

Understanding Attention Deficit Hyperactivity Disorder (ADHD)

**This booklet is written
with the intention
of improving the
understanding of ADHD**



INTRODUCTION

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*The opinions stated within this booklet are those of the authors and do not necessarily constitute those of Sandoz

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ATTENTION DEFICIT HYPERACTIVITY DISORDER (ADHD)

Attention Deficit Hyperactivity Disorder (ADHD) is not new: the clinical significance of the signs and symptoms of ADHD has been recognised for over two centuries. The first textbook description of a disorder with the hallmarks of ADHD was published in 1775 by Weikard, a German physician, and in 1798 a Scottish physician named Crichton wrote three books in which he described inattentiveness.

Then, in 1904, hyperactive behaviour after brain injury was described and the behavioural disorder was called Brain Damage Syndrome. This label was used for nearly 60 years, until the term Minimal Brain Dysfunction was coined in the 1960s. It described hyperactive behaviour that was not associated with any form of trauma or insult to the brain such as encephalitis.

In 1980, based on criteria described in the third edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM III), the name was changed to Attention Deficit With or Without Hyperactivity. This was modified in 1987 to Attention-Deficit/Hyperactivity Disorder, and the acronym ADHD is now used worldwide.

Today, when the term ADHD is used, it refers to a small – but measurable – difference in normal brain function which possibly causes the child to underachieve academically, be unsuccessful socially and to behave impulsively in spite of good parenting, normal intelligence and adequate schooling.

It has been established that the predisposition towards ADHD is present at birth – in other words, it is hereditary. The extent of the problem depends on how early it is diagnosed and effectively treated, with regard to both the learning and social difficulties of the child and their impulsive behaviour.

A short attention-span, distractibility, impulsiveness and high levels of motor activity are normal in younger children – in fact this description fits most two-year-olds. But when such behaviour continues into a year or two before formal schooling begins, a diagnosis of ADHD is then usually made. Early intervention can help to prevent the devastating effects of underachievement, the development of poor self-esteem and, in the long term, possible delinquent behaviour as the result of ADHD.

The aim of this booklet is to supply a scientifically balanced view of ADHD, and to answer many of the questions frequently asked by parents.

The authors would like to stress that this booklet is by no means comprehensive, and readers are advised to consult their doctor for additional information.



WHAT IS ADHD?

What the doctors know

- ADHD is the most common neuro-developmental disorder affecting children. It may be present at infancy, and can continue to be significant into adulthood.
- ADHD is a hereditary condition in about 80% of cases. While genetic and environmental risk factors accumulate to cause ADHD, its causes are diverse and not useful for diagnosing the disorder. Essentially, there is an imbalance of neurotransmitters (chemical messengers) in the brain.
- The latest consensus states that ADHD affects about 5.9% of children globally and 2.5–2.8% of adults. It is more common in males, with roughly a 2:1 male:female ratio.
- Approximately 75% of children presenting with ADHD may also have associated learning problems.
- All populations, cultures and socio-economic groups are equally affected.

What the parents say

- My child has been called disruptive.
- My child is accident-prone.
- My child has always been on the go, ever since they started walking.
- My child doesn't think before they speak, act or react.
- My child loses their temper easily, and is easily frustrated.
- My child is very distractible – they struggle to concentrate.
- My child doesn't finish their work in class.
- My child doesn't stop talking.

CLINICAL PRESENTATION

What the doctors look for

There are three main features of ADHD: hyperactivity (which is common but not necessarily present), inattention/distractibility and impulsivity.

The diagnosis of ADHD is usually made according to the criteria specified in the 5th revision of the Diagnostic and Statistical Manual of the American Psychiatric Association (DSM-5).

Previously, much emphasis was placed on hyperactivity – the most obvious manifestation of ADHD. But, unless severe, this does not give rise to the most serious difficulties that these children experience. It is the inattention, distractibility, impulsiveness and associated learning disabilities that cause most of the distress and difficulties, and these are therefore the areas which should be targeted in treatment.

Distractibility is one of the less understood aspects of ADHD. It is the inability to focus on something when another stimulus, usually of no importance, competes for one's attention. While we can all be distracted at times, the difference is that children with ADHD cannot stop being distracted, even when the intruding stimulus is no longer there. Most children with ADHD also have difficulty filtering out background noise. This can be

compared to being at a noisy dinner party where you have great difficulty hearing what anyone is saying clearly enough to continue a sensible conversation.

