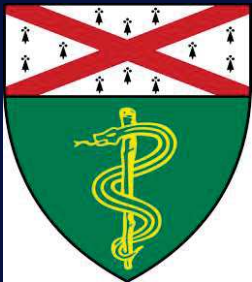


# Treatments for ADHD With and Without Co-Occurring Conditions

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# A Chemical Problem

- ◆ 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, noripinephrine)

- ◆ 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

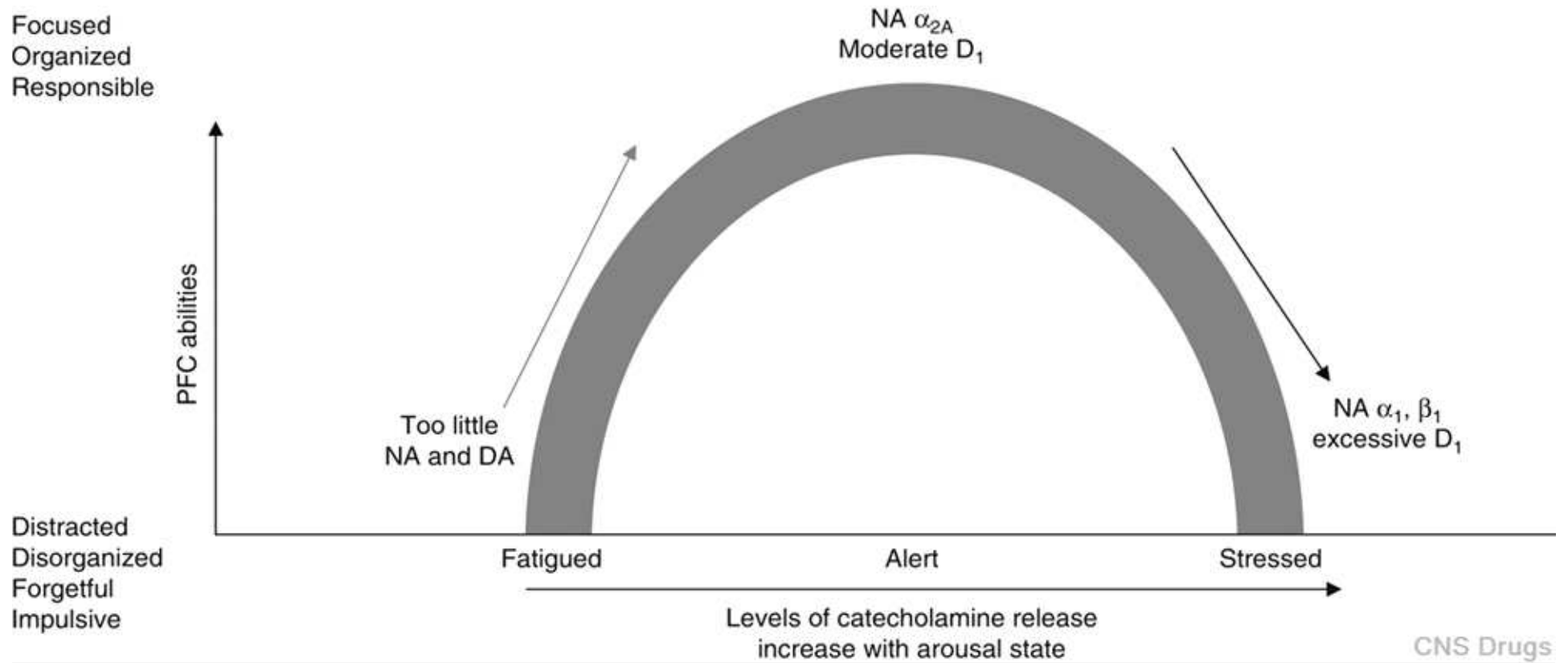
- dextroamphetamine (Dexedrine): 4-6 hours
- d, l amphetamine (Adderall): 4-6 hours
- Extended release (Adderall-XR) 8-10 hours
- Lisdexamfetamine (Vyvanse) 10-12 hours

