



What is ADHD: Impact across the Lifespan



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CHADD Public Policy Committee Presentation
July 23, 2024






Disclosure

- **Dr. Wiznitzer is a member of the CHADD board of directors and co-chair of the professional advisory board**
 - **There is a discussion of off-label treatment options**
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Attention- Deficit/Hyperactivity Disorder

- ❑ Most common behavioral disorder of childhood
 - ❑ Occurs in 3-10% of children
 - ❑ In one study, 5% children, 4% adults
 - ❑ Male/female ratio is 2-3:1
 - ❑ 40-80% persistence into adolescence/adulthood
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History of ADHD

1902 Morbid Defects of Moral Control

1947 Minimal Brain Damage Syndrome

1962 Minimal Brain Dysfunction

1968 Hyperkinetic Syndrome of Childhood (DSM-II)

1980 ADD +/- Hyperactivity (DSM-III)

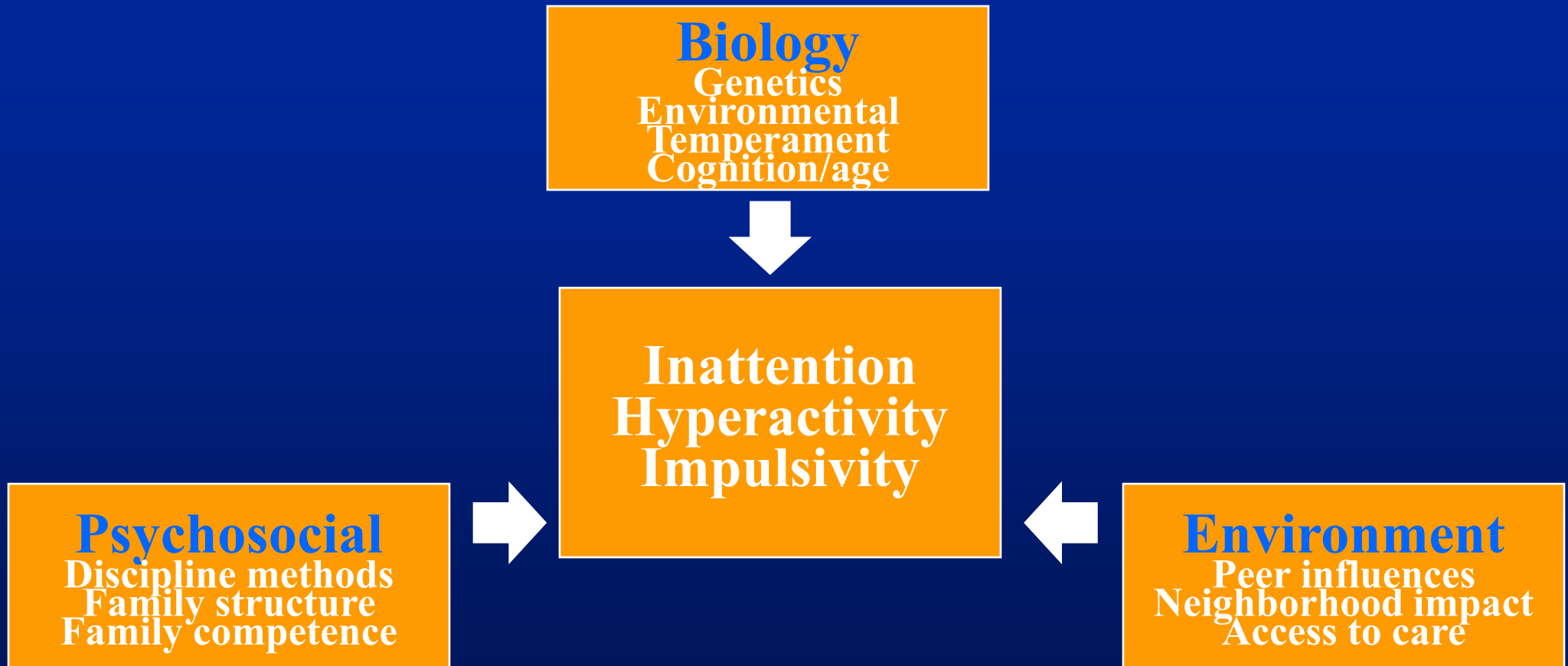
1987 ADHD (DSM-III-R) with overactivity/restlessness core

