Update on NIMH Study & ADHD Medications

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Implications of the

NIMH MTA Study

NIMH MTA ADHD Study

- Largest NIMH study in history
  - 579 children
  - ADHD combined type
  - Ages 7-10
  - Six sites
    - UC Berkley & San Francisco
    - Duke
    - UCLA & UC Irvine
    - Long Island Jewish Medical & Montreal
    - NY State Psychiatric, Columbia, Mt. Sinai
    - U of Pittsburgh

Jensen

NIMH ADHD MTA Study

- Four groups
  - Medication only
  - Behavioral only
  - Combined medication & behavioral
  - Standard community care (2/3 on meds)

Behavioral Interventions

- 27 Parent training sessions
- Individual therapy
- Day long summer treatment camp
- Teacher training
- Classroom consultation (twice monthly)
- Classroom aides (from camp staff)
- Daily school report cards
- Social skills and self-control training

NIMH ADHD Study

- Most effective interventions
  - Medication only
  - Combined medication & behavioral
- Both were significantly better than ***behavioral only & standard care re:***
  - oppositional/aggressive symptoms
  - internalizing symptoms (anxiety & depression)
  - teacher-rated social skills
  - parent child relations
  - reading achievement

NIMH ADHD STUDY

- Combined Treatment vs. Medication Only
  - Advantages for Combined Treatment
    - non-ADHD symptoms
    - positive functioning outcomes
    - reduced medication dose
- Medication vs. Standard Community Care
  - Medication group
    - 3 doses daily
    - used double blind to determine best dose
  - Implication:
    - med dose too low in standard community care

MTA Normalizing Treatment

- 68 % Combined medication & therapy
- 56 % Medication alone
- 33 % Behavioral alone
- 25 % Community treatment

- 6 years later… for best outcome…
  - Medication checks--but only 2 per year
  - Must continue medication checks more often
- When parents change, kids get better

NIMH ADHD MTA Study:
Results

- Over 2/3 had a coexisting diagnosis (ADHD+)

ADHD only	32%
Oppositional Def.	40%
Anxiety	34%
Conduct Disorder	14%
Tourette Syndrome	11%
Mood/Bipolar	4%

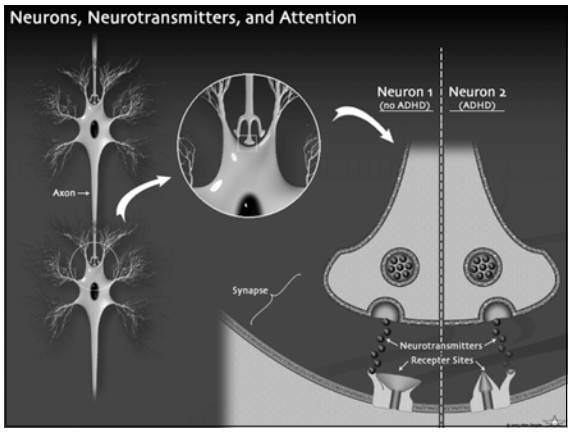
NIMH ADHD MTA Study:
Summary

- Two-thirds have a coexisting condition.
- *Medicine* alone **better than** *behavioral* alone
- *Meds* alone **nearly equal** to *combined treatment*
- Combined treatment better in these cases:
  - ADHD anxiety, ADHD/SLD
  - Can take lower med dose, if use both treatments
  - Parents happier

Implications:

- Medication is cornerstone of treatment
- Medication doses may be too low
- When meds right, child takes fewer total meds
- **Reduced number of children with CD/ADHD**

Medication Update



Neurons & Neurotransmitters

When neurotransmitters work right, it's easier to…..

- Pay attention.
- Follow directions.
- Finish your work.
- Remember to do things.
- Fall asleep and get up.
- Be happy.
- Be calm and reasonable.
- Be on time.
- Plan ahead.