Distractibility is often less apparent than other features of ADHD but, along with its resulting concentration difficulties, it is perhaps more disabling than most. It is also the most difficult feature of ADHD to measure. Having ADHD is a bit like being born with poor vision – everything you see is blurred, and you have no way of knowing that it should not be that way until you are given glasses.

It is important to note that very few of these children are totally unable to concentrate. It is merely more difficult for them to concentrate than it is for their peers. They may concentrate well in a quiet environment and on topics that really interest them – to some extent, the same applies to all of us. They find it difficult to concentrate when they find the task boring, or when it is repetitive, irrelevant or on demand. This explains why an ADHD child can concentrate superbly on computer games, while being unable to concentrate in a classroom situation.

WHAT THE PARENTS SEE

Inattention

- Gets bored with a task after a few minutes
- Cannot concentrate on one thing for a sustained period of time
- Fails to complete tasks
- Fails to pay attention to details, or pays excessive attention to details
- Makes careless mistakes
- Is unable to follow instructions carefully and completely
- Loses objects necessary for daily activities

Distractibility

- Focus of attention flits from one stimulus to another
- Does not sustain attention on a given task
- Does not listen when spoken to
- Does not finish tasks in time at school
- Is not able to work independently
- Has an inclination to daydream
- Is disorganised

Impulsivity

- Does not seem to think before speaking or acting
- Hits others when upset
- Shouts out answers without hearing the whole question
- Takes action before clearly understanding a problem in the classroom
- Is unable to wait for a turn in a game
- Engages in dangerous activities without consideration of the consequences
- Has a low frustration level
- Has a poor ability to plan ahead
- May lie impulsively or cause physical damage without thinking, rather than with malicious intent

Hyperactivity

- Cannot sit still, always fidgeting
- Struggles to stay at a desk
- Talks incessantly
- Tries to do several things at once
- Is on the go, runs and climbs excessively



Other characteristics

- Poor motor co-ordination
 - Moods/emotions go from one extreme to the other
 - Never satisfied, nags endlessly
 - Overstimulation may lead to verbal and/or physical aggression
 - Seeks immediate reinforcement
 - Has difficulty postponing self-gratification
 - Has a high awareness of praise or rewards
 - Is severely distressed on non-presentation of promised rewards
- Is unresponsive to social demands (obstinate, stubborn, negative) and impervious to discipline
 - Is socially aggressive (bossiness drives others away) which leads to social isolation and feelings of rejection and depression, which in turn give rise to acting-out behaviour and showing off
 - Poor self-image is concealed behind bravado or clowning
 - Disorganised (material chaos) – this is a major problem, especially in ADHD adolescents

The good news

- Being diagnosed with ADHD is not necessarily bad news! ADHD symptoms can also come with unique, special and desirable qualities, like creativity and intuition.
- People with ADHD may flourish in occupations that require out-of-the-box thinking, an adventurous spirit, an artistic temperament, or high energy levels.
- The trick is to channel these unique assets in a positive direction and to turn weaknesses into strengths.

CAUSES OF ADHD

As already discussed, the aetiology of ADHD is a combination of both genetic and environmental risk factors. These may include, but are not limited to, prematurity, emotionally traumatic pregnancy, smoking or alcohol intake during pregnancy, birth asphyxia, emotional deprivation, brain trauma and infections such as encephalitis and HIV.

What is ADHD *not* caused by?

- Poor parenting
- Poor schooling
- Excess sugar
- Food allergies

However, it **is** true that some of these factors – such as too much screen time (videos and games), food colourants and poor parenting – may worsen behaviour and the other symptoms of ADHD.

Parents being critical, hostile or disorganised can unfortunately also lay the foundation for severe problems in their relationship with their child.



DIAGNOSIS OF ADHD

What steps will the doctor follow before diagnosing a child as having ADHD?

1. Take a detailed history and look for indicators of ADHD. This could include asking about the subjective experiences of the child.
2. Exclude ADHD lookalikes by conducting physical and neurological examinations.