1994 ADHD (DSM-IV)

2013 ADHD (DSM-5)




Features of ADHD






ADHD

Diagnostic Criteria

- ❑ **Function inappropriate for developmental level**
 - ❑ **Motor overactivity**
 - ❑ **Impulsivity**
 - ❑ **Onset before age 12 years**
 - ❑ **Duration greater than 6 months**
 - ❑ **Presence of symptoms in 2 or more settings**
 - ❑ **Impairment in social, academic or occupational functioning**
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ADHD Inattention

- ❑ Poor attention to details or careless errors
 - ❑ Difficulty sustaining attention
 - ❑ Does not seem to listen
 - ❑ Poor follow through on instructions/work completion
 - ❑ Difficulty with organization
 - ❑ Avoids tasks requiring sustained mental effort
 - ❑ Loses necessary items for tasks
 - ❑ Easily distracted
 - ❑ Forgetful in daily activities
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ADHD

Hyperactivity - Impulsivity

- ❑ Fidgets or squirms
 - ❑ Leaves seat inappropriately
 - ❑ Runs or climbs excessively
 - ❑ Difficulty playing or engaging in leisure activities quietly
 - ❑ On the go or driven (or the feeling)
 - ❑ Talks excessively
 - ❑ Blurts out before question finished
 - ❑ Difficulty waiting turn
 - ❑ Interrupts or intrudes on others
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ADHD Associated Features

- ❑ Low frustration tolerance
 - ❑ Temper outbursts and mood lability
 - ❑ Bossiness and stubbornness
 - ❑ Insistence that needs be met
 - ❑ Demoralization, dysphoria, poor self esteem
 - ❑ Rejection by peers
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ADHD Associated Features

- ❑ Impaired academic/work achievement
 - ❑ Conflict with family and personnel
 - ❑ Inadequate application to tasks
 - ❑ Interpreted as lazy, irresponsible, oppositional
 - ❑ Resentful and antagonistic family relationships
 - ❑ Troublesome behavior interpreted as willful
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ADHD Types

(Specifiers of Current Presentation)

- ADHD, Combined Type
 - ADHD, Predominantly Inattentive Type
 - ADHD, Predominantly Hyperactive-Impulsive Type
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ADHD Across the Lifespan

PRESCHOOL

Markedly increased activity level
Impulsivity
Tantrums, oppositional-defiant, aggression and argumentative behavior
Sleep disturbance
Strained peer and family relations
Poor compliance
No sense of danger

ADOLESCENCE

Organizational difficulties
Difficulty with task completion
Excessive risk taking behavior
Poor self esteem
Poor peer relationships
Problems with authority figures
Diminished motor overactivity

Persistent inattention
↓Hyperactivity
ΔImpulsivity

SCHOOL AGE

Academic difficulties
Social immaturity
Difficult peer relations
Daydreaming
Difficulty waiting turn


ADULT

Difficulty with employment
Low performance level
Poor organization
Inability to sustain routine
Poor self discipline
Forgetfulness
Explosive behavior
Internal restlessness

