Clinic-based Management of Attention Deficit Hyperactivity Disorder in Adults

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Dr. Surman’s Lifetime Disclosures

• Speaking / Education
  McNeil, Janssen, Janssen-Ortho, Novartis, Shire and Reed/ MGH Academy (funded by multiple companies)

• Consulting
  McNeil, Nutricia, Takeda, Shire, Somaxon, Ironshore, Rhodes

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Overview
FAST MINDS – THE COMMON BURDENS OF ADHD

F – Forgetful
A – Achieving below potential
S – Stuck in a rut
T – Time challenged

M – Motivationally challenged
I – Impulsive
N – Novelty seeking
D – Distractible
S – Scattered
ADHD
Historical Timeline

- Minimal Brain Damage
- Hyperactive Child Syndrome
- Efficacy of Amphetamine
- Hyperkinetic Reaction of Childhood (DSM-II)
- Attention Deficit Disorder + or - Hyperactivity (DSM-III)
- ADHD (DSM-IV)
- ADHD (DSM-V)

Key Dates:
- 1930
- 1937
- 1950
- 1968
- 1980
- 1987
- 1994
- 2014
Highly prevalent neurodevelopmental disorder beginning before age 12 years

- Pediatric US 4-10%; European 2-7%
- Often lasts into adulthood with 2-5% prevalence

Worldwide ADHD Prevalence in Adults

- Overall, rates of ADHD across the lifespan are not increasing over the last 30 years
  - 154 studies meta-analyzed from the past 3 decades
  - No evidence of increasing prevalence when standardized diagnostic approaches are used

- Far fewer studies have focused on adults

- More than 11 thousand people screened aged 18-44 years in ten countries in the Americas, Europe and Middle East

- They estimated adult ADHD prevalence to average 3.5% with a range of 1.2%-7.3%, with lower prevalence in lower-income countries (1.9%) compared with higher-income countries (4.2%)

Ethnic & Minority Disparities

Early Childhood Longitudinal Study, Kindergarten through 8th grade; 1998–1999 through 2007

- By 8th grade, ADHD diagnosis in:
  - 7% of white children
  - 3% of African American,
  - 4.4% of Hispanic children
  - 3.5% of children of other races/ethnicities.

- Risk of an ADHD diagnosis higher for
  - boys, being raised by an older mother, English-speaking household, engaging in externalizing problem behaviors

• Morgan et al, Pediatrics, 2013
Parent-Reported ADHD Prevalence On Rise in Certain Groups

Between 2003 and 2011, the adjusted prevalence of parent-reported ADHD increased 42% for whites, 66% for blacks, 79% for Hispanics, and 31% for other race/ethnic groups.

Phone survey regarding mention of ADHD by a doctor.

Prevalence Rates of Psychiatric Disorders in Adults

- Major Depression: 6.6%
- Adult ADHD: 4.4%
- GAD: 3.0%
- Bipolar Disorder: 2.0%
- Schizophrenia: 1.0%

ADHD etiology

- The cause(s) and risk factors for ADHD include
  - Genetics
  - Brain injury;
  - Environmental exposures (e.g., lead)
  - Alcohol and tobacco use during pregnancy
  - Premature delivery
  - Low birth weight

http://www.cdc.gov/ncbddd/adhd/facts.html
Delayed Brain Morphology in ADHD

Cortical Thinning in ADHD

Cortical Thinning of the Cingulo-Frontal-Parietal Attention Network in Adults with ADHD

Makris, Biederman, Valera et al *Cerebral Cortex*
Anterior Cingulate (Cognitive Division) Fails to Activate in ADHD

Normal Controls  ADHD

Figure 3a. $y = +21 \text{ mm}$
Developmental Phases

Clinical presentation of ADHD changes across development

External Supports

Environmental Demands

More

Less

Child  Teens  Young Adult  Older Adult

Inattention

Hyperactivity

Higher Risks by Age for Untreated ADHD

- Smoking
- Sex/Pregnancy
- H.S. drop-out
- College drop-out
- Work Issues/Loss of Job
- Marital problems/Divorce

Age 11 13 15 17 19 22+

- Substance Use
- Driving problems

Impairment Patterns Vary

• ADHD = relative deficit in ability to engage
  - Worsens impact of relative weaknesses
    (eg. learning disabilities, social skill deficits)
  - Vulnerable to external or internal distractions
    (eg. busy workplace, self-conscious thoughts, structured opportunities (healthy or not))
Navigating ADHD & SUD
SUD is common in adults with ADHD

17 to 45% of adults with ADHD have co-occurring alcohol use disorder

9 to 30% of adults with ADHD have a co-occurring drug use disorder

Wilens 1995
ADHD is common in SUD populations

Van Emmerik-Van Oortmerssen 2012 of 29 studies

23% ADHD
Screen for + define SUD comorbidity

On a weekly or more regular basis

Social Use
Infrequent and in social settings

Regular Use
Emergence of a “pattern of use”

Misuse
Impaired control
Social impairment
Risky Use
Tolerance, withdrawal

Use Disorder
Validated Screening Tools

- National Institute of Alcohol and Alcoholism screening questions
- CRAFFFT
- Screening to Brief Intervention (SB2I)
- Alcohol Use Disorders Identification Test (AUDIT-C)
- Single Question for Drug Use
- Alcohol, Smoking, and Substance Involvement Screen Test (ASSIST)
- NIDA Quick Screen
- Drug Abuse Screen Test (DAST)
ADHD and SUD

Adults with both diagnoses may on average have:

– Earlier onset of SUD
– A longer course of SUD
– Greater SUD severity with more relapses
– Greater difficulty remaining abstinent

Do No Harm: ADHD & SUD

• Prioritize SUD over ADHD – 12 step programs; CBT; motivational interviewing

• SUD helps people not tell the truth to themselves, let alone you - third party reports, tox screens, and team treatment may identify unhealthy relationships with substances

• Consider if risk of treating outweighs predictable benefit
Why is there concern about prescribing stimulants to young adults?