Medication Works

70-92%

Impact of Stimulant Medication

- **Increased**
  - Attention
  - Concentration
  - Compliance
  - Effort on tasks
  - Amount & accuracy of school work
- **Decreased**
  - Activity levels
  - Impulsivity
  - Negative behaviors
  - Physical & verbal hostility

Swanson

Medication Impact

Dr. Russell Barkley's New Data

- Working memory, self-talk
- Verbal fluency, emotional control
- Ability to organize thinking
- Handwriting
- Motor coordination
- Self-esteem
- Acceptance by and interaction with peers
- Awareness of the game in sports
- Decreased punishment from others

Methylphenidate vs Dextroamphetamine

(eg., Ritalin, Concerta vs Adderall)

- 40 % respond well to either medication
- 26 % respond best to methylphenidate
- 36 % respond best to dextroamphetamine

ADHD Medications

- **Stimulants**
  - Ritalin, Ritalin SR, Ritalin LA
  - Focalin, Focalin XR
  - Dexedrine, Dexedrine SR
  - Metadate ER; Metadate CD
  - Adderall, Adderall XR, Vyvance
  - Concerta
  - Daytrana (patch)
- **Non-stimulants**
  - Strattera

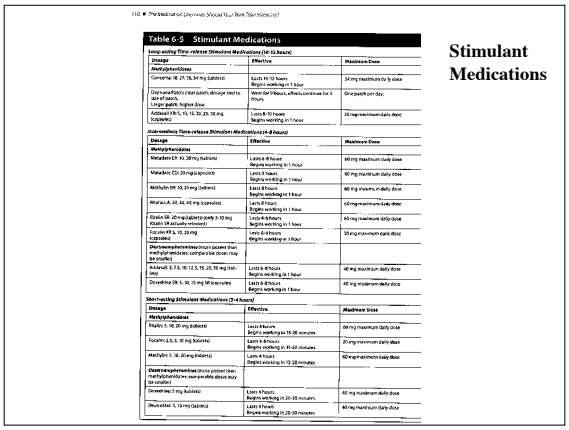


Table 6-5 Stimulant Medications

Long-acting Time-release Stimulant Medications (10–12 hours)

Dosage	Effective	Maximum Dose
Methylphenidates		
Concerta: 18, 27, 36, 54 mg (tablets)	Lasts 10–12 hours Begins working in 1 hour	54 mg maximum daily dose
Daytrana Patch (Total patch dosage tied to size of patch; Longer patch: higher dose	Worn for 9 hours; effects continue for 3 hours	One patch per day.
Adderall XR: 5, 10, 15, 20, 25, 30 mg (capsules)	Lasts 8–10 hours Begins working in 1 hour	30 mg maximum daily dose

Intermediate Time-release Stimulant Medications (4–8 hours)

Dosage	Effective	Maximum Dose
Methylphenidates		
Metadate ER: 10, 20 mg (tablets)	Lasts 4–8 hours Begins working in 1 hour	60 mg maximum daily dose
Metadate CD: 20 mg (capsule)	Lasts 6 hours Begins working in 1 hour	60 mg maximum daily dose
Methylin ER: 10, 20 mg (tablets)	Lasts 8 hours Begins working in 1 hour	60 mg maximum, in daily dose
Ritalin LA: 10, 20, 30, 40 mg (capsules)	Lasts 8 hours Begins working in 1 hour	60 mg maximum daily dose
Ritalin SR: 20 mg (tablet) (only 5–10 mg Ritalin SR actually released)	Lasts 4–6 hours Begins working in 1 hour	60 mg maximum daily dose
Focalin XR: 5, 10, 20 mg (capsules)	Lasts 4–5 hours Begins working in 1 hour	30 mg maximum daily dose
Dextroamphetamines (much poorer than methylphenidates; comparable doses may be smaller)		
Adderall: 5, 7.5, 10, 12.5, 15, 20, 30 mg (tablets)	Lasts 6–8 hours Begins working in 1 hour	40 mg maximum daily dose
Dexedrine SR: 5, 10, 15 mg SR (capsules)	Lasts 6–8 hours Begins working in 1 hour	40 mg maximum daily dose

Short-acting Stimulant Medications (2–4 hours)

