

# ADHD training

## Accident and Emergency

# Learning Objectives

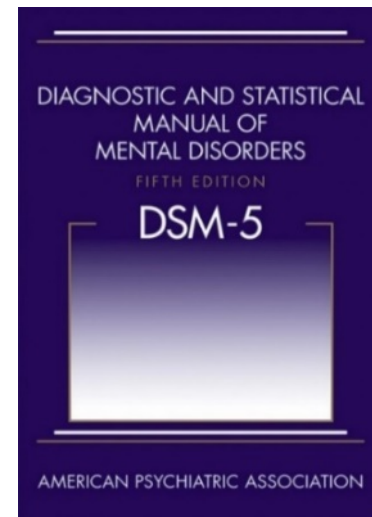
- Understand the stigma surrounding ADHD and develop ability to challenge stigma.
- Recall the three core symptoms and presentation in relevant venue/situation.
- Understand what you may need to do differently in be able to deliver a comprehensive service.

# DSM-5 classification of ADHD

ADHD is characterised by a pattern of behaviour, **present in multiple settings** (e.g. school & home), that can result in **performance issues** in social, educational, or work settings

Children must have **at least six symptoms** from the inattention criteria and/or the hyperactivity & impulsivity criteria, while older adolescents & **adults** (over age 17 years) must present with five

Symptoms must be present **before age 12** (previously before age 7)



# What is ADHD?

- ADHD stands for Attention Deficit Hyperactivity Disorder which is a recognised medical condition with specific symptoms.<sup>1</sup>
- ADHD is a behavioural disorder where the brain develops and works in a different way from those not affected.<sup>2</sup>

# Famous people with ADHD

Sir Richard Branson

Chef Jamie Oliver

Michael Phelps

***Ensure research has been completed and all people listed have ADHD before adding to this list***

# What is ADHD? **Select most appropriate videos**

ADHD - Challenges with accessing services

<https://www.dropbox.com/s/j8po75lbex3xiiv/ADHD%20-%20Challenges%20with%20accessing%20services.mov?dl=0>

What is ADHD?

<https://www.dropbox.com/s/yqtk5wsl5ua94v5/What%20is%20ADHD.mov?dl=0>

ADHD - Challenges in education

<https://www.dropbox.com/s/9psnn4smrq6tm9v/ADHD%20-%20Challenges%20in%20education.mov?dl=0>

ADHD - Challenges with life skills

<https://www.dropbox.com/s/vycm86kc75blbzi/ADHD%20-%20Challenges%20with%20life%20skills.mov?dl=0>

ADHD - Challenges with peers

<https://www.dropbox.com/s/y9ejy3ea1pioct6/ADHD%20-%20Challenges%20with%20peers%20.mov?dl=0>

# Key symptoms

**Inattention**

**Impulsivity**

**Hyperactivity**

These symptoms occur in every child from time to time but in young people and adults with ADHD they are persistent and impact on daily functioning

# Challenge or opportunity – a point of view

**Distractibility/disrupts  
others**

**Alertness/Interactive**

**Activity / impulsivity**

**Imagination/innovation**

**Insatiable / inflexible**

**Energy / persistence**

**Risk-taking / egocentricity**

**Enthusiasm / passion**



# Discussion

How may these symptoms present whilst in A&E –  
waiting room?

– consultation room?

*What strategies would you implement?*

*What do you expect to be the outcomes of your  
actions?*

## Key strategies: Create the right environment

Children with ADHD will struggle to sit still and wait in A&E or sit in a bed. They may need to move around the department or pace outside.

Children with ADHD may need to have instructions repeated, especially if they have not taken their medication.

If children have their medication wearing out of their system, they may settle if they are offered food.