Past year alcohol dependence

Highest risk period for developing a SUD—young adults!
Non Medical Use of Stimulants—General Population

<table>
<thead>
<tr>
<th>Age</th>
<th>Percent using in the past month</th>
</tr>
</thead>
<tbody>
<tr>
<td>12 to 17 years</td>
<td>8.0%</td>
</tr>
<tr>
<td>18 to 25 years</td>
<td>21.5%</td>
</tr>
<tr>
<td>26 years+</td>
<td>4.8%</td>
</tr>
</tbody>
</table>

Stimulant misuse relatively uncommon

NSDUH 2013

Illicit Drugs
Psychotherapeutics
Pain Relievers

www.mghcme.org
Non Medical Use of Stimulants—College Students

Percentage of nonmedical stimulant use

- Teter 2006
- McCabe 2014
- McCabe 2005

Legend:
- Lifetime Use
- Past Year use
• Ideal SUD patient for ADHD mgmt:
  – Robust evidence of life-adaptation limiting ADHD
  – solidly in early recovery; no past misuse of Rx / stimulants
  – seeking treatment for healthy reasons

• Tapering off medicine once or twice a year intermittently is a good way to re-evaluate ongoing need + adequacy of non-medication compensation to manage impairment

• Tolerance to effect is reported with stimulants, may contribute to SUD - taking 1-2 day breaks on weekends preferable to dose escalation.
Misuse & Abuse of Stimulants

• Can’t predict who will misuse stimulants, or develop addiction, but past history of SUD concerning; misuse common in some young adult populations.

• Nonprescribed use: much more common than it used to be – challenging to determine if normative or warning sign for bad Rx outcome; Alliance around following medical guidelines essential to treatment relationship.

• Treating children with ADHD may reduce or leave unchanged the risk of SUD in adolescence – risk may resurge by adulthood

• Little ADHD symptom reduction with prescriptions during treatment in presence of SUD

• See Zulauf et al et al. Curr Psych Reports, 2014
It is important to stabilize the SUD before initiating treatment for ADHD

• Generally start with non stimulant medications for treatment of ADHD in people with continued substance use and/or early sobriety

• Consider setting and population-specific policies for diagnosis and treatment monitoring e.g. shorter prescriptions, more frequent visits, random pill counts.

• Consequences of missed visits, positive tox screen deviation from agreed dosing plan should be clear.
Risk for misuse of stimulants with long acting stimulants

Spencer 2006
Red Flags It’s the Wrong Pharmacology

• Dose escalation over time
• “feeling better”…”better energy”…”better mood”
• (vs cognitive enhancement description)

• Clinical Intuition
  • Patient suspiciousness, defensiveness
  • Strong/emphatic desire for dose escalation
  • Excessive concern about running out
  • Including to avoid withdrawal states

• Third party concerns – be open to reports from family/parents of young adults
Diagnosing ADHD
The 4 Main Criteria To Diagnose DSM 5 ADHD

5 / 6 inattentive or impulsive/hyperactive symptoms producing impairment

Symptoms present since age 12

Symptoms impair
  (school, work, home / self care)
  *** One setting impaired? Consider other cause…***

Not explained by another disorder
The 4 Tasks of Diagnosis

Are sufficient presentation symptoms met?

What is their longitudinal course?

Are two or more roles impaired?

Is impairment due to another condition?
DSM-V Symptoms of Inattention

5 (adult) 6 (kids) of the following often apply:

- Careless mistakes
- Difficulty sustaining attention
- Poor listening
- Leaves tasks unfinished
- Difficulty organizing
- Avoids tasks requiring sustained attention
- Loses things
- Easily distracted
- Forgetful
DSM-IV Symptoms of Hyperactivity/Impulsivity

5 (adult), 6 (kids) of the following often apply:

- Fidgeting
- Inability to stay seated
- Moving excessively (restlessness)
- Difficulty doing quiet activities
- “On the go”
- Talks excessively
- Blurts out answers
- Difficulty awaiting turn
- Interrupting/intruding
Gathering clinical information to make diagnosis varies based on developmental level; most adult patients rely on self-report; efforts must be made to gather collateral info as much as possible.

<table>
<thead>
<tr>
<th>AGE:</th>
<th>7</th>
<th>12</th>
<th>18</th>
<th>25</th>
<th>32</th>
</tr>
</thead>
<tbody>
<tr>
<td>Child</td>
<td>Teacher</td>
<td>Adolescent</td>
<td>Self</td>
<td>Parent</td>
<td>Grandparent</td>
</tr>
<tr>
<td></td>
<td>Parent</td>
<td></td>
<td>Teacher</td>
<td>Self</td>
<td>Grandparent</td>
</tr>
<tr>
<td></td>
<td>Self</td>
<td></td>
<td>Parent</td>
<td>Spouse/Partner</td>
<td>Friend</td>
</tr>
</tbody>
</table>

Behavioral Observation        Self Report

Primary source for information
Impact of ADHD on Individual Employment and Income

*P<0.05.
†P<0.001.