Dosage	Effective	Maximum Dose
Methylphenidates		
Ritalin: 5, 10, 20 mg (tablets)	Lasts 4 hours Begins working in 15–30 minutes	60 mg maximum daily dose
Focalin: 2.5, 5, 10 mg (tablets)	Lasts 4–6 hours Begins working in 15–30 minutes	20 mg maximum daily dose
Methylin: 2, 5, 10 mg (tablets)	Lasts 4 hours Begins working in 15–30 minutes	60 mg maximum daily dose
Dextroamphetamines (more potent than methylphenidates; comparable doses may be smaller)		
Dexedrine: 5 mg (tablets)	Lasts 4 hours Begins working in 20–30 minutes	40 mg maximum daily dose
Dexedrine: 5, 10 mg (tablets)	Lasts 4–6 hours Begins working in 20–30 minutes	40 mg maximum daily dose

Stimulant Medications

Action of Stimulant Medications Sustained Release -- long acting

Sustained or Extended Release

Ritalin SR -- 4-5 hours

7:30 8 8:30 9 9:30 10 10:30 11 11:30 12 12:30 1 1:30 2

Dexedrine SR, Adderall, -- 6-8 hrs.

7:30 8 8:30 9 9:30 10 10:30 11 11:30 12 12:30 1 1:30 2 2:30 3 3:30 4

Concerta & Adderall XRTM -- 10-12 hours

7:30 8 8:30 9 9:30 10 10:30 11 11:30 12 12:30 1 1:30 2 2:30 3 3:30 4 4:30 5 5:30

Action of Stimulant Medications Regular -- short acting

Regular Tablets -- 3 hours

Ritalin or Dexedrine

MEDS ARE WORKING (3 hrs)

MEDS NOT WORKING (2 hrs)

MEDS WORKING (3 hrs)

7:30 8 8:30 9 9:30 10 10:30 11 11:30 12 12:30 1 1:30 2 2:30 3 3:30

(a.m.) (p.m.)

Medication Release

A.M./P.M.

Long-Acting (10-12 hrs)

- Concerta 22%-78%
- Adderall XR 50%-50%

Intermediate time release (4-8 hrs)

- Metadate CD 30%-70%
- Ritalin LA 50%-50%

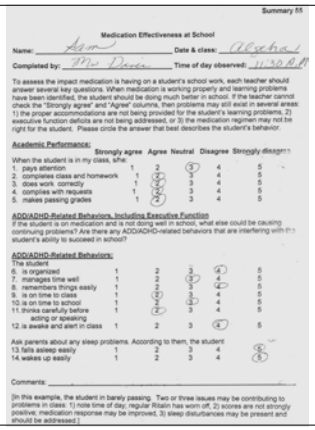
Strattera

- First line medication (some view as…)
  - Not a controlled substance; not abusable.
  - Can try samples; call in prescriptions.
- Improvement up to three years.
  - Norepinephrine; permanent change in reuptake?
- Reduces ADHD/ODD/aggression/anxiety/depressin
  - School, morning behavior, self-esteem, bedwetting, & affect better.
  - Faster time to fall asleep.
  - Okay for Tourette Disorder; doesn't cause tics.
  - Can't feel onset; doesn't peak like Concerta/Adderall.
- May need 2nd medication; Concerta, Adderall.
- Effective for 24 hours; take it in the evening.

Barkley

Medication Questions
(If Child Is Struggling, Ask..)

- What medication?
  - Stimulant, antidepressant?
  - Regular or sustained release?
  - Tablet or capsule?
- How much?
- How often?
- What time?
- Is it working?
  - If not, what change is needed?



Summary 55

Medication Effectiveness at School

Name: Adam Date & class: Algebra I

Completed by: Mr. Davis Time of day observed: 11:30 A.M.

To assess the impact medication is having on a student's school work, each teacher should answer several key questions. When medication is working properly and learning problems have been identified, the student should be doing much better in school. If the teacher cannot check the "Strongly agree" and "Agree" columns, then problems may still exist in several areas: 1) the proper accommodations are not being provided for the student's learning problems, 2) executive function deficits are not being addressed, or 3) the medication regimen may not be right for the student. Please circle the answer that best describes the student's behavior.

