

ADHD- Review and Inattentive Subtype

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Attention-Deficit/Hyperactivity Disorder

- All children can be inattentive, hyperactive, or impulsive sometimes
- Diagnosis
 - Symptoms for 6 or more months
 - More severe and occur more often than other children of the same age
 - “to an extent that is disruptive and inappropriate for developmental level”

ADHD – Common Childhood Disorder

- One of the most common childhood disorders
- Historically considered to be limited to childhood
 - ✓ DSM I (1952) reactive childhood overactivity
 - ✓ ICD-9 (1965) DSM II (1968) hyperkinetic syndrome of childhood, hyperkinetic reaction of childhood
- Since the 1980s has been recognized as persisting into adulthood

Attention-Deficit/Hyperactivity Disorder

- DSM IV-TR (1994/2000)
 - Three subtypes recognized
 - Predominantly Hyperactive-Impulsive (HI)
 - Predominantly Inattentive (I)
 - Combined Hyperactive-Impulsive/Inattentive (C)

ADHD – DSM IV-TR – **Hyperactivity/Impulsivity**

Six or more of the following:

Hyperactivity

- ✓ Fidgets with hands or feet or squirms in seat
- ✓ Motor restlessness, often runs about or climbs excessively
- ✓ Difficulty playing or engaging in activities quietly
- ✓ “on the go” or acts as if “driven by a motor”
- ✓ Talks excessively

Impulsivity

- ✓ Blurts out answers
- ✓ Difficulty waiting turn
- ✓ Interrupts or intrudes on others

ADHD – DSM IV-TR - **Inattention**

Six or more of the following:

- ✓ Fails to pay close attention to details or makes careless mistakes in work or school
- ✓ Difficulty sustaining attention
- ✓ Doesn't seem to listen
- ✓ Difficulty finishing task because of distractibility
- ✓ Difficulty with organization
- ✓ Avoids/dislikes tasks that require sustained mental effort
- ✓ Loses things
- ✓ Easily distractible
- ✓ Forgetful

ADHD – DSM IV-TR – Additional Criteria

Symptoms:

- ✓ were/are present (at least to some degree) **before age 7**
- ✓ result in clear, clinically **significant impairment** in social, academic, or occupational functioning.
- ✓ result in impairment in **two or more settings**.
- ✓ have persisted for at least 6 months.
- ✓ have been present to a degree that is maladaptive and inconsistent with developmental levels.
- ✓ do not occur exclusively during the course of a PDD, schizophrenia, or other psychotic disorder
- ✓ are not better accounted for by another mental disorder.

ADHD – Common Childhood Disorder

Prevalence Estimates

- 5 – 12% of children worldwide
- 3 – 5% of adults
 - some estimate >50% children ADHD continue with sx into adulthood

Gender Distribution

- M:F estimates range from 3:1 – 9:1

Higher incidence in urban areas (Offord et al 1987)

ADHD – Common Childhood Disorder

- Epidemiology
 - M:F - 3:1
- Clinic Presentation
 - M:F - 9:1
 - Females with ADHD less disruptive; more inattention and more internalizing problems (depression, anxiety), still meet diagnosis “significant impairment in function”

ADHD – Common Childhood Disorder

Prevalence Meta-Analysis

- Parent and Teacher Ratings
 - preschool – 10.5%
 - elementary – 11.4%
 - adolescents – 8 %
- Adult (self-report) – 5.0%

ADHD – Common Childhood Presentation

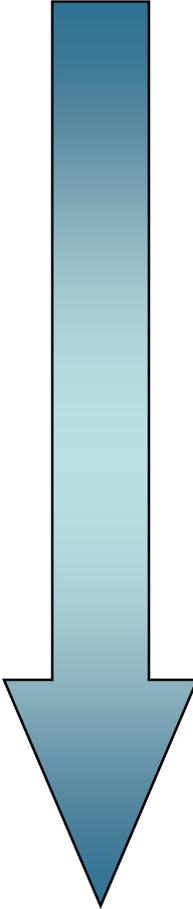
Surgeon General: “Inattention or attention deficit may not become apparent until the child enters the challenging environment . . . ”

Examples:

- 5yo male, kicked out of two daycares for aggression, in danger of being kicked out of a third daycare
- 8 yo male, “out of control”; mother called to school so many times she is afraid of losing her job
- 13 yo female, previously did well in school, now failing in new school setting