Challenges of Adult ADHD Diagnosis

- Other conditions overlap with ADHD
- Pattern of challenges vary between people
- Developmental history hard to confirm
- There is no test for ADHD
## WHO ASRS Screener

### 1. Inattention

<table>
<thead>
<tr>
<th>Question</th>
<th>Never</th>
<th>Rarely</th>
<th>Sometimes</th>
<th>Often</th>
<th>Very Often</th>
</tr>
</thead>
<tbody>
<tr>
<td>How often do you have trouble wrapping up the final details of a project, once the challenging parts have been done?</td>
<td></td>
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<tr>
<td>How often do you have difficulty getting things in order when you have to do a task that requires organization?</td>
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<tr>
<td>When you have a task that requires a lot of thought, how often do you avoid or delay getting started?</td>
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<tr>
<td>How often do you have problems remembering appointments or obligations?</td>
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</tbody>
</table>

### 2. Hyperactivity- - Impulsivity

<table>
<thead>
<tr>
<th>Question</th>
<th>Never</th>
<th>Rarely</th>
<th>Sometimes</th>
<th>Often</th>
<th>Very Often</th>
</tr>
</thead>
<tbody>
<tr>
<td>How often do you fidget or squirm with your hands or feet when you have to sit down for a long time?</td>
<td></td>
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</tr>
<tr>
<td>How often do you feel overly active and compelled to do things, like you were driven by a motor?</td>
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</tbody>
</table>

**Significant items in Red (*p=0.5); Likely to have ADHD with ≥ 4 significant items**

World Health Organization

http://www.hcp.med.harvard.edu/ncs/asrs.php
Inattentive in Childhood?

- **School**: “(bus); messy work; parent-teacher meetings “not with class” and “not apply self”; homework painful
  - better self observation into middle school
  - report cards/testing; parent or sibling report

- **Home**: “look at me, eyes on me”; disorganized, loss of parents’ valuable items

- **Social**: “out in left field” in baseball; quit organized sports “boring”; piano teacher frustrated; relatives comment

Paul Hammerness, MD
Hyperactivity/Impulsivity in Childhood?

- **School**: trouble in hallways, playground/recess; fidgety, squirmy – told to sit still or to sit down; “shouting out

- **Home**: dangerous/reckless about house; climbing trees; multiple accidents ”near-misses”; not sit for meals; too loud, too talkative

- **Social**: “too much…”; always on the go; clowning around at practice/dance/swimming; trouble in church; no play-date invites

Paul Hammerness, MD
Attention Dyscontrol in Adults

• Difficulty with:
  – Focus in meetings
  – Uninteresting / detailed tasks (documentation)
  – Organizing work materials, planning
  – Inefficient “multitasking”

• Stress often drives task completion
  – Reactive rather than proactive
  – Extra hours and late nights
Hyperactivity / Impulsivity in Adults

- Outward or inner restlessness
  - Less effective at low activity tasks
  - Poor participation, not “present”
  - Makes others uncomfortable
- Poor impulse control = ineffective team worker
  - Talking too much for listener
  - Interrupting others
  - Impulsive decisions
Sufficient Current Symptoms

Self-report and third-party inventories can be efficient

- Supplement with interview to confirm how you would rate!

“Think of a recent, typical week. For the symptoms we will discuss, I want to know:

- How often they occur
- How much effort it takes to avoid or manage them
- How they matter in your daily life.”

Try to “walk in their shoes” and imagine how symptoms may manifest
Symptom Rating

Use a Scale (eg. ASRI) to Identify recent challenges
  • Focus patient on last / a typical week

Symptom frequency
  • “How often? Several times a day? Once a week?”

Symptom rating - Severity
  •
  •
  •

  5+ Moderate Inattentive or Hyp/Impulsive Symptoms Required

Identify specific examples of challenges
  • Success at roles? (work, home, school)
  • Missed/avoided opportunities?
  • How do they compensate?

Record examples of struggles
Compensatory / Avoidant Efforts May Hide Symptom Impact

Patients opt out or defer challenging activities

Compensation may be a burden

- Efforts to maintain attention, control behavior
- Reliance on organizational, reminder systems
- Reliance on others for structure, deferred tasks
- Long hours to compensate for inefficiency
## Adult Symptom Prompts

### Difficulty being accurate with details

<table>
<thead>
<tr>
<th>Prompt: How much effort does it take to be accurate or catch mistakes in your work? How often do you make errors that matter?</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Self/Home:</strong> Filling out forms incorrectly.</td>
</tr>
</tbody>
</table>

### Excessive internal drive

<table>
<thead>
<tr>
<th>Prompt: Is it hard to linger at activities? How often does the urge to stay busy cause problems?</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Self/Home:</strong> Rarely taking time to relax.</td>
</tr>
</tbody>
</table>
1. Sitting:
Can sit for an hour, some effort

MILD
2. Fidgeting:
   Very often;
   has to be aware of its impact;
   effort not to disrupt

   MODERATE
3. Quiet activities:
   Friends comment on getting riled up

MODERATE
10. Waiting turn:
Patient, others agree

NONE
11. Losing things:
has system to avoid it

MODERATE
12. Listening:
misses info 4-5 times in 15 min conversation

MODERATE
Utility of Neuropsychological Assessment in ADHD?