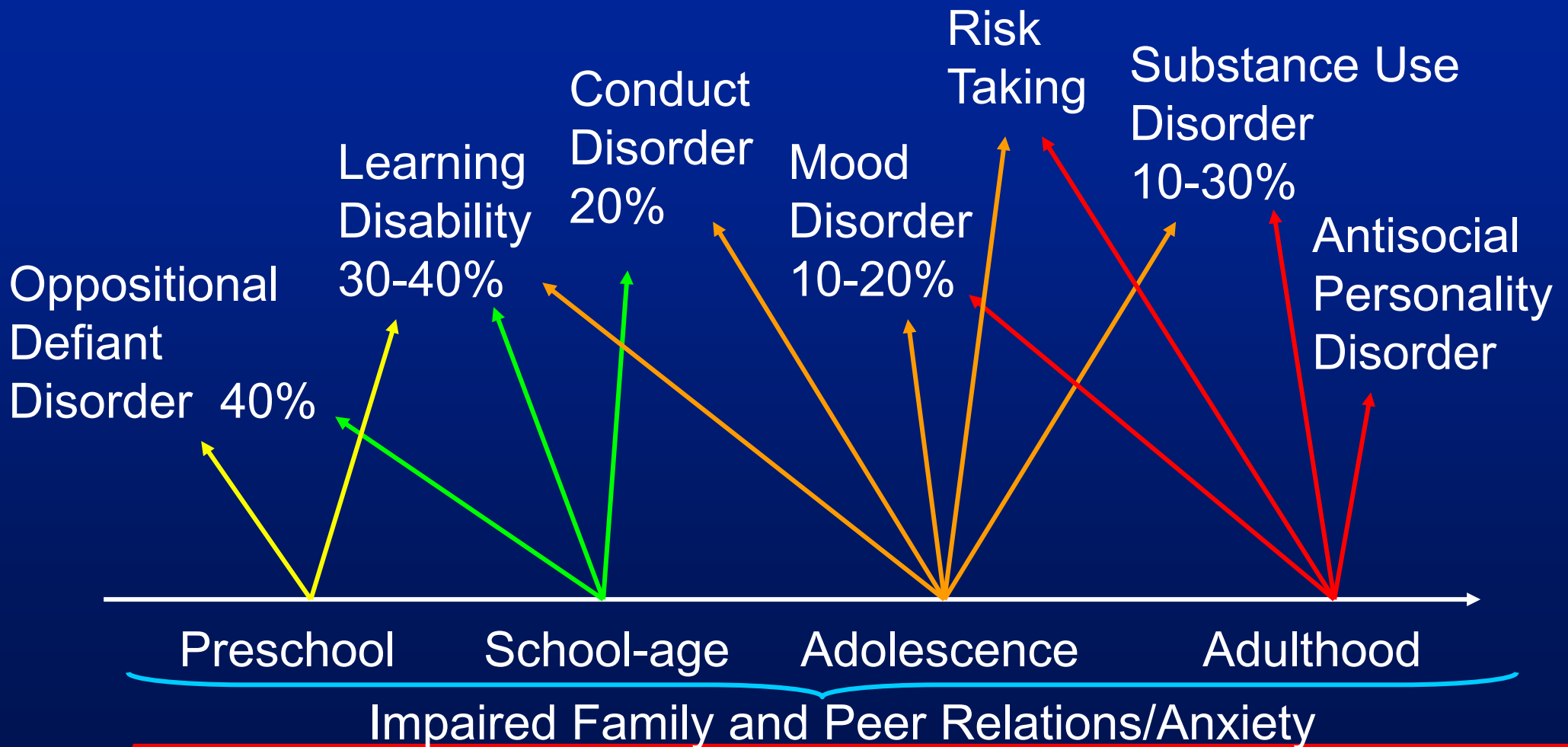


ADHD

Differential Diagnosis


- **Psychiatric disorders**
 - Mood disorder
 - Anxiety disorder
 - Post-traumatic stress disorder
 - Oppositional-defiant disorder
 - Conduct disorder
 - **Sleep disorder**
 - **Cognitive deficiency**
 - **Learning disability**
 - **Peripheral sensory deficit**
 - **Drug effect**
 - **Seizure disorder**
 - **Neglect/abuse**
 - **Difficult child**
 - **Younger age in kindergarten**
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ADHD-Complications