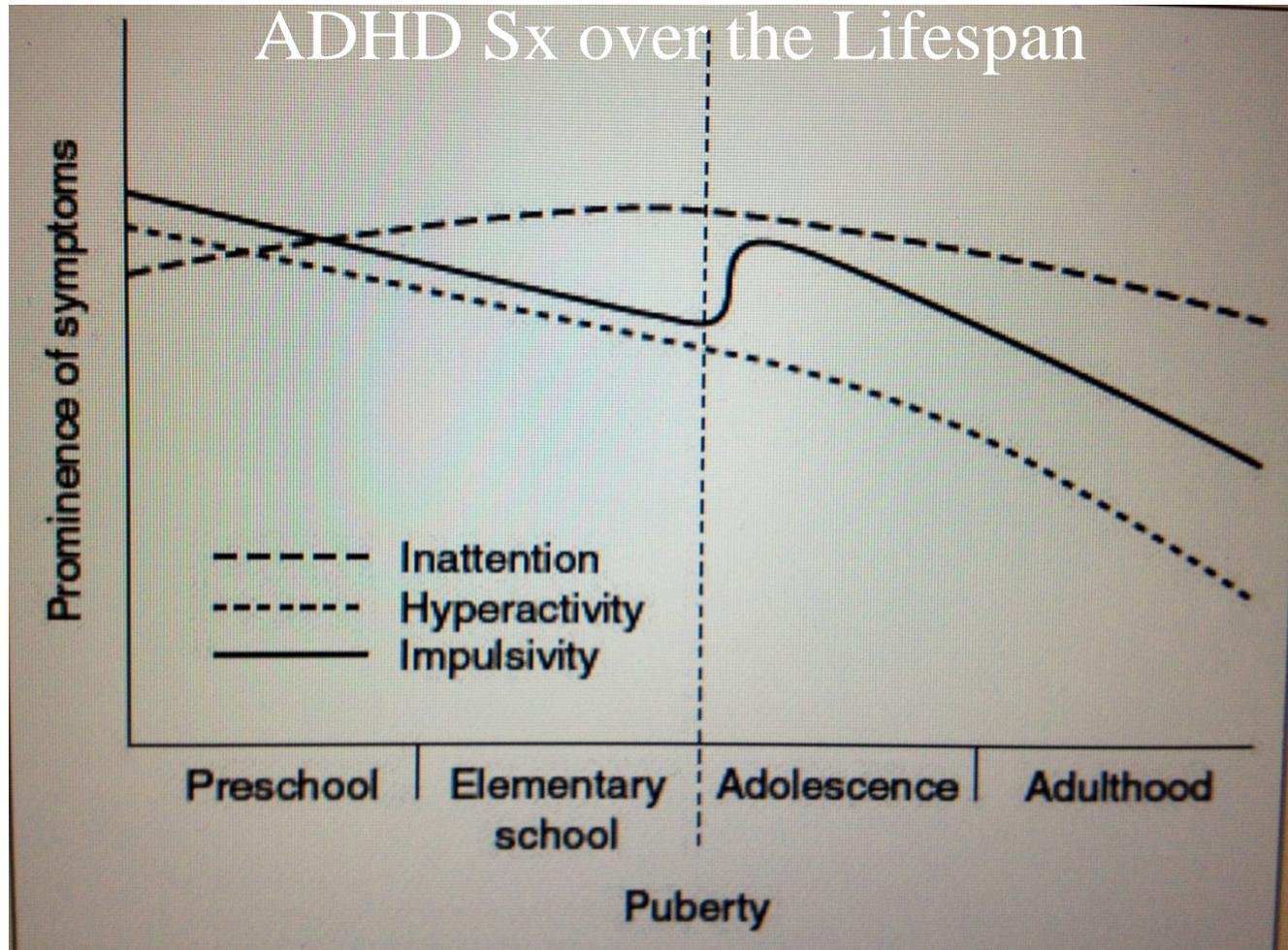
ADHD Symptoms – Developmental Trends

Children



- Motor Hyperactivity
- Aggressiveness
- Low Frustration Tolerance
- Impulsivity
- Distractibility
- Inattention
- Shifting Activities
- Ready Boredom
- Impatience
- Restlessness

Adults



Source: Volkmar, Essentials of Lewis's Child and Adolescent Psychiatry, 2011. Reproduced from Arnold, L.E. (2004) Contemporary Diagnosis and Management of ADHD.

