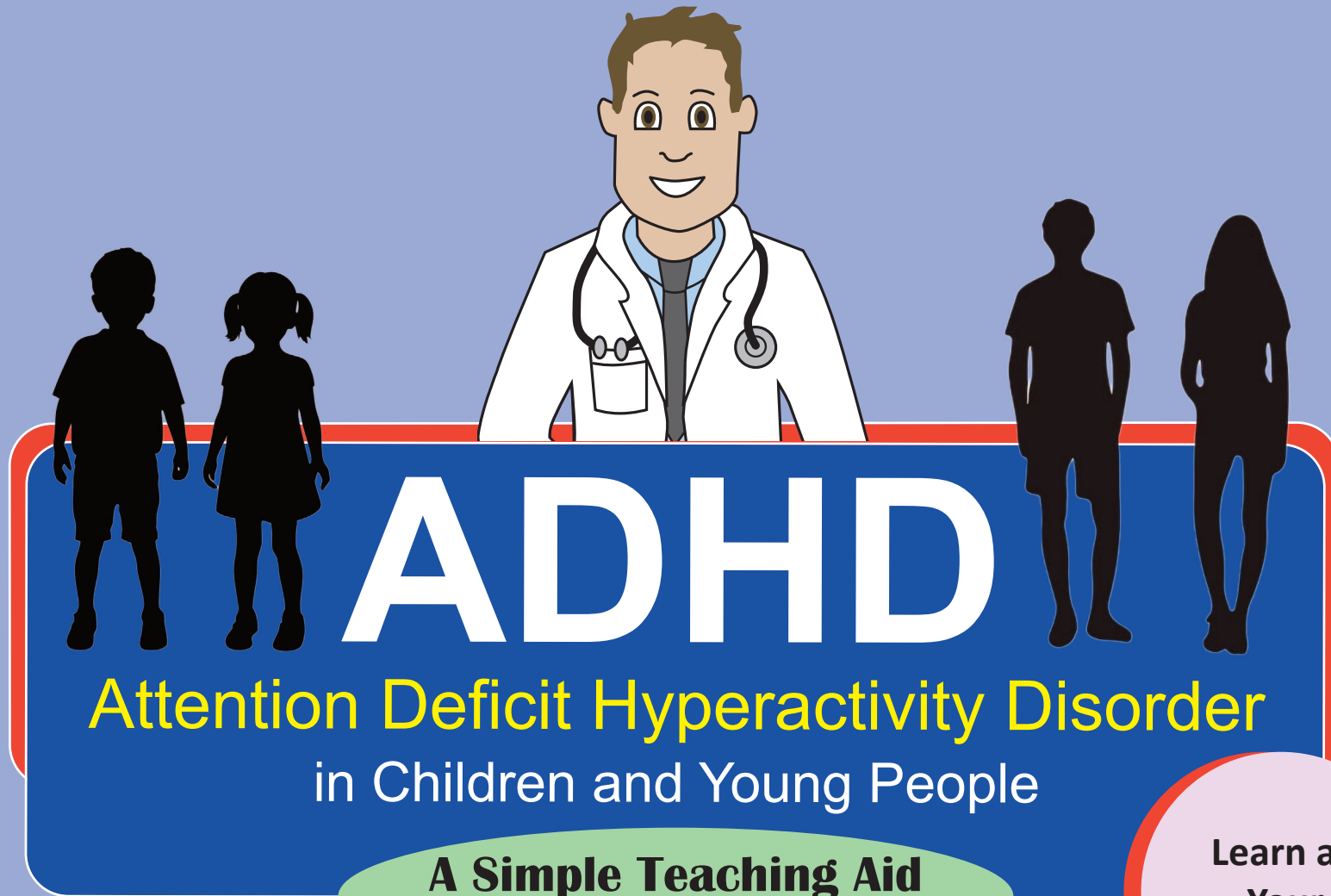




A Simple Teaching Aid

Digital Publication, Version 2, September 2026

**Learn at
Your
Own Pace**

GEORGE STILL FORUM
National Paediatric ADHD Network Group

A Resource for Healthcare Professionals

● Dr C. R. Yemula

● Professor Frank M C Besag

● Dr Nivedita Bajaj



About this publication

Published by Mrs Jamuna Yemula in September 2026.
285, Kimbolton Road, Bedford, MK41 8AQ.
icjyemula@gmail.com

Copyright © Mrs Jamuna Yemula, 2026
Copyright in text © Dr Yemula, Professor Besag and Dr Bajaj, 2026
The moral right of the authors has been asserted.

A catalogue record for this Teaching Aid is available
from the British Library.

All rights reserved.

Any product mentioned in this teaching aid should be used in
accordance with the prescribing information prepared by
the manufacturer. Neither the authors nor the publisher can accept
responsibility for any detrimental consequences arising from the
information contained herein.

Please note:

The information provided is intended as a support to
professional advice and care. Please refer to the national/local guidelines,
local care pathways and the drug formulary as required.

Acknowledgements

The authors would like to thank all the professionals, parents/carers,
children and young people who have provided suggestions and
constructive feedback in developing this Teaching Aid. The authors are
also grateful to members of George Still Forum (GSF, the National
Paediatric ADHD Network Group, UK) for their peer review and helpful
comments.

About the authors

Dr Chinnaiyah Yemula has worked as a Consultant Community
Paediatrician in Bedford for over 25 years. He has a specialist interest in
the fields of ADHD, behaviour, sleep and bedwetting difficulties in children
and young people. He has been the Guest Editor for ADHD and ASD
focus issues of the journal 'Cutting Edge Psychiatry in Practice'.



He has presented his work (posters, talks, lectures, courses) within the UK and several
other countries, including India, Ireland, Canada, Japan, Australia and China. He is a strong
advocate of patient education and collaborative work with children and families to achieve
holistic care with the best outcomes. He has published a number of resources (story books,
parental guides, ebooks, leaflets and flip charts) for children, teenagers, parents/carers and
healthcare professionals.

Professor Frank Besag is a Consultant Neuropsychiatrist at the East
London Foundation NHS Trust. He serves as visiting Professor at the
Institute of Psychiatry, Kings College London (KCL) and has served as
visiting Clinical Professor at the University College London School of
Pharmacy. He teaches regularly at a British Association of
Psychopharmacology course and at KCL. He is a fellow of four UK
Royal Colleges.



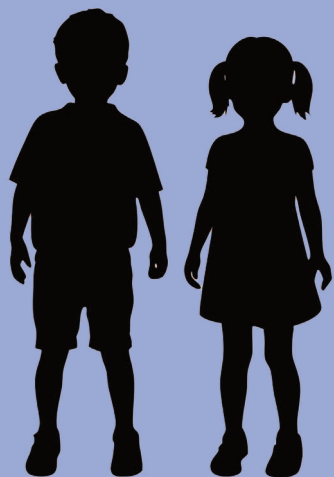
His special interests include epilepsy, autism, ADHD, tic disorders, sleep, catatonia,
brain-behaviour relationships and psychopharmacology. He has over 200 publications, with
over 8500 citations and has lectured in more than 30 countries. and has lectured in
more than 30 countries. His passion is to implement evidence-based practice in a way that
helps individual children, young people and their families.

Dr Nivedita Bajaj FRCPCH, is a Consultant Community Paediatrician
and is employed by the East and North Herts NHS Trust.

As Neurodevelopmental Paediatrician, she specialises in complex
neurodisability and neurodevelopmental conditions supporting children
and young people with ADHD, autism, FASD, developmental delay,
epilepsy, cerebral palsy and related conditions. She has practised
paediatrics for over three decades.



She chairs the George Still Forum, the UK's national ADHD forum. A regular speaker at
national and international conferences, Dr Bajaj has authored numerous psychoeducation
resources for children, young people, carers and professionals.



ADHD

Attention Deficit Hyperactivity Disorder
in Children and Young People



A Simple Teaching Aid

Digital Publication, Version 2, September 2026

Learn at
Your
Own Pace

Written by
Dr C. R. Yemula
Professor Frank M C Besag
Dr Nivedita Bajaj





Table of content with topics	Page number	
• Publication, about authors and acknowledgements	1 A	1 B
• Table of content, how to use, ADHD core features	2 A	
• Main features of ADHD		2 B
• You are not alone, How common is ADHD?	3 A	3 B
• What causes ADHD? Role of chemical messengers	4 A	4 B
• ADHD brain, ADHD features and 3 presentations	5 A	5 B
• How is ADHD diagnosed?	6 A	6 B
• What is the impact of ADHD?	7 A	7 B
• ADHD comorbidity (coexisting conditions)	8 A	8 B
• Oppositional Defiant Disorder (ODD)	9 A	9 B
• Conduct Disorder (CD)	10 A	10 B
• Sleep Difficulties/Disorders	11 A	11 B
• Developmental Coordination Disorder (DCD)	12 A	12 B
• Autism Spectrum Disorder/Condition (ASD/C)	13 A	13 B
• Sensory Processing Difficulties/Differences	14 A	14 B
• Intellectual Disability/Learning Disability/Difficulties	15 A	15 B
• Tics and Tourette Syndrome (TS)	16 A	16 B
• Anxiety and Depression	17 A	17 B
• ADHD, Epilepsy and Obesity	18 A	18 B
• ADHD and Enuresis (bedwetting)	19 A	19 B
• ADHD in girls	20 A	20 B
• ADHD in Teenagers - HEADSSS	21 A	21 B
• ADHD-Driving, teen pregnancy, relationships	22 A	22 B
• Management of ADHD, including preschool ADHD	23 A	23 B
• Parental and School support	24 A	24 B
• Diet, exercise and Cognitive Behavioural Therapy	25 A	25 B
• ADHD medications - benefits and types	26 A	26 B
• ADHD medication formulations	27 A	27 B
• ADHD medications - when and how to take	28 A	28 B
• Let us discuss your Superpowers and Goals	29 A	29 B
• ADHD follow-up and checking progress	30 A	30 B
• Resources - Books, Support Groups and Websites	31 A	31 B
• About this teaching aid	Back page	

How to use this Teaching Aid

This Teaching Aid contains the following information.

- **For healthcare professionals:** supporting and evidence-based information is provided on **pages** marked 'A'. Clinicians can review this information, whilst showing parents/carers and patients **pages** marked 'B'. Please do check the links to access many published articles/guidelines online.
- **For parents/carers:** simple text with colourful illustrations is provided on **pages** marked 'B' and to be shown to parents/carers and patients, whilst explaining about various aspects of ADHD.

However, you may wish to use your own teaching style and methods to communicate this important information.

Please try to set aside sufficient time in your clinic and dip in and out as required, while explaining specific aspects related to a patient.

- Please check symbols like these  to access free leaflets or play freely accessible video clips.

However, you may wish to use your own teaching style and methods to communicate this important information.

You can click this  link to visit this home page (2 A) to check the table of content for any individual topics.

What are the core features of ADHD?

There are 3 core features of Attention Deficit Hyperactivity Disorder.

1. Inattention
2. Hyperactivity
3. Impulsivity



ADHD



Attention **D**eficit **H**yperactivity **D**isorder

Main features

Inattention

Hyperactivity

Impulsivity



ADHD - You are not alone

Do explain that the child and parent/carers are not alone as ADHD is commonly seen in clinics and the community. It is not their fault that they have this condition and we, the healthcare professionals, can provide relevant help and support, though services vary locally.

Prevalence of ADHD: It is estimated that ADHD occurs in about 3 to 9% (average 5%) of school-age children and young people. This means that in a class of 30 children there may be one or two children with ADHD. Millions of people worldwide have ADHD.

However, about 1 to 2% of children and young people (based on ICD 11 criteria) are found to have Hyperkinetic Disorder which is a severe form of ADHD. About 3 to 4% of adults in the UK are estimated to have ADHD.

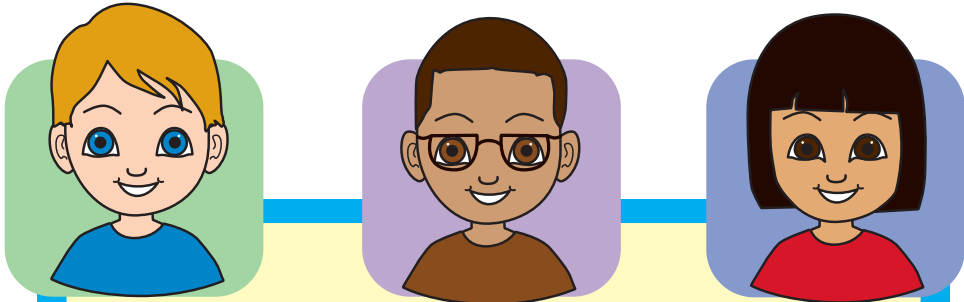
ADHD is more common in boys with a ratio of 2 to 5:1 (up to 10:1 in clinic samples). Boys, being boisterous, tend to be identified and referred early for management (please see section about ADHD in girls on pages [20 A](#) and [20 B](#)).

References:

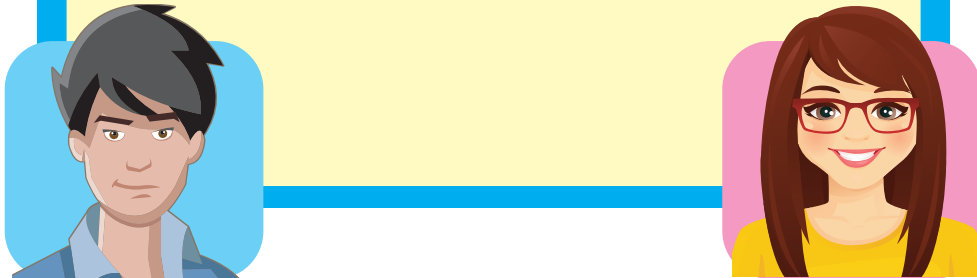
1. NICE guideline (NG 87, 2019) **Attention deficit hyperactivity disorder: diagnosis and management** <https://www.nice.org.uk/guidance/ng87>
2. <https://cks.nice.org.uk/topics/attention-deficit-hyperactivity-disorder/background-information/prevalence/>



How common is ADHD?

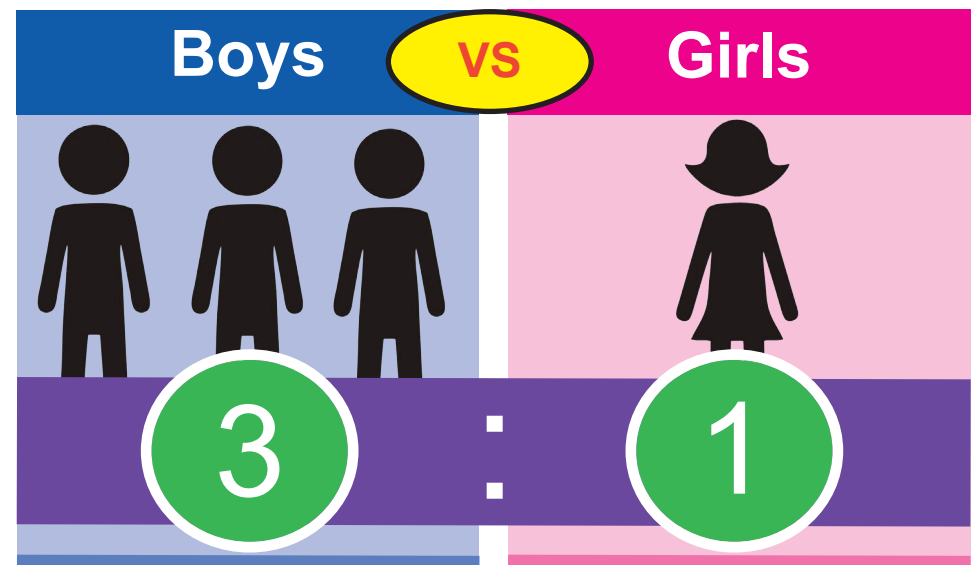
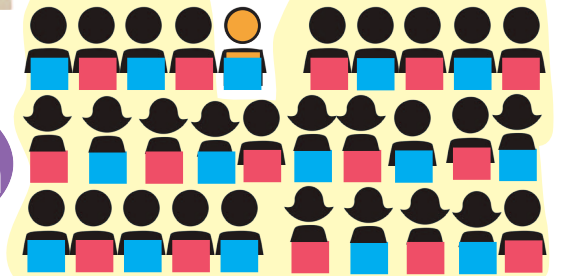


- You are not alone
- It is not your fault
- You can't help it
- We can support you



5%
school-age children
with ADHD

At least one child
in every class





What causes ADHD?

What exactly causes ADHD is not clearly known but there seems to be a combination of genetic and environmental factors resulting in ADHD presentation.

There is a strong genetic predisposition and ADHD can run in families. **Multiple genes** may be involved, with approximately 70 to 80% heritability. The first-degree relatives of the affected individual have a 5 to 10-fold increased risk of developing ADHD.

Environmental risk factors include:

- Preterm birth, low birth weight
- Prenatal exposure to smoking, alcohol
- Prenatal methylmercury exposure from maternal contaminated fish consumption
- Exposure to lead
- Perinatal vitamin D deficiency
- Head injury and meningitis

Some people are at high risk and more commonly develop ADHD than general population

- Preterm birth, looked-after children and young people
- Family history of ADHD in a close family member
- Oppositional defiant disorder, conduct disorder, anxiety, depression, substance misuse
- Autism spectrum disorder, intellectual (learning) disability, specific learning difficulties
- Epilepsy, acquired brain injury, people in youth justice system or criminal justice system

Neurophysiology of the brain in ADHD

- Our brain has a complex system of networking, with billions of nerve cells that send out messages from one to another in an orderly fashion

Neurophysiology of the brain in ADHD

- The messages, such as 'stop', 'wait' and 'think', need to be carried via a 'synapse', which is a tiny space between the two nerve cells
- We need neurotransmitters (chemical messengers) in sufficient amount to transmit these messages adequately

Please play the '**ADHD Brain - The Missing Postman**' video clip on the next page. It can help to explain to parents/carers about how messages are carried as tiny electrical signals across the nerve cells and that the neurotransmitters inside the vesicles (red dots in the video clip) open up the receptor channels to let messages into the next nerve cell.

What is the chemical imbalance in children with ADHD?

- Some parts of the brain are underactive in people with ADHD
- There is an insufficient amount of chemical messengers (dopamine and noradrenaline) in the synapse between the nerve cells

How can the role of chemical messengers be explained in simple language?

Chemical messengers or 'neurotransmitters' transfer messages across the synapses between nerve cells. Two important chemical messengers are dopamine and noradrenaline.

The chemical messengers act like postmen (let us call them as Mr Dopa for 'Dopamine' and Mr Norda for 'Noradrenaline').

They need to travel from one nerve cell to another, crossing the bridge (synapse) between the nerve cells to deliver messages (letters). This will, in turn, help us to carry out our executive functions correctly.

In ADHD, lots of postmen do not work. They are going back into the nerve cell and therefore not crossing the bridge to cross into the next nerve cell for delivery of letters or messages (this can be explained as 'the postmen are on STRIKE in ADHD').

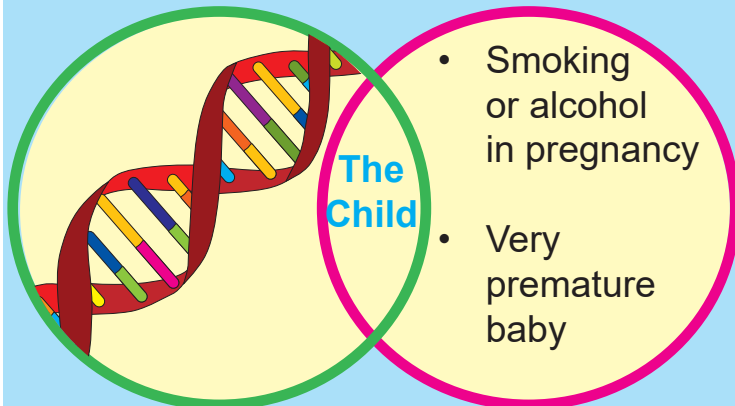


What causes ADHD?

