ADHD in Adulthood: Appraising Current Controversies

C. Jason Mallo DO

MMC Psychiatry

charles.mallo@mainehealth.org

Disclosure

- I have no actual or potential conflicts of interest in relation to this presentation
- I will be discussing off-label use of nonstimulant medications

Objectives

- Interpret data related to common ADHD controversies
- Recognize characteristic adult ADHD signs and symptoms
- Identify benefits and risks of different ADHD treatments

Controversies

1. Is ADHD a real disorder?
2. Can ADHD onset in adults de novo?
3. Did the DSM5 make it easier to diagnose adult ADHD?
4. Hyperactivity doesn't apply to adults with ADHD, right?
5. Is ADHD a biological disorder?
6. Do other disorders mimic ADHD in adults?
7. Are rating scales accurate?
8. Are stimulants safe?
9. Are stimulants effective in adults with active substance use disorders?
10. Are nonstimulants less useful?
11. Is medication superior to psychotherapy?

Why bother?

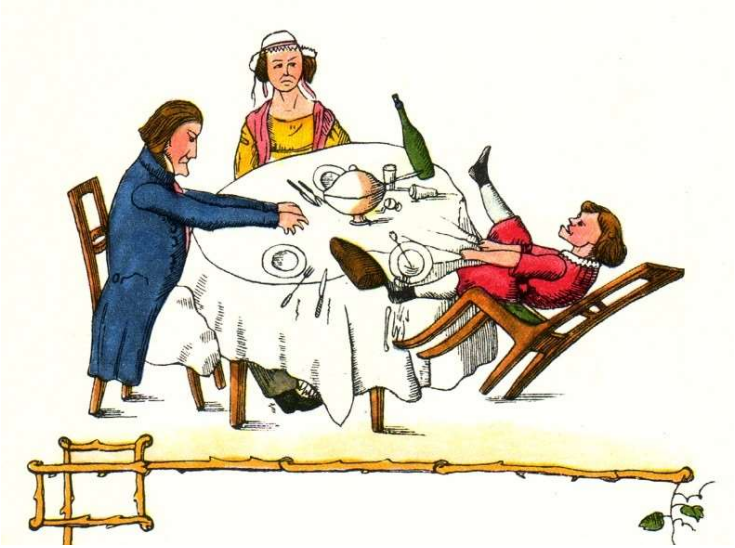
- Between 2007 & 2016, the prevalence of ADHD among adults increased 123%
- 36% of PCPs are not at all confident and only 8% are totally confident diagnosing and managing adult ADHD
- Only 1 in 10 adults with ADHD receives treatment
- Untreated ADHD is associated with a 13-year reduction in life expectancy

Chung W, et al. JAMA Network Open. 2019;2(11):e1914344
Goodman D, et al. Prim Care Companion CNS Disord. 2012;14(4):1-16
Kessler R, et al. Prevalence and Correlates of Adult ADHD: Results from the NCS-R. Am J Psychiatry. 2006; 163: 716-723
Barkley R & Fischer M. J Atten Disord. 2019;23(9):907-923

1. Is ADHD a real disorder?

History of ADHD

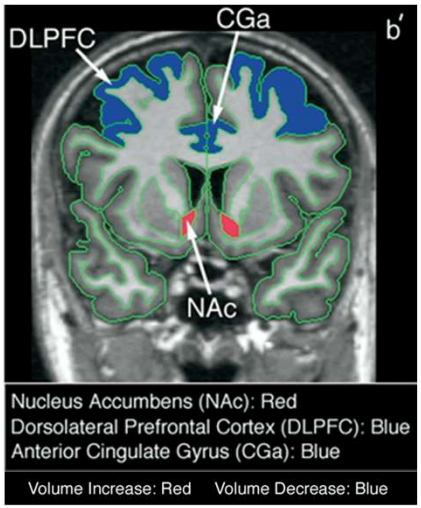
- Early references:
  - 1798: Incapacity of attending
  - 1902: Deficit of moral control
  - 1930: Minimal brain damage
- DSM:
  - 1968: -II Hyperkinetic rxn of childhood
  - 1980: -III ADD with or without H
  - 1987: -III-R ADHD
- Medications:
  - 1937: Benzedrine
  - 1944: Methylphenidate
  - 2001: Atomoxetine



Hoffman H. The Story of Fidgety Philip. Privately Published, 1845

Other reasons why ADHD is a real disorder

- Epidemiology:
  - 50% of childhood cases persist into adulthood
  - Prevalence: 5% of pediatrics and 2.5% of adults
- Heritability is 70-80%
- Neuroimaging