Frequent Presenting Complaints – Adult ADHD

- difficulty finding and keeping jobs
- job or school performance below level of competence
- inability to concentrate
- lack of organization
- inability to establish and maintain a routine
- poor discipline
- depression, low self-esteem
- forgetfulness or poor memory
- confusion, trouble thinking clearly

ADHD – Evaluation in Clinic

- Interview Parent and Patient
 - 18 symptoms ADHD assessed
- Information about functioning in home and school/daycare settings
- Evaluate for:
 - Comorbid Psychiatric Disorders
 - Review Medical, Social, and Family Histories

TABLE 1. Medical conditions simulating ADHD

Anemia	Narcolepsy
Congenital brain anomalies	Neurofibromatosis I
<i>Enterobius vermicularis</i> (pinworms)	PANDAS
» Epilepsy	Pervasive developmental disorder
Fetal alcohol effects/syndrome	Sex chromosome abnormalities
Fragile X syndrome	« Sleep apnea
» Hearing loss	» Sleep deprivation
Lead poisoning	Static encephalopathy
Learning disabilities	Sydenham's chorea
« Medication effects	Thyroid disorder
Mental retardation	Tourette syndrome
Metabolic disorders, e.g., ALD	Vision loss

ABBREVIATIONS: ALD (adrenoleucodystrophy); PANDAS (pediatric autoimmune neuropsychiatric disorders associated with streptococcal infections).

Rating Scales

- **Conners ADHD Rating Scale**
 - various versions: child/adult, patient/parent/teacher, short/long
- **Vanderbilt Diagnostic ADHD Teacher Rating Scale**
 - 35 items
 - ADHD criteria plus some mood and anxiety sx
- **SNAP-IV**
 - 26 items
 - 18 ADHD plus 8 ODD sx

ADHD – Common Childhood Disorder; who gets Treated?

ADHD Subtypes (Meta-Analysis)

- most referred – combined
- most common – inattentive

ADHD – Common Childhood Disorder; who gets Diagnosed?

ADHD Symptoms- Age of Onset

- DSM-IV ADHD sx present before age 7
- 10-15% of children who meet symptom criteria for ADHD have age of onset after 7; frequent w/ ADHD - Inattentive
- Functional impairment almost identical with onset before or after 7yo
- DSM-V proposal broaden to onset by age 12

ADHD – Comorbidities

- Affective disorders
- Anxiety disorders – 25-30%
- Oppositional defiant disorder, conduct disorder -50%
- Antisocial personality disorder
- Learning disorders – 20-25%
- Substance abuse
 - Smoking - 40% (Pomerleau et al 1995)
 - overall 3x general population risk (Biederman et al 1998)
 - Rx decreases substance abuse risk
- Multiple comorbidities - 18% (Anderson 1989)

DEVELOPMENTAL COURSE OF ADHD

Infants

- often active in utero
- sleeping and feeding difficulties
- colic, crying
- difficult temperament

DEVELOPMENTAL COURSE OF ADHD

Preschool

- 40% of children with ADHD exhibit Sx by 4 years
- difficulty sitting still and being read to, noncompliance, temper tantrums
- parents state they need to child-proof the home, must provide more supervision, have difficulties with babysitters and day care settings

DEVELOPMENTAL COURSE OF ADHD

School Age

- school accentuates problems: high rates of off-task behaviors, noncompliance, temper tantrums
- at risk for learning/academic problems: 3x more likely to be **retained**, often children retained as “immature”; poor academic motivation
- poor **social** skills; at risk for social rejection
- By late childhood, 30-50% develop Sx of **conduct** disorder such as fighting, stealing, truancy/ connect with deviant peer group

DEVELOPMENTAL COURSE OF ADHD

Adolescence

- 50-70% continue to have poor attention, **impulse** control, although hyperactivity diminishes
- 30% **drop out** of high school compared to 10% for normal controls; 5% of ADHD students go to college vs 41% of normal controls
- increased risk for car **accidents**, substance abuse, juvenile **delinquency**
- 25-35% of ADHD children will be referred to juvenile court at least one time

DEVELOPMENTAL COURSE OF ADHD

Adulthood

- difficulties with attention, impulsivity, organization, but not hyperactivity (may be subjectively restless)
- more likely to quit jobs, to be seen by employers as less capable
- lower SES than unaffected siblings
- lower self-esteem
- increased risk for adult psychopathology including depression, suicide
- 40% of ADHD children have inadequate social adjustment in adulthood

RISK FACTORS FOR ADHD - PERINATAL

- maternal use of ETOH/drugs
- number of cigarettes smoked per day
- maternal convulsions
- maternal hospitalizations
- fetal distress
- placental weight
- delayed motor development
- smaller head circumference at birth and at 12 months
- meconium staining
- low birth weight

RISK FACTORS FOR ADHD - FAMILY

- parental depression
- parental alcoholism
- parental antisocial behavior/conduct disorder
- parental history of ADHD
- low maternal SES and education
- father desertion or single-parent family

