

## IMPULSE CONTROL DISORDERS

- Attention Deficit Hyperactivity Disorder
- Attention Deficit Disorder\*
- Obsessive Compulsive Disorder\*

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## History of ADHD

- 1902 Still: "defect in moral control"
- 1922: Hohmann "post-encephalitic syndrome" hyperactive, inattentive, disruptive
- 1930s: "Organically driven"
- 1947 Strauss: "Minimal Brain Damage Syndrome"
- 1957 Laufer: "Hyperkinetic Impulse Disorder"

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## History of ADHD

- 1960 Chess: Hyperactive child syndrome
- 1962 Clements: Minimal Brain Dysfunction
- 1972 Douglas: deficit in attention and impulse control; hyperkinetic
- 1976: Stimulant trials in hyperactivity
- 1980: Development of diagnostic/research criteria for attention deficit disorder DSM III

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## Prevalence

- School-age children: 3-5%, ?increasing?
- Mental health clinics: 50%
- Male:female ratio is 9:1
- Decline with age

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## Aetiology/Pathogenesis

- Acquired brain disorders:
  - traumatic
  - infectious
  - foetal alcohol
- Genetic: linked to
  - dopamine transporter gene (DRD)
  - dopamine receptor gene (DAT)
- Involves frontal/prefrontal/striatal dopaminergic systems

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## Diagnosis of ADHD

- Interviews, questionnaires, rating scales
- No clinical examination or lab tests are accepted as either "rule in" or "rule out."
- Observations (if during a sufficiently lengthy and demanding examination) may be "3rd setting" ratings data contributing to diagnosis.
- Developmental Motor Coordination Disorder is highly comorbid across subtypes

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## ADHD: Subtypes and Associations

- Frequently comorbid with disruptive (over 30%) and mood/anxiety disorders (over 20%).
- Three types (as of DSM-IV) are:
- Combined/full ADHD
- Predominantly hyperactive-impulsive (HI)
- Predominantly inattentive (ADD)

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## Subtypes, Lifespan Issues

- Predominantly HI: most often preschoolers.
- Predominantly ADD: residual in adults and/or
- markedly overlapping LD.
- Heterogeneity, not only between but within
- subtypes, complicates understanding.
- Alcoholism and drug abuse risk is elevated in those with comorbid disruptive and/or mood disorders by teen years

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## DSM IV Diagnostic Criteria

- Symptoms of Inattention
- Symptoms of hyperactivity-impulsivity

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### Inattention symptoms: 6 or more

- Often fails to give close attention to details or makes careless mistakes in schoolwork etc.
- Often has difficulty sustaining attention in tasks or play activities
- Often does not seem to listen when spoken to directly
- Often does not follow through on instructions and fails to finish tasks

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### Inattention symptoms: 6 or more

- Often has difficulty organizing tasks and activities
- Often avoids tasks that require sustained mental effort
- Often loses things necessary for tasks or activities
- Is often easily distracted by extraneous stimuli
- Is often forgetful in daily activities

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### Six or more symptoms of Hyperactivity-Impulsivity

- Often fidgets with hands or feet or squirms in seat
- Often leaves seat in classroom or similar situations
- Often runs about or climbs excessively in situations in which it is inappropriate (feels restless)
- Often has difficulty playing quietly

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## Six or more symptoms of Hyperactivity-Impulsivity

- Often "on the go" or acts as if "driven by a motor"
- Often talks excessively
- Often blurts out answers before questions completed
- Often has difficulty awaiting turn
- Often interrupts or intrudes on others

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## Additional Criteria for ADHD

- Some hyperactive-impulsive or inattentive symptoms causing impairment before age 7 yrs
- Some impairment from the symptoms is present in two or more settings
- Clear evidence of clinically significant impairment in social, academic or occupational functioning
- These symptoms do not occur during a Pervasive Developmental Disorder, Schizophrenia or other psychotic disorder and are not better accounted for by another mental disorder

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## Differential Diagnosis

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|-----------------------|-------------------------|
| ● Hyperthyroidism     | ● Bipolar disorder      |
| ● Hearing Loss        | ● Tourette syndrome     |
| ● Learning Disability | ● Anxiety disorder      |
| ● Epilepsy            | ● Oppositional disorder |
| ● Chorea              | ● Conduct disorder      |
| ● CNS abnormality     | ● Psychosocial          |
| ● Metabolic           | ● Substance Abuse       |
| ● Depression          | ● Autism                |

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## ADHD in Preschoolers

- Constantly in motion
- Unresponsive to requests
- Trouble staying seated
- Demanding of attention
- Rapidly shift from one activity to another
- Resist passive activities
- Wander off alone
- Sleep problems
- Inappropriate touching/handling objects

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## ADHD: adolescents and adults

- Sense of internal restlessness
- Uncomfortable with inactivity
- Quick mood shifts
- Over-reaction to stimuli
- Poor self-control, little self-reflection
- Poor tolerance for frustration
- Disorganised in work and daily life
- Problems with relationships and jobs
- Often very creative, high activity level

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## ADHD: Assessment

- Developmental history
- Medical and family history
- Information from parents and school
- Physical examination:
  - "Soft" neurological signs
  - Minor anomalies
- Investigations as indicated
- Psychoeducational evaluation
- Hearing/vision screening