Seidman L, et al. Biol Psychiatry. 2006;60:1071–1080

Kessler R, et al. Am J Psychiatry. 2006;163:716-723
DSM5. APA, Washington, DC, 2013
Faraone S, et al. Biol Psychiatry. 2005;55(11):1313-23

Limitations of calling ADHD a real disorder

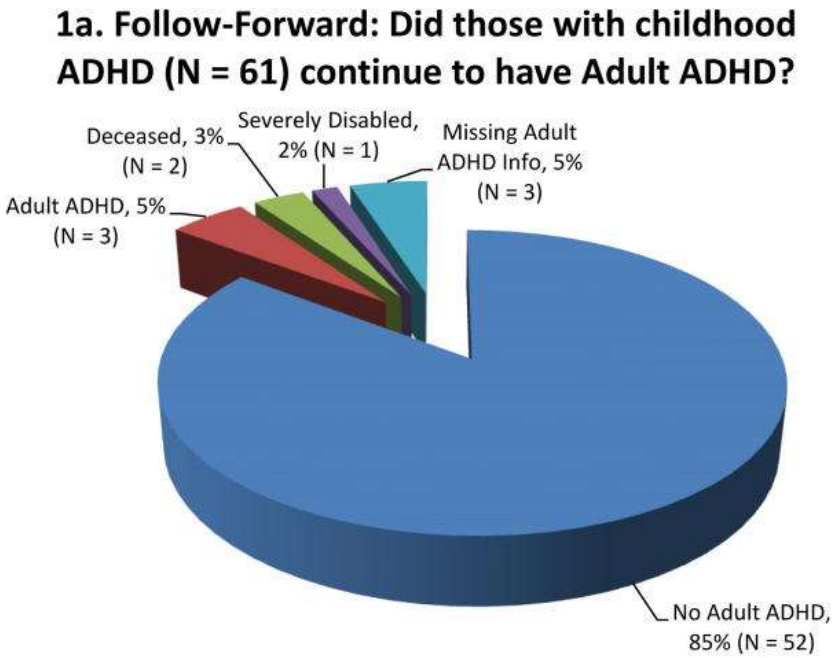
- ADHD is a comprehensible construct, but can falsely imply a known cause and clear treatment
- Calling ADHD a disorder risks placing the problem in a biological context and excluding other factors

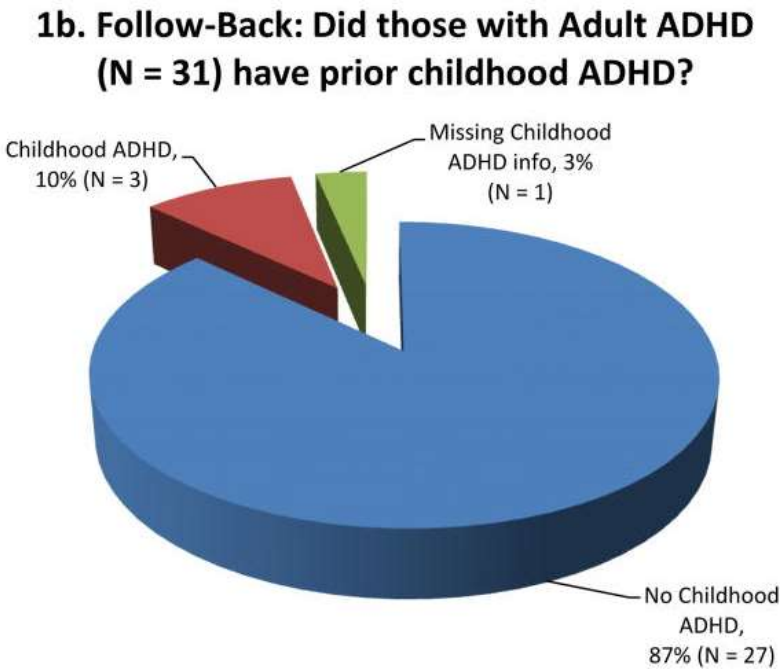
Incidence of ADHD Outcomes by Birth Quarter in the School Year			
Birth quarter	Incidence	Hazard ratio (95% CI)	P value
Diagnosis			
4 (youngest)	2.08	1.36 (1.28-1.45)	<.01
3	2.00	1.31 (1.23-1.40)	<.01
2	1.77	1.15 (1.08-1.23)	<.01
1 (oldest)	1.54	1.00 (reference)	
Stimulant prescription			
4 (youngest)	1.90	1.35 (1.27-1.45)	<.01
3	1.77	1.26 (1.18-1.35)	<.01
2	1.62	1.15 (1.07-1.23)	<.01
1 (oldest)	1.41	1.00 (reference)	