## ◆ 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

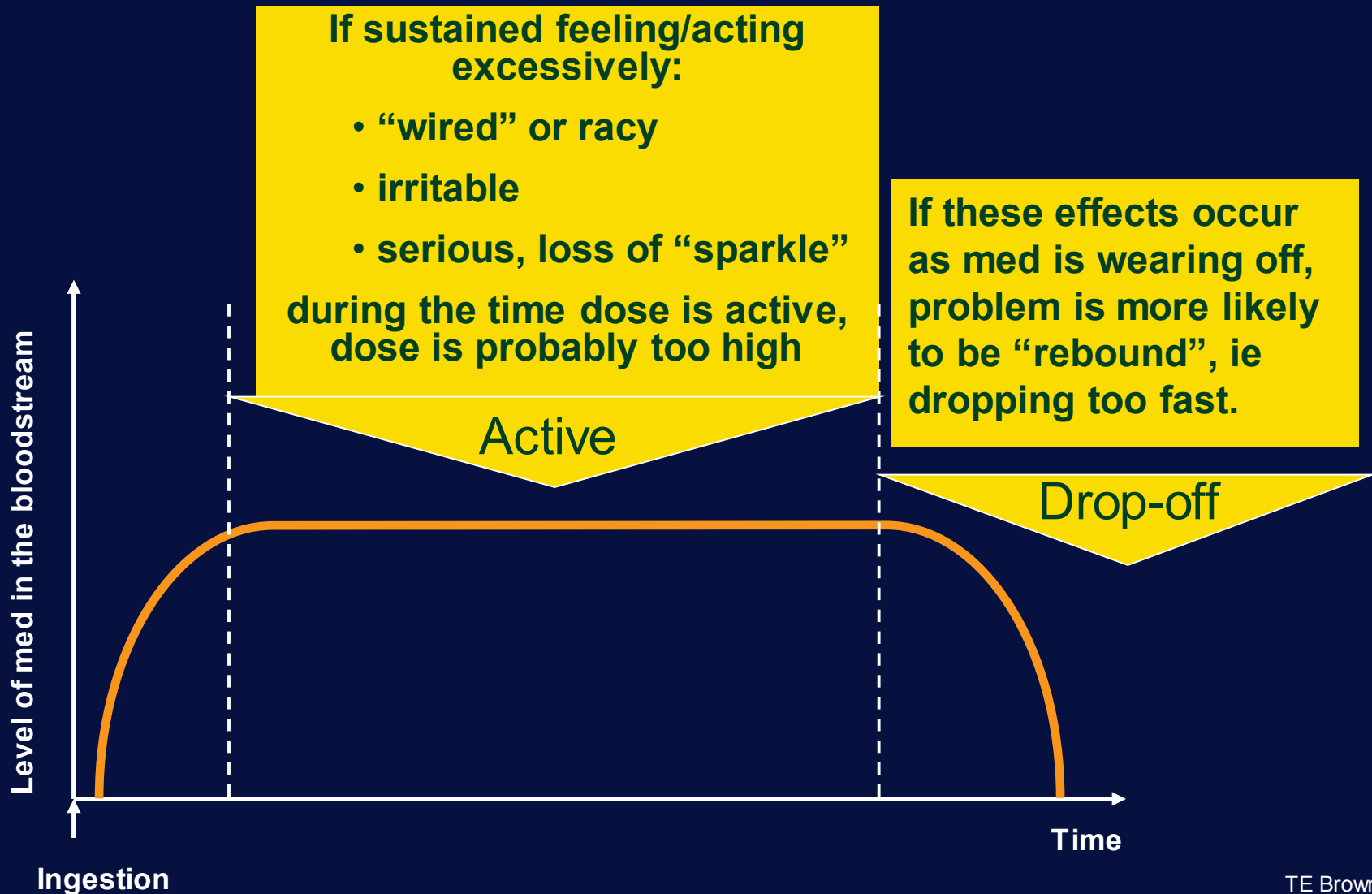
- ◆ Demonstrated safe and effective
- ◆ Often do not follow mg/kg
- ◆ Effective dose not based on age, wt or severity of sx
- ◆ Require titration and monitoring to “fine tune” to:
  - individual sensitivity
  - time frames for schedule and tasks



[Toward a New Understanding of Attention-Deficit Hyperactivity Disorder Pathophysiology: An Important Role for Prefrontal Cortex Dysfunction](#) Arnsten, Amy F.T. **CNS Drugs**. 23():33-41, Aug 1, 2009.



# Time Frames and Rebound



## 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

Medication	Starting dose	Target dose*	Usual daily dosing	Duration of effect
<b>Norepinephrine reuptake inhibitor</b>				
Atomoxetine (Strattera) children <70 kg	0.5 mg/kg/d	1.2 mg/kg/d	Once	Up to 24 hours
<b>Alpha-2a receptor agonist</b>				
Guanfacine (Intuniv) children and adolescents <sup>†</sup>	1 mg/d	1 to 4 mg/d	Once	About 12 hours

Pliszka SR et al. *J Am Acad Child Adolesc Psychiatry*. 2007;46(7):894-921.

[http://www.aacap.org/galleries/PracticeParameters/JAACAP\\_ADHD\\_2007.pdf](http://www.aacap.org/galleries/PracticeParameters/JAACAP_ADHD_2007.pdf). Accessed September 19, 2008

Sallee et al. *J Am Acad Child Adolesc Psychiatry*. 2009;19(3):215-226. Sallee et al. *J Am Acad Child Adolesc Psychiatry*. 2009;48(2):155-165.

# 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 ( $\geq 40\%$  sx improvement)
- ◆ **ATX**: 45% **OROS**: 56% **PBO**: 24%
- ◆ Of 70 Non-responders to OROS  $\rightarrow$  43% +
- ◆ Of 69 Non-responders to ATX  $\rightarrow$  42% +

(Newcorn, Kratochvil, et al, 2008)

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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

	Children	Adults
<b>Anxiety</b>	9%-34%	28%-47%
<b>Depressive</b>	14-22	38-63

## Disruptive Mood Regulation ???

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



# ADHD + Sleep/Arousal Probs

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

	Children	Adults
Bipolar	2-21%	3-17%

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

# Oppositional Defiant Disorder with ADHD

Chronically angry/irritable;

Defiant, headstrong; Vindictive

Incidence 35-50% (usually combined type ADHD)

May be quick/impulsive or sullen/sustained

Not just feelings, overt verbal/physical actions

Onset usually ~ 12 yrs; Duration ~ 6 years

>70% not CD by 18 yrs; Most never dx CD

May respond to stims and/or guanfacine

# OCD with ADHD

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

- ◆ obsessions: variable “overfocusing”
- ◆ compulsions: rituals/ perseveration”
- ◆ 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 colorr 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



# Meta-analysis Findings

(Sonuga-Barke, et al, 2013)

- ◆ “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**

Solanto (2011) Cognitive Behavioral Therapy  
for Adult ADHD: Targeting EF

# 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](http://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
- “**ADHD Comorbidities:** Handbook for ADHD Complications in Children and Adults” – 2009
- “**Attention Deficit Disorder:** The Unfocused Mind in Children and Adults” - 2005

