ATTENTION-DEFICIT/HYPERACTIVITY DISORDER:

RESEARCH INFORMED TREATMENT USING THE MULTI-TIERED SYSTEM OF MENTAL HEALTH SUPPORTS

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SPEAKER DISCLOSURES

Drs. Bernstein and Tresco have NO actual or potential conflict of interest to disclose in relation to this program or presentation.
OBJECTIVES

• Identify evidence-based, complementary, and integrative approaches to support school success for children with ADHD

• Discuss how school-based interventions for ADHD fit within educational contexts such as MTSS and educational law

• Describe how mental health and school-based professionals can collaborate to improve access to, and implementation of, interventions for children with ADHD
DEVELOPMENTAL PROGRESSION

• Hyperactivity
  – Often more pronounced in preschool
  – Tends to decline with time

• Inattention
  – Often become more pronounced with age
  – Tasks in later elementary and on require more independent planning and integration of previously learned skills
IMPAIREDNTS ASSOCIATED WITH ADHD

- Comorbid Diagnoses (don’t forget Test Anxiety!)
- Behavioral Impairment
- Social Impairment
- Self-regulation
- Executive Function
INTERVENTIONS

- Attention and Behavior
- Organization
- Social Performance
- Academic Competence
- Self Regulation
THE A-B-C’S OF BEHAVIOR

ANTECEDENTS
What occurs before the behavior

BEHAVIOR
Observable and Measurable

CONSEQUENCES
What occurs after the behavior
CONSEQUENCES

**Reinforcement**

*Increases* future behavior

- Positive Reinforcement: Give something that makes them happy
- Negative Reinforcement: Take away something that makes them unhappy

**Punishment**

*Decreases* future behavior

- Positive Punishment: Give something that makes them unhappy
- Negative Punishment: Take away something that makes them happy

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Results in learning and performance of a skill

Reduces occurrence of problematic behavior

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PHILADELPHIA COLLEGE OF OSTEOPATHIC MEDICINE
ACQUISITION VERSUS PERFORMANCE

• Acquisition Deficits – “can’t do”
  – Lack of knowledge on how to perform a skill
  – Inability to fluently display a sequence of behaviors
  – Difficulty selecting situation specific appropriate behaviors
  – Lack of social-cognitive abilities

• Performance Deficits – “won’t do”
  – Failure to acceptably perform in a given situation
  – Child knows how to perform the skill
  – Motivation or performance problems, not a failure to learn

Gresham, 2010
MAXIMIZING BEHAVIORAL INTERVENTION SUCCESS

- Consistency
- Immediacy
- Specificity
- Saliency
- 4:1 ratio of Positive Reinforcement to Punishment
MAXIMIZING BEHAVIORAL INTERVENTION SUCCESS

Clear and Precise Commands (Neutral Tone)

Positive Reinforcement (Praise, Attention, Reward)

Response Cost System

Frequent and Clear Communication between Home and School
DAILY REPORT CARD (DRC)  
HOME SCHOOL NOTE

• Combines Antecedent and Consequent Strategies
• Teacher provides ratings on a daily basis on one or more target behaviors (3 to 5 typical)
  • Examples, Completes work, followed rules, etc.
• Provides communication between home and school
  • Daily report is sent home to parents
• Parents provide reinforcement based for goal attainment
• Teachers/school personnel may also provide reinforcement at school
ADAPTIVE BEHAVIOR TARGET FOUNDATIONS

- ATTAINABLE
  - Unattainable targets set children up for failure
  - Lack of achieving targets and rewards will impact how effective the behavioral system will be

- Phrased Positively
  - Tell what to DO, not what not to do – state positively!
ADAPTIVE BEHAVIOR TARGET FOUNDATIONS (CONT)

- Involve Active Responding
  - Appropriate examples: completion of tasks, accuracy on work, participating in class discussions, getting along with others
  - Inappropriate examples: sit still, stay on-task, don’t call out, don’t fight
    - “dead person rule” - If a dead person can do it, it’s NOT a good target behavior for intervention
EXTENSIONS OF BEHAVIORAL PRINCIPLES TO NON-CLASSROOM SCHOOL-BASED INTERVENTIONS

• Playground (Leff et al., 2004)
  – Structure activities
  – Increased supervision

• Lunchroom (Fabiano et al., 2008; McCurdy, et al., 2009)
  – Group Contingency Approach
  – Extension of Good Behavior Game
ADHD & ACHIEVEMENT