ADHD can run in families

Genetics

Environment

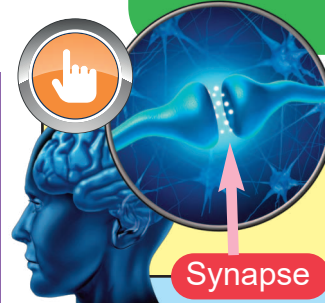


First-degree relatives at high risk of ADHD

- Siblings
- Parents

Lack of chemical messengers
(chemical imbalance)

Role of Chemical Messengers



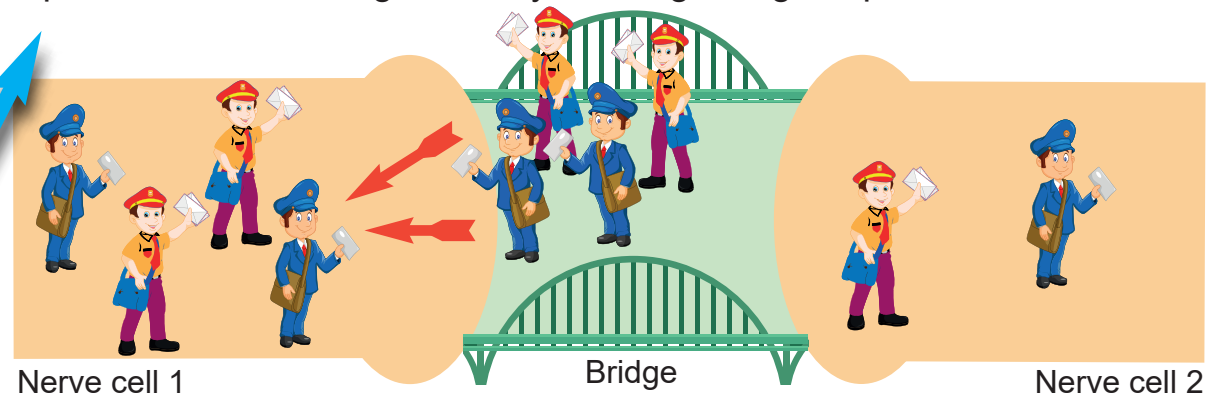
Our brain has billions of nerve cells. They talk to each other with the help of chemical messengers (postmen). *The postmen cross the bridge (synapse) between the nerve cells to carry messages (letters).*

A tiny space between the two nerve cells

Synapse or bridge



ADHD brain: Some postmen don't work and there are not enough postmen on the bridge to carry messages e.g. stop, wait, think etc.





What causes the chemical imbalance in ADHD?

- Genetic factors are important in causing ADHD. Defective genes lead to faulty metabolism of chemical messengers (neurotransmitters)
- As a result, there is an insufficient amount of chemical messengers (dopamine and noradrenaline) in the synapse
- In the case of dopamine, this is due to excessive reuptake (recycling) caused by increased dopamine transporter activity

What happens due to this chemical imbalance?

The overall effect is poor transmission of messages from one nerve cell to another, therefore causing a breakdown in executive functions.

About the executive functions of our brain

The executive functions of the brain help us to control our performance and include the following:

- Planning ahead and time management
- Self-control - able to wait for our turn, think before acting
- Self-monitoring and processing our thoughts
- Understanding social situations
- Organising our actions
- Working memory
- Task initiation - able to start and finish tasks without postponing
- Being flexible
- Controlling emotions
- Ability to focus and pay attention

Difficulty in executive functions results in ADHD features.

Clinical features of ADHD

Attention Deficit Hyperactivity Disorder (ADHD) is a complex neurodevelopmental condition characterised by 3 core features – inattention, hyperactivity and impulsivity.

Inattention (9 features): often the child makes careless mistakes in work, fails to finish tasks, avoids tasks needing sustained attention, doesn't seem to listen, is unable to concentrate, poorly organised, easily distracted, forgetful and loses things.

Hyperactivity (6 features): often the child is on the go as if driven by a motor, fidgety, unable to sit still, wanders about, talks excessively and can't play quietly.

Impulsivity (3 features): often the child is unable to wait for his/her turn, blurts out answers before the question is completed and interrupts conversations and games.

According to the DSM 5 criteria, ADHD can be categorised into 3 presentations:

1. Predominantly Hyperactive/Impulsive presentation (6 out of 9 features of hyperactivity and impulsiveness) - **15%** (about 1 in 10)

2. Predominantly Inattentive presentation (6 out of 9 features of inattention) - **20% to 30%** (about 2 - 3 out of 10 children with ADHD)

3. Combined presentation of ADHD (combination of the above 2) - **50% to 75%** (about 5 - 7 out of 10 children with ADHD)

In addition, the child needs to have ADHD features presenting before the age of 12 years, inconsistent with their developmental level, occurring in more than one setting - usually home and school - causing significant impairment, for a period of at least 6 months and not explained by other psychiatric conditions.



What is ADHD?



Inattention

9 features

- 1 Careless errors in tasks
- 2 Short attention span
- 3 Easily distracted
- 4 Not listening
- 5 Struggles to finish tasks
- 6 Not following instructions
- 7 Poorly organised
- 8 Forgetful
- 9 Losing things

Hyperactivity

6 features

- 1 Always on the go
- 2 Fidgety and not being able to sit still
- 3 Loud and noisy
- 4 Talking too much
- 5 Walking about in the classroom and not staying seated
- 6 Running about or climbing a lot

Impulsivity

3 features

- 1 Interrupting others
- 2 Shouting out answers before the question is completed
- 3 Unable to wait for their turn

ADHD Brain



Chemical imbalance

Executive function difficulties

Sustained attention



Poor concentration

Reflection



Impulsivity

Temporary immobilisation



Hyperactivity

Working memory



Forgetfulness

3 presentations

• Hyperactive/Impulsive presentation  15%

• Inattentive presentation  20% - 30%

• Combined  50% - 75%



Assessment of ADHD

This includes history taking, physical examination and investigations as required.

Evaluation of ADHD

Some aspects of basic evaluation are given below.

Category	Description
History Birth and development	Antenatal exposure to alcohol, smoking and drugs Birth - trauma, prematurity, low birth weight Development - history of delayed milestones, speech and language, vision and hearing
Medical history	History of accidents, head injury, seizures, tics, CNS infections, Adverse Childhood Experiences (ACEs) - e.g. abuse and neglect, unintentional injuries
Family history	Family - composition, anyone with ADHD/ASD, ID (LD), anxiety or depression, sudden death/cardiac conditions
Education	School - academic progress, bullying, behavioural, social skill concerns, exclusions, safeguarding concerns
ADHD, behaviour, sleep and other conditions	Conditions - ADHD symptoms, OD behaviour/conduct problems, sleep, coordination difficulties, any concerns about autism, anxiety, low mood, learning, vision, hearing, general health, bedwetting, constipation
Child's voice	Child's views - Speak to the child or young person for their views and concerns
Examination Physical Neurological	Check weight, height, head circumference, blood pressure, pulse rate along with physical and cardiovascular examination. Vision and hearing to be checked if there are concerns. Neurological evaluation.
Investigations Rating scales Other tests	Rating scales are helpful but not diagnostic. QbTest (computerised test) is available in some services (it is not a standalone diagnostic assessment). Routine blood tests or EEG are not recommended.

Multisource information: Do obtain information from several sources when there is uncertainty/discrepancy and to explore comorbidity as well as functional impairment.

- Child/young person, parents/carers and extended family members, friends of family
- School staff, Educational Psychologist, private tutor, music/PE/swimming instructor
- CAMHS, Speech and Language Therapist, Occupational Therapist
- Social Worker, Family Support Worker, Youth Offending Team

Rating scales/Questionnaires

Narrowband scales (focussed on ADHD symptoms)	Broadband scales (ADHD and coexisting conditions)
• ADHD rating scales (5 - 18 yrs) • Brown ADD Rating Scales for Children, Adolescents, and Adults • Conners 3rd edition (6 - 18 yrs) • Vanderbilt Assessment Scales (6 - 12 yrs) • SNAP 4 ADHD rating scale (6 - 18 yrs) • ADHD Rating Scale IV - Preschool version • CADDRA e Toolkit for clinicians & professionals (free) https://www.caddra.ca/etoolkit-forms/	• Child and Adolescent Behaviour Inventory • Child Behaviour Checklist (6 - 18 yrs) • Conners Comprehensive Behaviour Rating scales (6 - 18 yrs) • Conners Early Childhood • Strengths and Difficulties Questionnaire (2 - 17 yrs) • Paediatric Symptom Checklist • Development and Well-being Assessment (DAWBA)

ADHD diagnosis

According to NICE guidelines on ADHD (NG 87, 2019), a diagnosis of ADHD should only be made by a specialist psychiatrist, paediatrician or other appropriately qualified healthcare professional with training and expertise in the diagnosis of ADHD, on the basis of a full clinical and psychosocial assessment of the person this should include discussion about behaviour, symptoms in the different domains and settings of the person's everyday life, a full developmental and psychiatric history, and observer reports and assessment of the person's mental state.

The diagnosis of ADHD is made after meeting the diagnostic criteria of DSM-5 or ICD-11. The ADHD features should be present in 2 or more settings (home, school, social or occupational) and cause moderate psychological, social and/or educational or occupational impairment.

References:

1. **ADHD in Children: Common Questions and Answers**; American Family November 15, 2020 Volume 102, Number 10; <https://www.aafp.org/pubs/afp/issues/2020/1115/p592.html>
2. NICE guideline (NG 87, 2019) **Attention deficit hyperactivity disorder: diagnosis and management**
<https://www.nice.org.uk/guidance/ng87>



How is ADHD diagnosed?

Assessment

- Multisource information from parents/carers, teachers and others
- Rating scales
- School reports
- School observations



Clinic setting

- **History and Examination**
- **Observation**
- Child's voice - their views
- **Any tests if needed**
- Discuss and explain
- Check diagnostic criteria

DSM 5 (Diagnostic and Statistical Manual of Mental Disorders 5th edition, TR, 2022) or
ICD 11 (International Classification of Diseases, 11th revision, 2022)



Dr Best

ADHD is diagnosed

As per **DSM 5** or **ICD 11** criteria

ADHD Presentations

- 1 **Predominantly Inattentive**
(6 out of 9 features) or
- 2 **Predominantly Hyperactive/Impulsive**
(6 out of 9 features) or
- 3 **Combined** (both the above)

- *Present before the age of 12 years*
- *Not in keeping with the child's development*
- *In 2 settings - Usually home and school*
- *Significant impairment*



Impact of ADHD/impairment

Impact/impairment of ADHD can be assessed by checking both the severity of ADHD features and the impairment.

Impairment

ADHD affects the child or young person in many areas:

- Home and family
- School life
- Personal and social
- Risk-taking behaviour

Home and family life

- Tantrums
- Arguments
- Sibling fights
- Family conflicts
- Strained relationships
- As a family, not able to have fun activities
- Mental health of parents/carers can get worse, impacting their existing mental health issues

School life involving behaviour and educational ability

- Disruptive behaviour
- Detentions/exclusions
- Poor academic progress/low grades
- Underachieving
- Being late to school
- Low attendance
- Assignments incomplete

Personal and social

- Poor quality of sleep
- Social skills deficits; difficulty making and keeping friends
- Being a bully/victim of bullying
- Being rude and inappropriate
- Not invited to parties
- Low self-esteem
- Feeling stupid/rubbish

Risk-taking behaviour

- Not aware of dangers
- Prone to accidents
- Breaking things at home, school or other places
- Mixing with wrong company/easily led by others, getting into trouble
- Please see pages 20 A (ADHD in girls) 21 A (ADHD in teenagers) for more information.

How to measure the impairment

Weiss Functional Impairment Rating scale is available.

<https://www.caddra.ca/wp-content/uploads/WFIRS-S.pdf>

How to measure the ADHD symptom severity

- ADHD Treatment Response Form for parents/teachers
<https://www.cambscommunityservices.nhs.uk/docs/default-source/ADHD---Medication/adhd-treatment-response-form-for-parents-and-teachers58b1ed06f4f66239b188ff0000d24525.pdf?sfvrsn=0>
- ADHD Treatment Response Form for teenagers
<https://www.cambscommunityservices.nhs.uk/docs/default-source/ADHD---Medication/adhd-treatment-response-form-for-teenagers.pdf?sfvrsn=4>
- ADHD rating scale



ADHD Impact

School life

- Disruptive behaviour
- Detentions/exclusions
- Poor academic progress/low grades
- Lateness/low attendance
- Assignments incomplete
- Not reaching potential

Home and Family

- Tantrums
- Sibling fights
- Argumentative
- Defiant, stubborn
- Family stress
- Problems with homework

Personal and social

- Low self-esteem
- Being a bully and/or bullied themselves
- Poor social skills
- Difficulty making /keeping friends
- Not invited to parties



Risky behaviour

- Not aware of dangers
- Accident prone
- Breaking things
- Antisocial behaviour

**Please see next section
for coexisting conditions
with ADHD**



About ADHD and comorbidity

ADHD is commonly associated with one or more comorbid conditions. Having another comorbid condition is the norm rather than an exception. It is reported that about 50 to 90% of children with ADHD will have at least one other comorbid condition and 50% have at least 2 comorbid conditions (CADDRA - Canadian ADHD Resource Alliance: Canadian ADHD Practice Guidelines, 4.1 Edition, Toronto ON; CADDRA, 2020).

How is comorbidity explained?

It is possible that some comorbid conditions occur in the individual due to sharing/overlap of genetic and environmental risk factors.

What are the comorbid conditions?

The comorbid or coexisting conditions can be categorised as below:

Neurodevelopmental

- Autism Spectrum Disorder
- Developmental Coordination Disorder (DCD)
- Intellectual Disability (ID)/Learning Disability (LD)
- Specific Learning Difficulties/Disorders (SpLD)
- Tic Disorder/Tourette Syndrome (TS)

You can click each comorbid condition on the next page (8 B) to access the related page as required.

Disruptive Behaviour Disorders/Externalising disorders

- Oppositional Defiant Disorder (ODD)
- Conduct Disorder (CD)

Internalising disorders

- Anxiety Disorders and Obsessive Compulsive Disorder
- Depressive Disorder

Others

- Eating Disorders, Substance Use Disorder (SUD)
- Sleep Difficulties/Disorders
- Sensory Processing Difficulties/Differences
- Obesity, Bedwetting (Enuresis)
- Genetic (fragile X, neurofibromatosis, 22q11 deletion syndromes)
- FAS/D - Foetal Alcohol Syndrome/Spectrum Disorder

People with ADHD are at increased risk for obesity, asthma, allergies, diabetes mellitus, hypertension, sleep problems, psoriasis, epilepsy, sexually transmitted infections, abnormalities of the eye, immune disorders, and metabolic disorders.

Reference:

The World Federation of ADHD International Consensus Statement: 208 Evidence-based conclusions about the disorder, 2021

<https://doi.org/10.1016/j.neubiorev.2021.01.022>

Early childhood	Mid school age	Teenagers
ODD, ASD	CD, DCD	Substance use
Enuresis	Anxiety Sensory difficulties	Anxiety Depression
ID (LD), SpLD Sleep difficulties/ disorders	Tics/TS Sleep difficulties/ disorders	Sleep difficulties/ disorders Delayed Sleep-Phase Disorder
		Eating Disorders

Assessment

ADHD evaluation should be comprehensive, including a thorough history and screening for coexisting conditions at every clinic visit.

Some useful screening questionnaires:

- Conners Comprehensive Behaviour Rating Scales
- Strengths and Difficulties Questionnaire

Management

This involves a holistic approach with targeted interventions and support by various professionals from health, education and social care.

Neurodiversity: It is a concept that everyone's brain is unique and some people's brains may work differently, which is a natural variation. Some are diagnosed with conditions like ADHD, autism, dyslexia and dyspraxia.



50 to
90%

have at least one condition

ADHD Comorbidity

Coexisting conditions

50%

have at least 2 conditions

Oppositional
Defiant
Disorder

Developmental
Coordination
Disorder

Autism
Spectrum
Disorder

Sensory
Processing
Difficulties

Conduct
Disorder

Neurodiversity

ADHD

Tics/Tourette
syndrome

Sleep
Problems/Disorders

Obesity

Epilepsy
Bedwetting

Intellectual
Disability
(Learning Disability
/Difficulties)

Anxiety Disorders
Depression
Eating Disorders

Teenagers

Smoking, Alcohol
Drug misuse
Other issues



About ADHD and Oppositional Defiant Disorder (ODD)

Oppositional Defiant Disorder (ODD) or oppositional defiant behaviour is one of the commonest comorbid conditions associated with ADHD.

What are the features of ODD?

According to DSM 5, there are a total of 8 clinical features that can be present during interaction with at least one person but not a sibling.

Angry and irritable

- 1 often loses temper with tantrums
- 2 often is easily annoyed
- 3 often angry

Argumentative and defiant

- 4 often argues with others
- 5 often defiant and refuses to follow rules
- 6 often annoying others
- 7 often blames others for his/her mistakes

Vindictive

- 8 vindictive or spiteful at least twice in the past 6 months

Diagnosis

A child can be diagnosed with ODD if there are at least 4 out of 8 features, occurring most days (under 5s) or at least once a week (aged 5 and over), over a duration of at least 6 months and causing distress or significant impact on functioning.

Gender differences

ODD is seen more commonly in boys than in girls but may have equal prevalence in adolescence.

Reference:

An Introduction to Oppositional Defiant Disorder and Conduct Disorder
US Pharm. 2019;44(11):29-32.

Can ODD occur at home only?

The child may have ODD features in the home setting only or both at home and school in severe cases. Many children develop symptoms of ODD in preschool age.

ADHD and ODD: ODD is seen in up to 60% of children with ADHD.

ODD and CD: About 30% of children with ODD go on to develop Conduct Disorder (CD).

Management

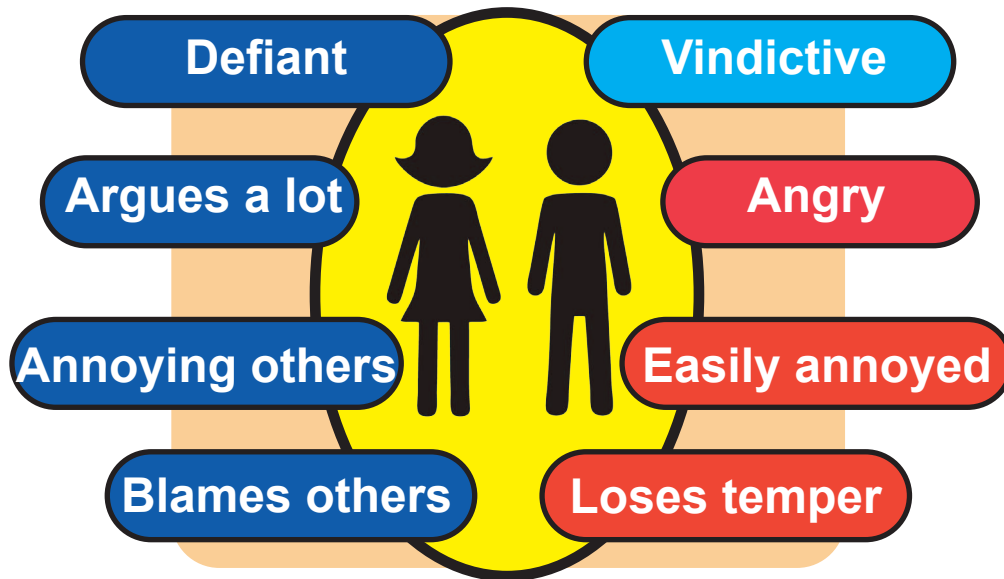
- Psychoeducation
- Parent training
- Cognitive Behavioural Therapy (CBT)
- When comorbid with ADHD, ADHD medication is often needed

Some useful behavioural strategies for parents/carers

- Understand your child's strengths and weaknesses.
- Establish clear rules.
- Try to foresee problem behaviour and plan consequences.
- Stay calm and try to relax. Do not argue back.
- Give your child frequent and immediate feedback.
- Praise good behaviour and do it without delay.
- Use rewards rather than punishment.
- Make sure you disapprove of the bad behaviour and not the child.
- Set up routines.
- Be consistent.
- Allow the child to work at his or her pace within reasonable time limits.
- Do not try to be perfect and finally, look after your own health.



Oppositional Defiant Disorder (Oppositional Defiant Behaviour)



Clinical features present

- **Under 5s** - most days
- **Over 5s** - at least once a week
- For at least **6 months**
- 1 or 2 settings - **home and school**
- **Causes major impact**



ODD
up to **60%**
in ADHD

How to manage ADHD and ODD

- **Parent training/support** with behavioural strategies
- Ignore undesirable behaviour
- Praise and encourage children for positive behaviour
- Use rewards, be consistent, be firm with boundaries and avoid confrontation
- **Optimal control of ADHD** symptoms - hyperactivity, impulsivity and attention problems
- **ADHD medication will often be required to achieve this**



About ADHD and Conduct Disorder (CD)

Conduct disorder

There are 15 clinical features/conduct problems, according to DSM 5 criteria. At least 3 out of 15 features, present over the last 12 months and at least 1 during the last 6 months are required to reach the diagnosis.

Aggressive

- 1 often bullies
- 2 often starts physical fights
- 3 has used weapons
- 4 physically cruel to people
- 5 physically cruel to animals
- 6 stealing while confronting a victim
- 7 forced someone into sexual activity
- 8 setting fire with intent to damage

Destruction of property

- 9 destroying property
- 10 broke into someone's car/house/building

Deceit and theft

- 11 often tells lies
- 12 stealing e.g. shoplifting

Breaking rules

- 13 staying out at night-time in spite of parental restrictions
- 14 ran away from home at least twice
- 15 often truant from school

How common is CD in ADHD?