• May review DSM ADHD Criteria (scales alone do not establish time-course)
• May identify extremes of brain function that are consistent with (not diagnostic of!) ADHD (executive function deficits probably most common)
• May clarify native strengths and challenges eg. learning disabilities, low processing speed
• May clarify level of functional impairment vs. norms
• Required by many entities to justify accommodation

David W. Goodman & Craig Surman, MD
## Clinician Adult ADHD Symptoms and Role Impact Inventory Rating Sheet

<table>
<thead>
<tr>
<th>Inattentive Symptoms</th>
<th>None</th>
<th>Mild</th>
<th>Moderate</th>
<th>Severe</th>
<th>Age started</th>
</tr>
</thead>
<tbody>
<tr>
<td>Difficulty being accurate with details</td>
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<tr>
<td>Difficulty sustaining attention</td>
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<td>Difficulty listening in conversation</td>
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<td>Difficulty sticking to and finishing actions</td>
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<tr>
<td>Difficulty organizing</td>
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<tr>
<td>Putting off tasks requiring mental effort</td>
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<tr>
<td>Often losing important items</td>
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<tr>
<td>Forgetfulness</td>
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<tr>
<td>Often distracted by things in environment</td>
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</tbody>
</table>

**# of moderate or severe inattentive symptoms:**

### Impulsive/Hyperactive Symptoms

<table>
<thead>
<tr>
<th>Fidgeting:</th>
<th></th>
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<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>Restless</td>
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<tr>
<td>Excessively in motion</td>
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<tr>
<td>Excessively loud</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Excessive internal drive</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Talking excessively</td>
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<tr>
<td>Speaking at the wrong time in conversation</td>
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<tr>
<td>Difficulty waiting</td>
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<td></td>
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<tr>
<td>Intruding on others</td>
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</tbody>
</table>

**# of moderate or severe impulsive/hyperactive symptoms:**

List examples of how Inattentive symptoms impair role functioning for personal daily tasks: work or school function: in relationships:

List examples of how Impulsive/Hyperactive symptoms impair role functioning for personal daily tasks: work or school function: in relationships:

Developed by Craig B.H. Surman, MD
Three
“Chief Complaints”
“Simple” ADHD
(The DSM ADHD Symptoms)
“I have trouble getting around to, sticking with and finishing things”

“I have trouble controlling my behavior”
(primarily pediatric)
Other Neurologic / Mental Health Challenges

“I am held back by my feelings, emotional or anxious thoughts”

“Other things I am not good at keep me from thriving – its not just ability to focus”
Organizational Challenges Beyond the Core Symptoms of ADHD:

Control of Engagement across roles and over time

Typical Complaint:

“I don’t do the right things at the right time or keep healthy routines”

(Occurs in other disorders)
Disentangling ADHD from Comorbidity
ADHD with Mental Health Comorbidity
Summary

• Identify all conditions compromising function
  - Comprehensive evaluation - 3rd party helps
  - Neuropsychological evaluation of learning/processing
  - Frequent visits/ team treatment - get to know them!!

• Symptoms of ADHD overlap with other disorders
  - Resolution of comorbidity may reveal ADHD

• Timecourse helps differentiate
  - ADHD starts earlier than most disorders
  - ADHD symptoms persistent, context highlights
    - (eg: school vs. vacation)
### Other conditions impacting attention/cognitive function

<table>
<thead>
<tr>
<th>Differential Disorders</th>
<th>Example of common medical conditions to consider</th>
<th>Points on history/testing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Respiratory problems</td>
<td>Sleep apnea</td>
<td>Clinical: Snoring, daytime fatigue, hypertension, headaches, polysomnography</td>
</tr>
<tr>
<td>Sleep disorders</td>
<td>Narcolepsy</td>
<td>Excessive daytime sleepiness, cataplexy, hypnagogic hallucination and sleep paralysis</td>
</tr>
<tr>
<td>Sensory deficits</td>
<td>Myopia, hearing impairment</td>
<td>Ophthalmology, audiology</td>
</tr>
<tr>
<td>Hormonal dysregulation</td>
<td>Thyroid</td>
<td>TSH</td>
</tr>
<tr>
<td>Metabolic disorder</td>
<td>Diabetes</td>
<td>Fasting glucose</td>
</tr>
<tr>
<td>Haematological disorder</td>
<td>Anaemia</td>
<td>CBC and differential</td>
</tr>
<tr>
<td>Substance abuse/dependence</td>
<td>Alcohol, cannabis or any illicit drug dependences</td>
<td>CAGE questionnaire (cut down, annoying, guilt, eye opening), urine toxicology</td>
</tr>
<tr>
<td>Neurological disorders</td>
<td>Concussion</td>
<td>History of trauma, headache, confusion, syncope</td>
</tr>
<tr>
<td>Other cognitive disorders</td>
<td>Learning disorder</td>
<td>Psychological testing/cognitive battery</td>
</tr>
<tr>
<td>Psychiatric disorders</td>
<td>Major depression</td>
<td>Depressed mood, anhedonia, worthlessness, suicidal ideation</td>
</tr>
<tr>
<td></td>
<td>Generalized anxiety</td>
<td>Continuous worries with somatic symptoms</td>
</tr>
<tr>
<td></td>
<td>Bipolar Disorder</td>
<td>Grandiosity, psychosis, periodicity</td>
</tr>
</tbody>
</table>

CADDRA 2011
Courtesy of Paul Hammerness
Other Mental Health Conditions are Common in Adult ADHD

Structured interview of 124 community ADHD adults

Comorbidity In National Epidemiologic Survey

Any mood disorder 38.3%

National Comorbidity Survey Replication: Anxiety Disorders in Adult ADHD

Any anxiety disorder 47%

- Social phobia 29.3%
- PTSD 11.9%
- Panic disorder 8.9%
- Generalized anxiety disorder 8%
- Agoraphobia 4%
- Obsessive-compulsive disorder 2.7%
Assessment & Treatment Priorities

Alcohol and substance abuse
Mood disorders
  Bipolar and MDD
Anxiety disorders
  Obsessive-compulsive disorder, generalized anxiety disorder, panic
ADHD

Order of treatment also considers the severity of the concurrent disorders.