- Students with ADHD experience significant academic underachievement

- Increased likelihood for retention and dropout
ACADEMIC INTERVENTION FOR ADHD

• Instructional Match
• Active Participation
• Goal Setting
• Peer Tutoring
• Computer Assisted Strategies

Summary in Power, Tresco, & Cassano, 2009
HOMEWORK AND CLASSWORK INTERVENTION

- Antecedent modification and contingency management
  - Antecedent –
    - Consistent start time and time limits
    - Consistent location
    - Assignment book
  - Consequences –
    - positive reinforcement for work completion and accuracy

- Goal setting - Parent/Teacher and child collaborate to:
  - 1. Establish realistic homework/classwork goals
  - 2. Evaluate performance
  - 3. Provide positive reinforcement

Power, Karustis, & Habboushe, 2001
ADDITIONAL CONCEPTUAL FOUNDATIONS

- Link Assessment Data to Intervention
- Intervene at Point of Performance
- Combine Antecedent and Consequent Interventions
- Combine Academic and Behavioral Interventions
- Use Multiple Intervention Agents
- Individualize Interventions
- Encourage pro-social/adaptive behavior and skill development

DuPaul & Tresco, 2004
ADHD AND SPECIAL EDUCATION LAW: IDEA

• Individuals with Disabilities Education Act (IDEA, P.L. 94-142), most recently reauthorized in 2004
  – ADHD -eligible under ‘Other Health Impaired’ (OHI) category

• Individualized Education Plan (IEP)

• Diagnosis NOT sufficient to receive services under IDEA 2004
ADHD AND SPECIAL EDUCATION LAW: SECTION 504

• Section 504 of the Rehabilitation Act of 1973 (Section 504)
  – Civil Rights Act providing for “reasonable accommodations” to ensure equal access to programs and opportunities
• To qualify – physical or mental impairment that substantially impacts a major life activity
• Accommodations are typically less resource intensive than those provided by an IEP under IDEA
TIERED SYSTEMS OF SUPPORT & ADHD

- Universal
  - Typically not sufficient

- Secondary
  - For some; possible 504 plans

- Tertiary
  - Most common; individualized; IEP typical
REMEMBER…

• It’s Just Behavior
  – It's not personal... students engage in problem and appropriate behaviors to get needs met

• Behavior is Learned
  – What you see is the result of risk factors within children’s past learning history (poverty, disability, academic failure, language, culture....)
REMEMBER…

- Research continues to demonstrate the most effective strategies are instruction based
  - Teach “what you want them to do instead”
  - Focus on academic and social success in terms of **linear** growth, not absolute

- Pause, step back, and smile
  - The most effective strategies will fail to impact students in the absence of sincerity, respect, and obvious joy in teaching
RESOURCES FOR SCHOOL-BASED PSYCHOSOCIAL INTERVENTIONS FOR ADHD


COLLABORATIVE AND INTEGRATIVE APPROACHES TO ADHD

• Dr. Bernstein has nothing to disclose
• No Big Pharma money in this talk!
APPROACH TO COLLABORATIVE CARE AND THERAPIES FOR ADHD
The 2007 and 2011 National Children’s Health Interview Survey
https://www.cdc.gov/nchs/slaits/nsch.htm

For those responding to survey
ADHD med 6 % (big pharma money)
CIMED in 12% of children (no big money yet)
Interventions should ideally be:

• Resilience Promoting
• Universally/Culturally Acceptable
• Safe/Effective
• Easy/Accessible
• Lessen stigma/not promote anxiety or stress

APPROACH TO COLLABORATIVE CARE AND THERAPIES FOR ADHD: COLLEGIAL

• Respect across disciplines
• Time for Communication
• Shared Language
• Cultural Competence
• Aware of Parental Pressures

APPROACH TO COLLABORATIVE CARE AND THERAPIES FOR ADHD: LEAD IS TOXIC

• Lead Free Water +
• Low Stress Prenatal +
• Adequate Nutrition =
Lower rates of ADHD - Especially for boys!

• Healthy Vending Machines
• No artificial colors or flavors
• Ingredient labels


APPROACH TO COLLABORATIVE CARE AND THERAPIES FOR ADHD: SHARED MISSION

1. EDUCATION VIEW: Support Academic Achievement
2. PUBLIC HEALTH VIEW: Prevent Morbidity and Mortality

- Reading ability → educational attainment
- Higher childhood IQ → predicts better outcomes
- Conduct problems in childhood → poorer educational attainment and occupational functioning in adults

Antisocial behaviors predict poorer educational achievement

Core symptoms remain for many at age 18

Nonalcohol substance use disorder 𝒃웅 worse outcomes

Educational interventions to reduce Test Anxiety
ADHD + co-morbid Anxiety ➔ Can respond to CBT!
The study included 94 children of which approximately 11% met criteria for comorbid mild-to-moderate ADHD
Less than 2/3 with ADHD had inattentive type (n = 61) and just less than 1/3 had combined (n = 27) subtype.