Root et al. JAMA Pediatr. 2019;173(11):1068-1075

2. Can ADHD onset in adults de novo?

Evidence from a longitudinal study





Moffitt et al. Am J Psychiatry. 2015;172:967-977

Reporting sources matter

- When asked, 82% of “normals” admitted inattention & 63% restlessness
- A prospective study found that when blinded examiners used self-report:
  - 3 out of 4 adults retrospectively diagnosed as having ADHD in childhood were false positive
  - Those not diagnosed were correctly identified 99% of the time
- Those w/ & w/o ADHD reported improved attention and decreased restlessness on stimulants

Wong J, et al. Arch of Clin Neuropsych. 1994;9:411-425
Mannuzza S, et al. Am J Psychiatry. 2002;159(11):1882-8
Rapoport J, et al. Arch Gen Psych. 1980;37(8);933-943

3. Did the DSM5 make it easier to diagnose adult ADHD?

DSM5 changes in definition of ADHD

- Examples of how symptoms manifest in adults were added
- Minimum number of inattentive or hyperactive/impulsive symptoms was reduced from 6 to 5 for adults
- Onset of symptoms before age 7 was changed to 12
- “Evidence of impairment” in 2 or > settings was changed to “evidence of symptoms”
- “Clinically significant impairment” was changed to “reduced quality of functioning” in social, academic, or occupational areas
- Autism spectrum disorder is no longer an exclusionary diagnosis

4. Hyperactivity doesn’t apply to adults with ADHD, right?

Hyperactivity/impulsivity in adult ADHD

- Hyperactivity:
  - Fidgety
  - Talks excessively
  - Very active job
  - Overscheduled & overwhelmed
- Impulsivity:
  - Quits jobs
  - Ends relationships
  - Drives too fast
  - Speaks off the cuff
  - Loses temper

Illustration by Hank Ketcham (1920–2001)

Inattention in adult ADHD

- “When any object of external sense, or of thought, occupies the mind in such a degree that a person does not receive a clear perception from any other one, he is said to attend to it” – Sir Alexander Crichton 1798

Types of Attention		
	Definition	Abnormalities
Selective	Conscious act of focusing on a task	Careless mistakes, difficulty listening, losing things, & procrastinating
Sustained	Maintaining attention over time	Difficulty prioritizing, following through on tasks, & with time management

5. Is ADHD a biological disorder?

Thomas Cole, Expulsion from the Garden of Eden, Oil on Canvas, Museum of Fine Arts Boston, 1828

6. Do other disorders mimic ADHD in adults?

Comorbidity may be mimicry

Comorbidity in Adult ADHD	
Disorder	Prevalence
MDD	39.2%
BiPD	44.9%
Dysthymia	56.4%
PTSD	49.9%
Panic D/O	43.8%
GAD	34.4%
Soc anx D/O	41.2%
Alc use D/O	40.2%
Drug use D/O	31.4%

Kessler R, et al. Bio Psych. 2005;57:1442-1451

Ghaemi N. Psychiatry Letter, Sept. 2020

Differential diagnosis

- Only 5% of 260 never-before-diagnosed adults complaining of ADHD met criteria for ADHD when a thorough evaluation was completed

Disorders That Can Mimic ADHD	
Medical disorders	Sleep apnea, sensory impairment, thyroid disorder, diabetes mellitus, anemia, concussion, traumatic brain injury, Lyme disease, lead toxicity, food sensitivity, and medication side effects
Psychiatric disorders	Major depressive disorder, bipolar disorder, panic disorder, social anxiety disorder, generalized anxiety disorder, borderline personality disorder, learning disorder, sleep disorder, and substance use disorder

Harrison A. The Carlat Report Psychiatry. 2017;15(1):1-8
Harrison A & Medd J. Canadian ADHD Resource Alliance Conference, Oct. 2011