- ADHD lookalikes which should be ruled out include the following (although the presence of any of these differential diagnoses does not preclude ADHD from being diagnosed):
- The behaviour of a normal, healthy, active pre-schooler
 - A sensory processing disorder – on its own or in conjunction with ADHD
 - Anxiety or other mood disorders
 - Significant learning difficulties, such as an auditory processing disorder
 - Being on the autistic spectrum
 - Intellectual disability
 - Being hearing-impaired
 - Disruptive behavioural disorder
 - Epilepsy
 - Some form of brain injury
 - Coming from a severely dysfunctional family or having been deprived or abused

3. Use some objective pointers towards diagnosis, including asking parents and teachers to observe and report accurately on the child's behaviour. This can be done using rating scales such as SNAP, the Copeland and the ADHDRS.
4. May make use of special investigations such as EEGs (electroencephalograms) and brain scans if indicated, but these are seldom used – usually only to exclude other conditions.

5. The child should also be assessed by members of a multi-disciplinary team when necessary, consisting of the following healthcare professionals:

- The Sensory Integration Occupational Therapist (SIOT): Able to evaluate and treat a sensory-based concentration difficulty, as well as gross motor, fine motor and visual perception difficulties. Some symptoms of sensory processing difficulties can be observed from as young as a few months of age. Although early intervention is recommended, sensory integration occupational therapy can be effective at any age.
- The Remedial Teacher or Therapist: Usually evaluates specific academic skills with which the child has difficulties.
- The Speech and Language Therapist: Evaluates the child's linguistic abilities, identifies and quantifies auditory perceptual disorders and other language difficulties, and provides corrective therapy. As most learning difficulties are language-based, the Speech and Language Therapist is often the most important member of the team initially. The emphasis of treatment is usually on Language Therapy (acquisition and use of language), rather than on Speech Therapy (correction of speech faults, like a lisp).
- The Psychologist (usually an Educational Psychologist): Able to determine the child's intellectual and academic abilities by using IQ and scholastic tests, and able to evaluate the child's emotional status and view of their own environment, using projective testing.

While not every child with ADHD will need to see all these professionals, most will – at some time – be seen by two or more, if only to exclude some disorders.

The diagnostic process should involve the child, if they are old enough, and they should be asked what their perceptions and experiences are. All too often, only the adult caretakers of the child are consulted by the professionals.

DISORDERS ASSOCIATED WITH ADHD

ADHD is clearly a very complex condition, as many other disorders may co-occur with it. It is important to know that, while they commonly co-exist with ADHD, each of these disorders is different and requires a different approach. Treatment for one is seldom effective for the other.

A good example of this is the child who is successfully treated with stimulant medication, and whose attention span and behaviour improve dramatically, but their academic performance hardly improves at all because they also have a visual perceptual disorder so they struggle to read. This type of challenge does not respond to medication only.

Specific learning disabilities

Approximately 50–93% of children with ADHD also have specific learning disabilities. Rather than limited intellectual abilities, a lack of effective education or a lack of exposure to appropriate stimulation, this means that their inability to progress educationally is often a result of struggling to process both visual and/or auditory information.

1. Visual perceptual difficulties

A child who has visual perceptual difficulties may have entirely normal eyesight, but lack the ability to accurately interpret what they see.

The recognition of shapes, like letters of the alphabet, and the ability to arrange those shapes (letters or words) in space (the page) are prerequisites for learning to read. These are skills which those of us who **can** read take for granted.

Imagine what it must be like to 'see' the previous sentence something like this:

**hsee era 5kiii5 hwieh
tho5c fo u5 hwo ean rcob
tokc ofr grontcb**

This may seem far-fetched, but it is the kind of situation which children with severe visual perceptual difficulties face daily. Typically, they mix up letters and numbers that look similar: p and q, b and d, s and 5, 9 and 6, to name but a few.

It is not uncommon for these children to memorise their readers for the first few years of school, thus appearing to be able to read. Their inability to read is often only noticed once the readers become too long to memorise!

2. Auditory perceptual difficulties

These children hear perfectly well but are unable to interpret or remember what they hear.

Parents frequently report that such children are unable to follow complex instructions, often only completing the first step. This causes significant problems in the classroom, where teachers often issue any number of instructions all at once.

Auditory perceptual difficulties may also be the precursor to dyslexia (reading difficulty) or difficulty with spelling.

3. Delays in fine motor development (Developmental Co-Ordination Disorder)

These children find it difficult to colour in, draw and write.

They will often be reluctant to take part in these activities and, because most of us are not keen to do things we're not good at, this reluctance is often incorrectly interpreted as the **cause** of the problem.

