Attention Deficit Hyperactivity Disorder – A Life Script from Conception to Adulthood

**Speaker:** Dr. Montagnese is board certified in adult, child, and adolescent psychiatry by the American Board of Psychiatry and Neurology. Dr. Montagnese provides comprehensive psychiatric evaluation and treatment for individuals, couples, and families. Her primary area of focus is working with children and adolescents but she also treats adults. Dr. Montagnese received her medical degree at Wayne State University in Detroit, Michigan. She completed her general psychiatry and child psychiatry training at the Penn State University Milton S. Hershey Medical Center. Dr. Montagnese is the medical director at Family and Children Services of Central Pennsylvania. This is a United Way funded nonprofit agency that serves the greater Harrisburg, York, and Lancaster areas. To contact her at this agency please call 717-238-8118.

**Speaker Disclosure:** Dr. Montagnese has no actual or potential conflicts of interest in relation to this program.

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Attention Deficit Hyperactivity Disorder

A life script from conception to adulthood.

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**Accreditation:**
Pharmacists 798-000-09-029-L01-P
Pharmacy Technicians 798-000-09-029-L01-T
Nurses - N 102209-440-L01

**CE Credits:**
1.0 Credit hour or 0.1 CEU for pharmacists/technicians/Nurses

**Target Audience:** Nurses, Pharmacists & Technicians

**Program Overview:**
Pharmacists have consistent contact with patients over a long period of time, making them an excellent and accessible resource for information on ADHD. Moreover, pharmacists are trusted healthcare providers who interact with a large, diverse patient population. One-on-one, patient-pharmacist interaction is routine, and advice can often be obtained without direct or additional cost to the patient. Pharmacists and patient relationships are often more conducive to conversation and have greater opportunities for discussion in comparison to a busy physician’s office. Pharmacists can play a key role counseling ADHD sufferers.

**Objectives:**
• Define attention deficit/hyperactivity disorder (ADHD) and its subtypes.
• Identify the clinical applications and limitations of medications for ADHD.

**Expiration Date:** 05/31/2012

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Minimal Brain Dysfunction
Hyperkinetic Disorder of Childhood
Attention Deficit Disorder
**COST OF ADHD**
- $32-52 billion annually in U.S. (CDC, ADHD homepage)
- Diagnosis rates have increased 3%/year from 1997-2006
- 56% of those with diagnosis receive meds

**EPIDEMIOLOGY OF ADHD**
- Prevalence rates: 3-8% general population
- Diagnosis rates have increased 3%/year from 1997-2006
- 56% of those with diagnosis receive meds
- Across all cultures when same diagnostic criteria applied
- M:F is 3-4:1
- Monozygotic twins: 30% higher concordance than dizygotic twins
- Parent with ADHD: 50% chance child will have ADHD
- Females: more likely to have inattentive type, less likely to get dx and tx

**WHY SO PREVALENT?**
- Evolutionary advantage in early environments
- One theory
- Not all inclusive
- Can possibly explain high prevalence rate

**EVOLUTIONARY ASPECTS: ASSET OR DEFICIT?**
- Hyperactivity helps with:
  - Foraging
  - Spotting food, predators, danger
  - Moving to better climates
Rapidly shifting attention helps with vigilance and scanning.

Overly focused/contemplative individuals would be at a disadvantage.

Impulsivity helps with reflexive or automatic responses, pounce or be pounced on, and may not get a second chance.

Warriors, Hunters, Protectors, and “Response Ready Individuals” had an advantage in early environments.

These individuals had an advantage in early environments, reason for high prevalence rate in general population, environment changed rapidly, and genes haven’t caught up.
MODERN DAY ENVIRONMENT
- School/workplace demands
- Attentional focus
- Motor passivity
- Many distractions - ADHD brain is wired to pay attention to distractions
- Passive listening
- Delayed response

SCHOOL AND THE ADHD CHILD

WHY IS THIS IMPORTANT?
- Steering child toward more adaptive environments/pursuits
- Changing environments to fit the child
- Strengths vs weaknesses assessment
- Providing treatment early on when brain is pliable

THEORIES OF CAUSATION
- Multifactorial
- Genetics
- Neurotransmitter deficits: dopamine, norepinephrine
- Perinatal complications
- Toxins: drugs, smoking, alcohol in pregnancy, lead exposure
- Trauma, neurological disorders
- Early severe deprivation
WHAT ADHD IS NOT!