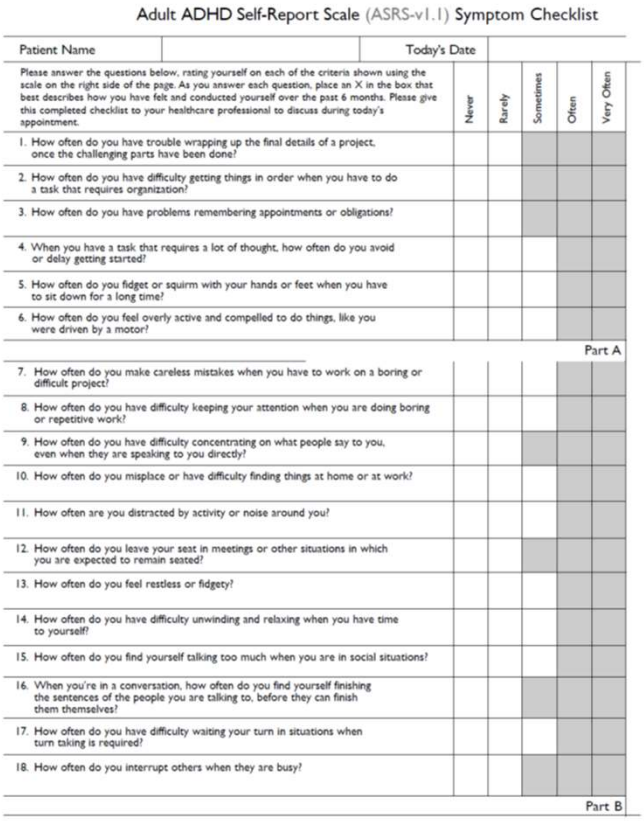
7. Are rating scales accurate?

Rating scales

- May be used to gather info, quantify symptoms, and track course
- No rating scale is superior, but each is unique
- The probability of a positive screen being a true positive is 48-49%, whereas the probability of a negative screen being a true negative is 73-97%
- Pts that faked ADHD had significantly higher rating scale scores

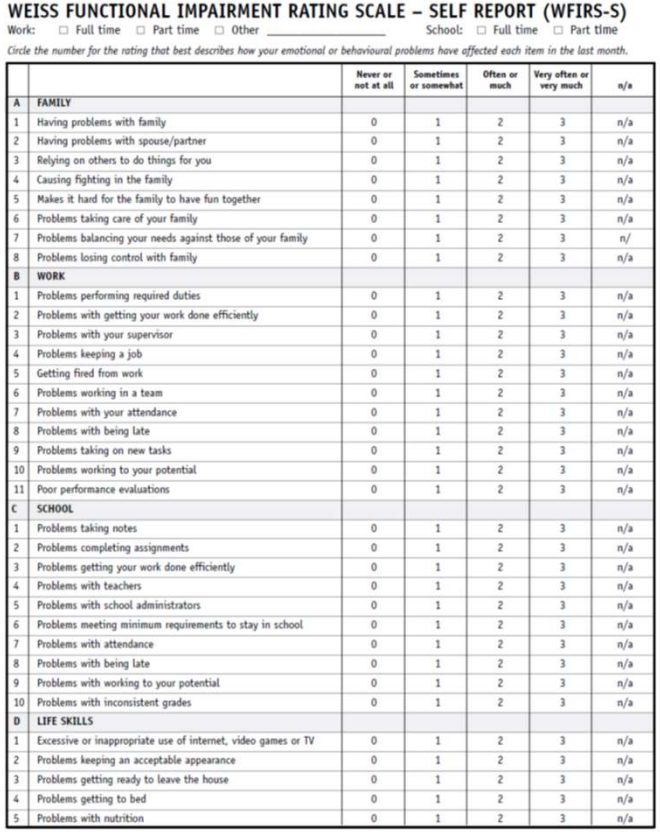
Harrison A, et al. J Attn Disorders. 2016,Jan:1-9
Hines J, et al. J Am Board Fam Med. 2012;25:847-853
Harrison A, et al. Arch Clin Neuropsychol. 2007;22(5):577-88