ADHD-Comorbidity

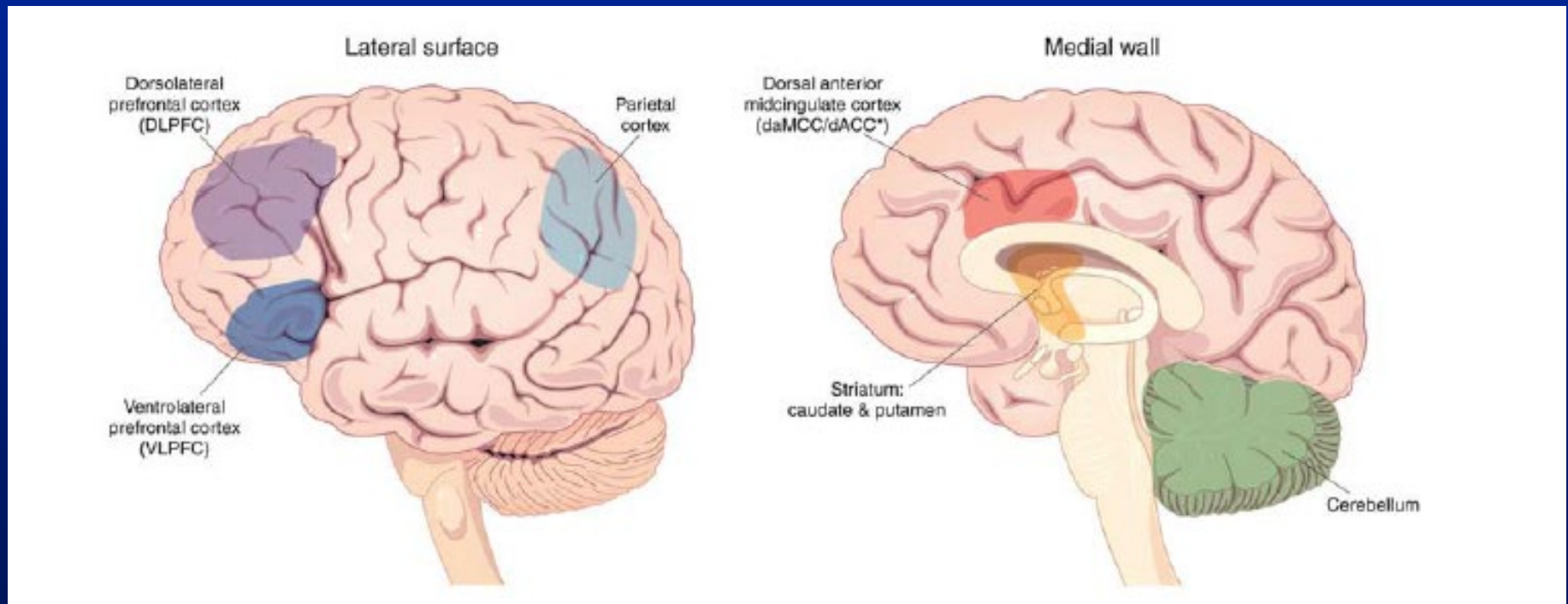
- ❑ Anxiety disorder
 - ❑ Mood disorder
 - ❑ Bipolar disorder
 - ❑ Oppositional-defiant disorder
 - ❑ Developmental language disorder
 - ❑ Learning disability
 - ❑ Sleep disturbance
 - ❑ Tic disorder
 - ❑ Developmental coordination disorder
 - ❑ Executive function problems
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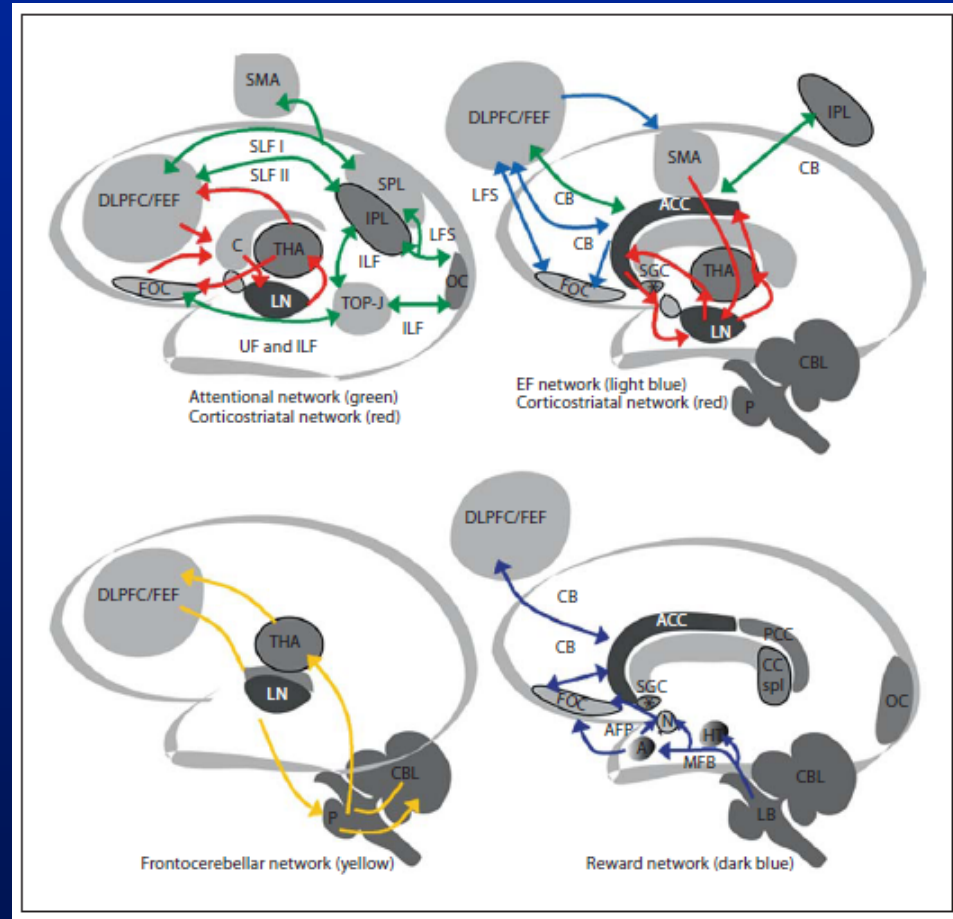
ADHD-Etiology