Academic Performance:

When the student is in my class, s/he:	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
1. pays attention	1	2	(3)	4	5
2. completes class and homework	1	(2)	3	4	5
3. does work correctly	1	(2)	3	4	5
4. complies with requests	1	(2)	3	4	5
5. makes passing grades	1	(2)	3	4	5

ADD/ADHD-Related Behaviors, Including Executive Function

If the student is on medication and is not doing well in school, what else could be causing continuing problems? Are there any ADD/ADHD-related behaviors that are interfering with this student's ability to succeed in school?

ADD/ADHD-Related Behaviors:

The student					
6. is organized	1	2	3	(4)	5
7. manages time well	1	2	(3)	4	5
8. remembers things easily	1	2	3	(4)	5
9. is on time to class	1	(2)	3	4	5
10.is on time to school	1	2	(3)	4	5
11.thinks carefully before acting or speaking	1	(2)	3	4	5
12.is awake and alert in class	1	2	3	(4)	5

Ask parents about any sleep problems. According to them, the student

13.falls asleep easily	1	2	3	4	(5)
14.wakes up easily	1	2	3	4	(5)

Comments: _____

[In this example, the student in barely passing. Two or three issues may be contributing to problems in class: 1) note time of day; regular Ritalin has worn off, 2) scores are not strongly positive; medication response may be improved, 3) sleep disturbances may be present and should be addressed.]

Data on Substance Use in ADHD

Good news!

- Children with AD/HD who take meds…

are 50% less likely to abuse drugs
than children with AD/HD
who don't take medication!

Tim Wilens, M.D.

Side Effects

- Appetite loss
- Sleep problems
- Rebound effect (1/3)
- Growth delay (MTA; 1/2 in., 8 lbs less; not perm,)
- Other side effects
  - Blood pressure & heart rate increases
- Impact on Tourette (increase in tics)
- Impact on Bipolar (anger, impulsive, hyper)
  - Stabilize tics and mood problems first

Additional Tips

- Don't snort or chew medicines
- Avoid aspirin & acidic foods with stimulants
  - Orange juice
- Avoid some meds with high fat breakfasts
  - Adderall
- Antihistamines may reduce med effectiveness
- Decongestants may increase the effect
- Antidepressants may work at a lower dose

Black Box Warnings

Deaths Reported

- 31,000,000 prescriptions written last year
- 17 children died over 7 years (99-05)
  - Five deaths related to heart defects. Other causes unclear: a family history of tachycardia (rapid heart beat), fatty liver, diabetes, very rigorous exercise, and heat exhaustion.
  - More study is needed.
- "Put this information in perspective"
  - Compare stimulants with penicillin (antibiotic)
  - 400 children died one year; allergic reaction

"FDA Puts Data in Perspective"

Comments from the FDA Office of Drug Safety:

- "The risk of death is no higher among children taking medicine than deaths among those who don't."
- FDA's "own studies found no conclusive link between the medications and the reported incidents in children and adults." Dr. Kate Gelperin, medical officer, FDA ODS.
- Reports of adverse reactions don't prove the drugs caused the problems. Gerald Dal Pan, Director, FDA ODS.
- "We still believe that what you tell people should reflect the available data. We didn't find the sudden death data very persuasive." We don't want to "overscare" people who might benefit from taking important drugs. Robert Temple, Director, Medical Policy.

CHADD 2006

This warning "should not alarm patients unnecessarily nor should they cause them to stop taking their medications."

FDA Strattera Warning 2004-2005

- Concern about potential liver damage
- 2,000,000 -- 2 people experienced problem
- Received treatment and recovered

- Increased thoughts of suicide
- (5 of 1357 - .4%; 1 attempt)

Common Medications

Coexisting Conditions

Antidepressants

- SSRI'S
  - Zoloft
  - Paxil
  - Prozac
  - Celexa
  - Lexapro
- Tricyclics
  - Tofranil (Imipramine)
  - Norpramin (Desipramine)
- Miscellaneous
  - Welbutrin
  - Effexor

Non-antidepressants

- Depakote
- Clonidine
- Tenex
- Risperidal
- Lithium
- Anafranil

FDA Antidepressant Warning

March 2004

- Concern about increased suicide risk or self-destructive behavior
- Yet untreated depression also increases risk
- After FDA warning, 20 percent drop in use
- 18% increase in teen suicide in 2004 for first time in a decade (2.2 to 2.6 per 100,000)

Treatment

Succeeding in school is one of the most therapeutic things that can happen to a child!!!