Two rating scales that supplement each other



Adult ADHD Self-Report Scale (ASRS-v1.1) Symptom Checklist

Patient Name		Today's Date					
Please answer the questions below, rating yourself on each of the criteria shown using the scale on the right side of the page. As you answer each question, place an X in the box that best describes how you have felt and conducted yourself over the past 6 months. Please give this completed checklist to your healthcare professional to discuss during today's appointment.			Never	Rarely	Sometimes	Often	Very Often
1. How often do you have trouble wrapping up the final details of a project, once the challenging parts have been done?							
2. How often do you have difficulty getting things in order when you have to do a task that requires organization?							
3. How often do you have problems remembering appointments or obligations?							
4. When you have a task that requires a lot of thought, how often do you avoid or delay getting started?							
5. How often do you fidget or squirm with your hands or feet when you have to sit down for a long time?							
6. How often do you feel overly active and compelled to do things, like you were driven by a motor?							
							Part A
7. How often do you make careless mistakes when you have to work on a boring or difficult project?							
8. How often do you have difficulty keeping your attention when you are doing boring or repetitive work?							
9. How often do you have difficulty concentrating on what people say to you, even when they are speaking to you directly?							
10. How often do you misplace or have difficulty finding things at home or at work?							
11. How often are you distracted by activity or noise around you?							
12. How often do you leave your seat in meetings or other situations in which you are expected to remain seated?							
13. How often do you feel restless or fidgety?							
14. How often do you have difficulty unwinding and relaxing when you have time to yourself?							
15. How often do you find yourself talking too much when you are in social situations?							
16. When you're in a conversation, how often do you find yourself finishing the sentences of the people you are talking to, before they can finish them themselves?							
17. How often do you have difficulty waiting your turn in situations when turn taking is required?							
18. How often do you interrupt others when they are busy?							
							Part B



WEISS FUNCTIONAL IMPAIRMENT RATING SCALE – SELF REPORT (WFIRS-S)

Work: ☐ Full time ☐ Part time ☐ Other _____ School: ☐ Full time ☐ Part time

Circle the number for the rating that best describes how your emotional or behavioural problems have affected each item in the last month.

		Never or not at all	Sometimes or somewhat	Often or much	Very often or very much	n/a
A	**FAMILY**					
1	Having problems with family	0	1	2	3	n/a
2	Having problems with spouse/partner	0	1	2	3	n/a
3	Relying on others to do things for you	0	1	2	3	n/a
4	Causing fighting in the family	0	1	2	3	n/a
5	Makes it hard for the family to have fun together	0	1	2	3	n/a
6	Problems taking care of your family	0	1	2	3	n/a
7	Problems balancing your needs against those of your family	0	1	2	3	n/
8	Problems losing control with family	0	1	2	3	n/a
B	**WORK**					
1	Problems performing required duties	0	1	2	3	n/a
2	Problems with getting your work done efficiently	0	1	2	3	n/a
3	Problems with your supervisor	0	1	2	3	n/a
4	Problems keeping a job	0	1	2	3	n/a
5	Getting fired from work	0	1	2	3	n/a
6	Problems working in a team	0	1	2	3	n/a
7	Problems with your attendance	0	1	2	3	n/a
8	Problems with being late	0	1	2	3	n/a
9	Problems taking on new tasks	0	1	2	3	n/a
10	Problems working to your potential	0	1	2	3	n/a
11	Poor performance evaluations	0	1	2	3	n/a
C	**SCHOOL**					
1	Problems taking notes	0	1	2	3	n/a
2	Problems completing assignments	0	1	2	3	n/a
3	Problems getting your work done efficiently	0	1	2	3	n/a
4	Problems with teachers	0	1	2	3	n/a
5	Problems with school administrators	0	1	2	3	n/a
6	Problems meeting minimum requirements to stay in school	0	1	2	3	n/a
7	Problems with attendance	0	1	2	3	n/a
8	Problems with being late	0	1	2	3	n/a
9	Problems with working to your potential	0	1	2	3	n/a
10	Problems with inconsistent grades	0	1	2	3	n/a
D	**LIFE SKILLS**					
1	Excessive or inappropriate use of internet, video games or TV	0	1	2	3	n/a
2	Problems keeping an acceptable appearance	0	1	2	3	n/a
3	Problems getting ready to leave the house	0	1	2	3	n/a
4	Problems getting to bed	0	1	2	3	n/a
5	Problems with nutrition	0	1	2	3	n/a

8. Are stimulants safe?

Stimulants are effective for ADHD

- NNT = 2-4
- The response rate was 87% in a crossover study of amphetamine & methylphenidate

