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.

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

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.
What is ADHD?

• ADHD stands for Attention Deficit Hyperactivity Disorder which is a recognised medical condition with specific symptoms.¹

• ADHD is a behavioural disorder where the brain develops and works in a different way from those not affected.²
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/yqtk5ws15ua94v5/What%20is%20ADHD.mov?dl=0

ADHD - Challenges in education

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

ADHD - Challenges with peers
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

<table>
<thead>
<tr>
<th>Distractibility/disrupts others</th>
<th>Alertness/Interactive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Activity / impulsivity</td>
<td>Imagination/innovation</td>
</tr>
<tr>
<td>Insatiable / inflexible</td>
<td>Energy / persistence</td>
</tr>
<tr>
<td>Risk-taking / egocentricity</td>
<td>Enthusiasm / passion</td>
</tr>
</tbody>
</table>
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

Greater Manchester Health and Social Care Partnership
How many children are affected?

- ADHD is the most common behavioural disorder in the UK\(^1\)

- It is estimated that ADHD affects around 2-5% of school-aged children and young people\(^1\)

- 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%\(^2\)
Comorbidities in childhood ADHD (N=579)¹

Comorbidity is seen within 75% of child and adult ADHD cases² (DIVA 2.0)
Does it affect boys or girls?

- **ADHD IS DIAGNOSED UP TO NINE TIMES** more often in boys than girls\(^1\)

- **GIRLS ARE TWICE AS LIKELY** to manifest the inattentive type of ADHD\(^1\) and may therefore be ‘missed’

- **BOYS WITH ADHD** have more oppositional behaviour, conduct disorder and anti-social behaviour\(^1\)

- **GIRLS WITH ADHD** have more depression in later life\(^2\)

- **IN ADULT ADHD CLINICS** the ratio of males to females is nearer 1:1\(^3\)

- **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 function¹
• Genetic component²
• Head injury³

• Exposure to toxins⁴ (Lead etc.)
• Premature & low birth weight⁵
• Smoking and alcohol use in pregnancy⁶
• Food or food additives are not associated with the development of ADHD⁷,⁸
ADHD: a genetic disorder

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

Twin studies estimate a heritability of up to 76%\(^1\)

Family studies

Adoption studies

Molecular genetics\(^2\)
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.

Some of the pathways involving key chemicals that enable brain-cells to communicate with each other are disrupted.
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\(^1\)-\(^3\)
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 a 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 know 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
- 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
www.nice.org.uk
www.sign.ac.uk
www.handsonscotland.co.uk
www.netdoctor.co.uk

www.help4adhd.org
www.mentalhealth.com
www.adhdtogther.com
www.addup.co.uk
www.ukadhd.com
LOCAL OFFER PAGE
Thank you to all our partners & All members of the SCN ADHD Training Workstream