The child is seen as untidy and careless, even though they may be trying their best.



Disruptive behaviour disorders

Two behavioural disorders are commonly associated with ADHD: Oppositional Defiant Disorder and Conduct Disorder. They often overlap, so a child could have one, two or all three disorders.

1. Oppositional Defiant Disorder (ODD)

These children seem to say “No” on principle – if told to do something, they not only refuse to do things they do not like to do, but also refuse to do things they **do** like to do. They may also deliberately do things to annoy others – adults in particular.

Other features of ODD include angry outbursts and temper tantrums, irritability, touchiness, resentment, spitefulness and vindictiveness. The child may be easily annoyed by others and never take the blame for their own actions.

On its own, ODD is a problem, but when it is combined with the impulsiveness of ADHD, it becomes very volatile. Parents who confront this behaviour in a hostile manner run the risk of exacerbating the ODD behaviour.

2. Conduct Disorder (CD)

This is the most worrying of the disorders commonly associated with ADHD. ADHD children are generally regarded as being ‘naughty’, but CD children are not only ‘naughty’, they lack any remorse for what they have done.

The CD child will typically have planned their hurtful deed and, when caught, will be angry rather than sorry – even blaming others for what they have done. The behaviour of the CD child is malicious and can include lying, cheating, stealing, destruction of property and cruelty.

The combination of ADHD and CD may be very difficult for both parents and professionals to manage.

Emotional difficulties

Emotional difficulties are very commonly associated with ADHD, and it is easy to understand why. Children with ADHD struggle constantly with their environment. Some may have the best intentions, yet simply do not manage to produce good work or behave well.

As a result, they often get into trouble and consequently develop poor self-esteem. They may come to believe that they are ‘no good’ or ‘stupid’, because this is what they are constantly being told. This process may result in them developing a psychiatric disorder, such as a generalised anxiety disorder or – less commonly – a major depression.

While some children have emotional disorders **because** of ADHD, others may have emotional disorders that **look** like ADHD, such as severe anxiety. Most of us, when anxious, become restless and fidgety, do not concentrate well and struggle with short-term memory. To the untrained eye, this could look like ADHD, but treatment for ADHD could aggravate the anxiety.

Similarly, a child with agitated depression could appear hyperactive and disinterested.

1. Symptoms of anxiety disorders

Symptoms include the following: nervousness, shyness, clingy behaviour, difficulty falling asleep, nightmares, distractibility, poor concentration, poor appetite, nausea, tummy-aches, diarrhoea, headaches, sweaty palms, rapid heartbeat, excessive sweating, an increased need to pass urine, and restlessness.

2. Symptoms of depressive illness

Symptoms include tearfulness, sadness, irritability, difficulty staying asleep, poor appetite, weight loss, social withdrawal (no longer wanting to be with friends), an inability to have fun,

a loss of interest in school as well as hobbies and sport, poor concentration and memory, feelings of worthlessness and guilt, and – in older children – suicidal thoughts.

Unexplained physical symptoms like headaches, tummy-aches, backache and even chest pain are also common.

If anxiety or depression are incorrectly treated with the drugs recommended for ADHD, they can be aggravated, but treatments specific to either disorder (medical and psychological) are usually very effective. It is therefore important that both anxiety disorders and depressive illness are recognised early.



3. Tourette's Syndrome

This is a relatively uncommon condition. Many of these children have behaviours very similar to the ADHD child and are prone to developing an obsessive-compulsive disorder and tics.

To be diagnosed as having Tourette's Syndrome, both motor tics (spasmodic repetitive movements) and vocal tics (typically repeated vocal sounds like throat-clearing and grunting) must be present, although not necessarily at the same time.

It is wrong to say that the child with a runny nose who sniffs and rubs his nose constantly has a motor tic; likewise, the child who gives the occasional grunt while concentrating on some activity cannot be said to have a verbal tic. Thirty percent of all children have a tic at some stage during their development, but tics must be present for more than six months in order for Tourette's Syndrome to be diagnosed.

It is important to identify the possible existence of this disorder in the patient or related family members for two reasons. First, drugs used to treat ADHD may **cause** tics and even trigger Tourette's Syndrome in a patient who is predisposed. Second, some of the drugs used to treat Tourette's Syndrome could possibly cause long-term complications.

4. Obsessive-Compulsive Disorder (OCD)

This can occur in conjunction with ADHD.