# Understanding the possible impacts of ADHD

mood  
instability

motor  
accidents

alcohol /  
drug abuse

sleep  
difficulties

antisocial  
behaviour

relationship  
problems

marital  
discord

social  
difficulties

peer  
rejection

smoking

occupational  
difficulties

behavioural  
disturbance

academic  
impairment

low self  
esteem

comorbidities

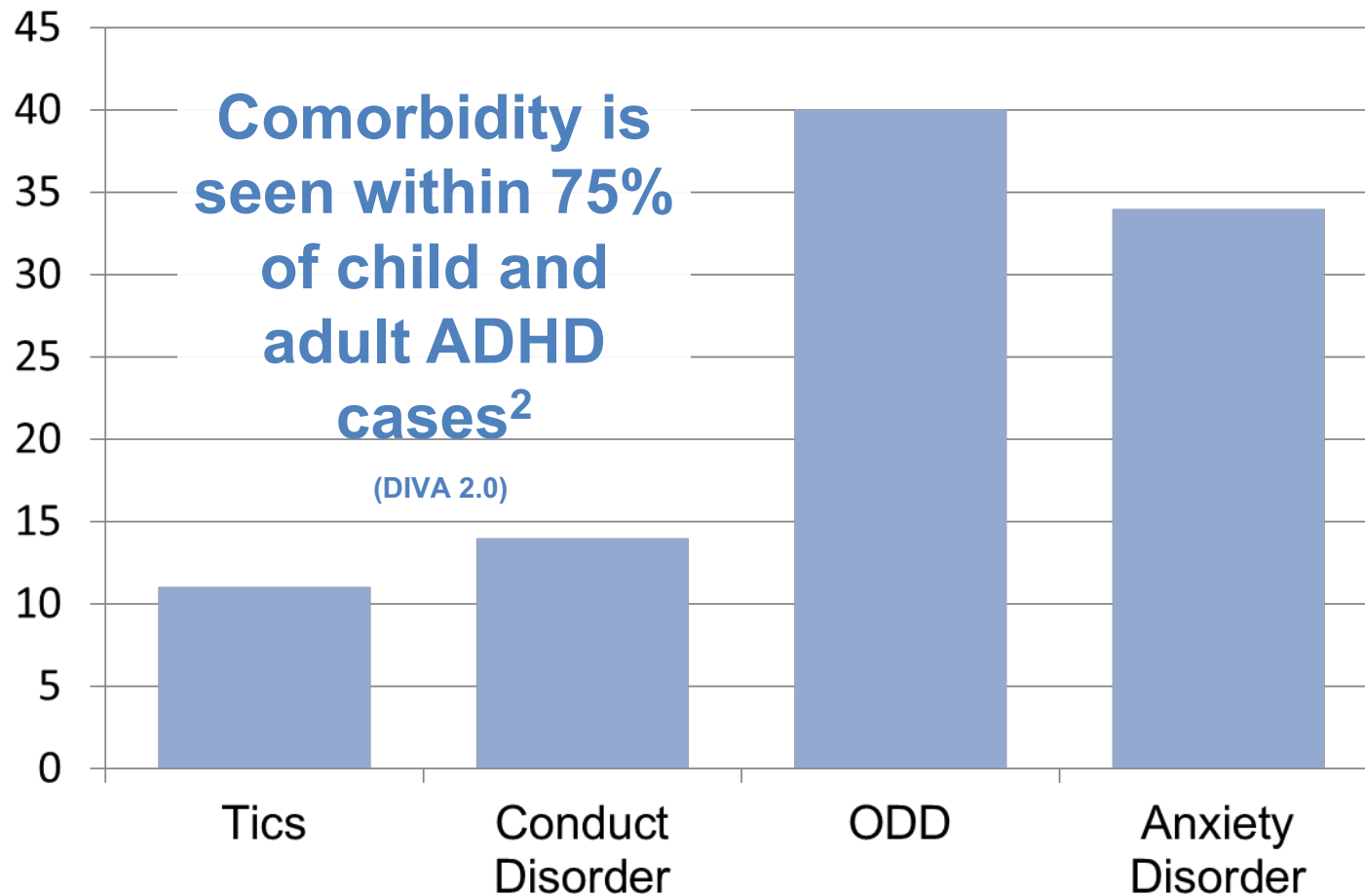


...Pre-school...Childhood ...Adolescence ...Adulthood

# How many children are affected?

- ADHD is the most common behavioural disorder in the UK<sup>1</sup>
- It is estimated that ADHD affects around 2-5% of school-aged children and young people<sup>1</sup>
- In UK, it is believed that the prevalence of severe ADHD in the school-age population is 1.5%, and the less severe form is 3-5%.<sup>2</sup>