It is reported that CD occurs in 3.5% to 10% of people with ADHD.

Management

According to NICE guidelines (CG 158, updated 2017), 'Antisocial behaviour and conduct disorders in children and young people: recognition and management', **assessment to include the following aspects:**

Consider using the **Strengths and Difficulties Questionnaire**

Assess for **coexisting conditions** such as:

- Depression, Post Traumatic Stress Disorder (PTSD)
- ADHD, ASD
- ID (LD), Learning difficulties
- Substance Use Disorder in teenagers

Check for **CD features**

- current functioning at home, school/college and with peers
- parenting quality
- history of physical and mental health (past and present)

Interventions include the following:

- Psychoeducation
- Parent training programmes
- Foster carer/guardian training programmes
- Child-focused programmes
- Multisystemic therapy (for children and young people aged 11 to 17 years)
- Medications for children and young people with ADHD and comorbid ODD/CD

Reference:

Gnanavel S, Sharma P, Kaushal P, Hussain S. Attention deficit hyperactivity disorder and comorbidity: A review of literature. World J Clin Cases 2019; 7(17): 2420-2426
<https://www.wjgnet.com/2307-8960/full/v7/i17/2420.htm>



Conduct Disorder (CD)

The child or young person displays repeated and persistent acts of antisocial, aggressive, defiant or challenging behaviour

CD
up to
10%
in ADHD

Management

Aggressive

- Bullying
- Starting physical fights
- Has used weapons e.g. knife/gun
- Physically cruel to people
- Physically cruel to animals
- Stealing e.g. mugging
- Forcing someone into sexual activity



Theft

- Stealing items e.g. shoplifting
- Lies/cons others
- Breaking into someone's car/house

Breaking rules

- Stays out at night
- Running away from home overnight at least twice
- Truant from school



Destructive

- Fire setting intending to cause serious harm
- Destroying other's property

- **Psychoeducation**
- **Cognitive Behavioural Therapy (CBT)**, a form of talking therapy
- **Psychotherapy**
- **Family Therapy**
- **Treat** ADHD, depression and any other psychiatric conditions adequately



About sleep difficulties/disorders

There is a complex relationship between sleep disorders and childhood neurodevelopmental, emotional, behavioural and intellectual disorders (NDEBID). NDEBID include several conditions such as attention deficit/hyperactivity disorder, autism spectrum disorder, cerebral palsy, epilepsy and learning (intellectual) disorders.

Up to 75% of children and young people (CYP) with NDEBID are known to experience different types of insomnia, compared to 3% to 36% in the normally developing population.

Why is sleep important?

Sleep is essential to refresh and rejuvenate the body and mind. Good quality sleep consolidates memory, promotes growth, strengthens immunity and helps cell growth and body repair. Poor sleep can increase irritability and features of ADHD.

How much sleep is ideal for children and adolescents?

Age	Recommended	May be appropriate	Not recommended
Pre-schoolers (3-5 yr)	10-13 hrs	8 -14 hrs	<8 hrs or >14 hrs
School-aged children (6-13 yr)	9-11 hrs	7-12 hrs	<7 hrs or >12 hrs
Teenagers (14-17 yr)	8-10 hrs	7-11 hrs	<7 hrs or >11 hrs

What are the sleep difficulties/disorders in ADHD?

Children with ADHD often experience insomnia with the following:

- Difficulty initiating/getting to sleep
- Difficulty maintaining sleep - frequent wakings at night/not able to stay asleep or settle to sleep
- Waking early in the morning
- Feeling sleepy during the daytime

What might cause sleep deprivation in ADHD?

We need to look out for several contributing conditions such as:

- ADHD brain - busy and restless mind, child can't switch off
- Bedtime resistance - child stalls or refuses to go to bed
- Anxiety
- Sensory problems - noisy, too cold or hot bedding in the bedroom
- Lack of sleep hygiene measures
- Side effect of ADHD medication

Other sleep disorders commonly reported in ADHD are:

- Obstructive Sleep Apnoea (OSA)
- Restless Legs Syndrome (RLS)
- Periodic Limb Movement Disorder (PLMD)
- Delayed Sleep Phase Disorder (DSPD) in teenagers

Impact

Chronic sleep deprivation is associated with significant risks

- Behavioural problems and worsening of ADHD features
- Impaired cognitive development and learning abilities
- Poor memory, mood disorders and school problems
- High risk of obesity and metabolic consequences, significantly impacting on the wellbeing of other family members.

Use BEARS screening tool as part of your assessment.

Bedtime problems, **E**xcessive daytime sleepiness, **A**wakenings at night, **R**egularity and duration of sleep and **S**nores

<https://www.med.upenn.edu/cbti/assets/user-content/documents/BEARS%20Sleep%20Screening%20Tool.pdf>

Management

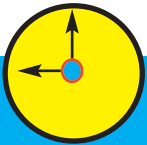
- Sleep hygiene measures (please see page 11 B)
- Refer to a relevant specialist for suspected OSA/RLS/DSPD
- Adjust ADHD medication as required
- Consider melatonin for sleep onset difficulties

Reference:

1. Management of sleep disorders among children and adolescents with neurodevelopmental disorders: A practical guide for clinicians
By Michael O Ogundele, Chinnaiah Yemula
World J Clin Pediatr 2022 May 9; 11(3): 239-252



Sleep Difficulties/Disorders



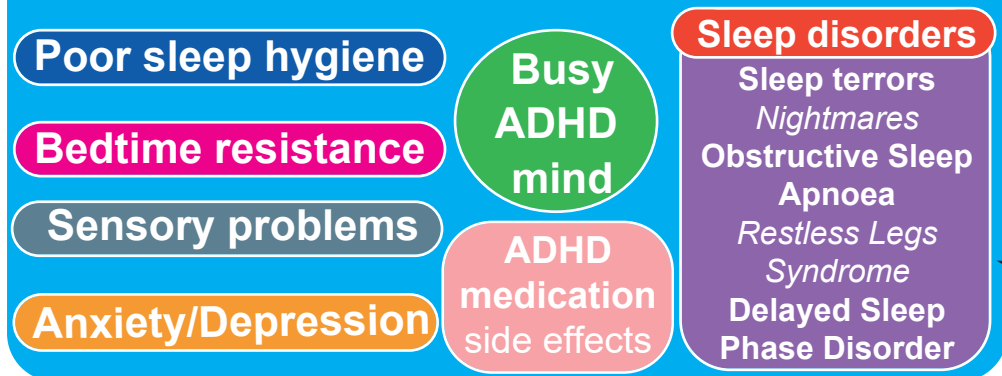
How much sleep is ideal?

Age in years	3 to 5 yrs	6 to 13 yrs	14 to 17 yrs	Adults
Hours of sleep	10 to 13 hrs	9 to 11 hrs	8 to 10 hrs	7 hrs or more

ADHD and sleep problems



Several of these causes in combination



More hyperactive

Can't focus well

Poor memory

Poor learning

Bad mood

NEGATIVES



POSITIVES

Good quality sleep

- Improves memory
- Better attention
- Assists learning
- Boosts immunity
- Helps body repair
- Promotes growth and good health

How to manage sleep problems

- **Regular activities** during the daytime
- **Avoid tea, coffee, hot chocolate or chocolate within 6 hours of bedtime**
- **Avoid vigorous/stimulating activities** 1-2 hours before bedtime e.g. no TV/games
- **Bedroom** – dark, quiet, comfortable and no TV/mobile/games/computer work
- Keep **bedtime and wake-up times** the same during school days and holidays
- **Melatonin**, if needed
- **Manage ADHD and other conditions** that contribute to sleep difficulties



About Developmental Coordination Disorder (DCD)

According to DSM 5, DCD is defined by the following criteria:

- 1 Poor performance in daily activities that require motor coordination, which is considerably below that expected for the child's age and intelligence.
- 2 It significantly and persistently interferes with the child's daily activities and academic performance.
- 3 It is not better explained by the child's learning disability or visual impairment and not caused by medical conditions such as cerebral palsy, hemiplegia or muscular dystrophy.
- 4 It starts in the early developmental period.

A child with DCD may experience significant difficulties with coordination, predominantly gross or fine motor skills. In the presence of intellectual disability/learning disability, the coordination difficulties are in excess/lot more than what is expected for the child's mental or cognitive ability.

Gross motor skills

This refers to the coordination of the arms and legs and also includes posture and balance. A child can have difficulties with:

- Riding a bicycle
- Catching/throwing a ball
- Hopping and skipping
- Running - runs awkwardly
- General movement - bumps into people, knocks things over
- They may also have problems with tripping and falling over

Fine motor skills

This refers to hand skills and manual dexterity.

Children with poor fine motor skills can have difficulties in:

- Using a pencil for drawing or writing
- Cutting with scissors
- Using a knife and fork
- Doing up buttons and zips
- Tying shoelaces

Impact

- Poor academic ability
- Low self-esteem
- Less participation in PE and team sports
- Risk of obesity
- Reduced social activities, isolated

Further learning:

Developmental Coordination Disorder - Presentation by Professor Amanda Kirby
<https://www.youtube.com/watch?v=2A94qviJOPg>

ADHD and DCD

DCD is seen in 5% of school-age children and co-occurs in about 50% of children with ADHD. DCD is diagnosable after the age of 5 years.

Assessment by Paediatrician

- A detailed birth and developmental history
- History of coordination difficulties inappropriate for development
- Physical examination, including neurological examination to exclude other medical conditions

An Occupational Therapist or Physiotherapist may evaluate the child through standardised assessments and observations when he or she is playing and completing tasks in a number of areas in relation to functional skills/daily activities such as eating, dressing and PE.

- Gross and fine motor coordination
- Posture and body awareness
- Manual dexterity and bilateral coordination (using two hands together)
- Visual perception (how they interpret what they see) and sensory processing

Management

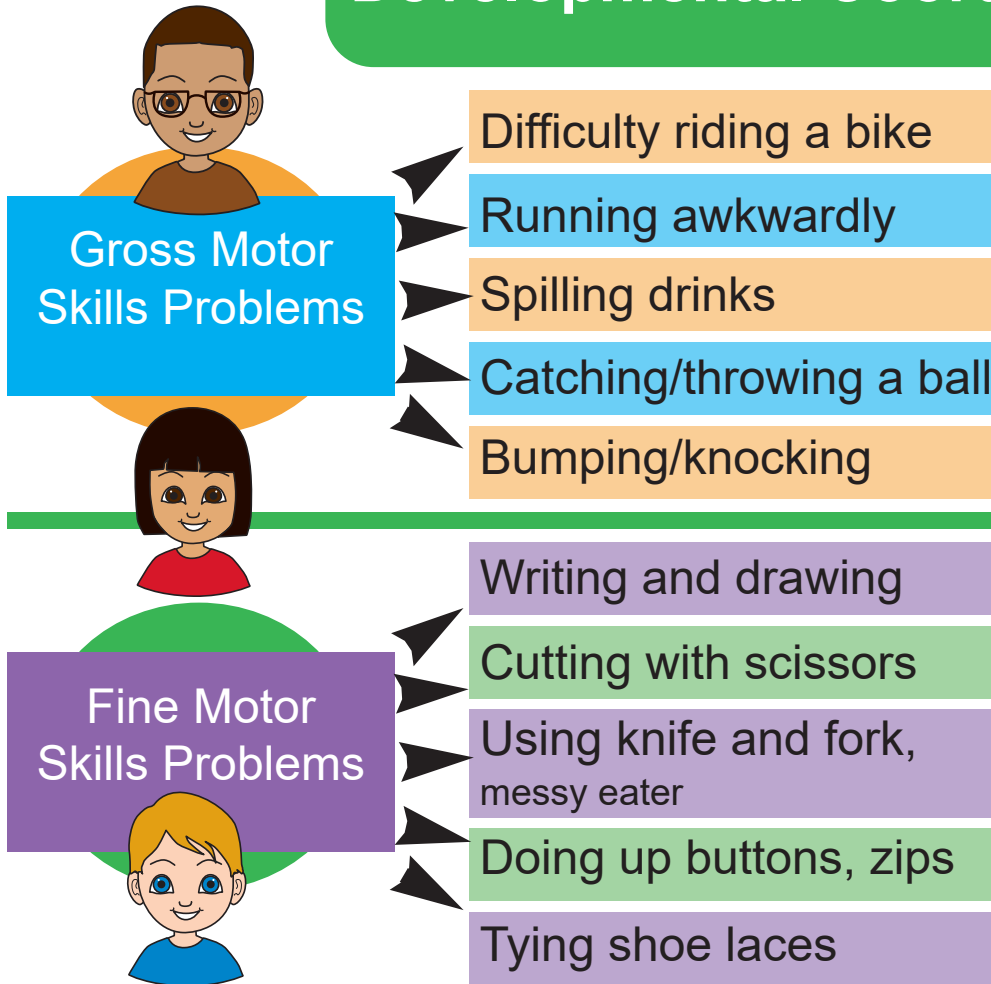
This can include a referral to an Occupational Therapist and/or Physiotherapist. There is no medication to treat or cure DCD, although it can be managed by a therapist in a number of ways:

- Activity ideas
- Home and school programmes
- Coping strategies
- Modifying the activity/environment
- Individual or group therapy

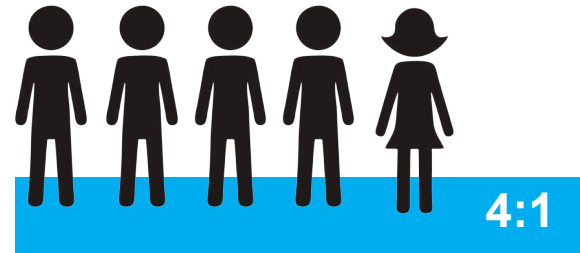
A parent/carer can help their child with a number of gross and fine motor activities (see page 12 B). In addition, school support can involve reducing distractions, providing a clear visual timetable and access to laptop, development of keyboard skills, extra time in exams etc.



Developmental Coordination Disorder (DCD)



- Significant impact on child's daily activities and academic achievements
- Not due to learning disability or vision problems
- There is no neurological or muscular problem



**DCD
50% in
ADHD**

Management

Consider a referral to Physiotherapist and/or Occupational Therapist

Encourage your child to do activities

Gross motor activities

- Obstacle courses, playground equipment, climbing
- Scooters, bikes, ball skills
- Trampolines, karate
- Space hopper
- Swimming

Fine motor activities

- Duplo, Lego, model making
- Baking
- Threading beads
- Drawing and colouring
- Musical instruments

- Have loose clothing with minimal fastenings, large buttons, Velcro fastening shoes
- *Use pencil/pen grips, gel rollerball pens*

**Leaflets
Videos**



School support

- Modify environment - reduce distractions, visual timetable
- Access to laptop, extra time in exams



About ASD and ADHD

What is Autism Spectrum Disorder or Autism Spectrum Condition (ASD/ASC)?

Autism Spectrum Disorder is a neurodevelopmental disorder (or condition). A child or young person with ASD/C often experiences difficulties with social interaction and communication, rigid and repetitive patterns of behaviour as well as restricted interests and activities.

Also known as autism, it is considered a lifelong condition and affects individuals variably, ranging from a mild to a significant degree in many aspects of daily activities. Approximately three out of every hundred people will have ASD.

ADHD and ASD

Many people with autism tend to have hyperactivity, a short attention span, get easily distracted or overfocused and individuals with ADHD often experience difficulties with social skills. Although some overlap exists, those with ADHD who do not also have ASD do not tend to have restricted, repetitive behaviours and unusual interests.

In clinical practice, ADHD and ASD often occur together and it is possible to make the dual diagnosis by undertaking appropriate assessments. Diagnosis of ASD is made after meeting DSM 5 or ICD 11 criteria. We note that in many cases ADHD is diagnosed first and underlying ADHD features can mask ASD. Therefore, when ADHD is treated adequately, ASD features become more obvious, revealing the ASD diagnosis subsequently.

Masking and Girls with ASD

- Girls may have superficial social skills and they may have learned by copying others. Girls are more likely to present with internalising problems, anxiety or depression.
- On the ADOS (Autism Diagnostic Observation Schedule) assessment, girls may score low for restrictive and repetitive behaviour/interests (RRB/Is).

Comorbidity

It is reported that 70% of children with ASD will have at least one comorbid psychiatric condition and 41% will have two or more comorbid conditions, the most common being social anxiety, ADHD and oppositional defiant disorder. According to another study, children with ASD were found to have ADHD in 42% of cases.

In our clinical experience, individuals with ADHD and ASD very often have other co-existing conditions

- Sensory processing difficulties/differences
- Restricted diet
- Intellectual (Learning) disability/specific learning difficulties
- Behavioural difficulties - oppositional and defiant
- Sleep difficulties or disorders
- Anxiety/depression
- Gender dysphoria

Managing ADHD and ASD

Management of both these conditions is often a challenge at home, school and in the community.

- Psychoeducation: parents and carers to be provided with adequate knowledge and understanding about the conditions - signposting to websites/support groups, post-diagnosis workshops, books/videos etc.
- Identify the child's health needs; offer and provide support/treatment as required
- School support is crucial - Individual Education Plan (IEP) or Education, Health and Care Plan (EHCP) when needed
- Support from social care as required
- Treat ADHD adequately. Please note when ADHD medication is being considered, the medication is to be introduced slowly and gradually titrated upwards, monitoring for side effects and improvement. Children with ASD tend to be sensitive, may overreact and may not respond as well as other children without ASD.

Further reading:

Guidance for identification and treatment of individuals with attention deficit/hyperactivity disorder and autism spectrum disorder based upon expert consensus, 2020
<https://bmcmedicine.biomedcentral.com/articles/10.1186/s12916-020-01585-y>



Autism Spectrum Disorder (ASD)

Autism Spectrum Condition (ASC)

Social communication difficulties

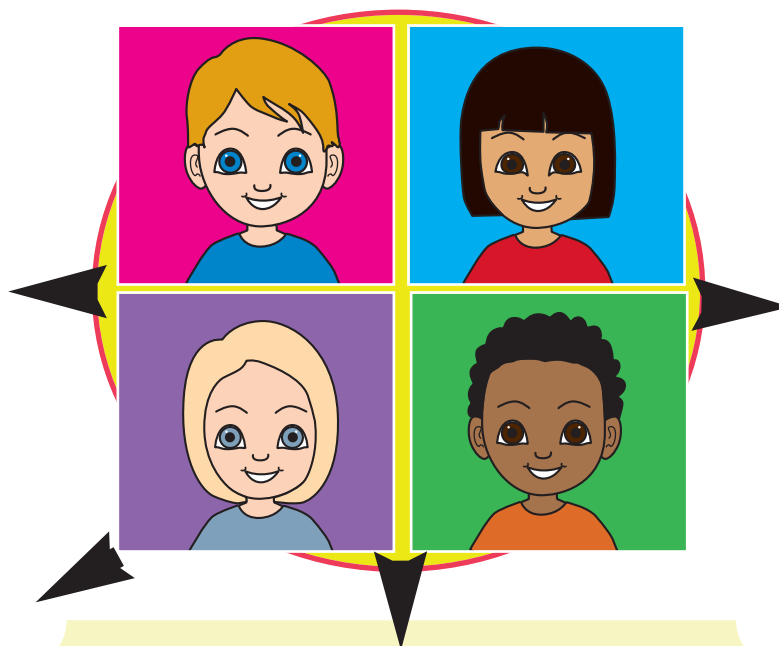
- Reduced/advanced language
- Talks at others
- Monotone/little variation
- Repeats phrases or words
- Takes things literally
- Reduced gestures (pointing/nodding)
- Difficulty with jokes/sarcasm

Social interaction difficulties

- Reduced facial expressions
- Eye contact - reduced/staring
- Plays alone/reduced social play/difficulty keeping friends
- Appears rude/blunt
- Difficulty expressing and responding to emotions

Social imagination

- Reduced pretend play
- Acts out scenes from media



Rigid behaviour

- Strict routines, upset with changes

Fixations/Obsessions

- Intense and unusual interests

Stereotypies

- Body rocking/hand flapping/spinning

Sensory processing difficulties/differences

ADHD and ASD/C

- Often coexist
- Often ASD features become more apparent when ADHD is treated

ADHD
40% in
ASD

Management

- **Psychoeducation** about ASD/C and ADHD
- Understand and support **the child's needs** (social, emotional, physical/sensory and educational)
- **Appropriate support** at home and school
- **Treat ADHD adequately**



About Sensory Processing Difficulties/Differences

What is sensory processing?

This refers to how we receive and interpret information about different sensations inside and outside of our body.

How many senses do we have?

There are 8 senses that we all experience.

- 1 Vision
- 2 Hearing
- 3 Smell
- 4 Taste/texture
- 5 Touch
- 6 Balance and movement (Vestibular, related to inner ear)
- 7 Sense of body position in space (Proprioception, related to muscle and joint sense)
- 8 Sense of internal body feelings such as hot/cold, hunger, thirst etc. (Interoception)

What are sensory processing difficulties/differences?