Crossroads, Columbia Pictures, 1986

Arnold L. Journal of Attn Disord, 3(4),2000:200-211

Prescribing has outpaced diagnosis

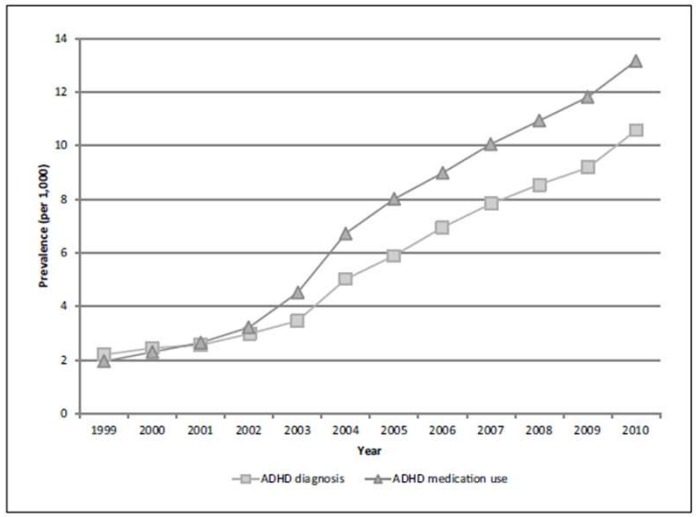
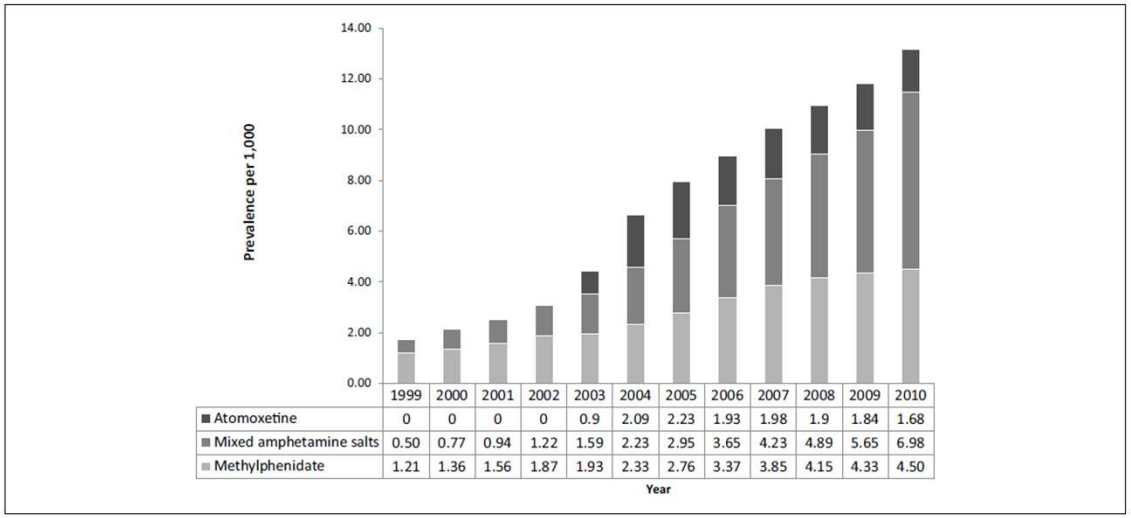


Figure 1. Annual ADHD diagnosis and medication use prevalence among adults.



	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Atomoxetine	0	0	0	0	0.9	2.09	2.23	1.93	1.98	1.9	1.84	1.68
Mixed amphetamine salts	0.50	0.77	0.94	1.22	1.59	2.23	2.95	3.65	4.23	4.89	5.65	6.98
Methylphenidate	1.21	1.36	1.56	1.87	1.93	2.33	2.76	3.37	3.85	4.15	4.33	4.50

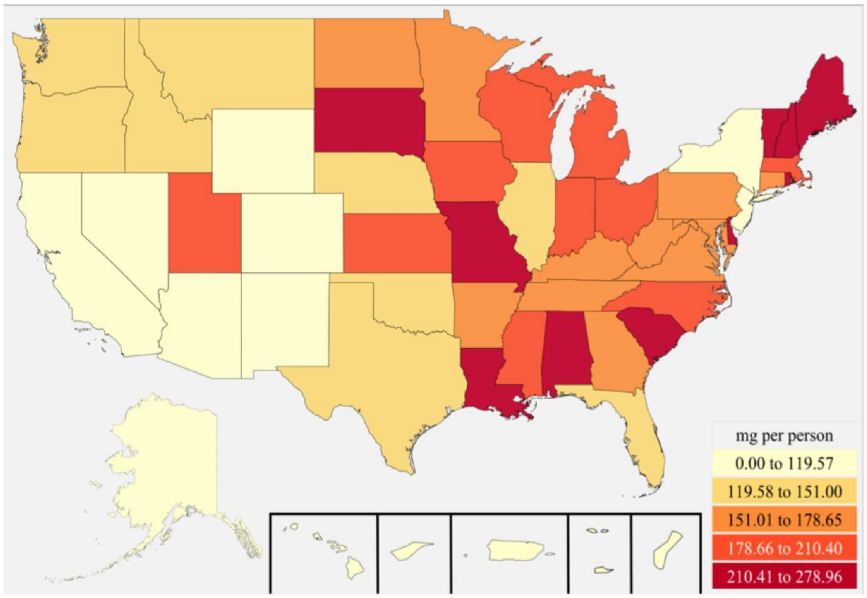
Figure 5. Annual prevalence of methylphenidate, mixed amphetamine salts, and atomoxetine preparations use.