Separate Out Challenges By Patterns

“States” vs. “Traits”

- Egs of traits: ADHD, dyslexia, obsessiveness
- Egs of states: depression, hypomania, panic

Patterns of “Pseudo-ADHD”

- ? Impairment due to a state
  eg. depression, sleep impairment?
- ? Environmentally dependent impairment?
  eg. academic setting only; socially only

works out?
Preoccupied/anxious Mental Style can look like, or be created by, ADHD

• Understand what preoccupies the patient + how often - is it a distraction source?
Key question: What is on your mind when your mind wanders?

• Obsessive/anxious thought may be secondary to ADHD
  - Self-awareness, concern / obsessive behavior may be compensatory – stress helps performance (to a point)
Guide Clients to Manage Primary or Secondary Anxiety:

Key questions:  Are you concerned or stressed for no reason? (eg. generalized anxiety)
Do you experience it physically? (eg. panic)
Do you avoid things? (eg. social, performance anxiety)
Do you relive or recall threats, day or night? (PTSD)

- Anxious ADHD children: lower impulsivity, worse inattention, poorer working memory
Exacerbation of Comorbidity: Lifetime Bulimia Nervosa in Two Female Cohorts

82 ADHD, 81 Control
42 ADHD, 110 Control

Surman et al, 2008
The irritable ODD child is hypersensitive to provoking stimuli from authorities and may or may not be able to self-regulate.

The “furious” mania patient is hypersensitive and experiences extremes of emotion that are impossible to self-regulate.

DESR is poor self-regulation of mood.

Courtesy of Stephen Faraone
Deficient Emotional Self Regulation (DESR) Items

1. Quick to get angry or become upset
2. Easily Frustrated
3. Over-react emotionally
4. Easily excited by activities going on around me
5. Lose my temper
6. Argue with others
7. Am touchy or easily annoyed by others
8. Am angry or resentful

DESR in ADHD = > 95th percentile score of controls

Surman et al, American Journal Psychiatry, 2011
Study Subjects with DESR:

> 95th %ile inventory item frequency

(p < 0.001 ADHD vs non-ADHD)

Surman et al, Amer Jour Psych 2011
Sleep Dysfunction in 182 Adults with and 182 without ADHD

*p<0.01; Not accounted for by Axis I comorbidity

Surman et al, 2009
Treatment for ‘Simple’ ADHD
“Simple” ADHD
(The DSM ADHD Symptoms)
“I have trouble getting around to, sticking with and finishing things”

“I have trouble controlling my behavior”
(primarily pediatric)
Child MTA Study – up to 14 months of Medication +/- Behavioral Therapy

Medication management alone
Behavioral treatment alone
Community based treatment
Medication management + behavioral treatment

Medication management vs. combination of medication behavioral treatment:

For ADHD Symptoms nearly equally effective, and superior to either behavioral treatment alone or community based treatment

All treatment arms found to be effective on an absolute basis

Combination of behavioral therapy and medication superior to other treatment groups for academic performance and family relations

http://www.nimh.nih.gov

(MTA Study Group, Arch Gen Psych, 1999)
Pediatric effect on ADHD symptoms

Free Fatty Acids

Cognitive Training

Behavioral Interventions

Neurofeedback

Sonuga-Barke et al Am J Psychiatry
Deciding to take medicine …

- Medicines for ADHD do not tell you if you have it … may “enhance” focus and energy for most people
- I strongly recommend time off medicine intermittently
  - Several days or more off to rule out “wear off fatigue” as the reason to restart
- “Can I take it as needed?”
  - Raise the question – do you have enough “ADHD” to merit changing brain function – impairment in 2 or more roles?
- A good reason for ADHD medicine can be to allow the “homework” it takes to build a life where you need medicine less … or not at all!
ADHD: Pharmacological Treatment

**Stimulants**
- Methylphenidate
- Dexedrine
- Amphetamine compounds

**Alpha agonists**
- Guanfacine
- Clonidine
- Guan/Clon+stimulants

**Antidepressants**
- Bupropion*
- Tricyclics*

**Modafinil**

**FDA Approved**
- Higher effect size (c. 1.0 for adults) than nonstimulant (c. 0.6 for adults)*
- FDA Approved
- FDA Approved
- FDA Approved

**Pediatric Only**
- Guan/Clon+stimulants

**Weaker evidence**
- Not FDA approved

Off-label use.
* Faraone et al, 2003 meta-analysis.
DAT Occupancy-Time Profiles:
90 mg OROS-MPH

(Spencer et al. AJP:163: 2005)
Early MGH OROS-MPH Study
(Superimposed MPH IR study- N@150)

Biederman, Biol Psychiatry 2006;59:829-835
Spencer Biol Psychiatry 2005;57(5):456-463
LDX Randomized Withdrawal

LDX ~6 mos;
6 wk blinded withdrawal phase;
Relapse ≥50% increase ADHD score
And ≥2 point CGI-S