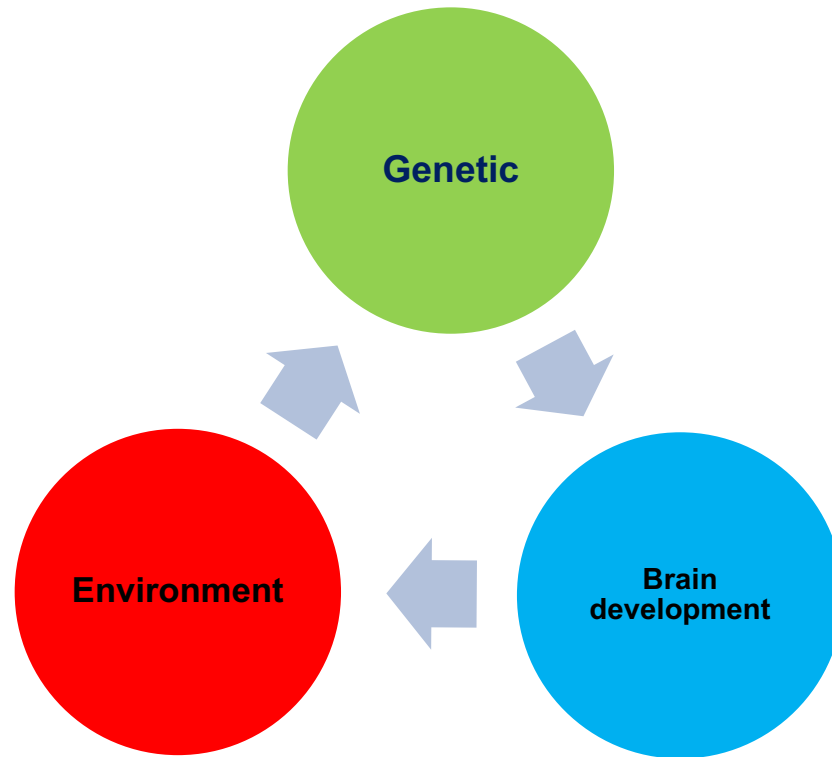
# Comorbidities in childhood ADHD (N=579)<sup>1</sup>



# Does it affect boys or girls?

- **ADHD IS DIAGNOSED UP TO NINE TIMES** more often in boys than girls<sup>1</sup>
- **GIRLS ARE TWICE AS LIKELY** to manifest the inattentive type of ADHD<sup>1</sup> and may therefore be 'missed'
- **BOYS WITH ADHD** have more oppositional behaviour, conduct disorder and anti-social behaviour<sup>1</sup>
- **GIRLS WITH ADHD** have more depression in later life<sup>2</sup>
- **IN ADULT ADHD CLINICS** the ratio of males to females is nearer 1:1<sup>3#</sup>
- **GIRLS WITH ADHD** are more likely to have intellectual impairment

# What causes ADHD?



A combination of factors

# What causes ADHD?

ADHD is thought to be caused by the interplay of multiple genetic and environmental factors which can include:

- Altered brain function<sup>1</sup>
- Genetic component<sup>2</sup>
- Head injury<sup>3</sup>
- Exposure to toxins<sup>4</sup> (Lead etc.)
- Premature & low birth weight<sup>5</sup>
- Smoking and alcohol use in pregnancy<sup>6</sup>
- Food or food additives are not associated with the development of ADHD<sup>7,8</sup>