Some children experience difficulties/differences making sense of various sensations. As a result, day-to-day activities can be significantly affected.

Some people refer to this situation as Sensory Processing Disorder, also called Sensory Integration Dysfunction. As there are no internationally recognised diagnostic criteria; we are using the term 'Sensory Processing Difficulties'.

There are 3 kinds of difficulties.

- **Sensory modulation problems:** over-responsive, under-responsive and sensory seeking
- **Sensory discrimination problems:** not able to distinguish between sensations
- **Sensory motor problems:** postural and coordination (e.g. DCD)

A child can be hypersensitive and/or hyposensitive to different sensations and may also experience fluctuating symptoms over a period of time.

Please see page 14 B for a list of these difficulties (not an exhaustive list).

In our clinical experience, we see a number of children with ADHD, ASD or LD having a varying degree of sensory problems and we feel it is important to screen for these difficulties to identify, raise awareness and work towards supporting the individual in different settings.

How should children and families be supported?

- Psychoeducation
- Signposting parents/carers to books and websites for self-help strategies
- School support
- Referral to an Occupational Therapist and/or Physiotherapist as required, although services are very variable in the UK.

Resources

- **Sensory differences - online learning**
<https://www.cambscommunityservices.nhs.uk/Bedfordshire/services/occupational-therapy/sensory-processing-awareness-training>
- <https://www.sheffieldchildrens.nhs.uk/services/child-development-and-neuro-disability/sensory-processing-difficulties/>
- <https://www.additudemag.com/slideshows/signs-of-sensory-processing-disorder/>
- An introduction to the understanding of Sensory Issues when caring for a child or young person with SEND; <https://www.youtube.com/watch?v=hWP5YNXRCTY>
- **Raising a Sensory Smart Child:** The Definitive Guide to Helping Your Child with Sensory Processing Disorder, by Lindsey Biel



Over-sensitivity

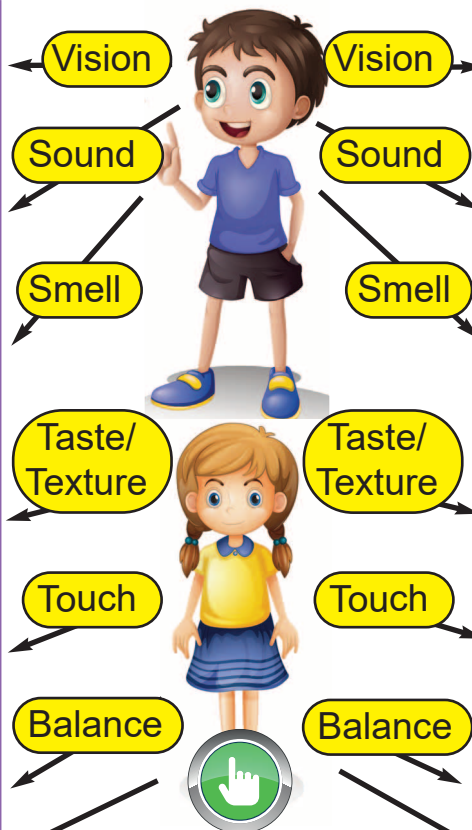
Avoids sensory stimuli

Sensory Processing Difficulties/Differences

Under-sensitivity

Sensory seeking

- I don't like** bright lights e.g. sunlight or fluorescent lights
- I don't like loud sounds** e.g. Hoover, hand/hair dryer, fire alarm, parties, motor bike/train
I cover my ears/walk away/hide when it gets noisy
- I don't like some smells, I gag at certain smells** e.g. perfumes, cooking/toilets
I am oversensitive to smells others don't notice
- I am a fussy eater:** I avoid certain types of foods e.g. soft foods (mashed potatoes), wet foods (gravy)
My diet is limited. I prefer foods separate on the plate
- I don't like the feel of** my hair being washed/cut/brushed or my teeth brushed, clothing labels/rough clothes/socks/shoes
I don't like to be touched/tickled
- I don't like** PE, jumping/hopping, lifts/escalators
I am afraid of falling e.g. walking down curbs or stairs



- I stare** at bright lights/flickering strobe lights
I fixate on shiny things
- I like** loud music
I like to have TV/music on high volume
- I smell** people/clothes/hair
I am not bothered by strong smells
- I lick** things/people
I chew my sleeves
I mouth/eat non-food items
- I touch** things/people frequently e.g. stroking other's hair, I mouth objects
I don't recognise when my hands/face gets messy
- I move** constantly
I like to spin/bounce a lot, hang upside down
I don't feel dizzy after spinning

How to help

- Self-support strategies
- School support
- Support from Occupational Therapist or Physiotherapist (services may vary locally)
- [Parent/Carer Resource](#)

Sense of body awareness (outside and inside)

- | Proprioception
(muscle and joint sense) | Interoception
(internal sensations) |
|--|--|
| <ul style="list-style-type: none"> • I don't like rough and tumble play | <ul style="list-style-type: none"> • I feel too hot or too cold • I am sensitive to pain • I can be quite emotional |

Sense of body awareness (outside and inside)

- | Proprioception | Interoception |
|--|---|
| <ul style="list-style-type: none"> • I jump/bump/crash a lot, I stand too close to others • I like bear hugs/tight clothes | <ul style="list-style-type: none"> • I can't tell too hot or too cold • I don't sense pain well • I don't know when I need to go to the toilet |



About Learning Disability/Intellectual Disability

According to **NICE guidance (NG11, 2015)**, Learning Disability is defined as having 3 core criteria:

1. Lower intellectual ability (usually an IQ of less than 70)
2. Significant impairment of social or adaptive functioning
3. Onset in childhood.

According to **ICD 11 (WHO 2022)**, the severity of Learning Disability is classified as below. Please note that the IQ scores may vary and the diagnosis should not be exclusively based on IQ scores but to include a thorough assessment of adaptive functioning.

Severity	Intelligence Quotient IQ	Limitation of skills	Adaptive functioning and support
Mild	50 to 69	Some difficulty in acquiring and understanding complex language concepts and academic skills.	Can manage basic self-care, domestic, and practical activities and can live and work relatively independently, but may require appropriate support.
Moderate	35 to 49	Likely to have basic language and academic skills.	Some will manage basic self-care, domestic and practical activities. Most will need considerable and consistent support to live and work independently.
Severe	20 to 34	Very limited language and academic skills and may also have motor impairments.	Typically need daily support in a supervised environment for adequate care, but may acquire basic self-care skills with intensive training.
Profound	Below 20	Very limited communication skills and may have basic concrete skills. May have motor and sensory impairments.	Typically need daily support in a supervised environment for adequate care

About Learning Disability (LD)/Intellectual Disability (ID)

According to **DSM 5 criteria (2013)**, Intellectual Developmental Disorder (Intellectual Disability) has 3 criteria:

- Onset in developmental period.
- Deficits in intellectual functions (reasoning, problem solving, planning, abstract thinking, judgement, academic learning, and learning from experience) and confirmed by clinical assessment and standardised tests.
- Deficits in adaptive functioning affecting daily activities such as social participation and independent living across home, school, work, and community.
- Severity is classified as mild, moderate, severe and profound.

Global Developmental Delay: This is diagnosed for children under the age of 5 years with delay in developmental milestones in several areas of intellectual functioning and will require reassessment later.

About Specific Learning Disorders/Difficulties (SpLDs)

Dyslexia is a reading disorder that affects reading, writing and spelling ability. Reading-related deficits occur in 25% to 48% of children with ADHD.

Dyscalculia affects an individual in their understanding of numbers and mathematics. Maths-related deficits occur in 11% to 30% of children with ADHD.

Dysgraphia is an SpLD which affects the child's handwriting ability and their recognition of written words, letters, and the sounds they make.

Developmental Language Disorder (DLD)

DLD is a condition in which children have problems understanding and/or using spoken language. There is no obvious reason for these difficulties. For example, there is no hearing problem or physical disability that explains them. In the past, DLD was known as specific language impairment (SLI) but recently the name has changed so that it better reflects the types of difficulties experienced by children who have it. A child can be diagnosed with DLD if their language difficulties:

- Are likely to carry on into adulthood
- Have a significant impact on progress at school, or on everyday life
- Make them unlikely to catch up without help

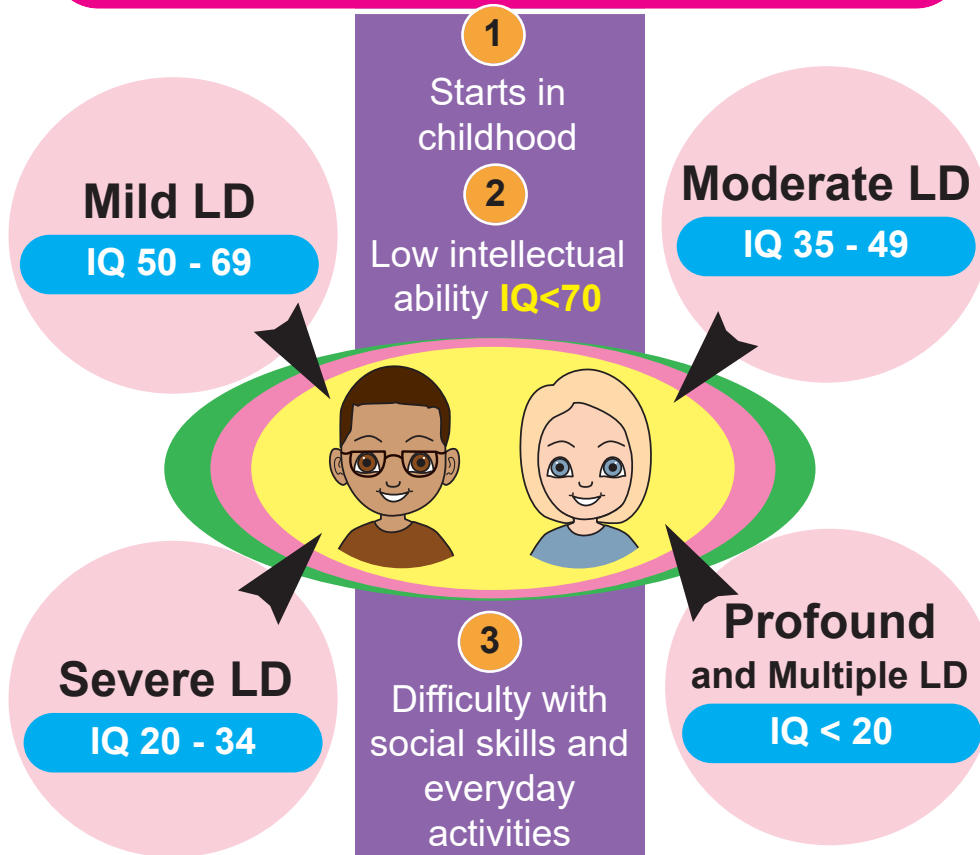
Reference:

Executive Functions in Neurodevelopmental Disorders: Comorbidity Overlaps Between Attention Deficit and Hyperactivity Disorder and Specific Learning Disorders
<https://www.frontiersin.org/articles/10.3389/fnhum.2021.594234/full>



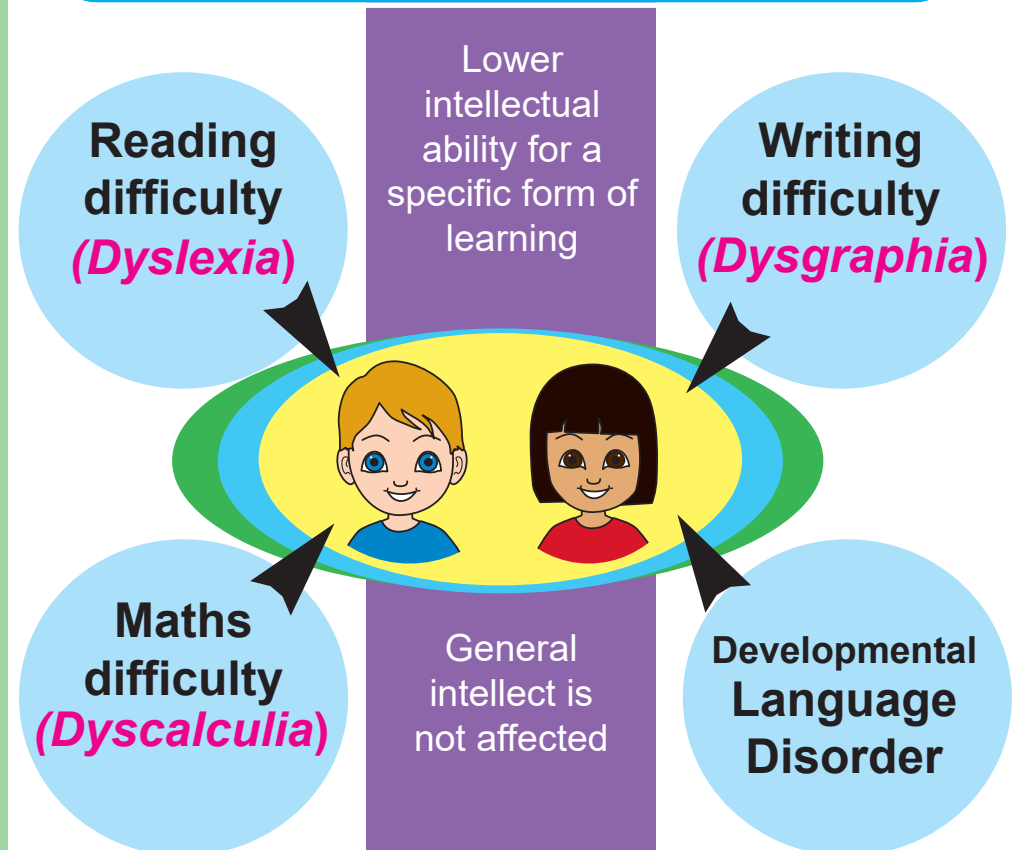
Intellectual Disability (Learning Disability/Difficulties)

Intellectual Disability (Learning Disability, LD)



- Medical assessment by Paediatrician, including physical examination and investigations as required
- Educational assessment and school support

Specific Learning Disorders (Specific learning difficulties, SpLDs)



SpLDs can be assessed by an Educational Psychologist/
Specialist Dyslexia Assessor and Developmental
Language Disorder by a Speech and Language Therapist



What are tics?

Tics are involuntary, sudden, rapid, nonrhythmic and recurrent movements or vocalisations.

Types of tics

Motor tics are involuntary, sudden, brief and meaningless movements which are repetitive and occur in bouts. **Vocal tics** are sudden sounds or words that occur in bouts. The tics can only be suppressed briefly, tend to wax and wane (come and go). A child may develop different types of tics over a period of time.

Motor Simple tics: Brief, meaningless, abrupt movement fragments

- Eye blinking, frowning, pulling faces, head jerking, shoulder shrugging

Motor Complex tics: Longer, involving more muscle groups, more goal-directed in character

- Scratching, chewing, hopping, clapping
- Picking at clothing, obscene gestures

Vocal Simple tics: Fast meaningless sounds or noises

- Clearing throat, sniffing, grunting, animal sounds

Vocal Complex tics: Syllables, words, phrases, odd patterns of speech, echolalia, palilalia and coprolalia.

Assessment

- A video recording of tics on camera or mobile phone can be helpful
- Check severity of tics: use clinical judgement, observation and tic rating scale, for example - Yale Global Tic Severity Scale (YGTSS). Tic rating scales are useful to understand the nature, frequency and impact of tics
- Physical and neurological examination

References:

Fifteen minute consultation: tics and Tourette syndrome

<https://ep.bmj.com/content/edpract/101/2/87.full.pdf>

European clinical guidelines for Tourette syndrome and other tic disorders: summary statement, 2022 <https://link.springer.com/article/10.1007/s00787-021-01832-4>

DSM 5 diagnostic criteria

Provisional Tic Disorder: single or multiple motor and/vocal tics that occur on most days with a duration of 4 weeks to a year, not due to Tourette Syndrome.

Persistent (Chronic) Motor or Vocal Tic Disorder: Single or multiple motor or vocal tics (but not both), may wax and wane but persisted for more than a year, not due to TS. Specify motor tics only or vocal tics only.

Tourette Syndrome (TS): 2 or more motor tics and at least 1 vocal tic (not necessarily concurrently), may wax and wane but persisted for more than one year.

All the above must start before 18 years of age and not be due to physical conditions or side effects of medication. There should not be a tic-free period of >3 months in a year.

Prevalence

Tics 5% general population; TS - 1% general population. Males: Females 4.3:1

ADHD and TS: ADHD is comorbid in 60% of people with TS. ADHD symptoms are generally present early on and followed by a TS diagnosis.

Impact

Find out from parents/carers how the tics/TS are affecting the child or young person - pain/injury, anxiety/low mood, bullying/social isolation, self-esteem, learning and communication.

Management

- **Psychoeducation and reassurance**
- Visit the website, **Tourettes Action** <https://www.tourettes-action.org.uk/>
- **Behaviour Therapy:** Comprehensive Behavioural Interventions for Tics (CBIT), Habit Reversal Training (HRT), Exposure with Response Prevention (ERP), Cognitive Behavioural Therapy (CBT)
- **Treat comorbidities** - ADHD, OCD etc
- **ADHD and tics/TS** - consider medications such as clonidine, guanfacine or atomoxetine. If not effective/not tolerated, consider risperidone/aripiprazole (Please note clonidine, risperidone/aripiprazole are not licensed for ADHD and clonidine, guanfacine, risperidone and aripiprazole are not licensed for TICS/TS)
- **Refer to a specialist centre** if necessary



Tics and Tourette Syndrome (TS)

What are tics?

Involuntary rapid movements or sounds

- Repetitive, not under the child's control
- Come and go
- Tend to get worse with anxiety



What is Tourette syndrome?

- Tics, both movements and sounds, persist for more than one year
- Not due to medicines/other medical conditions

Tics

Motor or movement tics

(start between 3 to 8 yrs of age)

Simple tics

- Eye blinking
- Frowning
- Pulling faces
- Head jerking
- Shoulder shrugging

Complex tics

- Hopping
- Clapping
- Picking at clothing
- Obscene gestures

Tics and TS

- Tics occur in 5% of children
- TS occurs in 1% of children
- Boys more than girls 4.3:1

**ADHD
60% in
TS**

Management

- Learn more about the condition - **Tourette Action**
- **What makes us tic?**
- **Tic Tips - managing your TS**
- Tics wax and wane
- Manage anxiety when present
- School support
- Monitor progress
- Treat ADHD appropriately
- Adjust ADHD medication
- Psychological input sometimes
- Medication may be needed

Vocal or sound tics

(start a few yrs after motor tics)

- Clearing throat
- Sniffing
- Grunting
- Animal sounds

- Repeating words or phrases
- Unusual rhythms, tone or volume
- Rarely obscene words



What is anxiety?

Anxiety is the general term given to fears, worries and panicky feelings people get when faced with situations that may or may not be threatening. Sometimes there are physical symptoms such as awareness of heartbeat (palpitations), feeling hot and sweaty, having a dry mouth or being dizzy.

Anxiety disorders: According to DSM 5, anxiety disorders share excessive fear and anxiety and are categorised as below:

- Separation anxiety disorder
- Selective mutism
- Specific phobia (e.g. insects, dogs, heights etc.)
- Social anxiety disorder
- Panic disorder
- Agoraphobia (fear or anxiety of being in public transport/open or closed space/in crowd or alone outside home)
- Generalised anxiety disorder
- Substance/medication induced anxiety disorder
- Anxiety disorder due to other medical condition

What is Obsessive-Compulsive Disorder (OCD)?

According to DSM 5, OCD is categorised under Obsessive-Compulsive and Related disorders. A person with OCD has trouble with frequent obsessions and/or compulsions that cause marked distress. Please see OCD features on page 17 B.

Management

- Reassurance
- Assessment and support from mental health professional/CAMHS
- Use SCARED (Screen for Child Anxiety Related Disorders) or RCADS (Revised Children's Anxiety and Depression Scale) to check anxiety
- Cognitive Behavioural Therapy (CBT) may help
- School support
- Anxiety is not a contraindication to starting stimulant or non-stimulant ADHD medication. Atomoxetine may reduce anxiety symptoms and can be considered in some cases. **Atomoxetine is not licensed for anxiety.** please ensure the ADHD features are not the result of anxiety. If they are, then the anxiety might need to be treated either before the ADHD or in addition to the ADHD, depending on the clinical assessment.
- Medication for OCD may be needed in some cases

What is depression?

Depression is more than just feeling sad or having a bad day. It occurs if the child is sad for a long period in all or most situations.

- The child may cry a lot for no apparent reason
- Have sleep problems
- Lose interest in activities that he or she previously enjoyed
- Have low energy
- Have poor appetite/weight loss or increased appetite/weight gain
- Sometimes have thoughts of self-harm

ADHD and Depression

Clinical evaluation should include finding out what is causing more impairment in or disabling the quality of life more - ADHD or depression.