Brams et al, J Clin Psych 2012; 73 (7), 977-983
### Methylphenidate Preparations

<table>
<thead>
<tr>
<th></th>
<th>Duration</th>
<th>Formulation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Generic methylphenidate</td>
<td>2-3 hrs</td>
<td>tablet</td>
</tr>
<tr>
<td>Metylin liquid</td>
<td>2-3 hrs</td>
<td>liquid</td>
</tr>
<tr>
<td>MPH SR</td>
<td>4 hrs</td>
<td>wax matrix</td>
</tr>
<tr>
<td>MPH LA</td>
<td>8 hrs</td>
<td>beaded (50:50)</td>
</tr>
<tr>
<td>OROS MPH*</td>
<td>12 hrs</td>
<td>OROS</td>
</tr>
<tr>
<td>MPH ER</td>
<td>6-8 hrs</td>
<td>beaded</td>
</tr>
<tr>
<td>MPH CD</td>
<td>8 hrs</td>
<td>beaded (30:70)</td>
</tr>
<tr>
<td>MPH XR</td>
<td>12 hrs</td>
<td>multilayer bead (40:60)</td>
</tr>
<tr>
<td>DexMPH*</td>
<td>3 hrs</td>
<td>tablet</td>
</tr>
<tr>
<td>DexMPH XL</td>
<td>10 hrs</td>
<td>beaded</td>
</tr>
<tr>
<td>MPH ER liquid</td>
<td>12 hrs</td>
<td>liquid</td>
</tr>
<tr>
<td>MPH transdermal patch</td>
<td>12 hrs</td>
<td>patch</td>
</tr>
</tbody>
</table>

*FDA approved for ADHD in Adults
### Amphetamine Preparations

<table>
<thead>
<tr>
<th>Preparation</th>
<th>Duration of Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dextroamphetamine</td>
<td>2-3 hrs</td>
</tr>
<tr>
<td>Dextroamphetamine</td>
<td>2-3 hrs</td>
</tr>
<tr>
<td>Dextroamphetamine spanules</td>
<td>4 hrs</td>
</tr>
<tr>
<td></td>
<td>6 hrs</td>
</tr>
<tr>
<td>Amphetamine racemic</td>
<td>6 hrs</td>
</tr>
<tr>
<td>Mixed AMPH salts XR*</td>
<td>6 hrs</td>
</tr>
<tr>
<td></td>
<td>Up to 12 hrs beaded</td>
</tr>
<tr>
<td>AMPH XL liquid</td>
<td>12 hrs</td>
</tr>
<tr>
<td>AMPH XR ODT*</td>
<td>12 hrs</td>
</tr>
<tr>
<td></td>
<td>Orally disintegrating</td>
</tr>
<tr>
<td></td>
<td>tablet</td>
</tr>
<tr>
<td>Lisdexamfetamine*</td>
<td>Up to 13 hrs prodrug</td>
</tr>
</tbody>
</table>

*FDA approved for ADHD in Adults
Nonstimulants

• Atomoxetine*
• Guanfacine ER
• Clonidine ER

Off-label:
  – Bupropion (positive controlled adult trials)
  – Desipramine (positive adult trial)
  – Modafinil (although adult study negative)
  – Memantine (open label study only)

Not FDA approved in adult ADHD

Meta-analysis of effect size for Adult ADHD Medication:
Stimulant: 0.91 (short-acting); 0.95 (long acting)
Non-stimulant: 0.62

*FDA approved in adult ADHD
Comprehensive Role of the Therapist

History of failure

Presentation
- Symptom
- Impairments
- Dysfunctional outcome
- Cognitive distortions
- Mood disturbance
- Behavioral avoidance
- Lost opportunity for skill development

Treatment
- Medication
- Organization techniques
- Cognitive therapy
- Behavioral therapy
- Life-skills building

Outcome
- Symptom reduction
- Improved productivity
- Modified schema
- Change behavior frequency
- Improve social interactions

Treating ADHD impacts Major Life Outcomes

- Those treated with ADHD medication were less likely to be convicted of a crime
  - Solid line—treated
  - Dashed line—not treated
  - Blue—men
  - Red—women

Lichtenstein 2012
Minimize iatrogenic Risks
Side Effects With Stimulant Medication

- Insomnia
- GI upset
- Decreased appetite
- Weight loss
- Headaches
- Dry mouth
- Constipation
- Hand tremors
- Jittery

- Research on individual stimulants has generally shown no dose relationship with side-effects in group data
- Some research has shown side effects may be more likely in stimulant-naïve patients
- Children may be more sensitive to side effects than adults

Clinical Presentations ADHD Rx May Exacerbate:

– Extreme states (psychosis, bipolar) • Stimulants, atomoxetine, ?others

– Seizure risk (eg. Bulimia Nervosa, Binge drinking) • bupropion

– Birth Control • Modafinil reduces levels

– Orthostatic vulnerability • Guanfacine, clonidine

– Tics or Tourette syndrome • Stimulants exacerbate

Cortese et al, J Child Psychol Psychiatry. 2013
Sympathetic Exacerbation by Atomoxetine, Stimulants

– Hypertension, Arrhythmia
  Small HR, BP effect typical, monitor for outliers, regularly.
– Urologic / sexual function
– Narrow Angle Glaucoma
– Poor Peripheral Circulation (eg. Reynaud's)
– MAOI-related hypertensive crisis
– Stress, vigilance (PTSD, anxiety)

Patient should consult treat on how to monitor for and minimize possible exacerbation

Limiting sympathomimetic burden (eg. caffeine, pseudoephedrine) may help
Other Specific ADHD Rx Concerns:

Atomoxetine:
- Black Box: Suicidal Thought/Action in Children + Teenagers
  • estimated 4/1000 from 2200 clinical cases
- Several reports severe liver injury – onset within 3-12 weeks

Stimulants, Atomoxetine:
- Reports of pediatric priapism (recent mph alert by FDA)