## ADHD: a genetic disorder

- ADHD is often a genetically inherited disorder
- Overall heritability is 75%

Twin studies estimate a heritability of up to 76%<sup>1</sup>

Family studies

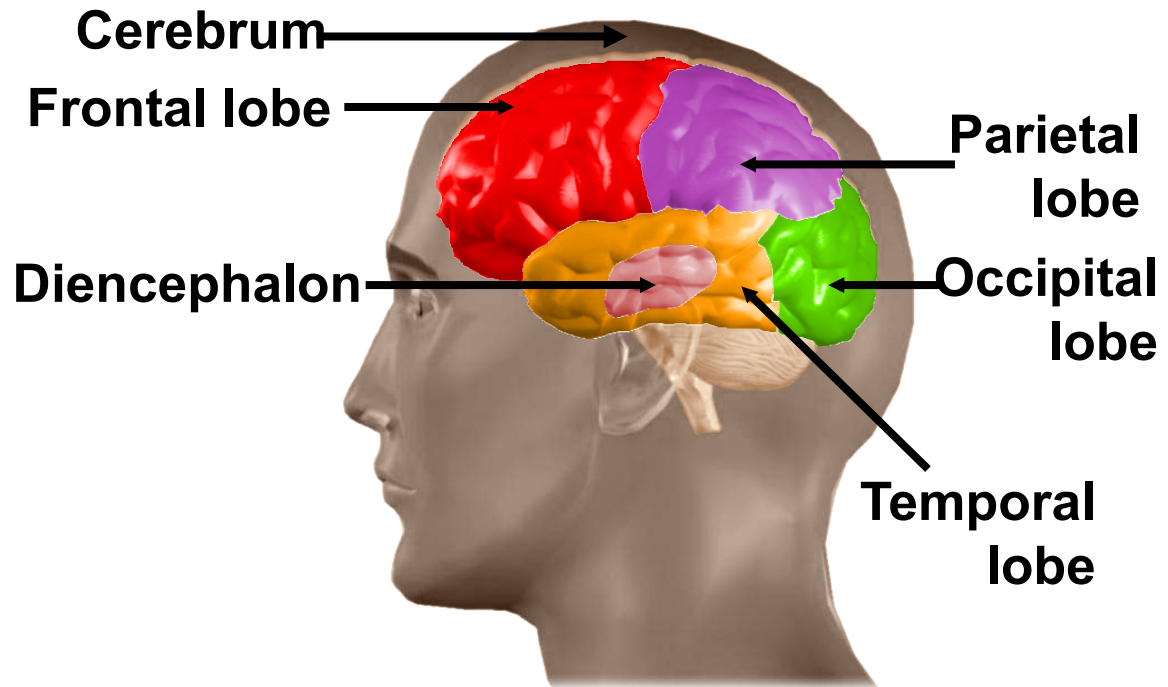
Adoption studies

Molecular genetics<sup>2</sup>

# ADHD is a neurobiological disorder

The frontal lobes that enable us to control our thoughts and behaviour do not function as well in those affected<sup>1</sup>

Some of the pathways involving key chemicals that enable brain-cells to communicate with each other are disrupted<sup>2</sup>



## Causes of ADHD: neurotransmitter function

- ADHD is thought to be influenced by an imbalance of neurotransmitters, dopamine and noradrenaline.
- Both play an important role in the ability to focus & pay attention to tasks<sup>1-3</sup>



# Insert case study group discussion

*If a young person with ADHD is more likely to have inhibited learning abilities, how may this effect gathering consent?*

# Medication

- NICE advises that medication should be initiated by an appropriately qualified clinician (nurse prescriber/paediatrician/psychiatrist).
- Before prescribing, the clinician will review the child's physical health; cardiovascular symptoms in response to exercise, family history of cardiac disease or sudden death.
- Illegal drugs are unregulated, and new compounds constantly enter the market. Thus ADHD drugs may have an unexpected interaction with new psychoactive substances.
- There are 4 groups of drugs available for the treatment of ADHD, two main stimulant and two main non-stimulant families.

# Stimulants

- Methylphenidate (immediate and modified release) – e.g. Equasym, Concerta, Matoride and Medikinet – all have slightly different initiation and duration of action. All work only while they are in the child's system. All can increase blood pressure and pulse and reduce appetite. All can increase pulse and blood pressure to dangerous levels if combined with an illegal stimulant.
- Dexamphetamine e.g. Elvanse can increase blood pressure and pulse and reduce appetite. All can increase pulse and blood pressure to dangerous levels if combined with an illegal stimulant.

# Non-stimulants

- Atomoxetine is a selective noradrenaline reuptake inhibitor. Common side effects include stomach pain, reduced appetite, nausea and vomiting as well as increased heart rate and blood pressure.
- Guanfacine (2016) – NICE notes that this is a non-stimulant treatment for ADHD in children. Common side effects include sleepiness, headache, tiredness, stomach pain and sedation. Hypotension, bradycardia and weight gain have also been identified. If a child misses more than one day of guanfacine at a higher dose, this can cause dangerous dysregulation of blood pressure.