- If depression is predominant and causing significant concern, it should be treated first, before the management of ADHD. When managing ADHD first with medication, consider slow titration and careful monitoring for any side/adverse effects such as low mood.
- Often, both the conditions require treatment. It is important to be aware of potential drug interactions, such as that between atomoxetine and the antidepressant, fluoxetine. There is a risk of increased drug levels due to fluoxetine inhibiting the metabolism of other drugs.
- If there are serious concerns about suicide, including either a plan to end life or a history of a serious suicide attempt, arrange urgent referral to a psychiatrist (CAMHS).

ADHD and Eating Disorders

Eating disorders are reported in about 20% of young people with ADHD. They include Anorexia Nervosa, Bulimia Nervosa and Binge Eating Disorder. Please check *NICE guideline, NG 69, Eating disorders: recognition and treatment, updated Dec 2020.*

References:

The World Federation of ADHD Guide (Chapter - Organising and delivering treatment for ADHD)
https://www.adhdfoundation.org.uk/wp-content/uploads/2022/08/The-WF-ADHD-Guide_072019.pdf
ADHD and eating disorders in childhood and adolescence: An updated minireview, 2023
<https://www.sciencedirect.com/science/article/abs/pii/S0165032722012071#preview-section-abstract>



Anxiety, Depression and Eating Disorders

**Anxiety
25%
in ADHD**

Anxiety Disorders

Some examples include

- Generalised anxiety, Panic
- Social anxiety, Phobias
- PTSD and OCD



Mood Disorders

Some examples include

- Depressive episode
- Bipolar disorder

**Eating
Disorders
20%
in ADHD**

Obsessive-Compulsive Disorder (OCD)

Obsessions

Repeated thoughts, images or urges that cause anxiety

- Fears about contamination with dirt, germs or disease
- Hoarding junk and unable to get rid of it
- Fears of harming others by loss of control

Compulsions

Repeated thoughts or actions in response to obsessions to reduce anxiety

Repetitive

- Washing of hands
- Cleaning of clothes or rooms
- Excessive checking if windows or doors locked
- Arranging things in order
- Words or phrases

Signs of depression in children

- Child sad for long period in all situations
- Child may cry for long periods for no apparent reason
- Lose interest in activities they enjoyed before
- Poor appetite or excessive eating
- Sleep problems
- Low energy
- Sometimes thoughts of self-harm

- Encourage your child/young person to talk about their feelings
- Seek support - school, local mental health team

Management of anxiety/depression

- Psychoeducation, support at home and school
- CBT and medication as required



ADHD and Epilepsy

What is epilepsy?

Epilepsy is a condition of the brain defined by any of the following:

- At least two unprovoked seizures occurring more than 24 hours apart
- One unprovoked seizure and a probability of further seizures similar to the general recurrence risk after two unprovoked seizures, occurring over the next 10 years
- Diagnosis of an epilepsy syndrome

How common is epilepsy?

5 to 10 cases per 1000 and more common in people with intellectual disability.

How common is ADHD in children with epilepsy?

ADHD can occur in about 30% of children with epilepsy. Inattentive presentation is more commonly observed. International League Against Epilepsy (ILEA) 2018 recommended to screen for ADHD in children with epilepsy onset at age 6 years or over.

What might cause the comorbid ADHD and epilepsy?

- Shared genetic and environmental factors
- Adrenergic system dysfunction
- Epileptic seizures may exacerbate ADHD features
- Some antiseizure medications worsen hyperactivity and impulsivity. Phenobarbital and topiramate can cause inattention and hyperactivity. Benzodiazepines can cause inattention and disinhibition.

Management of ADHD and epilepsy

- Adequate treatment of epilepsy and support
- Assess the quality of seizure control and adverse effects of antiseizure medications.
- **Valproate**, also a mood stabiliser, can help to reduce impulsivity and oppositional and defiant behaviour
- **Topiramate** can cause significant adverse behavioural changes
- **Carbamazepine** and **Lamotrigine** are known to have positive behavioural effects
- **Beware of drug interactions:**
 - **Methylphenidate** can increase serum phenytoin levels
 - **Carbamazepine** may reduce serum level of methylphenidate
 - **Atomoxetine** doesn't have interaction with antiseizure medications
- Address sleep difficulties which can exacerbate seizures and ADHD features

Please note
Valproate,
carbamazepine and
lamotrigine are not
licensed for ADHD.

Management of ADHD and epilepsy

- The Summary of Product Characteristics (SmPC) state that stimulant medications (methylphenidate, dexamfetamine and lisdexamfetamine) “may over the convulsive threshold in patients with a prior history of seizures” and that “convulsions” are a “very rare” side effect of methylphenidate and dexamfetamine. Please see the SmPC of each product for further information. The seizure frequency is not known for lisdexamfetamine.
- The CADDRA Canadian ADHD Practice Guidelines (4.1 Edition, 2020) state that “no strong evidence exists that psychostimulants increase the severity or frequency of seizures in patients with stable epilepsy”.
- NICE guideline NG87 (2018, updated 2019) states that people with epilepsy may have an increased prevalence of ADHD compared with the general population. Prescribers should ensure that dose titration is slower and monitoring more frequent if epilepsy is present in people with ADHD. Prescribers should exercise their clinical judgement in patients with epilepsy with comorbid ADHD.
- Do consider ADHD medication when indicated.
- Treat ADHD adequately and avoid rapid titration of ADHD medication.
- NICE guideline (NG87) states that “If a person with ADHD develops new seizures or a worsening of existing seizures, review their ADHD medication and stop any medication that might be contributing to the seizures. After investigation, cautiously reintroduce ADHD medication if it is unlikely to be the cause of the seizures”.

References and further reading:

ILAE official report: a practical clinical definition of epilepsy (abstract)

<https://pubmed.ncbi.nlm.nih.gov/24730690/>

Canadian ADHD Practice Guidelines (4.1 edition, 2020)

<https://adhdlearn.caddra.ca/wp-content/uploads/2022/08/Canadian-ADHD-Practice-Guidelines-4.1-January-6-2021.pdf>

Fan, H.-C.; Chiang, K.-L.; Chang, K.-H.; Chen, C.-M.; Tsai, J.-D. **Epilepsy and Attention Deficit Hyperactivity Disorder: Connection, Chance, and Challenges**, 2023

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10049646/pdf/ijms-24-05270.pdf>

ADHD and obesity

- Obesity is commonly seen in children and young people with ADHD.
- Risk factors include impulsivity, erratic eating/eating disorders, sedentary lifestyle and genetic factors. Some may have endocrine problems.
- Do check NICE guidelines about obesity: identification, assessment and management, updated July 2023.
- Do explain about potential health risks associated with high central adiposity.

References:

Obesity: identification, assessment and management - Clinical guideline [CG189], updated 2023

<https://www.nice.org.uk/guidance/cg189>

Ravi P, Khan S (December 14, 2020) **Attention Deficit Hyperactivity Disorder: Association With Obesity and Eating Disorders**. *Cureus* 12(12): e12085. DOI 10.7759/cureus.12085



Epilepsy

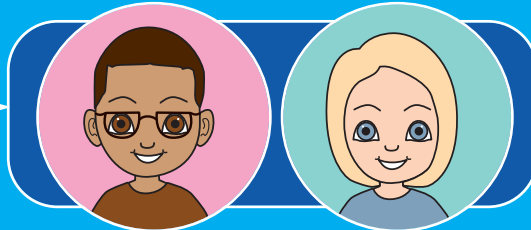
ADHD

Obesity

ADHD

about **30%** in Epilepsy

Inattentive
presentation common



Children with Epilepsy



Are seizures well controlled?

Behaviour related to adverse effects of antiseizure medications?

Assess for ADHD early

Management

Epilepsy

- Adequate treatment and support
- **Sleep problems** can worsen ADHD and epilepsy
- Beware of **drug adverse effects and interactions**

ADHD

- Treat adequately with ADHD medication, if needed
- **New seizures/worsening of existing seizures**
 - Review, stop ADHD medication if contributing
 - Investigate and restart slowly if not thought to be causing the seizures

Overweight	+	BMI	=/>91 st centile
Obesity (Very Overweight)	++	Body Mass Index	BMI calculator =/>98 th centile
Severe Obesity (Very Very Overweight)	+++	Weight kg Height m ²	=/>99.6 th centile



Impulsivity

Erratic eating/eating disorder

Activity Screen time

Genetics

Some medical conditions

Management

- Treat ADHD adequately
- Ensure a balanced diet
- Set screen time limits
- **Be active** for >60 min/day
- Local **weight management programmes**, clubs
- Visit **Healthier Families** to learn more about healthy lifestyle
- Specialist referral as needed

Keep <0.5
Waist to Height ratio

Health problems with large central fat

Some examples

Headaches

Sleep problems

High blood pressure

Type 2 Diabetes

Heart diseases

Sleep Apnoea



ADHD and Enuresis

What is Nocturnal Enuresis (bedwetting)?

According to the ICCS (International Children's Continence Society), Enuresis, also called Nocturnal Enuresis, is defined as a condition with intermittent bedwetting episodes during sleep in children aged 5 years or over.

Primary Enuresis: the child has never achieved dryness at night-time. It is the most common presentation in children.

Secondary Enuresis: the child wets the bed after achieving dryness at night-time for a period of at least 6 months in the past.

Monosymptomatic Enuresis: the child has bedwetting but doesn't have other difficulties.

Nonmonosymptomatic Enuresis: in addition to bedwetting, the child has daytime symptoms and bladder dysfunction.

- Daytime wetting
- Frequent voiding > 7 times per day
- Urgency - the child often rushes to the toilet
- Hesitancy - the child takes a while to initiate micturition
- Voiding problems: straining, pain, narrow stream of urine

What causes Primary Enuresis?

- **Polyuria:** excessive production of urine at night-time that exceeds the child's bladder capacity. This can result from an insufficient secretion of the antidiuretic hormone at night-time
- **Sleep arousal problems:** the child is unable to wake to the full bladder sensation at night-time
- **Overactive or twitchy bladder:** the bladder is irritable with small bladder capacity
- **Genetics:** positive family history is reported in 65% to 85% of children with nocturnal enuresis

What causes Secondary Enuresis?

- Sleep-disordered breathing: Obstructive Sleep Apnoea due to adenotonsillar hypertrophy or obesity, causing sleep arousal difficulties
- Diabetes mellitus, Diabetes insipidus
- Psychological stress, child abuse

ADHD and comorbid Enuresis

ADHD is the most common psychiatric comorbidity associated with enuresis. Enuresis is reported in about 30% of children with ADHD. Assessment includes a detailed history, examination, voiding diary and further tests as required.

Management

- **Psychoeducation:** encourage parents/carers to visit the website of ERIC, the National Bowel and Bladder Charity
- **Urotherapy:** this includes appropriate drinking and voiding habits
- Treat constipation which is a common association
- **Alarm therapy**
- **Medications** such as desmopressin and anticholinergics (oxybutynin, solifenacin etc.)

ADHD and Enuresis

- Treat ADHD adequately and also other comorbid conditions
- Alarm treatment may not be appropriate due to the underlying behavioural, sleep and compliance difficulties
- Early medication treatment for bedwetting more effective
- Enuresis may be persistent in people with ADHD

References:

Bohra A, Bhatt GC. Evidence based management of primary monosymptomatic nocturnal enuresis. *Asian J Pediatr Nephrol* 2022;5:69-77
https://journals.lww.com/ajpn/fulltext/2022/05020/Evidence_based_Management_of_Primary.4.aspx
Bedwetting (enuresis), CKS NICE guideline, updated March 2023
<https://cks.nice.org.uk/topics/bedwetting-enuresis/>
Optimising the management of children with concomitant bladder dysfunction and behavioural disorders *European Child & Adolescent Psychiatry* (2023) 32:1989–1999
<https://doi.org/10.1007/s00787-022-02016-4>



Enuresis (bedwetting)

Primary Enuresis

- Child aged 5 years or over
- Never dry at night

Secondary Enuresis

- Child aged 5 years or over
- Previously been dry at night for 6 months

Monosymptomatic Enuresis

- Bedwetting only
- ### Non-monosymptomatic Enuresis
- Daytime wetting
 - Urgency/hesitancy
 - Frequent voiding

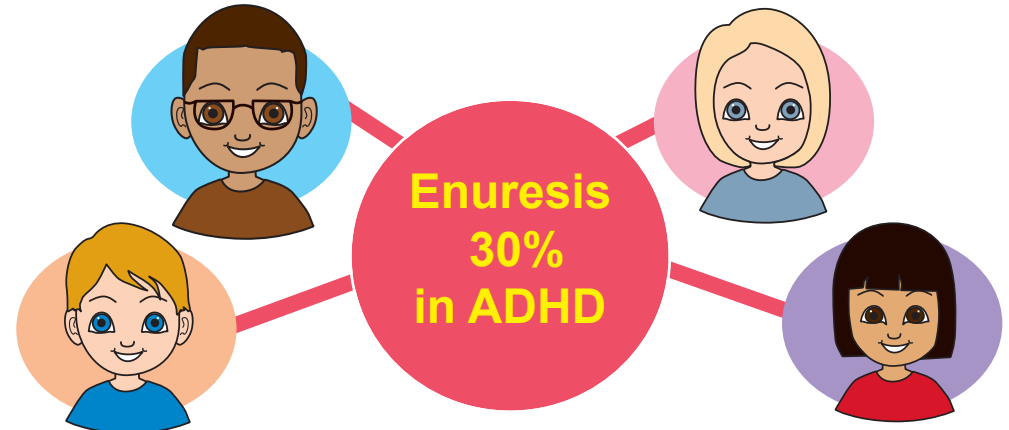
Causes

- Child can't wake up at night to the bladder sensation
- **Makes too much urine at night**
- Twitchy bladder
- **Genetics**

Management

- Psychoeducation (please visit website - **ERIC**)
- Appropriate drinking and voiding habits
- Treat constipation and other coexisting conditions
- Alarm treatment
- Medications such as desmopressin, oxybutynin
- Support from your local continence team

ADHD and Enuresis



Enuresis and coexisting conditions

- Constipation/encopresis
- Obstructive Sleep Apnoea
- **ADHD**
- ODD
- Anxiety/depression
- Tic disorders

Treat ADHD adequately

- **Alarm treatment:** may not always be suitable due to behavioural, sleep and compliance issues
- **Medication treatment** for bedwetting and ADHD helpful

- Bedwetting may persist for a long period



ADHD in girls - Why are they missed?

- Less likely to be referred
- Internalising symptoms more common, e.g. daydreamer
- Present with emotional dysregulation symptoms
- Develop resilience and coping strategies with compensatory and socially adaptive behaviours, masking ADHD symptoms
- Likely to get a diagnosis of a comorbid condition first, such as anxiety, depression or an eating disorder

Unique presentation in girls

- Inattentiveness is common, which is not easily recognised.
- Girls tend to have fewer symptoms but the impact on their lives can be just as detrimental as in boys. Some features include being a daydreamer, distracted, disorganised and dysregulated (emotionally).
- They receive more appointments and a later diagnosis compared to boys, often after being assessed for a psychiatric disorder and starting treatment for anxiety and depression.
- Symptoms become more pronounced when educational and social demands increase, e.g. at the time of transition.
- In post-pubertal females, the hormonal fluctuations may cause variations in symptoms.

Assessment

- Obtain a history of inattention, emotional reactivity, low self-esteem, academic difficulties, and risky behaviour.
- Some may excel academically; satisfactory academic achievement does not rule out ADHD.
- Poor peer relationships, anxiety, self-esteem issues and/or somatic complaints may be the initial clues to the impact of ADHD on girls and women.
- Clinicians should enquire about compensatory strategies that may mask or moderate behaviour.
- Excessive talking and giggling can be a sign of hyperactivity.

Comorbidity

Girls with ADHD are more likely than boys to have comorbid, internalising conditions.

- Anxiety, depression, low mood
- Emotional lability and emotional dysregulation

They may indulge in risky sexual behaviour and substance misuse. Teenage girls with ADHD may start consuming alcohol, cannabis and other recreational drugs to cope with their emotional problems.

Impact

Undiagnosed or undertreated ADHD in girls leads to consequences such as school dropouts, under-achievement and social problems.

Patients may have difficulty in coping with life stressors and can somatize, experiencing headaches, stomach aches and other

symptoms as a result of feeling a lack of control over their situation.

Multimodal management

1. **Non-pharmacological interventions:** This includes psychoeducation, behavioural interventions (through parent training, classroom and school-based interventions), neurofeedback, cognitive behavioural therapy (CBT), psychotherapy, mindfulness and meditation-based therapies, healthy balanced diet and regular exercise.

2. **School support**

3. **Managing comorbid conditions**

4. **Medications**

ADHD in girls and periods: As the oestrogen levels start falling after ovulation, and are decreased during the later part of the cycle, before the periods, the girls may experience increase in their ADHD symptoms during this time. If this happens, a slight increase in the medication dose in later part of cycle may help in controlling the ADHD symptoms.

Reference:

ADHD in girls: improving long term outcomes p13-15, March 2022, article in BACCH Newsletter, authored by Dr Chinnaiah Yemula and Dr Nivedita Bajaj

Further reading:

Females with ADHD: An expert consensus statement taking a lifespan approach providing guidance for the identification and treatment of attention-deficit/hyperactivity disorder in girls and women -Young et al. *BMC Psychiatry* (2020) 20:404 <https://doi.org/10.1186/s12888-020-02707-9>



ADHD in Girls

Girls have unique features

More inattentive as a 'day dreamer'
Late for deadlines
Chaotic, messy bedroom

Less 'on the go/running around'
but 'talking too much and giggling'

Interrupting/blurting out answers

Girls with ADHD

- Symptoms not easily identified in school
- Less boisterous and present differently to boys
- Late referrals
- Late diagnosis
- May not get treatment/support



Anxiety
Low mood
Depression

**Emotional
Dysregulation**

Irritable
Argues a lot
Mood changes
Easily frustrated

What is the impact?

School

- Underachievement
- Low self-esteem
- Detentions/exclusions
- School dropout

Social

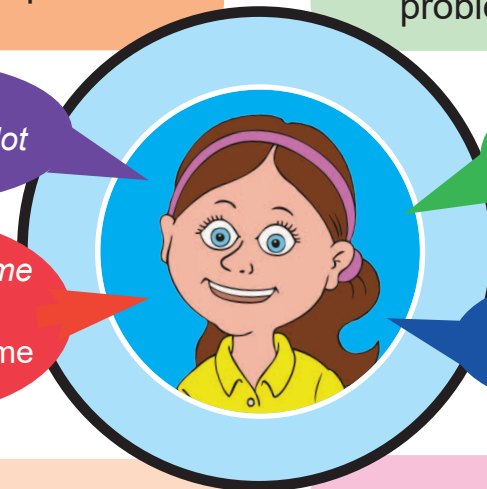
- Social isolation/rejection
- Bullying/victimisation
- Peer relations problems

My mind wanders a lot

*No one likes me
No one understands me*

I am good at singing and dancing

*I am creative
I am good at making things*



Family

- Parental and sibling conflicts
- Strained relationships

Personal

- Road traffic accidents
- Self-harming
- Risky behaviours



About ADHD in Teenagers

ADHD features in teenagers

Physical hyperactivity in the form of excessive jumping, running or climbing is not a manifesting feature in teenagers with ADHD. Instead, a teenager with ADHD is likely to be very fidgety, impatient, impulsive and experience inner restlessness and/or move around.

Psychosocial interview

Engaging with teenagers is not always easy and every effort should be made to encourage them to have an open and honest discussion regarding their personal views, concerns and ambitions.

A psychosocial interview with the teenager in a structured manner can be helpful, using 'HEADSSS' as below:

H	Home • Who lives at home with the young person? • Do they have their own room? How do they relax at home? • How are the relationships at home with parents/carers and siblings? • What do parents/carers do for a living? • Any new people at home?
E	Eating • What is the diet like? Restricted or balanced • Appetite • Do they feel hungry? • Any vomiting? • Adequate weight gain? Education • How is school? Happy, friends, teachers, relationships? • Attendance, favourite/difficult subjects? • School detentions/exclusions? • Academic performance/grades? Employment • Current job/s? • Plans for future employment?

A	Activities • On own/with friends/family? Do they have fun? • Any hobbies? Screen time? • Sports/clubs? • Favourite music?
D	Drugs, Smoking and Alcohol • Any use of smoking/vaping, alcohol or illegal drugs? • How much and how often? • Any of the above with friends? • Anyone in the family who smokes/drinks alcohol/uses drugs? • Source and how are drugs/cigarettes/vapes/alcohol paid for?
S	Sexuality, Sex and Relationships • Orientation? • Sexually active/number of partners? • Protective measures? • Pregnancy? • Abuse?
S	Self-harm, Depression, Self-image • Any self-harm, history of depression, suicidal ideations?
S	Safety • Aware of risk taking, cyberbullying and any violence at home/school?

