Treatments for ADHD With and Without Co-Occurring Conditions

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ADHD is fundamentally a chemical problem

Most effective treatment is to change the chemistry with medication

Unless the problematic chemistry is changed, other interventions are not likely to be very effective
2 crucial chemicals: (dopamine, norpinephrine)

- control most of functions impaired in ADHD
- Brain of person with ADHD makes these chemicals, as does everyone else
- but does not release & reload effectively → control messages often not connecting
- For 80% of those with ADHD medications improve this problem.
How do ADHD Impairments of EF Usually Respond to Medication?

- This wide range of cognitive impairments responds to medication treatment in 70-90% of cases in children, adolescents and adults.
- Symptom improvement varies from modest to very dramatic.
- Adverse effects are usually transient, not significant.
Set Realistic Expectations for Tx Medications do not cure ADHD!

- Cannot realistically promise “there will be no problematic effects” for any medication for any disorder.
- Cannot realistically promise that medication will effectively treat ADHD. ~80% success rate w/stims
- Close collaboration with prescriber is essential for “fine-tuning”
**Stimulant Medications**

- **Amphetamine**
  - dextroamphetamine (Dexedrine): 4-6 hours
  - d, l amphetamine (Adderall): 4-6 hours
  - Extended release (Adderall-XR) 8-10 hours
  - Lisdexamfetamine (Vyvanse) 10-12 hours

- **Methylphenidate**
  - Ritalin: 4 hours
  - Concerta: triphasic, 10-12 hours
  - Metadate CD: biphasic, 8 hrs
  - Focalin (d -isomer) 4 hours
  - Focalin-XR 8 hours
  - Ritalin-LA (biphasic) 6-8 hours
Stimulant Medications for ADHD

- Demonstrated safe and effective
- Often do not follow mg/kg
- Effective dose not based on age, wt or severity of sx
- Require titration and monitoring to “fine tune” to:
  - individual sensitivity
  - time frames for schedule and tasks
Toward a New Understanding of Attention-Deficit Hyperactivity Disorder Pathophysiology: An Important Role for Prefrontal Cortex Dysfunction

Time Frames and Rebound

If sustained feeling/acting excessively:
- “wired” or racy
- irritable
- serious, loss of “sparkle”

during the time dose is active, dose is probably too high.

If these effects occur as med is wearing off, problem is more likely to be “rebound”, ie dropping too fast.
DEA: Prescriptions for 3 months

- If permitted under state law, federal regulations now allow multiple prescriptions for stimulants to be issued on the same day, for up to a 90-day supply.

- Each prescription must list all the required information and be signed and dated on the date it is issued.

- Each prescription (other than the first) must have instructions stating the earliest date on which it may be filled.

- If state law is more restrictive, the state law applies.

Vyvanse (lisdexamfetamine)

- prodrug (not bioavailable pre-ingestion)
- active ingredient = dextroamphetamine
- once daily dosing (duration 10-12 hrs)

Dosing:
30 mg Vyvanse = 10 mg ADRL-XR
50 mg = 20 mg ADRL-XR
70 mg = 30 mg ADRL-XR

About 1/3 of total Vyvanse dose = d-amphetamine
# Medications Approved for ADHD: Nonstimulants

<table>
<thead>
<tr>
<th>Medication</th>
<th>Starting dose</th>
<th>Target dose*</th>
<th>Usual daily dosing</th>
<th>Duration of effect</th>
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</thead>
<tbody>
<tr>
<td><strong>Norepinephrine reuptake inhibitor</strong></td>
<td></td>
<td></td>
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<tr>
<td>Atomoxetine (Strattera) children &lt;70 kg</td>
<td>0.5 mg/kg/d</td>
<td>1.2 mg/kg/d</td>
<td>Once</td>
<td>Up to 24 hours</td>
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<td><strong>Alpha-2a receptor agonist</strong></td>
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<td>Guanfacine (Intuniv) children and adolescents†</td>
<td>1 mg/d</td>
<td>1 to 4 mg/d</td>
<td>Once</td>
<td>About 12 hours</td>
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*May exceed FDA-approved dose.
†Newly FDA-approved.

Comparative Study of ATX vs OROS

- 492 patients with ADHD (6-16 yrs) randomized to ATX (0.8-1.8 mg/kg/d) OROS (18-54 qd) or PBO for 6 wks
- Response (≥40% sx improvement)
  - ATX: 45%  OROS: 56%  PBO: 24%
  - Of 70 Non-responders to OROS → 43% +
  - Of 69 Non-responders to ATX → 42% +

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Boundaries between ADHD & other disorders?

“Many deficits of ADHD are shared with other disorders and some differences between ADHD and other disorders may be quantitative rather than qualitative”

(Banaschewski, et al, 2005)

e.g. “irritability”

ADHD (+)
depression (++)
bipolar (+++)

Mick, et al, 2005)
### Anxiety & Depression with ADHD

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<th>Children</th>
<th>Adults</th>
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<tbody>
<tr>
<td>Anxiety</td>
<td>9%-34%</td>
<td>28%-47%</td>
</tr>
<tr>
<td>Depressive</td>
<td>14-22</td>
<td>38-63</td>
</tr>
<tr>
<td>Disruptive Mood</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regulation</td>
<td></td>
<td>???</td>
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Many individuals have more than 1 with ADHD

Treat most acute problem first (suicidal, veg, panic)

Stims may worsen or alleviate anxiety/irritability

Watch “attentional bias” & working memory in both
Falling asleep, awakening, daytime alertness

- may be primary, or secondary to other dx: MDD, anx, substance abuse, sleep apnea
- late aft stim dose may cause or help dfa
- assess sleep schedule and sleep “hygiene”
  consider anxiety, breathing problems, OSA

dfa: Melatonin, Benadryl, clonidine, Klon
daw: in-bed stim dose 1 hr before get-up; small dose of Daytrana MPH patch during night
## Bipolar Disorder with ADHD

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<th>Adults</th>
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<td>Bipolar</td>
<td>2-21%</td>
<td>3-17%</td>
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Estimated rates vary widely depending on operational definition, especially re: requiring episodicity.