- Just lazy
- Bad
- Unmotivated
- Incorrigible
- Stupid
- Undisciplined

CORE SYMPTOMS

- Inattention
- Hyperactivity
- Impulsivity

CORE SYMPTOMS

- Present in multiple settings
- Prior to age 7
- Symptoms must cause problems
- Symptoms must be present for 6 months

DIAGONSTIC CRITERIA

SYMPTOMS OF INATTENTION

- Careless
- Difficulty sustaining attention
- Doesn’t listen when spoken to
- Poor follow through
- Disorganized
- Avoids things that require focus
- Loses things
- Easily distracted
- Forgetful
**DIAGNOSTIC CRITERIA**

**SYMPTOMS OF HYPERACTIVITY**
- Fidgets
- Can’t stay seated
- Runs, climbs, darts, restless
- Can’t play quietly
- Driven by motor or “on the go”

**SYMPTOMS OF IMPULSIVITY**
- Talks excessively
- Blurs out answers
- Can’t wait turn
- Intrudes or interrupts

**DIAGNOSIS**
- No single test
- Clinical diagnosis
- Synthesis of info from multiple sources: parents, teachers, caregivers
- Structured interviews-in depth
- Rating scales: Conners, ADHD Rating Scale IV, CBCL
- Observation and interview of child
- Psychoeducational testing is helpful

**ADHD ACROSS THE LIFESPAN**

- Prenatal
- Infancy
- Toddlerhood
- Young child
- Adolescence
- Adulthood
ADHD: A Life Script from Conception to Adulthood

Focus on prevention
- Good prenatal care
- Avoid drugs, smoking, alcohol
- Emotional readiness
- Strengthen parental relationship
- Difficult labor
- Perinatal complications: infection, trauma, respiratory distress
- Colicky, difficult to soothe
- Difficult with sleep/wake/eating cycle

Core symptoms present
- Trouble in unstructured time
- Problems with rules governing behavior
- Poor peer relationships
- Poor organization skills
- Poor teacher relationships
- “Bad kid” identity
- Low self esteem

Less hyperactive, more restless
- Easily bored
- Risk taking behaviors
- Drug and alcohol use
- Sexual experimentation
- Legal problems
- Depression
- Anxiety
- Identity issues
- 60-85% children with ADHD continue to meet criteria into adolescence
ADULTHOOD

- Chronic boredom
- Lack of follow through
- Problems in relationships
- Frequent job changes/losses
- Mood and anxiety problems
- Poor anger control
- Drug and alcohol abuse
- Legal problems
- 4% prevalence rate
- Typically fewer symptoms
- Different diagnostic criteria?

TREATMENT APPROACHES

- Behavior therapy
- Parent and teacher training
- Psychoeducation
- Educational accommodations
- Treat comorbid conditions
- Psychotherapy
- Pharmacotherapy

MTA STUDY

- 1999
- Compared 4 groups
- Meds only
- Behavior Tx only
- Combo Tx
- Community Tx
- Initial results: Meds and Combo were significantly improved.
- Lead field to feel meds were defining factor

MTA STUDY

- JAACAP, May 2009- 8 year follow up
- Differences between treatment groups were not sustained at follow up
- Growth retardation was documented
- Protective effect on later substance abuse not evident
- Very heated debate currently
MTA STUDY
- Treat the individual
- Assess carefully for comorbid conditions
- Periodically assess efficacy of medications
- Not everyone needs long term medications
- Monitor physical parameters and alter dose or medication if necessary

COMORBID CONDITIONS
- ODD and Conduct Disorder
- Learning Disorders
- Substance Abuse
- Anxiety
- Depression
- Bipolar Disorder