ADHD and Substance Use Disorder (SUD)

ADHD and SUD commonly coexist but are not well recognised in the clinic setting and hence often not treated. SUD relates to substances such as alcohol, tobacco, caffeine, cannabis, stimulants (amphetamine type substances, cocaine and others), opioids, hallucinogens, sedatives/hypnotics/anxiolytics and inhalants.

- Children with ADHD and comorbid ODD/CD are at a high risk for developing SUD in teenage years. Stimulant treatment of childhood ADHD may reduce the risk of developing SUD in adolescence.
- Screen for SUD in teenagers with ADHD (use CRAFT tool - (<https://www.ndbh.com/Docs/PCP/CRAFT-adolescents.pdf>) and vice versa.
- Manage both conditions with psychosocial and/or pharmacological treatments.

References: International Consensus Statement for the Screening, Diagnosis, and Treatment of Adolescents with Concurrent Attention-Deficit/Hyperactivity Disorder and Substance Use Disorder *Eur Addict Res* 2020;26:223–232 Özgen et al. DOI: 10.1159/000508385 <https://karger.com/ear/article-pdf/26/4-5/223/3897834/000508385.pdf>

Identification and treatment of individuals with attention-deficit/hyperactivity disorder and substance use disorder: An expert consensus statement. *World J Psychiatry* 2023; 13(3): 84-112 [PMID: 37033892 DOI: 10.5498/wjp.v13.i3.84] <https://www.wjgnet.com/2220-3206/full/v13/i3/84.htm>



Less physically hyperactive
e.g. running/jumping

ADHD in Teenagers

More fidgety, impatient
and restless mind

H

Home

E

Eating, Education
Employment

A

Activities

D

Drugs, Smoking
Alcohol

S

Sexuality
Sex, Relationships

S

Self-harm, Depression
Self-image

S

Social media,
Safety and Abuse



S
M
O
K
I
N
G

- Early smoking, twice as common
- Cigarette smoke contains over 4000 poisonous chemicals
- Serious damage to health
- **Support** - GP/community pharmacist
- **How to quit** - www.nhs.uk/betterhealth
- Download free **NHS Quit Smoking app**
- Free National smokefree **helpline** 0300 123 1044



A
L
C
O
H
O
L

- Binge drinking more common
- *High risk of accidents, injuries, fights, trouble with the law*
- Risky behaviours
- *Long-term risks: stomach, liver and heart diseases, memory loss, stroke*
- Talk to your child/young person



D
R
U
G
S

- **High risk** of illegal drug use e.g. cannabis, cocaine, ecstasy, heroin, LSD and solvents
- *Physical, mental health and social problems*
- Risk of assault and sexual exploitation
- *Look out for signs and discuss with the teenager*
- **Seek help:** Doctor, Drug action team
- www.talktofrank.com



More about ADHD in Teenagers

What are the challenges?

ADHD in teenagers is often a complex presentation with a number of challenges in terms of diagnosis, management and care.

ADHD diagnosis is not easy

- Hyperactivity in terms of excessive moving/running/climbing may not be evident
- Teenagers tend to be more fidgety, restless in mind, inattentive and impulsive
- May present with the consequences of impulsivity

Comorbidity is highly prevalent

- ODD and CD
- Anxiety, depression, suicidal ideations
- Substance Use Disorders - smoking, alcohol, illegal drugs
- Risk of medication diversion
- Major sleep problems e.g. Delayed Sleep-Phase Disorder
- Criminality
- Eating disorder
- Teenage pregnancy
- Early sex, unprotected sex, Sexually Transmitted Diseases
- Driving related accidents and receiving tickets/penalty points due to attention difficulties and impulsive behaviour

Treatment non-compliance

- Some teenagers may not wish to consider ADHD medication when recommended
- Some will just stop taking ADHD medication abruptly
- Many teenagers have poor compliance when expected to take their medication regularly

Difficulty engaging with services

- Non-engagement of teenagers with services such as CAMHS is often a major barrier

Academic challenges

- Poor organisation, time management and working-memory problems
- Academic under-performance
- School exclusion
- School drop-out

Home and social life

- Stress and conflict with parents/carers and siblings
- Social skill deficits
- Strained relations with peers

Management

- Psychoeducation
- Parent training and behavioural strategies
- Teenage specific workshops or one-to-one support e.g. ADHD, sleep, anxiety
- Social skills training
- School and college support
- Pharmacological treatments
- Cognitive Behavioural Therapy



ADHD in Teenagers

Challenges and Opportunities

Home

- Arguments
- Violence
- Sibling fights
- Self-harm
- Not complying with treatment

Education

- Academic difficulties
- Disruptive
- Exclusions
- Drop-out



Relationships

- Be sure before starting any relationship
- Qualities of a good relationship include trust, sharing common interests and lots of support
- Practice contraception and safe sex, when you are ready
- See your GP for advice about contraception

Teenage pregnancy

- High risk of teenage pregnancy
- Take contraceptives if having sex
- Take emergency contraception in case of unsafe sex
- Treat ADHD adequately

Career

- Know your strengths and weaknesses
- Set your goals
- Complete your education
- Develop organisation and time management
- Learn about careers such as army

Driving

- Impulsivity and poor concentration
- High risk of accidents and speeding offences
- Inform DVLA and insurance company about ADHD
- Never drink and drive
- Don't drive if angry/upset
- Turn off mobile phone when driving
- Treat ADHD adequately

Support for transition and moving to adult service for ongoing care



Management of ADHD

Managing ADHD should involve a multimodal and multidisciplinary approach, including pharmacological and non-pharmacological interventions.

According to the NICE guideline (NG 87, 2019), a holistic and comprehensive shared treatment plan needs to be provided to address the psychological, behavioural and occupational or educational needs of the individual with ADHD.

Take into consideration

- severity of ADHD features
- the individualised goals
- protective factors
- impact of comorbid neurodevelopmental and mental health conditions

Discuss treatments and interventions, understand their preferences and involve child/young person and parent/carer in decision making.

- Parental support
- Diet and exercise
- Educational interventions and support
- Psychological - e.g. CBT
- Medications
- Treat comorbid conditions with interventions and support

Challenges in management

Clinicians often find it difficult and challenging to manage

- Preschool ADHD
- ADHD in girls
- ADHD in teenagers
- Children and young people with associated significant and multiple comorbid conditions

Preschool ADHD (children under the age of 5 years)

- It is important to assess preschoolers for ADHD when suspected
- A comprehensive evaluation should be undertaken
- Many children present either with isolated difficulties or a combination of difficulties such as delayed development, sleep and language difficulties, behavioural difficulties, features of autism spectrum disorder and sleep difficulties, in addition to the features of ADHD.
- According to the NICE guideline, offer ADHD-focused group parent-training programme as first line treatment. Do not offer ADHD medication without second opinion from a specialist ADHD service (ideally a tertiary service).
- However, in view of the limited service in practice, it may be more appropriate to obtain a second opinion from another colleague with expertise in ADHD management (CAMHS or community paediatric team) before considering a trial of ADHD medication.
- Discuss and inform parent/carer that ADHD medication is unlicensed for under 5s.
- Ensure ADHD medication (usually a stimulant) is started at low dose and titrated slowly with frequent monitoring to check for adverse effects and progress. Do not exceed recommended doses without specialist consultation.

Treatment with ADHD medication reduces:

- Accidental injuries, traumatic brain injury, bone fractures
- Educational underachievement

In case of teenagers

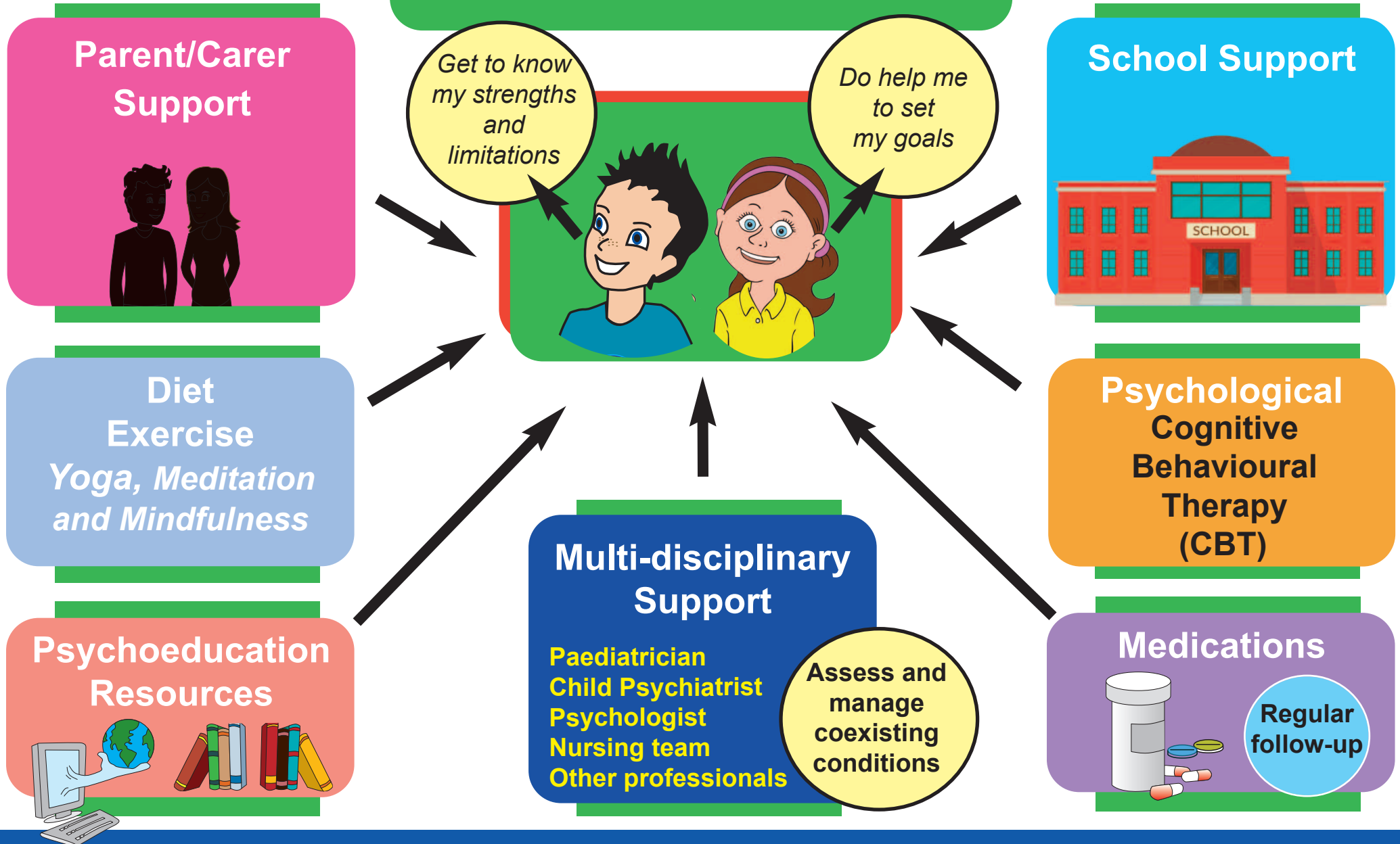
- Substance abuse, cigarette smoking
- Sexually transmitted infections
- Depression, suicide
- Criminal activity
- Teenage pregnancy

Reference:

The World Federation of ADHD International Consensus Statement: 208 Evidence-based conclusions about the disorder, 2021 <https://doi.org/10.1016/j.neubiorev.2021.01.022>



How do you manage ADHD?





Parental support

What is psychoeducation?

It involves teaching/providing children, young people and parents/carers with knowledge and better understanding of various aspects of their condition, including treatments. *Please note psychoeducation is an ongoing process required to address the individual needs of the child/young person and their parent/carer.*

This can help to facilitate collaborative working between patients, families and healthcare professionals, with better outcomes.

What are parent training/education programmes?

Parent training/education programmes are considered the first step in managing children with ADHD. They are structured programmes which can be group based or individual based and aim to provide parents and carers with relationship enhancing strategies.

Some examples are:

- 123 Magic (2-12 yrs); www.123magic.com
- Positive Parenting Programme® (0-12 yrs and 12-16 yrs); www.triplep.net
- Incredible Years® (parent 0-12 yrs, teacher 3-8 yrs); www.incredibleyears.com
- New Forest Parenting programme (3-11 yrs); www.nfppprogram.com
- Parent Child Interaction Therapy (2-8 yrs); www.pcit.org

Some basic and useful strategies are:

Educate, empathise, engage and empower patients and families.

Advocate '5 Cs' as parental strategies given below:

- **Connection:** learn about ADHD, provide your child with attention, safety and fun.
- **Composure:** Be calm and patient. Recognise their difficulties and your own emotions.
- **Compassion:** Accept their ADHD. Love them regardless. Understand from their perspective.
- **Collaboration:** Keep an open mind. Encourage problem solving. Improve their self-esteem.
- **Consistency:** Be consistent in rules and consequences. Be fair but firm and reward positive behaviour.

School support

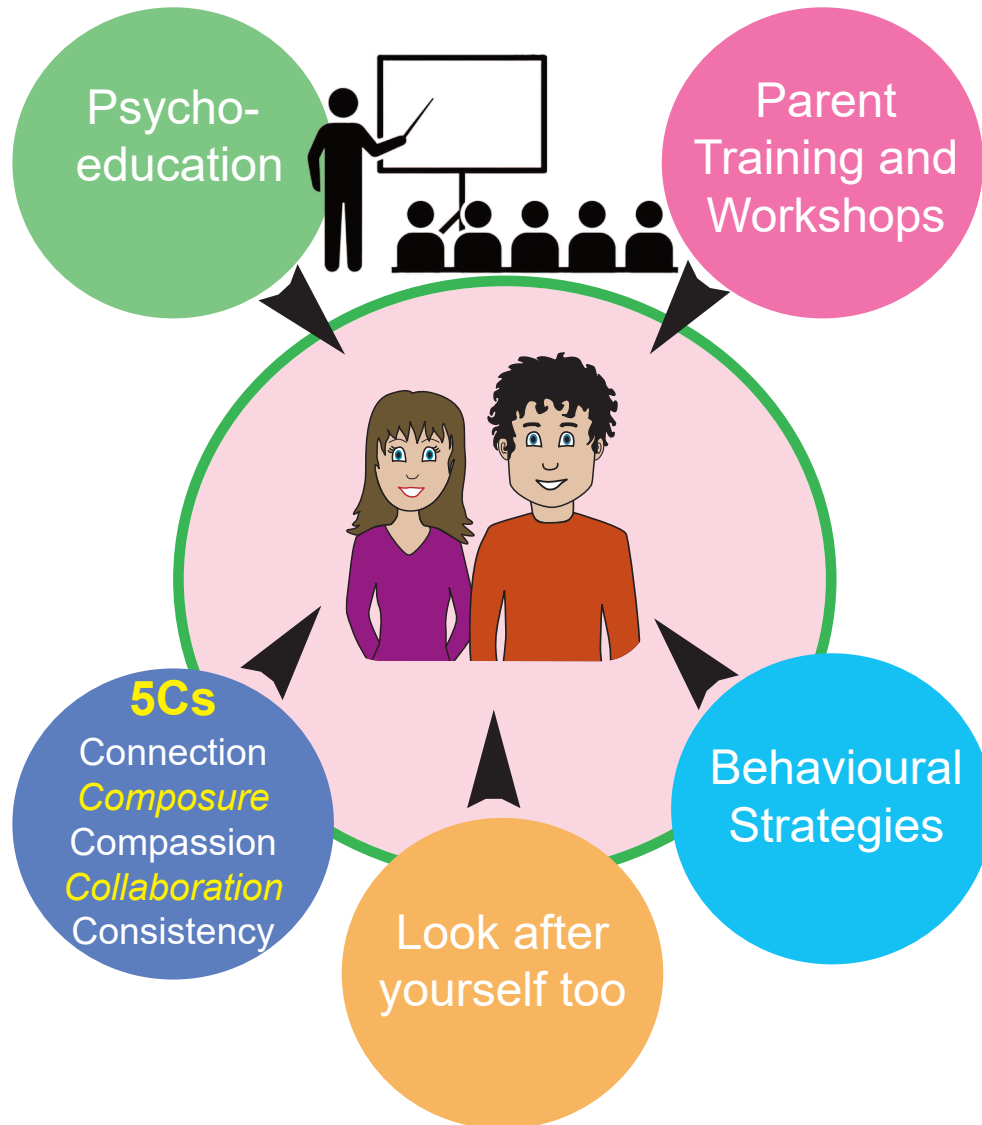
It is crucial to provide adequate and appropriate school support in relation to the individual needs of the child or young person with ADHD. It is important to support the individual with associated comorbid conditions, such as specific learning difficulties, ASD, DCD, anxiety/depression. The support should be needs-led and not restricted to the need for having a medical diagnosis.

Some helpful strategies include:

- Seating arrangement: sit at the front of classroom and next to a role model
- Avoid distractions
- Have regular movement breaks
- Provide the child with small chunks of work
- Give clear and concise instructions
- Verbal instructions to be complemented with written instructions
- Provide additional time in exams or supervised breaks, and accommodations to reduce sensory overload and anxiety
- Provide with sensory support, for example. avoiding noisy environment etc
- Use visual timetable as appropriate to the child's ability
- Provide immediate feedback and positive reinforcement of good behaviour and success
- Provide specific instructions/guidance on homework and revision strategies
- Provide guidance and support on deadlines and late submissions and regularly check on progress during extended tasks
- Assign roles/tasks according to the child's ability and provide positive feedback
- Provide support with prioritising tasks and time management with task lists, mind-maps etc to sort out complex topics
- Avoid stigma and organise to dispense ADHD medication during school hours as required



Parental Support



School Support



Support Based on Child's Needs
A Diagnosis is Not Essential

Some Helpful Strategies

- **Seating:** at front, close to the teacher and next to a role model, if possible
- *Provide clear and concise instructions*
- **Reduce distractions**
- **Small chunks of work**
- Appropriate **movement breaks**
- **Exams** - additional time/supervised breaks
- **Sensory support as required**

Please liaise with
School SENDCO
to discuss your child's needs
and support

SENDIASS
Special Educational Needs
and Disabilities Information
Advice and Support Services

Local Offer



About Diet and Exercise

Diet

It is important to look out for any specific food and drinks that worsen your child's behaviour and ADHD features; for example, if the child becomes more hyperactive after having a sugary food or certain drinks. In this case, encourage the parent/carer keep a food diary and try to cut down or remove these specific items from the child's diet if there is a clear link.

In some cases, a referral to the dietitian may be required for further assessment and advice. Fatty acid supplements are generally not recommended as part of ADHD treatment.

Also a healthy, balanced diet can help to maintain good health and weight. Do suggest that the parent/carer check the **Eatwell Guide** (www.nhs.uk/live-well/eat-well/) for additional information.

Exercise

Having regular physical activities can have several benefits, such as improving concentration, better sleep, boosting muscle and bone strength and generally feeling good.

Encourage the parent/carer to check the **Physical activity guidance** (<https://www.gov.uk/government/collections/physical-activity-guidelines>) for children aged 5 to 18 years for further information.

Do encourage the child to take part in physical activities. It is also helpful to organise some of these as part of family lifestyle, enjoying them as a whole family.

About Cognitive Behavioural Therapy (CBT)

This is a psychological treatment by a therapist to help people understand the thoughts and feelings affecting their behaviour.

According to NICE guidelines (NG 87, 2019), consider **a course of cognitive behavioural therapy (CBT)** for young people with ADHD who have benefited from medication but whose symptoms are still causing a significant impairment in at least one domain, addressing the following areas:

- Social skills with peers
- Problem-solving
- Self-control
- Active listening skills
- Dealing with and expressing feelings

Others

Yoga, meditation and mindfulness

Yoga can be helpful with strategies to improve attention and emotional regulation skills. It is known to benefit people with anxiety disorders.

Mindfulness involves living in the present moment and being nonjudgmental, which requires attention and focus. It is found to be helpful in adult ADHD and may benefit children with ADHD.

Neurofeedback

This is aimed at improving self-regulation of brain activity through the correction of electroencephalography (EEG) abnormalities. The literature evidence on the efficacy of NF for ADHD is currently mixed; some suggesting long-lasting benefits with no side effects, whereas others reporting it as a placebo effect, or no significant outcome.