- ❑ Idiopathic/genetic
 - ❑ Hypoxic-ischemic encephalopathy
 - ❑ Traumatic brain injury
 - ❑ CNS infection
 - ❑ Inborn errors of metabolism
 - ❑ External toxins
 - ❑ Stroke
 - ❑ Chromosomal disorders
 - ❑ Medication effect
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Brain Structures Associated with ADHD




Functional Neuroanatomy of ADHD circuitry






ADHD-Evaluation

- **ID of ADHD**
 - Information from multiple sources, including rating scales
 - Pre-existing documents
 - **Confirmation of features of ADHD during childhood**
 - **History for:**
 - Causal factors
 - Timing and severity of presentation.
 - **Delineation of**
 - Possible alternative diagnoses (psychiatric and medical)
 - Comorbid conditions
 - **Family history of psychiatric and neurologic conditions**
 - **Physical examination for:**
 - Medical condition that may mimic ADHD or impact on treatment
 - Neurologic abnormalities (dyspraxia, cerebral palsy, movement disorder)
 - **Is technology needed for the diagnosis?**
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ADHD – Prognosis

- ❑ Features ‘fade’ in 50% by adulthood
 - ❑ Adult outcome
 - ❑ Greater difficulties with reading
 - ❑ Less years of schooling
 - ❑ Lower graduation rate
 - ❑ Lower than expected job placement
 - ❑ Impaired social skills
 - ❑ Increased comorbidity risk
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ADHD-Adult Outcome

