Nonpharmacological Treatment of ADHD in Children & Adolescents

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Objectives
- Review current ADHD diagnostic criteria
- Describe evidence-based nonpharmacological treatment approaches
- Review emerging evidence for other nonpharmacological interventions

What is ADHD?
- A neurobehavioral disorder
- Primary deficit in executive functioning characterized by persistent and pervasive
  - Overactivity (Hyperactivity)
  - Behavioral disinhibition (Impulsivity)
  - Poor attention span (Inattention)
- An exaggeration of normal behaviors (considering developmental level)
- Interferes with daily functioning across settings
ADD or ADHD?

- Previously labeled as Attention Deficit Disorder (ADD) with and without Hyperactivity
  - a.k.a. brain damaged syndrome, minimal brain dysfunction, hyperkinetic impulsive disorder
- DSM-5 now lists five types of ADHD
  - ADHD-Predominately Inattentive Presentation
  - ADHD-Predominately Hyperactive/Impulsive Presentation
  - ADHD-Combined Presentation
  - Other Specified ADHD
  - Unspecified ADHD

DSM-5 changes to ADHD criteria

- Additional behavioral descriptions for symptoms
- 5 symptoms needed for adolescents 17 and older
- “Several” symptoms present prior to age 12
- “Several” symptoms needed in 2 or more settings
- 4 new specifiers:
  - In partial remission
  - Severity specifiers (Mild, Moderate, Severe)

Inattentive Presentation

Must have 6 or more of the following:
1. Fails to pay attention to detail; careless mistakes
2. Difficulty sustaining attention in tasks/play activities
3. Does not seem to listen
4. Poor follow through on instructions; fails to finish tasks
5. Difficulty organizing tasks and activities
6. Avoids, dislikes tasks requiring mental effort
7. Often loses things necessary for tasks or activities
8. Easily distracted by extraneous stimuli
9. Often forgetful in daily activities
Hyperactive/Impulsive Presentation

Must have 6 or more of the following:
1. Often fidgets with hands or in seat
2. Difficulty remaining seated when expected
3. Runs/climbs excessively in inappropriate situations
4. Difficulty with quiet leisure activities
5. Always “on the go” as if “driven by a motor”
6. Talks excessively
7. Blurs out answers
8. Has difficulty awaiting turn
9. Interrupts or intrudes on others

Other Diagnostic Criteria

• Symptoms developmentally inappropriate
• At least 6 mos duration
• Symptoms occur across settings (at least 2)
• Result in significant impairment in major life activities
• Several symptoms present prior to age 12
• Not better explained by another disorder (e.g., ASD, IDD, Mania)

Treatment & Intervention

ADHD is managed, not cured. Treatment is multimodal.
Empirically-Supported Psychosocial Interventions

Well-Established
- Parent Management Training
  - Children (<11yrs, 65-75% respond)
  - Adolescents (25-30% show reliable change)
- Behavioral Classroom Management
- Behavioral Peer Intervention
- Organization Training

(Evans et al., 2014)

Predictors of PMT Success
- Family income
  - Lower income - poorer response
- Symptom severity
  - Efficacy for children with callous-unemotional traits
- Parental ADHD
- Maternal psychopathology
- Parent education
  - Less education - poorer response
- Degree of prediction weak, except for income level, parental ADHD, and child CU

(Hawes & Dadds, 2007)
Behavioral Classroom Mgmt

- Collaboration (including education) with school critical to success
- IEPs and 504 Plans
- Proactive and reactive strategies
- Consistency of interventions
- Use of peers, parents, technology to deliver interventions

Academic Strategies

- Match work to student's abilities
- Vary presentation format and task materials
- Present work in brief, separate chunks
- Allow frequent, active participation
- Intersperse lecture/academic periods with physical exercise
- Schedule more difficult subjects in morning hours
- Reduce length of assignments; provide more time for tests; allow for testing in a less distracting environment

(Piffner & DuPaul, 2015)

Behavioral Strategies

- Allow for some restlessness/movement at work area
- Increase frequency and specificity of feedback
- Daily Report Card (DRC)
- Frequent communication between home/school
- Allow for regular breaks
Behavioral Peer Interventions
• Summer camps/treatment programs
• Parent Friendship Coaching