References: NICE guidelines NG 87, 2019 Attention deficit hyperactivity disorder: diagnosis and management <https://www.nice.org.uk/guidance/ng87>

ADHD in children and adolescents: Review of current practice of non-pharmacological and behavioural management, 2023 by Michael O Ogundele and Hani F Ayyash;
<https://pubmed.ncbi.nlm.nih.gov/37063364/>



Diet and Exercise

Have a healthy and balanced diet

Keep a diary of any food and drinks that worsen ADHD symptoms

Dietitian may help in some cases



Physical activities and Exercise

Several benefits:

- Helps muscle and bone growth
- *Better sleep*
- Improves concentration and learning
- *Better coordination*



Be active
for at least
60
minutes/day

Other Therapy/Support



Cognitive Behavioural Therapy

CBT

This is a **psychological treatment** by a therapist to help people understand the thoughts and feelings affecting their behaviour

For young people on ADHD medication who are still experiencing significant symptoms to help improve

Social skills
Problem-solving
Active listening skills
Self-control



About the ADHD medications: ADHD medications help to improve attention difficulties, reduce hyperactivity and reduce impulsivity. They generally work by blocking the reuptake of dopamine and noradrenaline, increasing the amount of chemical messengers, thereby improving message transfer and the executive functions of our brain (stop 'POSTMEN STRIKE' - see page 4A)

What are the different formulations of medications?

Stimulant - Methylphenidate group			
Medication Brand name	Duration of action	Tablet/capsule Times per day	Dose strength
- Medikinet® - Ritalin® - Generic MPH - Liquid 2mg/ml	2 to 4 hrs	Tablet* - can be halved Take 2 to 3 times a day	5 mg, 10 mg, 20 mg <i>Ritalin® is only available as 10 mg strength.</i>
- Ambinet XL - Focusim XL - Medikinet® XL ▼ - Meflynate® XL - Metyrol® XL - Ritalin® XL	6 to 8 hrs (IR 50%: MR 50%)**	Capsule - content can be sprinkled onto apple sauce/yoghurt Take once a day with/without food (Medikinet XL and Ambinet XL with or after breakfast)	5 mg, 10 mg, 20 mg, 30 mg, 40 mg, 50 mg and 60 mg (Metyrol® XL and Meflynate® XL - 5 mg and 50 mg not available)
- Addepta XL - Equasym® XL	6 to 8 hrs (IR 30%: MR 70%)	Capsule - content can be sprinkled onto yoghurt/apple sauce Take once a day before breakfast	10 mg, 20 mg, 30 mg
- Affenid® XL - Atenza XL - Concerta® XL - Kixel XL - Matoride® XL - Xenidate XL	10 to 12 hrs (IR 22%: MR78%***)	Tablet - should not be crushed Take once a day in the morning with or without food	18 mg 27 mg (not Matoride XL) 36 mg 45 mg (with Atenza XL) 54 mg
- Delmosart® - Xaggitin® XL	(IR 25%: MR75%***)		

*Tablet can be halved to aid swallowing and does not provide equal doses of medicine

**IR - Immediate release proportion, MR - Modified release proportion

***Reference <https://www.sps.nhs.uk/articles/considerations-when-prescribing-modified-release-methylphenidate/>

▼ This medicine is subject to additional monitoring. This will allow quick identification of new safety information. You can help by reporting any side effects you may get.

See <https://yellowcard.mhra.gov.uk> for how to report side effects.

Stimulant - Amfetamine group			
Medication Brand name	Duration of action	Tablet/capsule/liquid Times per day	Dose strength
- Dexamfetamine generic - Amfexa® (Dexamfetamine) (once or twice a day)	3 to 6 hrs	Tablet^ - can be divided Liquid Take 2 to 3 times a day	Tablet 5 mg, 10 mg, 20 mg Liquid 5 mg/5 ml
Elvanse® (Lisdexamfetamine)	Up to 13 hrs	Capsule - content can be mixed in water/juice Take once a day in the morning with or without food	20 mg, 30 mg, 40 mg, 50 mg, 60 mg and 70 mg

Non -stimulant			
Medication Brand name	Duration of action	Tablet/capsule/liquid Times per day	Dose strength
- Atomaid - Atomoxetine	Up to 24 hrs Response in 6 to 12 weeks	Capsule/liquid Take once a day in the morning or 2 divided doses	Capsule 10 mg, 18 mg, 25 mg, 40 mg, 60 mg, 80 mg, 100 mg Liquid 4 mg/1 ml
- Intuniv® - Guanfacine	Up to 24 hrs Response in 2 to 4 weeks	Tablet Take once a day in the morning or evening with or without food	1 mg, 2 mg, 3 mg, 4 mg, 5 mg, 6 mg, 7 mg

^Tablet can be divided to aid swallowing and does not provide equal doses of medicine

Mechanism of action of ADHD medications:

Methylphenidate - Blocking dopamine and norepinephrine reuptake

Dexamfetamine and Lisdexamfetamine - Blocking the reuptake of norepinephrine, dopamine and also release of dopamine from vesicles into synaptic space

Atomoxetine - Selective inhibition of presynaptic norepinephrine reuptake (although note that in prefrontal cortex the norepinephrine transporter is responsible for dopamine reuptake)

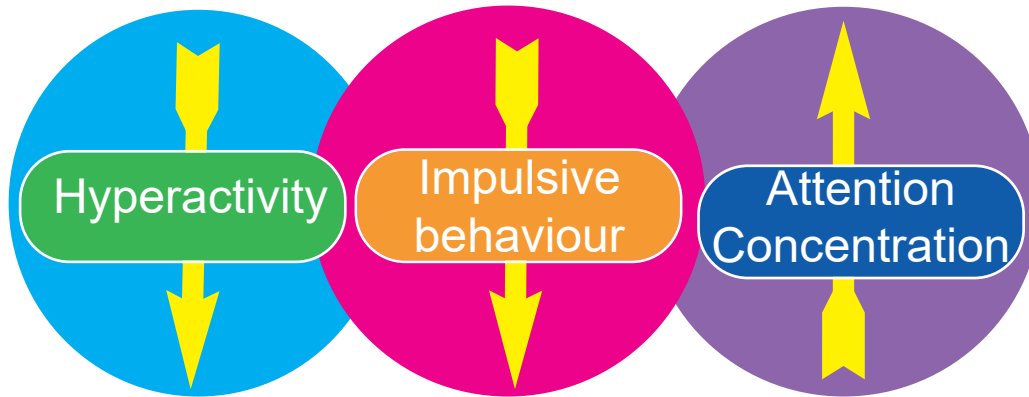
Guanfacine - Stimulation of central alpha (2)-adrenergic receptors (more selective than clonidine) increasing noradrenergic stimulation.

Reference: The management of ADHD in children and adolescents: bringing evidence to the clinic: perspective from the European ADHD Guidelines Group (EAGG), 2023

<https://link.springer.com/article/10.1007/s00787-021-01871-x>



ADHD medication benefits



How do medications work?

Stop the postmen going back and so more postmen deliver messages, improving executive functions.



Types of medications

Stimulants

Controlled drugs

Methylphenidate

Short-acting tablet
2 to 4 hrs action

Long-acting capsule
**6 to 8 hrs action
for school cover**

Long-acting tablet
10 to 12 hrs action

Amphetamine group

Short-acting tablet
3 to 6 hrs action

Long-acting capsule
Up to 13 hrs action

Non Stimulants

Atomoxetine

Long-acting capsule
24 hrs action

Guanfacine

Long-acting tablet
24 hrs action

Combining medications

Stimulants

Long-acting and short-acting medications for longer duration



Pharmacokinetic profile of ADHD medications

Pharmacokinetic profile (what body does to the drug) of various medications is provided in the table below. The duration of action can vary in individual patients.

On page 27 B, illustrations with graphs represent plasma levels of medications. Please note there is no common Y axis and direct comparison should not be made between the medications.

Medication	IR : MR Immediate Release and Modified Release	Onset of action in hours	Timing of second peak in hours	Duration of action in hours	Food requirement when taking medication
Methylphenidate Medikinet Ritalin MPH liquid	IR 100%	1 - 2 hours	Not applicable	4 hours	No
Medikinet XL	IR 50% MR 50%	1 - 2 hours	3 - 4 hours	8 hours	take with food
Ambinet XL Focusim XL Ritalin XL Metyrol XL Meflynate XL	IR 50% MR 50%	1 - 2 hours	4 hours	8 hours	No
Equasym XL Addepta XL	IR 30% MR 70%	1 - 2 hours	4.5 hours	8 hours	Take before breakfast
Atenza XL Concerta XL Xenidate XL * Affenid XL * Matoride XL *	IR 22% MR 78%	1 - 2 hours	6 - 8 hours	12 hours	No
Delmosart Xaggitin XL	IR 25% MR 75%	1 - 2 hours	6 - 8 hours	12 hours	No

References:

<https://www.sps.nhs.uk/articles/considerations-when-prescribing-modified-release-methylphenidate/>

*Manufacturers have not provided exact IR/MR ratio but confirms bioequivalent to the reference product

Guidance for switching between lis-dexamfetamine and dexamfetamine, October 2023

https://www.oxfordhealthformulary.nhs.uk/docs/Lis-dex%20to%20dex%20switch%20guidance_FINAL.pdf

Factors to consider when choosing short-acting and long-acting formulations of methylphenidate

Short-acting Methylphenidate Immediate Release:

Consider short-acting methylphenidate when more flexible dosing is required or at the start of titration to determine correct dosing levels.

Long-acting methylphenidate (Modified Release formulations):

The benefits are given below.

- Convenience of taking once a day
- Improved compliance
- Reduced stigma as no need to take the medication in school setting
- Reduced risk of abuse and diversion
- More consistent action with longer duration

Switching between IR and MR formulations

Medication	Dosage equivalence of IR methylphenidate (MPH)
Medikinet XL Metyrol XL Meflynate XL Equasym XL Addepta XL	5 mg = 2.5 mg MPH twice a day 10 mg = 5 mg MPH twice a day 20 mg = 10 mg MPH twice a day 30 mg = 15 mg MPH twice a day 40 mg = 20 mg MPH twice a day 50 mg = 25 mg MPH twice a day 60 mg = 30 mg MPH twice a day
Concerta XL , Ambinet XL Xenidate XL, Kixel XL Affenid XL Matoride XL Delmosart Xaggitin XL	18 mg = 5 mg MPH 3 times a day 36 mg = 10 mg MPH 3 times a day 54 mg = 15 mg MPH 3 time a day

Medication	Dosage equivalence of dexamfetamine
Elvanse (Lisdexamfetamine) once daily dose)	20 mg = 5.9 mg dexamfetamine 20 mg = 5 mg in divided doses 30 mg = 7.5 mg in divided doses 40 mg = 10 mg in divided doses 50 mg = 15 mg in divided doses 60 mg = 17.5 mg in divided doses 70 mg = 20 mg in divided doses



Stimulant medication - Methylphenidate

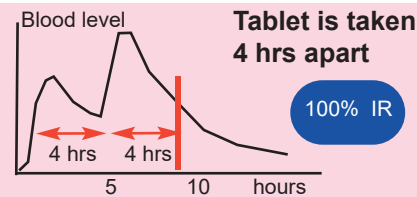
Short-acting tablet

- Medikinet, Ritalin, Methylphenidate generic 5 mg, 10 mg, 20 mg
- Methylphenidate liquid 2mg/ml

Take 2 to 3 times a day with or after food. It can be halved to aid swallowing.



Works for 2 to 4 hrs

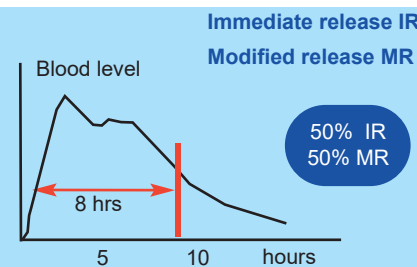


Long-acting capsule

- Medikinet XL (with/after food)
- Metyrol XL, Meflynate XL, Ambinet XL, Focusim XL
- Ritalin XL (with/without food)
- Metyrol XL and Meflynate XL 10/20/30/40/60 mg
- Medikinet XL and Ambinet XL 5/10/20/30/40/50/60 mg
- Ritalin XL and Focusim XL 10/20/30/40 mg

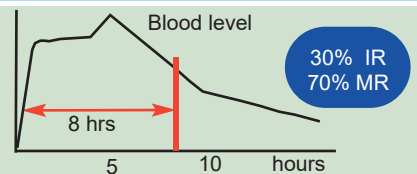


Works for 6 to 8 hrs



- Equasym XL
- Addepta XL (before breakfast) 10 mg, 20 mg, 30 mg

Works for 6 to 8 hrs



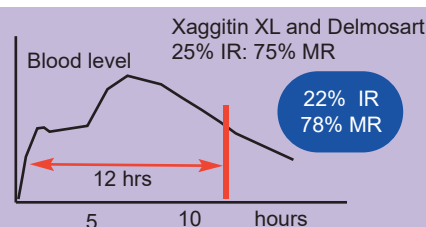
Long-acting tablet

- Matoride XL (no 27 mg)
 - Xaggitin XL
 - Delmosart
 - Concerta XL
 - Affenid XL
 - Xenidate XL
 - Kixel XL, Atenza XL
- 18 mg
27 mg
36 mg
54 mg

Take once a day in the morning with or without food. Tablet should not be crushed.



Works for 10 to 12 hrs



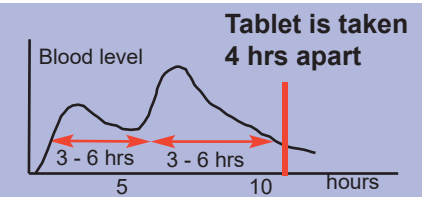
Stimulant medication - Amfetamine

Short-acting tablet or liquid

- Dexamfetamine
 - Amfexa
- Tablet 5 mg, 10 mg, 20 mg
Liquid 5 mg/5ml



Works for 3 to 6 hrs

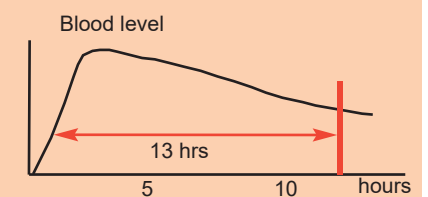


Long-acting capsule

- Elvanse
- 20 mg, 30 mg, 40 mg, 50 mg, 60 mg, 70 mg



Works up to 13 hrs



Non-stimulant medications

Long-acting capsule or liquid - Take once a day or 2 divided doses per day.

Works up to 24 hrs



- Atomoxetine
 - Atomaid
- 10 mg, 18 mg, 25 mg, 40 mg, 60 mg
80 mg, 100 mg

Long-acting tablet
Take once a day morning or evening.

Works up to 24 hrs



- Guanfacine
 - Intuniv (no 5/6/7mg)
- 1 mg, 2 mg, 3 mg, 4 mg, 5 mg, 6 mg
7 mg

Please note the graphs show blood levels of various medications, but the 'Y' axis is not common so we should not compare one medication against another medication.



When to consider ADHD medication?

According to NICE guidelines, ADHD medication can be offered when ADHD symptoms are causing persistent significant impairment

- In at least one domain (area of function such as education, risk awareness, interpersonal relationships or occupational attainment) **and**
- After implementing and reviewing environmental modifications, such as school support with seating arrangements, reducing distractions, changes to lighting and noise, verbal and written instructions and appropriate use of teaching assistants
- Baseline assessment has been carried out
- Information about ADHD medication has been discussed with parent/carer and child/young person

Cardiovascular risk assessment

Refer to cardiologist if any of the following applies:

- History of congenital heart disease or previous cardiac surgery
- History of sudden death in a first-degree relative under 40 years suggesting a cardiac disease
- Shortness of breath on exertion compared with peers
- Fainting on exertion or in response to fright or noise
- Palpitations that are rapid, regular and start and stop suddenly (fleeting occasional bumps are usually ectopic and do not need investigation)
- Chest pain suggesting cardiac origin
- Signs of heart failure
- A murmur heard on cardiac examination
- Blood pressure that is classified as hypertensive

What is the choice of ADHD medication for children aged 5 years and over?

- Methylphenidate (short or long acting) is the first-line treatment
- Consider switching to lisdexamfetamine after a 6-week trial of methylphenidate at an adequate dose but not getting enough benefit in terms of reduced ADHD symptoms and associated impairment.
- Consider dexamfetamine if ADHD symptoms improve but not tolerating lisdexamfetamine
- Consider atomoxetine or guanfacine if methylphenidate or lisdexamfetamine are not tolerated or when there is no response to separate 6 week trials of methylphenidate and lisdexamfetamine
- **ADHD medications are only licensed for children aged 6 years and over**

General principles

- **Individual needs:** school day cover only or all day cover with medication.
- **Check swallowing ability:** can the child or young person swallow tablet/capsule? if not, consider dividing a short acting methylphenidate or methylphenidate with sprinkle indication (Medikinet XL, Metyrol XL, Meflynate XL, Equasym XL) or Lisdexamfetamine (Elvanse) with capsule content dissolvable in water/juice.
- **Need for drug holidays:** a break from ADHD medication can be considered during weekends/holidays in case of stimulant use. Do discuss pros and cons of skipping the medication.
- **Dosage and titration:** always start at low dose and go slow when titrating the dose upwards. Much slower titration and frequent monitoring is required in people with ASD, TS, ID (LD) and also mental health conditions.
- **Monitor:** regularly for side effects, ADHD symptom improvement and progress.

How to manage adverse effects/side effects

Appetite decreased

- Wait to see if it gets better
- Decrease dose of medication
- Encourage to eat better, increase calorie intake
- Monitor weight gain
- Encourage a good breakfast before the medication suppresses appetite and a reasonable evening meal when the appetite suppression is wearing off
- Try not to battle over lunch when the appetite suppressant effect of the medication is likely to be greatest.

Weight loss

- Take medication with or after food
- Take additional meals or snack in the morning or evening when the effect of medication wears off
- Reduce dose of medication
- Consider lower dose or stop medication over weekends
- Take high calorie healthy foods
- Refer to dietician
- Assess for other causes -? unwell

Difficulty getting to sleep

- Ensure bedtime routine and sleep hygiene in place
- *If short-acting tablet* – stop the dose after 3pm, alternatively try a short-acting tablet 1-2 hrs prior to bedtime for a short trial period
- *If long-acting medication*
 - Reduce dose
 - Start medication early in the morning before breakfast
 - Change the formulation
 - Consider a trial of melatonin if sleep onset delayed or delayed sleep-phase disorder

Tics

- Reduce stimulant dose or stop medication
- Restart medication to check if tics return
- Consider guanfacine, clonidine (unlicensed) or atomoxetine
- Remember: tics wax and wane



ADHD medications



Illustration only, not actual
ADHD medications

When and how to consider ADHD medication

- **First step:** Behavioural and school interventions
- **If not helpful, consider a trial of ADHD medication**

What medication to consider

- **What are the benefits and side effects?**
- **Cover:** School day/all day
- **Can the child swallow?**
- Any impact of **coexisting conditions?**
- **Drug holidays?**
- **Stimulant or non-stimulant?**
Methylphenidate is the first-line treatment



When going abroad

Carry a letter if your child is taking stimulant medication, which is a controlled drug

When taking ADHD medication

- **Set goals to achieve**
- **Start low and go slow**
- **Check progress** at home and school
- **Ensure compliance**
- **Look out for side effects**
 - Low appetite
 - Difficulty sleeping/or feeling sleepy
 - Stomach pain, tearful/nervous
 - Others

Talk to your doctor, nurse or pharmacist about any side effects, including those not listed in the packaging leaflet.

You can also report side effects directly via the **Yellow Card Scheme** at <https://yellowcard.mhra.gov.uk> or search for **MHRA Yellow Card** in the Google Play or Apple App Store.
By reporting side effects, you can help provide more information on the safety of this medicine.



About challenges, positives and strengths of people with ADHD

We all have to face challenges and difficulties in our lifetime in many aspects - personally, socially, educationally and occupationally.

Individuals with ADHD often experience several challenges and barriers in daily activities and tasks. They may have to put in a lot more effort to achieve success. However, it is important to understand that people with ADHD also have strengths and positives, and there are many famous people with ADHD worldwide who are high achievers.

What are Superpowers?

We refer to 'positives and strengths' as 'Superpowers' in clinical practice. Do encourage children, young people and their parents/carers to talk about their 'Superpowers'. Do ask them to tell you about 3 Superpowers from both child's perspective and the parent/carer's perspective; this is likely to enhance their awareness and promote self-esteem.

Our recent ADHD survey involving children, young people and parents/carers revealed some amazing results about 'Superpowers'.

Parents/carers about their child	Children and young people
• Creative, artistic and developing new ideas • Fun loving with great sense of humour • Persistent and hyper-focused on things they love and enjoy • Doesn't feel tired at all and seem to have boundless energy!	• Happy, kind and cheerful • Clever, chatty and funny • Acting, dancing and love for the arts • Creative, intelligent and quick-witted

Setting your own goals

As part of the clinical interview, it would be helpful to engage the child and young person as well as their parent/carer about their dreams, hopes and aspirations. In addition, do encourage them to set goals (short term in the first instance) and discuss support and interventions in order to achieve them.

Keep them **SMART**- **S**pecific, **M**easurable, **A**ttainable, **R**elevant and **T**ime-bound. The goals can be related to personal life, school progress, behaviour or sleep. Some examples include:

- To be able to focus and complete tasks
- To sit still and not disrupt others
- Stop annoying others
- To wait for your turn and not interrupt others
- Sleep better for 8 hours and not to wake at night

Number of goals

Encourage the child and parent/carer to set three goals each. It would be nice to agree and monitor progress at regular reviews.