Risks include diversion, misuse, addiction, dependence, cardiovascular events, low weight, growth suppression, psychosis, mania, and neurotransmitter depletion

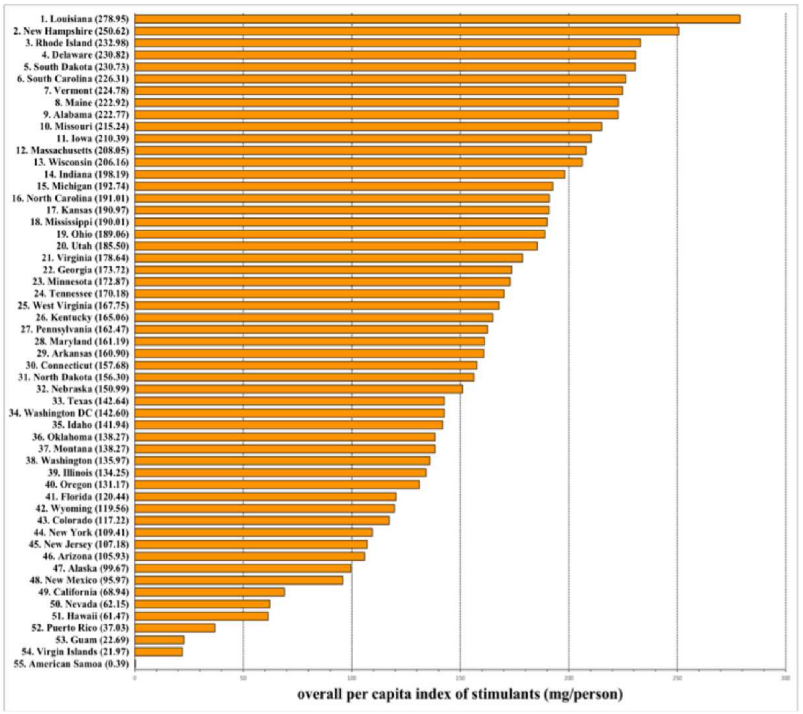
Ziu Y, et al. J of Attn Disorders. 2018;22(2):182-190

Maine ranks in top 10 states for prescribing

S3A Fig. Heat map of per capita (mg/person) of stimulants as reported to the DEA in 2016



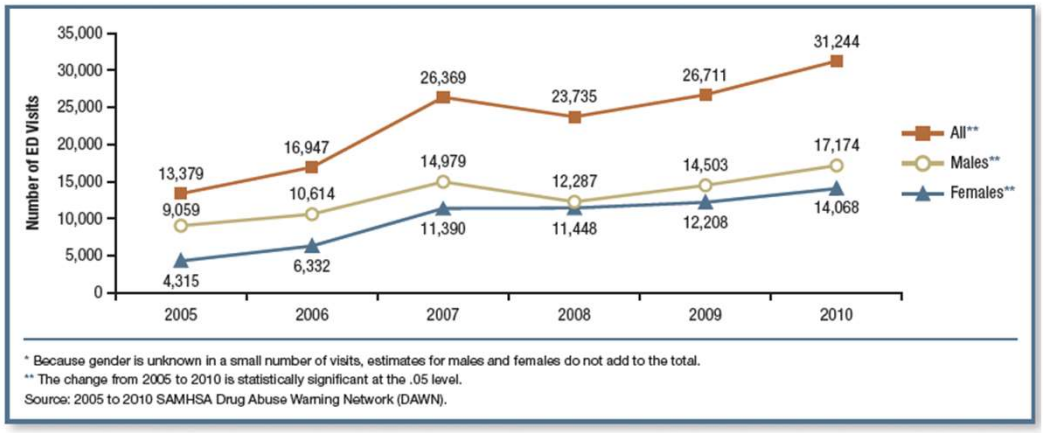
S3B Fig. Per capita (mg/person) of stimulants as reported to the DEA in 2016, ranked in the US and US Territories