Involves not only ability to regulate emotions, but also to:
- a) inhibit and manage actions
- b) manage arousal

If level of arousal is chronically too high or exacerbated by stimulants, guanfacine or mood stabilizers may be preferable. If needed, stimulants may be added when mood/arousal are stabilized.
<table>
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<td>Chronically angry/irritable;</td>
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<tr>
<td>Defiant, headstrong; Vindictive</td>
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<tr>
<td>Incidence 35-50% (usually combined type ADHD)</td>
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<tr>
<td>May be quick/impulsive or sullen/sustained</td>
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<tr>
<td>Not just feelings, overt verbal/physical actions</td>
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<tr>
<td>Onset usually ~ 12 yrs; Duration ~ 6 years</td>
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<tr>
<td>&gt;70% not CD by 18 yrs; Most never dx CD</td>
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<tr>
<td>May respond to stims and/or guanfacine</td>
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OCD with ADHD

Normal obsessions/compulsions vs disorder (OCD in 10-30% of ADHD v 4%)

- obsessions: variable “overfocusing”
- compulsions: rituals/ perseverance”
- Excessive perfectionism, e.g. in writing
- stims may worsen
- SSRI useful for OCD, not for ADHD
- Stims + SSRI or clomipramine
- and/or behav tx for OCD
Substance Use Disorders with ADHD

Odds ratio for SUD in adults with ADHD

- Nicotine: 2.4-2.8
- Alcohol: 1.4-1.7
- Marijuana: 1.5-2.3
- Cocaine: 2.05
- Any SUD: 2.6-3.4

ADHD meds alone do not alleviate SUD
Childhood med tx for ADHD may reduce risk
Education & 12 Step Programs
“clean” before med treatment: How long??
“Abstinence” vs “Harm Reduction”
rehab vs outpatient relapse prevention
Autism Spectrum Disorders with ADHD

- 20-50% of those with ADHD have ASD
- If signif. ADHD sx in ASD, consider ADHD tx
- significant social impairment (poor in: empathy, non-verbal communication, developing friendships); pragmatic language; all-absorbing interest
- spectrum of sx severity & cognitive abilities
- need school supports
- social skills instruction
- Stimulants->ADHD sx (titrate cautiously)->ATX
- ?SSRI for OCD, anxiety
Efficacy of Non-Pharmacological Txs shown in reviews & meta-analyses

- Restricted elimination diet
- Artificial food color exclusion
- Free fatty acid supplementation
- Cognitive training
- Neurofeedback
- Behavioral interventions

(Nigg, 2012; Bloch, 2011; Markomichali, 2009; Arns, 2009; Fabiano, 2009)
Meta-analysis Findings

Limitations of previous meta-analyses:

- Non-randomized designs
- Non-ADHD samples or outcome measures
- Estimates of efficacy are based on unblinded assessments, often by persons invested in that treatment
“Free fatty acid had small beneficial effects on ADHD sx while elimination of food coloring helped only pts w/food sensitivities”

“Evidence for value of neurofeedback, cognitive training, and behavioral interventions is limited to unblinded ratings by individuals likely to have investment in tx success”
Reviews of CogMed Efficacy Claims
Melby-Lervag, 2013; Hulme, 2012; Shipstead 2012)

- “Working memory training has positive benefits on tasks similar to those trained…but there is no evidence of transfer to other less directly related tasks.”

- “There is no good evidence that the CogMed working memory training program is effective…as an effective treatment for ADHD”
Cognitive Behavioral Treatments for:

Defensive attitudes about self & others:

- “Everyone expects too much from me.”
- “I may seem smart, but I’m really stupid.”
- “High goals just bring disappointment.”
- “It’s not worth trying; the world is unfair.”
- “I’m just destined to be a loser.”

These attitudes have cognitive & emotional aspects
"Pills Don’t Teach Skills"
Remedial instruction or Coaching for:

Skill deficiencies that persist
- Study skills and academic deficits
- Organization of ideas and stuff
- Priority setting & time management
- Budgeting income and spending
- Monitoring self in conversations

Levels of Care for ADHD tailor to pt & family needs

- Comprehensive assessment for ADHD, comorbid disorders, and context
- Family Education re: ADHD and its tx
- PE, “fine-tuning” of meds, monitoring
- Parent support & behavior mgmnt training
- Accommodations/Interventions in school
- Psychotherapy: individual, family
My Website

- To see more info
- To download articles
- To sign up for free email newsletter

www.DrThomasEBrown.com
Books by Thomas E. Brown, Ph.D.

- “Smart but Stuck: Emotions in Teens and Adults with ADHD” – 2014
- “A New Understanding of ADHD in Children and Adults: Executive Function Impairments” – 2013
- “Attention Deficit Disorder: The Unfocused Mind in Children and Adults” - 2005