A person with OCD will have an unusual fixation, such as needing activities to happen in a certain order. There may be an obsession with washing their hands, closing doors or turning off lights.

Most OCD sufferers are upset by their obsession and how it rules their lives, but they cannot help themselves.

Treatment for OCD should be sought from a specialist psychiatrist and a psychologist specialising in cognitive behavioural psychotherapy.

Autism Spectrum Disorder (ASD)

Since the publication of the DSM V, both ASD and ADHD can be diagnosed in the same individual. Between 20% and 80% of people with ASD will also meet the criteria for ADHD.

While it is not the purpose of this booklet to discuss ASD in detail, it is important to realise that these children may present with language delay and communication difficulties, often seeking their own company. They may also have a very specific (sometimes exotic) interest and repetitive behaviours.

The management of ADHD is exactly the same in these individual as in the normal ADHD population, but they may be inclined to have more side effects on medication.



TREATMENT OF ADHD

It is now generally accepted that the cornerstone of treatment of ADHD is the administration of medication. This should always be done in conjunction with behaviour management, educational support (including management of specific learning disabilities), and a healthy diet where relevant.

Medical management

Not everyone who has a diagnosis of ADHD needs to take medication, but if the diagnosis causes significant impairment academically, socially or career wise (in adults), it is prudent to consider it. Doctor and patient should work together to figure out which medication is most suitable, and to determine the ideal dose and schedule.

What medication is available for the management of ADHD?

There are two main classes of drugs registered for the management of ADHD in South Africa: **stimulants** (like Methylphenidate – available in various formulations – and amphetamines) and **non-stimulants** (such as atomoxetine and alpha blocking agents like clonidine).

Note:

The adverse effects listed here are by no means comprehensive. Only the most common have been mentioned.

Adverse effects will **not** necessarily be experienced when taking a particular drug.

Please consult the package insert for your particular medication for full information. Should you have any questions or concerns, please discuss with your doctor or healthcare provider.

The authors have intended to represent the medications available in South Africa at the time of writing in 2022. They acknowledge that additional medication options may become available in future.

1. Stimulants

Despite their name, stimulants actually have a **calming** effect on hyperactive children with ADHD. They are believed to increase brain levels of dopamine, a neurotransmitter associated with motivation, attention and movement.

Stimulants have a well-known safety profile, do not sedate and are not addictive if used appropriately. Many side effects usually subside or disappear within a few weeks. There are also a number of formulations which allows for flexible dosing, as well as tailored dosing to suit individual needs.

Stimulants are particularly helpful to improve attention span, reduce ADHD symptoms and improve behaviour management. They generally decrease restlessness, fidgetiness, overactivity and inappropriate behaviour, and can also be used to curb aggression.

Stimulants are known to improve the ability to sit still and concentrate on one task for longer and to improve the ability to relate socially to other children, allowing improvement in confidence and self-esteem and allowing a child to have more friends.

1.1 Methylphenidate

Methylphenidate is available in a number of formulations, with different times to onset of effect and, in particular, different durations of effect. These different formulations are broadly described below.

Immediate-release Methylphenidate (short-acting 10 mg)

- Takes effect quickly, usually within 15–45 minutes and commonly lasts about four hours
- Benefits
 - Useful for initial treatment, to assess the effects and benefit of the medication for the patient
 - Useful for when short-lasting treatments are necessary (for example end-of-day 'top-ups')
- Side effects (these are the same for all methylphenidate formulations)
 - The most common side effect is appetite suppression, which can lead to a reduced intake of food. This side effect often improves if the medicine is taken with or after meals, and may also improve over time
 - Headaches

- Abdominal discomfort
- Insomnia
- Social withdrawal
- Emotionality
- Exacerbation of tics
- Potential for abuse, if not used/monitored appropriately
- Concerns about growth stunting and cardiac complications are controlled with careful medication monitoring

Long-acting Methylphenidate

- Available in a SODAS formulation and designed to mimic a twice-daily dose of immediate-release methylphenidate, therefore lasting about eight hours
- Available in 10 mg, 20 mg, 30 mg and 40 mg SODAS and alternate modified-release capsule formulations, and now also available in 5 mg modified-release capsule formulations
- Benefits
 - It is a once-a-day dosage, which covers the academic day of most children
 - For children who cannot swallow capsules (or tablets), the SODAS capsule may be opened and the contents given with a semi-solid substance like yoghurt