Organization Training
• Teaching organizational systems/strategies
• Use of planners, notebooks, calendars
• Self-monitoring strategies
• Contingent rewards based on use of strategies

Empirically-Supported Psychosocial Interventions
Possibly Efficacious
• Neurofeedback
Experimental Treatment
• Cognitive training

(Evans et al., 2014)
Neurofeedback
- NF is a learning process in which the brain is rewarded for changes in its activity
- Patient receives feedback regarding their brain activity via video games or films
- When brain activity is maintained within desired limits, games and films continue
- If brain activity varies from such limits, video games and films are discontinued

Evidence for Neurofeedback
- Moderate tx effects in recent review (11 RCTs)
  - Overall effect size = 0.57
  - Attention measures = 0.72
  - Hyp/Imp measures = 0.70
  - Some studies demonstrate comparable effects compared to MPHtx
    (Druck et al., 2012)
  - Still in need of further research
    - Large, multi-site, double-blind, sham-controlled RCT of NF for ADHD now underway

Evidence for Neurofeedback
- Improvements in core ADHD symptoms
- Effects non-significant in studies that are unblinded
  - http://www.youtube.com/watch?v=dYLtM0RrIJU

(Lofthouse et al., 2011, 2012)
(Holtmann et al., 2014)
Cognitive Re-training

- CogMed – computerized working memory training program (www.cogmed.com)
- Other popular programs include Jungle Memory, Cognifit
- Software-based working memory exercises
- Personal coaching (typically via telephone)
- Expensive, not covered by insurance

Evidence for effectiveness of re-training programs

- 2 of 3 recent meta-analyses demonstrated short-term gains in working memory and decreased ADHD symptoms
- Reliable, short-term improvements on verbal/nonverbal working memory tasks.
- Effects not sustained 5-9 mos after training.
- No evidence working memory training produces generalized gains to other areas or other skills (verbal ability, word decoding).
- Dissociation between neuropsych functioning and ADHD?

Elimination Diets

- Eliminating foods associated with hypersensitivity
- Re-introducing foods and assessing response
- 2 recent meta-analyses have demonstrated benefit of elimination diets in a subset of children (small effect size)
- Any elimination diet need to be monitored by a physician and/or dietician
- Artificial food colors – small effect on ADHD sx
- Nonspecific findings?
- Sugar restriction - no evidence for attenuation of ADHD sx, but good practice

(Cotesie et al., 2015; Melby-Lervag & Hulme, 2012; Rapport et al., 2013)
Nutritional Supplements

- Essential fatty acids (omega-3, omega-6) – small, but significant effect on ADHD sx
- Amino acids – some short-term benefit for ADHD, but should ensure adequate nutrition instead of supplementation
- Vitamin supplements – any improvements with multivitamins may be limited to children with poor diets

(Hurt & Arnold, 2015)

Mineral Supplements

- Iron – some evidence of benefit for ADHD in small subsets of children (iron deficiency)
- Magnesium – some evidence for deficiency in children with ADHD. More research is needed. Not recommended unless deficient
- Zinc – discrepant research results. One study showed benefit when combined with MPH, relative to MPH alone. Only recommended currently for documented deficiency

(Hurt & Arnold, 2015)

Alternative Interventions

- Yoga
- Massage
- Homeopathy
- Acupuncture
- Chiropractic strategies
- OT interventions (weighted vests, stability balls)

(Bader & Adesman, 2015)
Summary

- ADHD is one of the best understood psychiatric disorders in childhood
- Effective, evidence-based nonpharmacological treatment is multi-modal, requiring multiple providers to collaborate

Helpful Websites

- Children and Adolescents with Attention Deficit/Hyperactivity Disorder (CHADD) www.chadd.org
- American Academy of Pediatrics (AAP) www.aap.org
- National Initiative for Children’s Healthcare Quality (NICHQ) http://www.nichq.org/nichq
- Attention Deficit Disorder Association (ADD) www.add.org
- ADDvance – Answers to Your Questions about ADHD http://www.addvance.com/

References