Modafanil
- life-threatening rash rate > background

FDA Medication Guide
livertox.nlm.nih.gov
FDA 2007
Select Polypharmacy Concerns:

Select Drug-Drug Interactions

− 2C9, 2C19 Inhibition • Modafinil (2C9, 2C19)
  (citalopram, TCA, clomipramine)

− 2D6 Inhibition • Bupropion
  (many psychotropics including atomoxetine)

-Hypotensive / Rebound Hypertension • Guanfacine/Clonidine
  (discontinuation of alpha-2, or other antihypertensive)
Stimulant Tolerance and Dependence

• Theoretically, amphetamine more likely than methylphenidate

• Psychological dependence:
  - effect or importance of the agent is over-valued
  Key question: Under what circumstances would it be ok to be off medication?
• Physiologic dependence:
  – Physiologic functioning is different off the agent.
  Key question: When you stop medicine, what is different than before you ever started it?
  – Listen for fatigue, personality change, other ways they are “not themselves”

• Tolerance:
  – Less effect (positive or negative) of agent over time at same dose.
  – May lead to dose escalation
  Key question: Does your medication change you the same way it always has?
  If not, what is different?

Dependence may be fostered by tolerance – where patients end up on higher doses that are not helping them
Change Prescription If:

- Has side effects on Rx or as wears off
- Is “not myself” in mood or personality
- Has dependence
  - (strong fatigue, personality change)
- Partial coverage

Good to know that:

- Your patient still has impairing ADHD ... Plan breaks
- Side effects differ between agents & release patterns
- Nonstimulants can take several weeks to work
- Methylphenidate approx. 50% potency of amphetamine
- “Tolerance” is reported - may resolve with breaks from medicine
Pregnancy and Stimulants

• Category C
  – Amphetamines, methylphenidates, atomoxetine
  – Animal reproduction studies have shown an adverse effect on the fetus and there are no adequate and well-controlled studies in humans, but potential benefits may warrant use of the drug in pregnant women despite potential risks

Breastfeeding and Stimulants

• Amphetamine
  – Detectable in breast milk
  – Amphetamine in infants’ urine

• Methylphenidate
  – Detectable in breast milk

• American Academy of Pediatrics considers amphetamines and methylphenidate a contraindication for breastfeeding

Clinical Assessment of Cardiac Risk

- ECGs are not routinely required

*Obtain cardiac clearance if:*

- Spontaneous syncope or unexplained lightheadedness
- Exercise-induced syncope
- Exercise-induced chest pain
- Sudden death in family member under age 30
- History of cardiac abnormalities (structural or electrical) in self or family members

Treatment Planning for Disorganized Clients
Executive Dysfunction not explained by Inattention, Impulsivity, Hyperactivity

“I don’t do the right things at the right time or keep healthy routines”

Strategies/Habits
Help Organizational Skill Challenges
Interviewing Patients On Their Executive Resources

Challenges

• Proactive? - In control or flying by seat of pants?
• Anticipate challenges? - Know and avoid pitfalls?
• Habitual? About eat, sleep, work, relaxed time?
• Sense of time? Are you on time? Take on too much?
• Delegation? Who helps with things you are not good at?

Strategies

• What techniques do you use- a planner? “To do” list?
• What do you remind yourself about? How?
• Do you regularly plan? Prioritize?
• Who helps you be on top of things?
Common Elements of Behavioral Therapy
To Improve Compensatory Skills
Individual or Group Work

— Target disorganization related to ADHD
  • Time + method of planning
  • Prioritization / Time management practice
  • Problem-solving practice (pro-con lists, generating alternatives)
  • Breaking task into steps

— Skills to reduce distractibility
  • “Out of sight out of mind”
  • Write down “popcorn” distracting thoughts; In planner or ONE list
    and hold self to managing them at the right time
  • Right environment - eg. card table for effortful work

— Alter distracting automatic thoughts
  • Blame ADHD, not you; Rational vs. emotional thought patterns
  • Mantras: “Not getting started? First step is too big” “Keys, wallet, ID”

TAKES ACCOUNTABILITY AND REVIEW TO PRACTICE AND MAINTAIN HABITS

Eg. Safren et al, 2010; Group - Solanto et al, 2010Surman, Bilkey & Weintraub: FASTMINDS
ADHD Symptom Reduction With CBT

Help them Organize
Self-Care First

- Support biological day and biological night
  - Match light, activity to diurnal behavior
  - No naps
  - > 20 min tossing - up and do nothing until tired in dark

- Support sleep initiation
  - Relaxation; hot shower; camomile; tryptopham

- Sleep/wake drive adjustment -
  - Light box in AM; melatonin before bed
Map out those high-yield critical moments

<table>
<thead>
<tr>
<th>Need to Address</th>
<th>Action to take</th>
<th>What days should you act?</th>
<th>6 a.m.</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>Noon</th>
<th>1 p.m.</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sleep</td>
<td>Start getting ready for bed</td>
<td>Every day</td>
<td></td>
<td>*</td>
<td>*</td>
<td></td>
<td></td>
<td>*</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Healthy Eating</td>
<td>4 small meals</td>
<td>Every day</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Exercise</td>
<td>Prepare Gym Bag</td>
<td>Tuesday, Thursday, Saturday</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<td></td>
</tr>
</tbody>
</table>

* indicates specific times for each action to be addressed.
Accommodation Principles

Standard School Accommodations
- Copy of class notes, extra time and quiet for tests