- The 5 mg capsule may also be squeezed out to accommodate such patients
- Side effects are mostly similar to those for short-acting methylphenidate, though may be prolonged

Ultra-long-acting Methylphenidate

- Several formulations and brands are available, all lasting up to approximately 12 hours and mimicking a three-times-daily dose of immediate-release methylphenidate
- They are available in 18 mg, 27 mg, 36 mg and 54 mg formulations
- The original and generic formulations make use of OROS technology (osmotic pump) or similar technology, which allows for the ultra-long-acting mechanism
- Some other generics make use of a MUPS release system (a tablet with imbedded particulates), a hydrophilic matrix tablet or an extended-release film-coated tablet
- Benefit: a once-daily dose that covers most hours of work or school, as well as sport and/or evening studies
- Side effects are similar to those for short-acting Methylphenidate, but can be prolonged

SODAS, spheroidal oral drug absorption system; OROS, osmotic release oral system/osmotic-controlled release oral delivery system; MUPS, multiple unit pellet system

1.2 Amphetamines

Dextramphetamine

- Available in 5 mg and 10 mg as a snap tablet, which facilitates giving small doses and tailoring the dose to the need.
- Usually lasts for about six hours
- Side-effect profile similar to other stimulants

Lisdexamphetamine

- An ultra-long-acting stimulant, used once daily
- Currently available in 30 mg, 50 mg and 70 mg tablets
- Usual onset of effect one to two hours after ingestion with the effect lasting up to 14 hours

Benefits and side effects of amphetamines

- Very useful for those needing to concentrate for long hours
- Very low abuse potential
- Side effects are similar to those for stimulants, and commonly include
 - Abdominal discomfort and pain
 - Nausea and headaches
 - Insomnia
 - Loss of appetite / reduced food intake
 - Tachycardia (increased heart rate)

2. Non-stimulants

Non-stimulants offer many of the same benefits as stimulants offer, and are a useful alternative for children who do not tolerate stimulants well. They are also often considered a preferred choice in patients with certain concomitant conditions, for example for anxious ADHD children and children with tics. In addition, they can be particularly useful for improving executive function.

2.1 Atomoxetine

- A first-line non-stimulant treatment option for ADHD, available in several generic formulations
- Expect near-maximum efficacy from about six weeks after starting treatment
- Effect can theoretically last for up to 24 hours
- Available in 10 mg, 18 mg, 25 mg, 40 mg, 60 mg and 80 mg capsules
- Benefits
 - Once-a-day dosage with 'all-day' effect
 - Abuse potential is low to none
 - Appetite and sleep neutral
 - Generally does not suppress the patient's personality
 - Effective with co-morbid conditions such as anxiety, tics or Tourette's Syndrome

- Side effects
 - ▶ Gastro-intestinal symptoms like heartburn or nausea
 - ▶ Sleepiness or insomnia
 - ▶ Headache

3. Off-label medications

Some medications are not registered for use in ADHD but are sometimes used to help manage certain associated symptoms. They include:

3.1 Risperidone: an atypical antipsychotic

- Used to help manage emotional and behavioural complications or tics
- No effect on attention, but increased appetite may lead to unwanted weight gain

3.2 Modafinil and armodafinil: a medicine for narcolepsy

- Can improve executive functioning and the core symptoms of ADHD, often without disrupting sleep

3.3 Bupropion: an antidepressant

- Has some good, documented effects in adults
- Seldom used in children

3.4 Clonidine

- Helps to control impulsive, overactive behaviour and/or aggression
- Helpful in assisting ADHD children to sleep
- Generally used in combination with a stimulant
- Can take up to two weeks to have an effect
- Does not seem to improve concentration
- Side effects
 - ▶ Sedation (usually eases after a few weeks)
 - ▶ Tiredness
 - ▶ Dizziness or light-headedness
 - ▶ Headaches
 - ▶ Dry mouth

Advantages of using medication

The research-based consensus is that medication has the following positive effects in ADHD:

- Large improvements in ADHD symptoms
- Improves academic results
- Increases the probability of completing high school by two-thirds
- Decreases criminality by 33%
- Decreases injuries, especially serious transport accidents, by 30–50%

- 'Normalises' brain function
- May decrease anxiety by 14%
- Effective in decreasing aggression, ODD and conduct problems

Note:

Children on medication should have regular check-ups



Behaviour management

In order for behaviour management to be effective, the main clinical features of ADHD must be kept in mind: distractibility/short attention span, impulsivity and hyperactivity.