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## Management of ADHD

- Psychosocial intervention with the family to ensure adequate understanding of the child and to stabilise the family situation
- Behavioural management with child, family and school, emphasis on positive feedback
- Educational strategies: address the learning environment
- Pharmacologic
- Flexibility, patience, tolerance, encouragement

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## Medications for ADHD

- Methylphenidate (Ritalin)
- Dextroamphetamine
- Clonidine
- Low-dose antidepressants (desipramine)
- Pemoline
- Atomoxetine (USA)
- Bupropion

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## ADHD Outcome: Adverse Factors

- Pervasiveness of symptoms
- Persistence of symptoms
- Associated problems: aggression
- Psychosocial dysfunction: peers, family
- Poor academic achievement
- Drug or alcohol use
- Criminal activity

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## ADHD Outcome: Positive Factors

- Good family support
- Higher intelligence
- Good peer relationships
- Positive temperament, nonaggressive
- Emotional health, positive self-esteem
- Socio-economic factors
- Diminution or resolution of symptoms

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## Stimulant Medications

- Methylphenidate
- Dextroamphetamine
  
- Racemic mixture of d and l amphetamine (USA only)

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## Methylphenidate

- Stimulant drug, banned by the IOC
- In the US “Appropriate Clinical Use” form applies
- Improves concentration: could be effective in athletes without ADHD

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## Methylphenidate: Side-Effects

- Appetite Reduction/Weight Loss
- Insomnia
- Rare:Headache/abdominal pain
- Rare: depression/withdrawn behaviour
- Theoretical: could worsen epilepsy
- Does not have any effect on final height
- Is not addictive
- Schedule II drug: drug abusers may use it simultaneously with other illegal substances

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## Methylphenidate: Formulations and dosing

- Goals:
  - Effective during school and homework-time
  - Out of the system by bedtime
  - May use Monday to Friday or 7 days /week
  - Week-End use if significant behavioural comorbidity or needed for weekend activity: sports, scouts, etc
- Ritalin: approx 4 hour duration of action, need twice daily dosing: On/Off effect
- Long-acting preparations:
  - Concerta
  - Ritalin LA

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## Dextroamphetamine

- Similar profile to methylphenidate
- May be used where methylphenidate ineffective
- Some prefer to use it in children with epilepsy (less theoretical risk of worsening seizures)

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## Clonidine

- Constant action, not on-off
- Evidence base not as good as for stimulants
- Drowsiness may occur
- Rare: depression
- Rare: hypotension, cardiac arrhythmia

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## Atomoxetine (Strattera)

- Licensed in USA, not in Ireland
- Not a stimulant
- Selective norepinephrine reuptake inhibitor
- May work via norepinephrine transporter
- In randomised studies: as effective as methylphenidate
- Adverse reactions: 5%, irritability, GI upset, anorexia, mood swings, fatigue
- May be given as single daily dose or bd
- Currently recommended as second-line only

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## Antidepressants

- Bupropion
  - Effective
- Tricyclic Antidepressants
  - Ineffective
- Monoamine oxidase inhibitors
  - Ineffective

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## Low-dose Antidepressants

- Desipramine and imipramine
- Limited evidence base
- Not as frequently used
- Side-effects: rare with low-dose
- Risk of idiosyncratic effect such as arrhythmia

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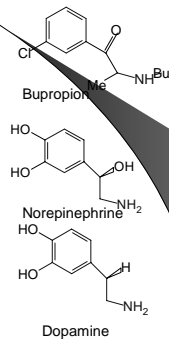
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## Bupropion

- Bupropion is a dopamine and norepinephrine reuptake inhibitor.
- ADHD is a deficiency in the dopamine and norepinephrine reuptake inhibitor
- Selective serotonin reuptake inhibitors do not appear to be effective in ADHD



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## Role of Stimulants in Treatment of ADHD

- Not the only treatment needed, but effective in
- 75-90% of ADHD cases (7 through adult years).
- Side effects few, rarely serious, usually manageable.
- Response to stimulants is NOT diagnostic of
- ADHD

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## Treatment Implications

- More formulations now exist, use of which involves “the art of medicine.”
- Individualize medication for “target symptoms, target times”
- Stimulants outperform non-drug interventions but combination is best and permits lower drug doses.

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## US Randomised Study: MTA

- Medical management superior to behaviour therapy
- Combined therapy and medical treatment did not differ on any dependent measure
- Combined treatment was better than behaviour therapy
- Medical Management and Combined therapy superior to community treatments
- Behaviour therapy equivalent to community treatments
- Sustained effect at 24 mths follow-up

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## CoMorbid Motor Problems

- Developmental Co-ordination Disorder
- “Dyspraxia”
- Often may have minor findings of motor incoordination in fine and gross motor activities
- May function poorly at sport
- However, some may be highly coordinated, good at sports

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## Conclusions

- Children and adults with ADHD should take medication if necessary Medical exception form appropriate where drug testing applies
- More research necessary on whether stimulant drugs may be useful to 'normals'

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## Comparison

Drugs	Stimulant?	Addictive/ easily abused?	Side Effects	Targeted audience	Time frame
Strattera®	No	No	More prominent	Adults	4 hours
Ritalin®	Yes	Yes	Some	Children	4 hours
Bupropion	No	No	Some	Both	4-8 hours
Adderall®	Yes	Yes	Some	Both	8 hours

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