# British National Formulary

## Methylphenidate drug interactions

- The risk of hypertension is increased when methylphenidate is given with volatile liquid general anaesthetics.
- Methylphenidate may enhance the anticoagulant effect of coumarins.
- The manufacturer of isoflurane advises avoidance of sympathomimetics due to the possible risk of ventricular arrhythmias.
- Methylphenidate is noted to antagonise the hypotensive effect of adrenergic neurone blockers.
- Methylphenidate is known to increase the plasma concentration of fosphenytoin.
- The effects of methylphenidate may be enhanced by alcohol.



# British National Formulary

## Dexamphetamine drug interactions

- Dexamphetamine is a sympathomimetic.
- Sympathomimetics can increase the risk of hypertension when given with doxapram.
- The avoidance of sympathomimetics is advised by the manufacturer of isoflurane due to the risk of ventricular arrhythmias.
- There is the risk of a hypertensive crisis when sympathomimetics are given with moclobemide.
- There is the risk of hypertension when vasoconstrictor sympathomimetics are given with oxytocin due to the enhanced vasopressor effect.

# British National Formulary

## Atomoxetine drug interactions

- Amiodarone has a long half life, and interactions may happen weeks or months after it has been stopped. There is an increased risk of ventricular arrhythmias when atomoxetine is given with amiodarone.
- There is a risk of ventricular arrhythmias when atomoxetine is given with disopyramide.
- The hypokalaemia caused by diuretics can increase the risk of ventricular arrhythmias when combined with atomoxetine.
- There is an increased risk of ventricular arrhythmias when atomoxetine is given with *parenteral* erythromycin.
- There is an increased risk of ventricular arrhythmias when atomoxetine is given with mefloquine.
- There is an increased risk of ventricular arrhythmias when atomoxetine is given with methadone.

# British National Formulary

## Atomoxetine drug interactions

- There is an increased risk of ventricular arrhythmias when atomoxetine is given with moxifloxacin.
- There is an increased risk of cardiovascular side-effects when atomoxetine given with *parenteral* salbutamol.
- There is an increased risk of ventricular arrhythmias when atomoxetine given with sotalol.
- There is a possible increased risk of convulsions when atomoxetine given with tramadol.

# British National Formulary

## Guanfacine drug interactions

The sedative effects of guanfacine may be increased by alcohol. The plasma concentration of guanfacine is possibly increased by:

Aprepitant

Atazanavir

Boceprevir

Bosentan

Carbamazepine

Chloramphenicol

Clarithromycin

Crizotinib

Diltiazem

Efavirenz

Erythromycin

Etravirine

Fluconazole

Fosamprenavir

Fosaprepitant

Imatinib

Indinavir

Itraconazole

Ketoconazole

Nevirapine

Oxcarbazepine

Phenobarbital

Phenytoin

Posaconazole

Primidone

Rifabutin

Rifampicin

Ritonavir

Saquinavir

Telaprevir

Valproic acid Verapamil.

# Documented benefits of medication

## **Cognitive**

- Improves attention and short-term memory; increases amount and accuracy of work completed

## **Motor**

- Reduces activity level; improves handwriting; decreases talkativeness, noisiness and disruptiveness

## **Social**

- Improves cooperation; reduces anger; improves parent-child interactions; reduces non-compliance

## Some useful websites\*

[www.addiss.co.uk](http://www.addiss.co.uk)

[www.nice.org.uk](http://www.nice.org.uk)

[www.sign.ac.uk](http://www.sign.ac.uk)

[www.handsonscotland.co.uk](http://www.handsonscotland.co.uk)

[www.netdoctor.co.uk](http://www.netdoctor.co.uk)

[www.help4adhd.org](http://www.help4adhd.org)

[www.mentalhealth.com](http://www.mentalhealth.com)

[www.adhdtogether.com](http://www.adhdtogether.com)

[www.addup.co.uk](http://www.addup.co.uk)

[www.ukadhd.com](http://www.ukadhd.com)

**LOCAL OFFER PAGE**

**Thank you to all our partners  
&  
All members of the SCN ADHD  
Training Workstream**