ADHD – Genetics

- Rate of ADHD in families of ADHD probands is **7 times** nonpsychiatric control families (Biederman et al., 1990; Faraone et al. 1991)
- **32% of siblings** of ADHD children have ADHD (Biederman et al. 1992)
- Risk of ADHD parent having an ADHD child is **57%** (Biederman et al., 1995)
- Twin studies show higher concordance rates in MZ (identical) twins than in DZ (fraternal) twins (Stevenson, 1992; Gilger, Pennington, and DeFries, 1992)

Psychopharmacology - Efficacy

- > 3,000 studies confirming medication efficacy
- Psychostimulants show roughly equivalent efficacy in medication trials
 - slight, non-significant trends favoring amphetamines
- Large differences in individual response
- To date, no reliable predictors of medication response.
- **70 – 80% of ADHD children respond** positively to stimulants; 20-30% show adverse or no response

(Swanson et al 1995)

Psychopharmacology – Efficacy

- demonstrated short-term efficacy, compared to placebo, in **reducing** such core ADHD symptoms as:
 - task-irrelevant motor activity (eg, finger-tapping)
 - classroom disturbance
 - over-solicitation in class
 - aggressive behavior
 - stealing
- and **increasing** such behaviors as:
 - compliance
 - sustained attention
 - parent-child interactions
 - peer problem-solving activities

Psychostimulants

Methylphenidate (Ritalin)

More common side effects

- loss of appetite
- weight loss
- insomnia
- irritability
- behavioral rebound
- GI upset

Psychostimulants

Side Effect Management - Tics

- ~15-30% of children with ADHD develop tics
- 50-60% of Tourette's children meet criteria for ADHD
- Most tics are transient
- Stimulant medications may accelerate the onset of a tic disorder, rather than cause it.
- Some literature supports continuation of stimulant medication in the presence of tics – a clinical judgment call.

α -Adrenergic Agents

- originally mediocre antihypertensives
- clonidine (Catapres), guanfacine (Tenex)
- effective for impulsivity, ?emotional hyper-reactivity
- clonidine available as a transdermal patch
- not effective for hyperactivity/inattention

Advantages of Combining Behavioral and Pharmacological Treatments

- Behavioral treatments may be reduced in scope and complexity if combined with medication, resulting in improved cost-effectiveness (Atkins et al., 1989)
- Dose of medication maybe reduced when combined with behavioral intervention (Carlson et al., 1992; Pelham et al., 1980)
- Medication and behavioral treatment can be synergistic
- Long term maintenance of treatment effects may be improved by combined intervention

Classroom Interventions

- Smaller student:teacher ratio
 - Maximize individual and small group instruction
- Row seating better than clustered seating
- Preferential seating
 - Place ADHD students by positive role models and designated peer buddies
 - Avoid placing ADHD students by distractions
- Proximity control procedures – eye contact, tap on desk, short/firm verbal commands
- Provide opportunities for personal achievement and visible success
 - e.g. “Jamie, I’m going to ask you to do problem #7.”

Classroom Interventions

- Increase pro-social behaviors
 - Contingent teacher attention (praise vs ignoring)
 - Tangible rewards (stickers, prizes, food)
 - Privileges (free time, skip an assignment, computer time, music time)
- Decrease or eliminate inappropriate behaviors
 - Ignoring
 - Logical/natural consequences
 - Time-outs
 - Loss of privileges
- Consequences – timely, consistent, simple, tolerable
- Plan for transitions and other disorganizing events.

Cognitive-Behavioral Treatments

Development of self-controlled behavior through self-mediated strategies (*Meichenbaum and Goodman, 1971; P. Kendall, Univ. of Pennsylvania*)

- Verbal self-instruction/verbal mediation
- Self-monitoring
- Cognitive modeling
- Self-reinforcement
- Self-evaluation
- Problem solving strategies (eg, “Stop, look, and listen”)
 1. *What is the Problem?*
 2. *What are some solutions?*
 3. *Pick one*
 4. *What happened?*

Cognitive–Behavioral Treatments

- Anger Management training
- Social Skills training
- Psychoeducational counselor or other paraprofessional
 - Using modeling, role play, and practice to teach cognitive skills

Stimulant Medications and Growth Retardation?

Spencer, TJ et al. Growth deficits in ADHD children revisited:
Evidence for disorder-associated growth delays?
JAACAP 35:1460 (1996)

Results: Small but significant differences in height were identified between ADHD children and controls. However, height deficits were evident in early but not late adolescent ADHD children and were unrelated to use of psychotropic medications. There was no evidence of weight deficits in ADHD children relative to controls.

Conclusions: ADHD may be associated with temporary deficits in growth in height through mid-adolescence that may normalize by late adolescence. This effect appears to be mediated by ADHD and not its treatment.