- **Educational achievement**
 - 2-3 years less formal schooling
 - Higher high school drop out rate
 - Lower percent who complete college
 - **Occupation**
 - Lower level of ranking
 - Skilled worker most common
 - Sales personnel
 - Worse overall job performance
 - No difference in employment rate
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ADHD-Adult Outcome

- **Psychosocial impact**
 - **Persistent self-esteem and social skills problems**
 - **Risk of**
 - **Antisocial personality disorder**
 - **Substance use**
 - **Alcoholism**
 - **Cognitive impairments including executive dysfunction**
 - **Comorbid disorders associated with higher rate of separation and divorce**
 - **Decreased independence**
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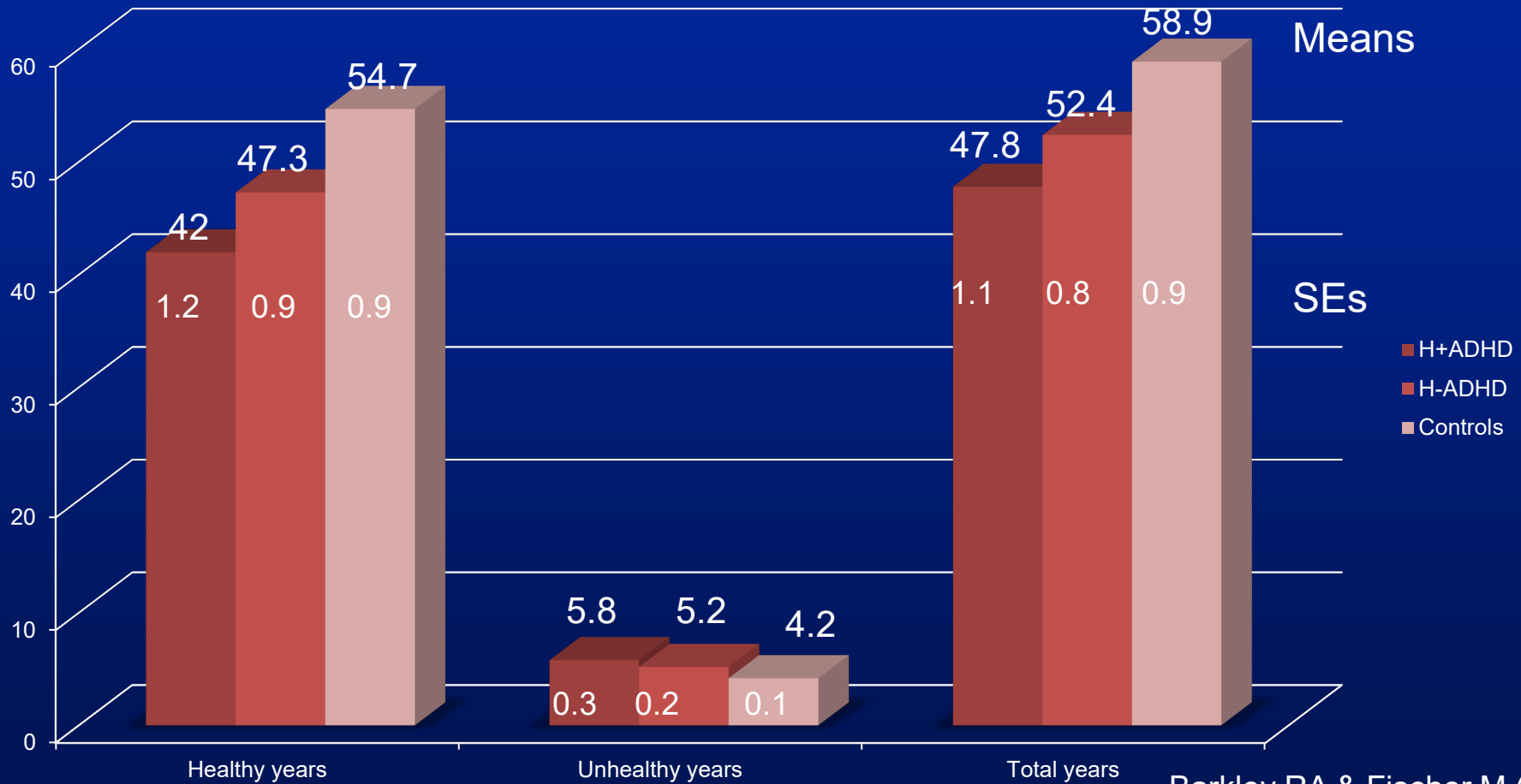