Here are some suggestions for ADHD behaviour management.

1. Distractibility

- Place the child in a small class, if possible.
- Seat them at a desk alone, at the front of the class.
- Clear the work surface of anything that is not immediately needed for the task at hand.
- Provide a noise-free homework environment, without music or videos playing. Note: Some people with ADHD actually find soft background music helpful, because it masks background noise.

2. Short attention span

- Break tasks down into small chunks that match the child's attention span, especially when doing homework.
- Allow for frequent, short breaks.
- Avoid repeating activities unnecessarily.
- Frequently change the task on which the child is working.
- Find tasks that excite and interest the child, such as educational computer games.

3. Impulsivity and hyperactivity

- Distract the child from undesirable behaviour by presenting other stimuli.
- Reinforce good behaviour as soon as possible, either by praising the child or by making use of a star chart (stars are given for specified behaviour and, after a pre-determined number of stars have been collected, the child is rewarded with a small toy or other reward).

4. General principles of behaviour management

- Persist with disciplinary measures that are reasonable and fair. Remember that the ADHD child needs many repetitions to learn what to do, or not to do.
- Avoid corporal punishment as this often causes the ADHD child to become rebellious and 'wild'. Instead, make use of 'time out' where the child is sent to another room to regain control of themselves.
- Avoid shouting at ADHD children. Either they just do not listen or it escalates aggressive behaviour. Rather speak in a soft, clipped and detached fashion (aloof) and use simple, non-ambiguous language. Do not use sarcasm or irony – the

child will usually take what you say literally, particularly when distressed.

- Try the 1-2-3 method. When you ask the child to do something, like to put away their toys, their immediate response is likely to be, "I won't." Counting 1-2-3 at five-second intervals will, however, often produce the desired action if the child knows that some punishment or consequence will follow should you get to three before they begin the task. This gives them some apparent control of their actions, rather than having control imposed from outside.

Together with all the above, parents must remember that routine is extremely important to the ADHD child. They will not cope well with change or the unexpected, and feel safer and more secure when their life is structured by the adults in their environment.

It would seem that, for successful management, children with ADHD probably need feedback (positive or negative) every 20 minutes.

Diet

Diet does not appear to be the direct cause of ADHD, although certain foodstuffs may make a small number of children with ADHD more irritable, or make them more active. This has also been shown to be true of children **without** ADHD.

There is little evidence that inattention and impulsivity can be significantly altered by paying attention to diet alone, but there is **some** evidence that the consumption of a diet rich in food colourants can aggravate ADHD behaviour to a moderate degree.

Supplements

The body only needs a certain amount of vitamins and minerals, and any extra will be excreted. Some vitamins, such as A, D and K, can be harmful in excess so a balanced, healthy diet is advisable.

The only evidence for the efficacy of a supplement is the replacement of iron in children who have an iron deficiency or depleted iron stores. Omega 3 has also been shown to have a modest positive effect on ADHD symptoms.

Homoeopathic medicines

It is almost impossible to test these substances scientifically because, more often than not, homeopathic medicines are a compound of several ingredients. This makes it difficult to prove effectivity in ADHD.

Some parents make use of a number of homoeopathic remedies and firmly believe that they improve the symptoms of ADHD to some degree, but – at present – there is no scientific evidence to recommend their use in ADHD.



ADHD IN ADOLESCENTS

Most parents, teachers and clinicians who deal with adolescents will agree that this developmental phase has a particular set of challenges. This is especially true when the teenager has ADHD.

Age of onset

Previous medical opinion held that ADHD was 'outgrown' by adolescence and that no more treatment was necessary. More recent research has, however, shown that in 50-60% of children with ADHD impairment continues into adulthood. Most ADHD children therefore need ongoing treatment during adolescence.

But some people only present with ADHD for the first time during adolescence. Diagnosis at this stage may be difficult and other diagnoses, such as anxiety or substance abuse, must also be considered.

How does typical ADHD present in adolescents?

Hyperactivity and impulsivity may be less obvious during adolescence, but common complaints are distractibility, excessive irritability, and poor concentration. Procrastination and poor time management are also frequently reported.