Rewards

Do discuss with parents/carers about individual rewards for their child after achieving their goals.

Famous people with ADHD

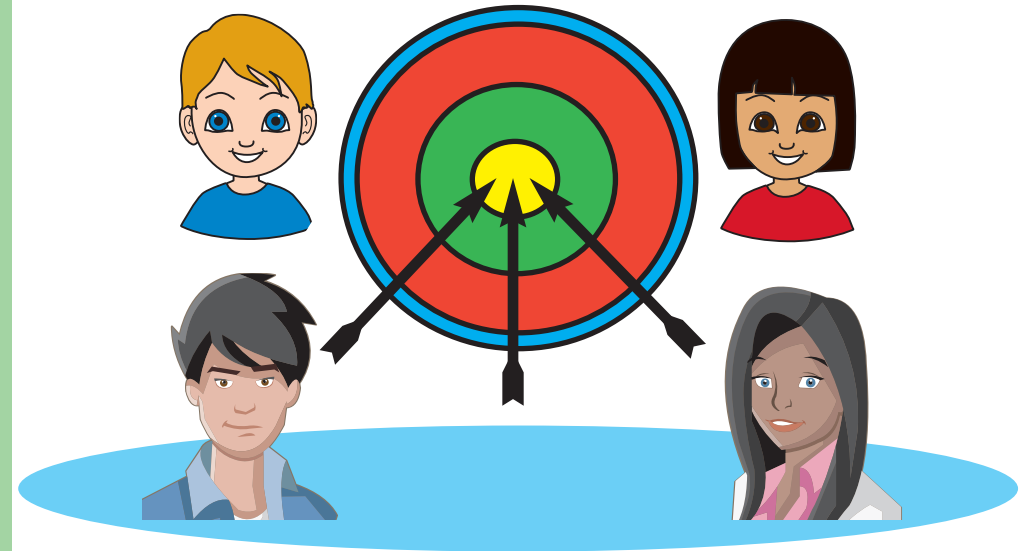
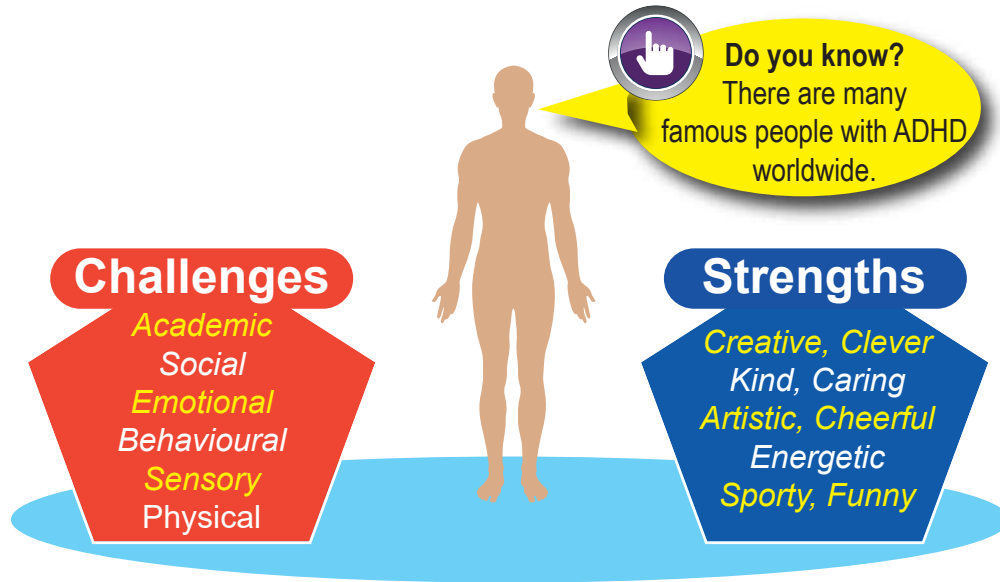
Do you know, there are many famous people with ADHD worldwide, who managed to overcome barriers and difficulties and set out to achieve success and satisfaction in their chosen fields?

- Ant McPartlin OBE, television presenter, singer, comedian and actor from UK
- Britney Spears, an American singer and songwriter
- Justin Timberlake, a singer and actor
- Simone Biles, a successful gymnast from America
- Michael Phelps, the world's most successful Olympian

<https://adhduk.co.uk/famous-people-with-adhd/>



Let's Talk about Your Superpowers and Goals



Name three things you are good at

Your Superpowers

1

2

3

Name three goals you'd like to achieve

Your Goals

1

2

3



ADHD medication review: Some principles are outlined below:
Please refer to ADHD NICE guidelines and BNFC/Summary of Product Characteristics for monitoring, a full list of adverse effects and further information.

Monitor vital signs: Plot weight and height on a growth chart.

Parameter	Aged 10 years and under	Over the age of 10 years
Weight	Every 3 months	At 3 months and 6 months after starting treatment and every 6 months thereafter
Height	Every 6 months	
Blood pressure and pulse rate	Every 6 months before and after dose change	

Compare the blood pressure centiles according to age, height and gender of the child/teenager. https://www.nottsapc.nhs.uk/media/vv2jpti/bp_and_hr_monitoring_for_children.pdf

Medication response rates (stimulants): Approximately

Methylphenidate	71%	Amphetamine	68%	Either medication	91%
-----------------	-----	-------------	-----	-------------------	-----

Monitor for adverse effects/side effects: Some major adverse effects are listed here.

Stimulants	- Decreased appetite, sleep disturbances - Increased blood pressure and pulse - Headaches, irritability, stomach pain	
Atomoxetine	- Decreased appetite, headache - Stomach pain, nausea, vomiting - Sleep disturbances - Increased blood pressure and pulse	Uncommon Migraine Suicidal ideation Rare: Liver failure
Guanfacine	- Somnolence/sedation, fatigue - Hypotension, abdominal pain	

References: Evidence-based pharmacological treatment options for ADHD in children and adolescents, 2022; <https://www.sciencedirect.com/science/article/pii/S016372582100142X?via%3Dihub>
Ann C. Childress, Marina Komolova & F. Randy Sallee (2019) An update on the pharmacokinetic considerations in the treatment of ADHD with long-acting methylphenidate and amphetamine formulations, Expert Opinion on Drug Metabolism & Toxicology, 15:11, 937-974
<https://doi.org/10.1080/17425255.2019.1675636>
Electronic Medicines Compendium: <https://www.medicines.org.uk/emc#ref>

Screen for coexisting conditions: It is good practice to screen for comorbid conditions at every clinic review and how they might be contributing to child's response and progress.

Check progress:

- ADHD features: get feedback from parent/carer and teacher. Use rating scales to monitor ADHD symptoms.
- Behaviour and emotion
- Home life and school progress
- General health, social skills
- Compliance with ADHD medication, missed doses and response this period.

Do engage the child/young person to talk about their needs, views, positives and strengths and how they are progressing with their goals.

Checklist if ADHD medication is not working and need to switch:

- Are you treating the right symptoms?
- Was the medication correctly titrated? Maximum dose tried?
- What time is the medication working?
- Is the medication wearing off?
- What else is happening in home/school?
- Have you got school and parental feedback? Any disagreement?
- Medication is working but significant adverse effects?
- Any comorbidity missed, e.g. sleep problems?
- Is ADHD the right diagnosis?

Do check compliance and if the medication is being administered correctly.

Reference: The World Federation of ADHD Guide, 2022 (Chapter - ORGANIZING AND DELIVERING, TREATMENT FOR ADHD)
https://www.adhdfoundation.org.uk/wp-content/uploads/2022/08/The-WF-ADHD-Guide_072019.pdf

Continue psychoeducation: Please try drip feeding aspects of psychoeducation according to the needs of the family and individuals.

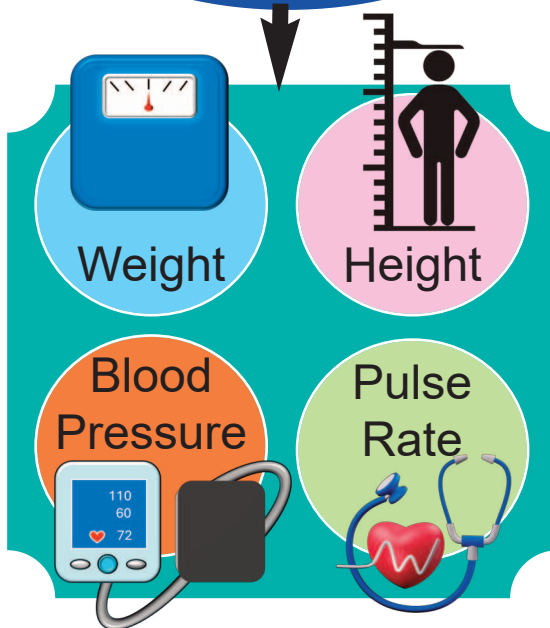
Shared Care with GP: Inform GP and copy parent/carer and school.

Lifelong ADHD: About 6 out of 10 children and young people may continue to have ADHD features into adult life. Many people develop coping strategies. About 3 to 4% of adults are estimated to have ADHD.



ADHD Follow-Up

When taking
ADHD medication
check every
6 months



At clinic

and/or

At home
if possible

ADHD medication may need to be
adjusted/changed as required
Follow Shared Care with GP



Illustration only, not actual
ADHD medications

Check Progress

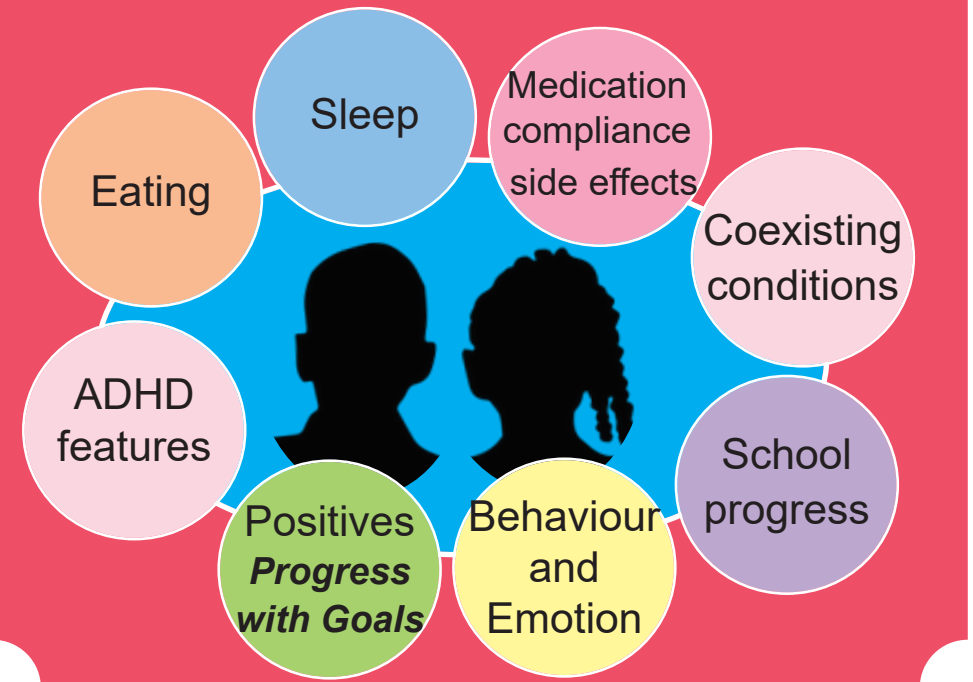
From
Parent/Carer
Child/Young Person
Teacher/others

I think I might
have ADHD!!!

About
4%
adults
have
ADHD

Parents

Monitor and report concerns





About Resources

Parents and carers, children and young people

Please see on page 30 B for books, websites, videos and support groups recommended for parents and carers of people with ADHD. Also do signpost them to local resources and workshops/training in your local area.

Healthcare professionals

- **Treating ADHD in Children and Adolescents:** What Every Clinician Needs to Know, 2022 By Russell A. Barkley
- **The World Federation of ADHD Guide, 2019**
Click [HERE](#) for free download
- **CADDRA e Toolkit for clinicians & professionals**
<https://www.caddra.ca/etoolkit-forms/>
- **Nurodiversity Resources for Healthcare Professionals**
Click [HERE](#) to access the padlet with links to various resources

Some Free Resources Online

Psychoeducation is considered a fundamental part of managing medical conditions, including Attention Deficit Hyperactivity Disorder (ADHD), sleep problems and associated conditions. Outlined below are some free resources that have been piloted with users and also peer reviewed prior to publication.

How do ADHD medications work?

By Dr Chinnaiah Yemula and Dr Nivedita Bajaj

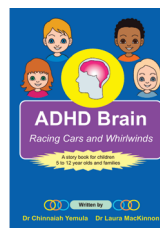
This resource is an interactive pdf book for parents and carers. It provides simple information about ADHD medications and explains how different medications work, using the analogy of postmen as chemical messengers who go on strike, along with links to online video clips. Click [HERE](#) for free download.



ADHD Brain: Racing Cars and Whirlwinds

By Dr Chinnaiah Yemula and Dr Laura MacKinnon

A short story book for children written as an interactive PDF. Click [HERE](#) for free download.



Also available as a free apple ebook with sounds and animations
Click [HERE](#) for free download.

Some Free Resources Online

ADHD in teenage girls: Take control and be the best you can be

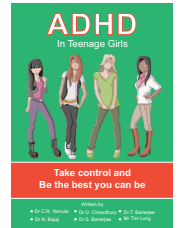
By Dr Chinnaiah Yemula, Dr Uttom Chowdhury, Dr Tapomay Banerjee, Dr Nivedita Bajaj, Dr Satrupa Banerjee and Tim Long

ADHD in teenage girls is often unrecognised, underdiagnosed and as a result girls with ADHD may not get appropriate treatment and support.

This is an interactive pdf book for teenage girls, providing simplified information about various aspects of ADHD, including medications, coexisting conditions, relationships and employment prospects.

There are external links to video clips as well as inspiring personal accounts of teenage girls.

Click [HERE](#) for free download.



How to sleep well: Teen sleep guide

By Dr Chinnaiah Yemula, Professor Frank Besag and Dr Emily Musgrave

This interactive pdf is a self-help guide for teenagers to increase their understanding of sleep problems and how poor sleep can affect their health and wellbeing. It provides a number of animations, sounds and links to video clips. Full of interactive features and practical tips, teens will find this book an enjoyable resource. Click [HERE](#) for free download.



Also available as a free Apple book with animations and sounds (How to sleep well and stay healthy: A guide for teenagers). Click [HERE](#) for free download.

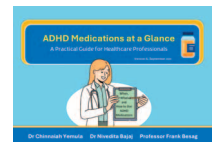
ADHD medications at a Glance: A Practical Guide for Healthcare Professionals

By Dr Chinnaiah Yemula, Dr Nivedita Bajaj and Professor Frank Besag

This pdf resource can be used as a quick-reference desktop tool (digital/laminated paper) by healthcare professionals when discussing with parents and prescribing an ADHD medication for a child/young person.

It provides a concise table summary of various ADHD medications, formulations, dosages, titration and along with some key aspects on NICE guidance about ADHD and tips to manage some medication side effects.

Click [HERE](#) for free download





Resources



Books and Video Links

Parents/carers

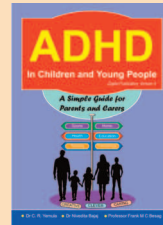
ADHD in Children and Young People:

A Simple Guide for Parents and Carers, 2026

By Dr C. R. Yemula, Professor Frank M C Besag,

Dr Nivedita Bajaj

Please click [HERE](#) to download the digital version



The Complete Guide to Raising and Empowering an ADHD Child: From Behavioral Disorders to Emotional Control

Strategies Through Positive Parenting ... Children, 2021

By Jennifer Mind

Children

My Doctor Says I Have ADHD:

The Awesome Story of Boisterous Buzz, 2023

For 6 to 12 year olds, By Dr C. R. Yemula

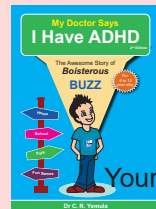
Attention Girls: A Guide to Learn All About

AD/HD, 2009, For 8 to 13 year olds, By Patricia Quinn

ADHD Brain: Racing Cars and Whirlwinds

A video story, By Dr C. R. Yemula and Dr N. Bajaj

Please click [HERE](#) to view the video



Teenagers

ADHD in Teens & Young Adults: A Mindfulness Based

Workbook to Keep You ANCHORED, 2019, By Dr. Melissa Springstead Cahill

ADHD Brain: Super Cars and Smart Glasses

A video story, By Dr C. R. Yemula and Dr N. Bajaj

Please click [HERE](#) to view the video



Support Groups, Websites, Video Links

Support groups

ADDISS - support group

- Attention Deficit Hyperactivity Disorder Support Service
- www.addiss.co.uk



ADHD UK - support group

- <https://adhduk.co.uk/>



Other websites

- www.additudemag.com; www.youngminds.org.uk
- www.wholeschoolsend.org.uk; <https://thrivingwithadhd.com.au>
- www.chadd.org

The ADHD and Neurodiversity Padlet

Understanding ADHD, Autism and other Neurodiverse

conditions in Small Bites: This Neurodiversity Hub offers a comprehensive collection of Psychoeducational Resources for Children, Young people and Parents and Carers. Topics include ADHD, Autism, other neurodiverse conditions and difficulties.

Please check to access the information and resources for bitesize learning and at your own pace. You can dip in and dip out and view or download as and when needed. These have been peer reviewed by professionals and families. Please click [HERE](#) to access the padlet.

Video links

YouTube video clips about ADHD

by Jessica McCabe

www.youtube.com/c/HowtoADHD/featured





A Resource for Healthcare Professionals

About this Teaching Aid (Digital Publication)

ADHD is a neurodiverse condition that is being increasingly recognised all over the world. This Teaching Aid can be used by clinicians to help parents and carers better understand such a complex condition. It is hoped that this will enable parents and carers to manage their child's problems more effectively, leading to an improved outcome.

This Teaching Aid covers a wide range of topics such as:

- What is ADHD and what causes it?
- How do you diagnose ADHD?
- Various coexisting conditions
- Management methods, including:
 - Parent support, behavioural strategies, diet, exercise
 - Educational interventions
 - Medications, benefits, types and adverse effects
 - Resources: books, videos, websites and support groups

How to use this Teaching Aid (Digital Publication)

Please review **pages marked 'A'** for supporting and evidence-based information, whilst explaining about ADHD and showing the pages marked 'B' to parents/carers and patients. Simple text with colourful illustrations is provided on pages marked 'B'.

However, you may wish to use your own teaching style and methods to communicate this important information. Please try to set aside sufficient time in your clinic and dip in and out as required, while explaining specific aspects related to a patient. Please see page 2 A for further information.

Comments from readers

The resource was friendly, colourful and informative, and helped close the gap in some areas of my existing knowledge about ADHD. I found the information about medical treatments particularly useful - **A parent of a child with ADHD.**

The Teaching Aid was informative and very helpful in clinic when I discussed it with a parent for whose child was commencing medication. I was able to use the visual aids to explain how the medication worked in the brain and to show them the possible benefits and side effects that might be expected. It is an asset to the discussions we have with families - **Amanda Carter, who worked as a Clinical Nurse Specialist at Child Development Centre in Bedford, UK.**

An invaluable collection of resources and references, providing clear information, insights and interaction for patients, parents, and clinicians on a wide range of ADHD topics. This Teaching Aid will become an essential part of the medical toolkit for paediatric ADHD - **Dr Emily Musgrave, Consultant Community Paediatrician, East and North Hertfordshire NHS Trust, UK.**

This user-friendly resource helps to explain complex aspects of ADHD in a simple and effective way with easy-to-understand language, colourful illustrations, and educational videos links. As part of psychoeducation, It provides up-to-date information about ADHD, associated comorbidities as well as practical strategies and treatments to engage, support, and empower individuals with ADHD.

This interactive tool will help enhance the understanding of ADHD in the caregivers and those affected. Explaining the condition will help build stronger rapport between clinician and families of affected children and young people. **Dr Neel Kamal, Consultant Community Paediatrician, Honorary President, George Still Forum, The National Paediatric ADHD Network Group, UK**

Published by
Mrs Jamuna Yemula
285 Kimbolton Road
Bedford, UK
MK41 8AQ

cjyemula@gmail.com

Dr Yemula, Dr Bajaj and Professor Besag have developed this free resource to complement psychoeducation as part of a comprehensive patient care.

It has been reviewed by a multidisciplinary team of professionals including Paediatricians, Child and Adolescent Psychiatrists, Speech and Language Therapist, Physiotherapist and Occupational Therapists, Mental Health and Paediatric Nursing Team. Additionally, parents and carers as well as healthcare professionals have provided constructive feedback via an online survey.

No external financial grant or funding was received in the development of this educational material.