-Deficit/Hyperactivity Disorder in Children and Adolescents. *PEDIATRICS*, 144(4). <https://doi.org/10.1542/peds.2019-2528>

Next HHP Webinar: (for HQIP credit)

4/3/2025 at 5:30-6:30pm

Headache Management – Dr. Engstrom

To view upcoming HHP webinars and future events, please visit our [Hawai'i Health Partners website](#) for the “**Events Calendar**” from the “For Providers” dropdown.

The screenshot shows the top navigation bar of the Hawai'i Health Partners website. The header includes the logo for 'HAWAI'I PACIFIC HEALTH' and 'HAWAI'I HEALTH PARTNERS' with the tagline 'CREATING A HEALTHIER HAWAI'I'. A search icon is located in the top right corner. The navigation bar features several dropdown menus: 'For Providers' (highlighted with a red box and labeled '1.'), 'For Patients', 'Find A Physician', 'About HHP', and 'Physician Login +'. Below the navigation bar, the 'For Providers' section is visible, containing links for 'Why join HHP', 'HPH eConnect Login', and '2024 Program Guide'. The 'Events Calendar' link is highlighted with a red box and labeled '2.'.

HAWAI'I PACIFIC HEALTH | HAWAI'I HEALTH PARTNERS
CREATING A HEALTHIER HAWAI'I

1. **For Providers** ▾

For Patients ▾ Find A Physician About HHP ▾ Physician Login +

For Providers

Why join HHP
HPH eConnect Login
2024 Program Guide

2. **Events Calendar**
Education & CME Credit

What is an ACO?
Telehealth

Thank you for joining us!

- A recording of the meeting will be available afterwards
- Unanswered question?
 - Contact us at info@hawaiihealthpartners.org