Hypothetical Case example

8 year old male 3rd grader has a 504 plan for ADHD
Disruptive behavior in the classroom includes:
Running out of the classroom
Calling out instead of raising his hand
Verbal aggression on the playground

What is Next?
APPROACH TO COLLABORATIVE CARE AND THERAPIES FOR ADHD
APPROACH TO COLLABORATIVE CARE AND THERAPIES FOR ADHD

- Middle School and High School
- Especially Acute Time Pressures on Staff
- Age of Consent Differs Between HIPAA and FERPA and State Laws

Team meeting

What were the critical elements of the 504 plan?
What might be needed in addition to what was already provided?
Who should be the invited participants to the meeting?
What are shared goals?
What might be some areas with lack of consensus agreement?

• Why Not Medication Only?

APPROACH TO COLLABORATIVE CARE AND THERAPIES FOR ADHD

- Medication + Behavior Therapy =
- Potentiation of effect

- SUBCOMMITTEE ON ATTENTION-DEFICIT/HYPERACTIVITY DISORDER, STEERING COMMITTEE ON QUALITY IMPROVEMENT AND MANAGEMENT. Clinical Practice Guideline for the Diagnosis, Evaluation, and Treatment of Attention-Deficit/Hyperactivity Disorder in Children and Adolescents
  www.pediatrics.org/cgi/doi/10.1542/peds.2011-2654
doi:10.1542/peds.2011-2654
Recent Study of 199 children with ADHD inattentive type at UCSF and UC Berkley over 4 years

Looked at the impact of Child life and attention skills (CLAS) vs. Parent Focused Treatment (PFT)

PFT and CLAS groups both had improved symptoms of inattention, organization, social skills, academics

CLAS had improvements for positive and negative parenting behavior as well as inattention, organization, social skills and academics.

A SHOUT OUT TO DR. STEVE PLISZKA, M.D.

APPROACH TO COLLABORATIVE CARE AND THERAPIES FOR ADHD
### FDA APPROVED STIMULANTS FOR ADHD

#### Approved stimulant products for ADHD:

<table>
<thead>
<tr>
<th>Immediate-Release Stimulants</th>
<th>Long-Acting, Formulated Stimulants</th>
<th>Non-Stimulants</th>
<th>Long-Acting, Prodrug Stimulants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amphetamine</td>
<td>Amphetamine SR</td>
<td>Atomoxetine</td>
<td>Lisdexamfetamine dimesylate</td>
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<tr>
<td>D-methylphenidate</td>
<td>Dexamethasone XR</td>
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<tr>
<td>Methylphenidate</td>
<td>Methylphenidate CD</td>
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<tr>
<td>Mixed amphetamine salts</td>
<td>Methylphenidate LA</td>
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<td>Methylphenidate patch</td>
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<td></td>
<td>Mixed amphetamine salts XR</td>
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<tr>
<td></td>
<td>OROS® methylphenidate</td>
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</tbody>
</table>

*OROS=osmotic release oral system*
Algorithm for the Pharmacological Treatment of ADHD
(with no significant comorbid disorders), Revised 2005

Stage 0
Diagnostic Assessment and Family Consultation Regarding Treatment Alternatives

Stage 1
Methylphenidate or Amphetamine

Response
Partial Response (if MAS or DEX used in Stage 1)
Partial Response or Non-response
Stimulant not used in Stage 1

Stage 1A (Optional)
Formulation not used in Stage 1

Continuation
Partial Response or Non-response

Non-Medication Treatment Alternatives


DEX = Dextroamphetamine
MAS = Mixed amphetamine salts
TEXAS ALGORITHM

Stage 2
- Stimulant not used in Stage 1

Stage 2A (Optional)
- Formulation not used in Stage 2

Stage 2A (Optional)
- Response

Stage 3
- Partial Response or Non-response
- Atomoxetine

Stage 3A (Optional)
- Combine stimulant and atomoxetine

Stage 4
- Bupropion or TCA


TCA = Tricyclic antidepressant
TEXAS ALGORITHM

Stage 4
- Bupropion or TCA
- Response
  - Partial Response or Non-response
    - Agent not used in Stage 4
    - Response
      - Partial Response or Non-response
        - Alpha agonist
          - Clinical Consultation
          - Maintenance
      - Continuation
  - Continuation