Piper B, et al. PLoS ONE. 2018;13(11):e0206100

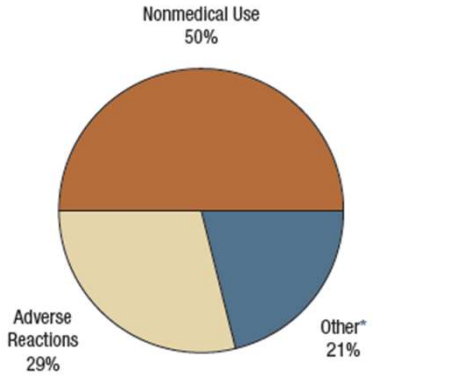
ED visits for stimulant use are on the rise

Figure 1. Emergency Department (ED) Visits Related to Attention Deficit/Hyperactivity Disorder (ADHD) Stimulant Medications, by Gender*: 2005 to 2010



* Because gender is unknown in a small number of visits, estimates for males and females do not add to the total.
** The change from 2005 to 2010 is statistically significant at the .05 level.
Source: 2005 to 2010 SAMHSA Drug Abuse Warning Network (DAWN).

Figure 3. Emergency Department (ED) Visits Related to Attention Deficit/Hyperactivity Disorder (ADHD) Stimulant Medications, by Reason for Visit: 2010



* Includes accidental ingestions and suicide attempts.
Source: 2010 SAMHSA Drug Abuse Warning Network (DAWN).

SAMHSA. The Dawn Report. January 24, 2013:1-5

9. Are stimulants effective in adults with active substance use disorders?

Stimulants for dual diagnosis

- 9 RCTs on stimulants for adult ADHD and current SUD (including cocaine, amphetamine, opioid, alcohol, and cannabis use disorders)
- No overall improvement of SUD or ADHD
- However, there were 2 exceptions:
  - Methylphenidate SR (up to 180 mg/day) x 24 weeks for amphetamine addicted men recruited while in prison
  - Mixed amphetamine salts ER (60-80 mg/day) x 13 weeks for cocaine use disorder
- No worse outcomes for substance use or evidence of diversion

Schubiner H, et al. Exp Clin Psychopharmacol. 2002;10(3):286-294
Riggs P, et al. JAACAP. 2004;43:420-429
Carpentier P, et al. Addiction. 2005;100:1868-1874
Levin F, et al. Drug and Alc Dependence. 2006;81:137-148
Levin F, et al. Drug and Alc Dependence. 2007;87:20-29
Konstenius M, et al. Drug and Alc Dependence. 2010;108:130-133
Riggs P, et al. JAACAP. 2011;50:903-914
Konstenius M, et al. Addiction. 2014;109:440-449
Levin F, et al. JAMA Psychiatry. 2015;72:593-602

10. Are nonstimulants less useful?

Nonstimulants are effective too

- Nonstimulants are a heterogenous group of medications that include atomoxetine, viloxazine, bupropion, desipramine, guanfacine, & clonidine
- NNT = 5-7
- Atomoxetine and viloxazine are FDA approved in adults
- Advantages include less risk of misuse and diversion, their effects last all day, you can prescribe refills, and they can target noncore ADHD symptoms, such as depression, anxiety, and irritability

11. Is medication superior to psychotherapy?

Lessons from the MTA study

- 14-month NIMH funded RCT of treatment strategies for ADHD
- 579 children (7-10 years old) with ADHD were randomized into 4 groups: medication, combo medication and therapy, therapy only, and routine care
- Results showed stimulants were more effective than therapy and routine care
- Secondary analysis showed combined treatment was more effective for patients with comorbidity and noncore ADHD symptoms
- Plus, those in combined treatment used 20% lower doses of stimulants

MTA Cooperative Group. Arch Gen Psychiatry. 1999;56:1073-1086

Lessons from the MTA study continued

- After the original study, the MTA transitioned into an observational follow-up of the original group (approx. 85%) plus a control group
- Between 14 months and 3 years from baseline the effects of stimulants faded, but those of therapy remained
- At 16 years those who consistently or inconsistently used stimulants were not any better off than those who did not
- Also, those prescribed stimulants were shorter, 4.0 cm with consistent use and approx. 2.0 cm with inconsistent use

MTA Cooperative Group. Pediatrics. 2004;113(4):754-761
Jensen P, et al. JAACAP. 2007;46(8):989-1002
Swanson J, et al. J Child Psychol Psychiatry. 2017;58(6):663-678

Conclusion

- It is important to know where you stand on ADHD in adulthood
- Key principles of assessment/management include:
  - There are no easy answers or quick fixes
  - ADHD is a neurodevelopmental disorder w/ biopsychosocial components
  - Diagnosis depends on a thorough history, ruling out other causes, use of an informant, and rating scales
  - An individualized treatment plan with functional outcomes is needed
  - Multiple useful treatments are available

Thank You

Any Questions?