ALTERNATIVE THERAPIES
- CBT not supported
- Dietary modifications generally not supported (except in food allergic individuals)
- EEG feedback not supported
- Formal social skills training groups not supported

MEDICATIONS
STIMULANTS
- Methylphenidate based
- Amphetamine based
- Equally effective
- 65-75% response rate
- Three decades of research

(1997 AACAP Practice Parameters for ADHD)
METHYLPHENIDATES

<table>
<thead>
<tr>
<th>Brand</th>
<th>FDA Max/day</th>
<th>Starting Dose</th>
<th>FDA Max/day</th>
<th>Starting Dose</th>
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<tbody>
<tr>
<td>Focalin</td>
<td>20mg</td>
<td>2.5-5 mg</td>
<td>60mg</td>
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<tr>
<td>Methylin</td>
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<td>Metadate ER</td>
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<td>Methylin ER</td>
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<tr>
<td>Ritalin SR</td>
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<tr>
<td>Metadate CD</td>
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<tr>
<td>Ritalin LA</td>
<td>60mg</td>
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Short acting: BID or TID
Intermediate acting: QD or BID

METHYLPHENIDATES

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<th>Brand</th>
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<th>FDA Max/day</th>
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<td>Concerta</td>
<td>72mg</td>
<td>18mg</td>
<td>30mg</td>
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<td>Daytrana Patch</td>
<td>30mg</td>
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<td>5mg</td>
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<tr>
<td>Focalin XR</td>
<td>30mg</td>
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Long acting: QD

AMPHETAMINES

<table>
<thead>
<tr>
<th>Brand</th>
<th>FDA Max/day</th>
<th>Starting Dose</th>
<th>FDA Max/day</th>
<th>Starting Dose</th>
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<tbody>
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<td>Dexedrine</td>
<td>40mg</td>
<td>Start 5mg/dose</td>
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<td>10mg</td>
</tr>
<tr>
<td>Dexerstat</td>
<td>40mg</td>
<td>Half for preschoolers</td>
<td>30mg</td>
<td>10mg</td>
</tr>
<tr>
<td>Adderall</td>
<td>30mg</td>
<td>10mg</td>
<td>70mg</td>
<td>20-30mg</td>
</tr>
<tr>
<td>Lisdexamphetamine (Vyvanse)</td>
<td>70mg</td>
<td></td>
<td>70mg</td>
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Short acting: BID or TID

STIMULANT SIDE EFFECTS
- Weight loss, decreased appetite
- Insomnia
- Headache
- Tics
- Emotional irritability
- Less common: psychosis, severe aggression
- Growth retardation (debated)
STIMULANT USE PRECAUTIONS
- Glaucoma
- Hyperthyroidism
- Hypertension
- Don’t use with MAO-I
- Drug and alcohol abuse
- Known cardiac defects

NONSTIMULANTS
- Not schedule II
- Use if anxiety or D&A issues are present
- Use if can’t tolerate stimulant
- Not immediately effective
- Monitor for SI
- Less effect on sleep, appetite
- Common side effects: sedation, nausea

<table>
<thead>
<tr>
<th>FDA Max/day</th>
<th>Starting Dose</th>
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<tr>
<td>Atomoxetine (Strattera)</td>
<td>100mg or 1.8mg/kg</td>
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Long acting: QD or BID

2ND LINE MEDICATIONS
- Buproprion
- Tricyclic antidepressants
- Alpha agonists: help with tics, hyperactivity and impulsivity most
- Use care in combining these with stimulants

EDUCATIONAL CONSIDERATIONS
- Identify needs
- Individualized approach
- Strengths-based
- Match child to environment and teacher
- Identify learning disorders
- Classroom behavioral plans
- Team approach: support each other
- Involve the child
REFERENCES


RESOURCES

- CHADD: www.chadd.org
- American Academy of Child and Adolescent Psychiatry: www.aacap.org
- National Institute of Mental Health: www.nimh.nih.gov/
- American Academy of Pediatrics: www.aap.org

NOTES