TMAP Algorithm: Pharmacologic Management of ADHD and Comorbid Depressive Disorder

Pliszka SR et al. J Am Acad Child Adolesc Psychiatry 2006; 45(6) 642-657
TMAP algorithm for pharmacologic management of ADHD and comorbid anxiety disorder:

Pliszka SR et al. J Am Acad Child Adolesc Psychiatry 2006; 45(6) 642-657
TMAP algorithm for pharmacologic management of ADHD with comorbid tic disorder:

- **Stage 0**: Diagnostic Assessment and Family Consultation Regarding Treatment Alternatives
- **Stage 1**: Begin ADHD Algorithm
  - Partial Response or Nonresponse
- **Stage 2**: Next stage of ADHD algorithm
  - Improvement of ADHD and tics
    - ADHD responds best to stimulant, but tics cause impairment
  - Partial Response or Nonresponse of ADHD
- **Stage 3**: Add alpha agonist to stimulant
  - Improvement of ADHD and tics
- **Stage 4**: Add atypical antipsychotic to stimulant
  - Improvement of ADHD and tics
- **Stage 5**: Add haloperidol or pimozide
  - Improvement of ADHD and tics
  - Clinical consultation

ADHD AND AGGRESSION

TMAP algorithm for pharmacologic management of ADHD and aggression:

Pliszka SR et al. J Am Acad Child Adolesc Psychiatry 2006; 45(6) 642-657
SECOND LINE MEDICATIONS ADDED TO STIMULANTS

Possible Medical Side Effects of Dopamine Blockers
Weight Gain (or Loss)
Changes in Blood Glucose, Cholesterol, TG
Sleepy
Irritable
Breast development


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APPROACH TO COLLABORATIVE CARE AND THERAPIES FOR ADHD
VIDEO GAMES

• More digital medial use → ADHD symptoms
• 24 months later in 15 – 16 years old adolescents
• Take Home:
• More Green Time and Less Video Game Time
INTEGRATIVE APPROACHES AND ADHD
INTEGRATIVE APPROACHES TO ADHD

• Omega 3 Fatty Acids

INTEGRATIVE APPROACHES TO ADHD

• Deficiency of Magnesium and Zinc may provoke all types of ADHD symptoms
• Deficiency of Ferritin may also be linked to Hyperactivity

INTEGRATIVE APPROACHES TO ADHD

- Micronutrients may improve ADHD symptoms

INTEGRATIVE APPROACHES TO ADHD

- Acetyl-L-Carnitine


INTEGRATIVE APPROACHES TO ADHD: TECH

- Neurofeedback (NF)?
- No differences in ADHD baseline symptoms between groups were found.
- Post-treatment, teachers reported significantly lower ADHD symptoms in the MPH group (p = 0.01), but parents reported no differences between the groups.

INTEGRATIVE APPROACHES TO ADHD: TECH

• Not yet proven: Executive Function training via Computer Games

• Evo delivers AKL-T01 NeuroRacer


INTEGRATIVE APPROACHES TO ADHD: TECH

10 APPS for ADHD were reviewed for ease of use, fun quality, accuracy of claims
In general APPS did not perform as promised
Remember the Milk, DUE, Calendar may be helpful

INTEGRATIVE APPROACHES TO ADHD
INTEGRATIVE APPROACHES TO ADHD

Smart phone calendars

- Most smart phones come with calendars that can sync with email service calendars
- Once you've entered appointments and events on your email calendar, it will sync with the smartphone calendar
- Smartphone calendar will sound an alarm when tasks or appointments come up

Executive Functions Supported: Monitoring and self-activating for tasks
INTEGRATIVE APPROACHES TO ADHD
INTEGRATIVE THERAPIES FOR ADHD
INTEGRATIVE APPROACHES

- Tai Chi and Karate/High Impact Running/Exercise
- Helpful

- Meditation/Mindfulness/Yoga
- Breathing strategies
- Mindfulness in the Present Moment
- Doesn’t require special equipment
- If done at home also can reduce the stress parents experience

INTEGRATIVE THERAPIES FOR ADHD
INTEGRATIVE APPROACHES TO ADHD: CREATIVE ARTS

• More research needed, although intuitively appealing!
• No conclusive research driven data.

QUESTIONS