Create structure:
- use natural accountability (? group work; mentoring; reward schedules)
- stimulation (adapt work to interests)
- reminder systems (calendars with alarms)

Match optimal work style and pattern
- sedentary vs. on the road, breaks, variety of projects

Outsource to “peripheral brains” - devices + people
- planning, prioritization, decisions
- schedule management
- capturing information (eg. recording pens; alarms to head for class)

Maximize interest, decrease distraction, outsource challenges, maintain accountability
## Finding resources

<table>
<thead>
<tr>
<th>Areas for Extra Help</th>
<th>Resources to Assist You</th>
</tr>
</thead>
<tbody>
<tr>
<td>Your understanding of how FASTMINDS or ADHD impacts your life</td>
<td>Psychiatrist; psychotherapist; coach who specializes in ADHD; group for ADHD or organization</td>
</tr>
<tr>
<td>Building mindfulness skills to be less governed by internal distractions</td>
<td>Mind-body work (meditation, yoga, etc.)</td>
</tr>
<tr>
<td>Practice decreasing negative self-talk, attitudes that get in the way of clear, engaged function</td>
<td>Mental health clinicians; CBT, dialectical behavioral therapy; self-help mental health workbooks</td>
</tr>
<tr>
<td>Breaking tasks down into steps you can vividly hold in your mind</td>
<td>Organizational, Job, or ADHD-specific coach; mentor, well-organized friend/family member; CBT</td>
</tr>
</tbody>
</table>
## Finding resources

<table>
<thead>
<tr>
<th>Creating a low-distraction (actual and virtual) workspace at home, work, and school</th>
<th>Organizational or ADHD-specific coach; well-organized friend; employee assistance/human resources department; university/college student services department</th>
</tr>
</thead>
<tbody>
<tr>
<td>Making use of to-do lists and planners a routine</td>
<td>Self-help organizational books; organizational coach; well-organized friend/family member; rehabilitation specialist; phone apps</td>
</tr>
<tr>
<td>Getting Ideas for high-yield behavior patterns, systems, and habits</td>
<td>ADHD coach; support group; mentor, close friend/family member; student services department; rehabilitation specialist</td>
</tr>
<tr>
<td>Training in using peripheral devices such as phones, computers, tablets</td>
<td>Classes by device companies; online tutorials; workplace; community college classes</td>
</tr>
</tbody>
</table>

Surman, Bilkey & Weintraub “FASTMINDS”, 2013
# Finding resources

<table>
<thead>
<tr>
<th>Action</th>
<th>Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eliminating things in your life that you don’t do well or engage in naturally</td>
<td>Career counselor; ADHD coach; close friend/family member; aptitude and vocational counselling; financial advisor</td>
</tr>
<tr>
<td>Chances to see other people apply useful habits</td>
<td>Mentor, close friend/family member; support groups</td>
</tr>
<tr>
<td>Practice habits and systems with people</td>
<td>Close friend/family member; work colleagues; rehabilitation specialist; tutor</td>
</tr>
<tr>
<td>Determining critical moments when you can make better choices</td>
<td>Close friend/family member; ADHD coach; support group; psychotherapist</td>
</tr>
</tbody>
</table>

Surman, Bilkey & Weintraub “FASTMINDS”, 2013
# Finding resources

<table>
<thead>
<tr>
<th>Adapting and choosing work, home, and social environments that match you best</th>
<th>Career counselor; ADHD coach; support group; aptitude and vocational assessment; close friend/family member</th>
</tr>
</thead>
<tbody>
<tr>
<td>Keeping healthy daily rhythms</td>
<td>Personal trainer; support group; close friend/family member; mindfulness</td>
</tr>
<tr>
<td>Practicing social skills</td>
<td>Coach; Toastmasters group; close friend/family member; mindfulness</td>
</tr>
<tr>
<td>Creating accommodations at work or school</td>
<td>Human resources department; school disability office; ADHD coach; close friend/family member</td>
</tr>
</tbody>
</table>

Surman, Bilkey & Weintraub “FASTMINDS”, 2013
Conclusion
Evaluate Opportunity Cost of Rx vs. no Rx

Unclear Diagnosis
Hx of agitation
Hx of sub use disorder
Sympathetic vulnerability
Subpopulation specific risk
Misuse/ diversion
Lack of outcome measure

Clear Diagnosis
No comorbid history
Typical effects
Medically healthy agenda
Clear adaptive improvement
Clear outcome measure
Healthy Management

Establish the diagnosis systematically
Evaluate individualized risk/benefit profile
Coordinate a clear treatment plan to compensate for ADHD:

- Low-risk medical management
- Adaptive compensatory skill development
- Accommodating, nurturing environments
Treatment Planning

For Core ADHD Symptoms: list medication options that could improve core ADHD symptoms (new agent, dose change, cover longer duration).

For Improved Organization: List critical situations where better habits (decisions or actions) can be practiced (e.g., taking time to prioritize/plan; more reliance on others or electronic devices; using reminders; isolating from lower priority distractions).

For Adherence: List what will ensure practice of the treatment plan. Consider factors in past success (e.g., deadlines, reminders, tracking, involving others, other accountability).

For Environmental Accommodation: List accommodations, e.g.: for weaknesses (e.g., extra time to check work, recording meetings/class); to make tasks more engageable (e.g., clearer steps/goals, better match to interests); for accountability (e.g., involving others, deadlines); for work space (lower distraction).
Some ADHD Resources

For consumers
  CADDAC.ca
  CHADD.org
  ADD.org

For professionals:
  APSARD.com
  CADDRA.ca

Contact: csurman@partners.org
         www.drsurman.com