How Can You Help?

"Do Whatever It Takes to Help a Child Succeed!"

Reframe ADHD

****

Remember…
Traits that are not valued in children are often valued in adults!

Reframe ADHD

Bossiness	Leadership, albeit carried too far
Hyperactivity	Energetic, high energy, 10 project
Strong-willed	Tenacious
Daydreamer	Creative, innovative, imaginative
Daring	Risk-taker, tries new things
Laziness	Laid-back, Type B, not Type A

Reframe ADHD

Instigator	Initiator, innovative
Manipulative	Delegates, gets others to work
Aggressive	Assertive, others can't take adv.
Argumentative	Persuasive, may be an attorney
Questions authority	Independent, free thinker
Poor handwriting	May be a doctor one day

SUMMARY 71 Reframe: Building on Strengths

Name Steven Grade 11 Date 9/26

STRENGTHS—*Home/Community/School*
1. a strong leader; not afraid to take charge
2. high-energy; works long hours
3. tenacious; doesn't give up; persuasive
4. confident public speaker
5. entertaining; always upbeat; makes others laugh
6. friendly; never meets a stranger
7. laser focused when working on an interesting project
8. independent thinker; not afraid to disagree
9. skilled in mechanical areas; works on cars and stereos
10. active in church youth group; a leader

Treatment

What works?

If a student has problems, remember…

Consider academics first!

Best Treatment

Multimodal Treatment

- Medication 90%+
  - Parents seek treatment
- ADHD Education
  - Parents (children & teens)
- Parent Training (65-75%; teen 25-30%)
- School Success (IDEA/504)
- Physical Exercise
- Parent support
- Moving (better than 60 sessions)
  - Disrupts bad schools &
  - Delinquent friends (NIMH)

MTA (Jensen) & Barkley

Helpful Treatment

- Family therapy+ (30%)
  - Problem solving
  - Communication
  - Behavior management
- Behavioral intervention (less than meds)
  - Good for anxiety & SLD
  - Intervene at point of performance
- Teacher training
  - ADHD education
  - Behavior management
- Residential treatment (last resort)

MTA & Barkley

Less Effective Treatment

ADHD is not a *knowledge* deficit,
it's a *performance* deficit!
They know what to do, but don't do what they know!

- Skills training (not in clinic; must be real world)
  - Better for ADD/I and anxious
    - Driving
    - Anger & time management
    - Phobias
    - Academics such as study skills & test taking
- Cognitive behavioral therapy
  - Lack ability to use self-talk; internalize language
- Talk therapy

Outcomes

Hope for the Future!!

Outcome Studies

- 10-20% do extremely well;
  - Indistinguishable from others.
- 66% face some challenges
  - Work, family, or relationships.
  - For most, ADHD is a life-long challenge.
- 10-20% face serious problems
  - drugs; legal issues; criminal justice.

Barkley, R & Weiss, G

Factors Influencing Outcome

- A nurturing supportive home
- Emotionally healthy parents
- Positive parenting practices
  (infrequent hostile parent/teen interactions)
- Positive friends
- Emotional stability with less aggression
- Fewer emotional blow-ups

Promote Resilience

1. Be understanding and empathetic
2. Use good communication skills
3. Change negative interactions
4. Believe in & love the child unconditionally
5. Set realistic expectations and goals
6. Help the child find his special talents or "islands of competence"

Promote Resilience

7. Teach them that mistakes are unavoidable, and are actually opportunities for learning
8. Give the child opportunities to help others
9. Teach problem-solving
10. Discipline wisely
11. Don't just punish; teach new skills

Brooks, Goldstein & Katz