ADHD – Adult Outcome

□ Health

- Accidental injury/TBI
 - Violence (victim and perpetrator)
 - Unplanned pregnancy/STI
 - Poor dental hygiene
 - Increased (3x) obesity and T2 Diabetes (3x)
 - Greater risk cardiovascular disease
 - Increased dementia/BG disorders
 - Poorer management of chronic disorders
 - Increased suicide risk
 - Increased mortality rate
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Estimated Life Expectancy Persistent vs. Non-persistent ADHD



Barkley RA & Fischer M (2019)



ADHD – Economic Impact

- **\$143-266 billion yearly**
 - **Costs**
 - **Education**
 - **Healthcare**
 - **Caregiver**
 - **Un/underemployment**
 - **Productivity loss**
 - **Judicial**
 - **Effect on adult labor market**
 - **Employment reduction 10-14%**
 - **Earnings reduction 33%**
 - **Increased social assistance 15 points**
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Modifiable Factors

- ❑ Education risks
 - ❑ Employment risks
 - ❑ Driving risks
 - ❑ Obesity and nutrition
 - ❑ Risky sexual behavior
 - ❑ Sleep problems
 - ❑ SUD
 - ❑ Health management
 - ❑ Medication effect
 - ❑ Reduced suicide risk attempts
 - ❑ Better, but not normal, educational outcome
 - ❑ Reduced SUD, driving, obesity, social issues
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ADHD-Treatment

- **Participation of:**
 - Patient
 - Family
 - School/Work
 - Clinician
 - **Components**
 - Behavioral
 - Educational
 - Medical
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ADHD Intervention Outcome Effects

- **Single modality effects differ among individuals**
 - **Effects of multimodal therapy**
 - **Treats comorbid disorders**
 - **Lessens dose of medication**
 - **Addresses components that are not totally medication responsive**
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ADHD Intervention

- In all environments
 - Structure
 - Routine
 - Consistency
 - Support of executive functions
 - Working memory
 - Inhibition
 - Sustain and shift (flexibility)
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ADHD - Medications

- **Stimulants**
 - Methylphenidate
 - Amphetamine
 - **Antidepressants**
 - Atomoxetine
 - Viloxazine
 - Bupropion
 - **Adrenergic agonists**
 - Clonidine
 - Guanfacine
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Therapies in ADHD

- ❑ Goal of treatment is the control of ADHD features during daytime functioning
 - ❑ All day therapy is optimal in achieving this goal
 - ❑ The use of extended release formulations leads to more consistent blood levels and longer duration of effect and may improve compliance
 - ❑ Medication should be used in conjunction with an appropriate educational, behavioral and/or psychosocial program
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ADHD – Adult Outcome

- ❑ Disorder of self-regulation
 - ❑ Impact on life activities
 - ❑ Negative impact on life expectancy
 - ❑ Public health issue
 - ❑ Increased health care costs
 - ❑ Negative employment effect
 - ❑ Treatment may reduce risks
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ADHD Resources

- ❑ Children and Adults with ADHD (CHADD)
www.chadd.org
 - ❑ National Resource Center on ADHD
www.help4adhd.org
 - ❑ Attention Deficit Disorder Association
www.add.org
 - ❑ ADHD Coaches Organization
www.adhdcoaches.org
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