Inattention and disorganisation may prevent homework from being done, studying ahead of time presents challenges, and these individuals are easily bored. This combination may result in

The condition may have been mild enough during childhood to go unnoticed until the increased academic demands of high school, or these children may have had enough intellectual ability to have compensated for the deficit until adolescence. During the teen years, self-discipline, motivation and structure need to be **self-generated**, and teenagers often need to be more independent than before as they negotiate multiple teachers, classrooms and schedules. These new demands may bring previously 'hidden' ADHD to the fore.

poor academic performance, while inattention may also compromise sport and peer group activities and result in rejection from sports teams and in social ostracism.

Emotional dysregulation is a well-recognised component of ADHD and, coupled with the emotional instability of adolescence, it often makes these teenagers intense and emotionally impulsive.

What can co-exist with ADHD in adolescents?

Depression, mania and anxiety disorders can all present for the first time during adolescence. These co-existing disorders may be difficult to recognise in adolescents with persistent ADHD.

Experimentation with drugs and alcohol is a risk. Untreated teenagers with ADHD are more likely to abuse drugs, are three times more likely to abuse drugs other than cannabis (so-called 'hard drugs'), and are likely to start smoking cigarettes two years

earlier than their non-ADHD peers. It is also more difficult for them to quit.

Many adolescents with ADHD drive more poorly than their peers. They are up to four times more likely to have a motor vehicle accident because of their impulsivity, immature judgement and thrill-seeking, risk-taking behaviour.

Treatment

A combination of medication and behaviour therapy is the best treatment. Social skills training can also be helpful. It is always best to allow the adolescent to be part of the decision-making process around treatment.

Medication includes the two previously described broad groupings: stimulants

(e.g. methylphenidate and lisdexamphetamine) and non-stimulants (e.g. atomoxetine). If ADHD adolescents have been diagnosed and treated from childhood, their treatment may need to be sustained during adolescence but may also need to be adjusted and tailored to their changing requirements.



WHAT HAPPENS WHEN ADHD CHILDREN GROW UP?

There is increasing evidence that many ADHD children have symptoms of the disorder that persist into adulthood. Studies conducted since the 1990s have reported that over 50–60% of children with ADHD continue to experience symptoms of the disorder in later life.

Overall, about 2.5–2.8% of adults have ADHD. Yet most of these patients are undiagnosed and untreated.

While it has been recognised for decades that ADHD presents in children with a combination of three symptom clusters – inattention/distractibility, impulsivity and hyperactivity – by the time patients reach adulthood, these symptom clusters have changed.

In adults, there are four possible areas of difficulty:

1. Sustaining attention
2. Inhibiting behaviour and emotional regulation
3. Resisting distraction
4. Regulating their level of activity

Poor attention occurs often and is a hallmark feature of adult ADHD. When performing repetitive or boring tasks, focus is noticeably lacking, although many adults

with ADHD can concentrate well in areas that fascinate them. Only in very severe cases would the inattention be pervasive.

Concentrating on protracted tasks is often disrupted by distraction. Patients with ADHD are chaotic, disorganised and seem to react to novelty more quickly than others. They are plagued with procrastination and may only complete boring tasks under time pressure. They also struggle to sort out personal administration.

Difficulty in inhibiting their impulses and behaviour is another key symptom cluster. These patients interrupt frequently during conversation and battle to delay gratification. In the workplace, they may find it difficult to work for a long-term reward rather than immediate gratification and may be highly impatient. This may manifest in irresponsible behaviours, such as fast or reckless driving or engaging in promiscuous sex, drug taking or gambling.

Emotional regulation – managing moods and feelings – can be very difficult for ADHD adults. They may therefore appear to be emotionally immature, reactive or quick-tempered. They seem to lack

will-power or self-discipline. They may have poor self-esteem, and a tendency to be depressed.

‘Hyperactive’ adults are uncommon, but regulation of activity level is often dysfunctional. Patients describe themselves as restless, fidgety or ‘on the go’.

They are always busy and driven. They may be observed to tap, shift position, shake and wriggle while performing boring tasks. They may be workaholics, full of nervous energy, unable to relax and easily bored.

Treatment of adults with ADHD involves several steps

1. Psychoeducation: helping the adult become an expert on their condition
2. Psychological techniques: mastering areas of difficulty with a therapist or self-help books
3. Medication: stimulants and non-stimulants are the mainstay
4. Identifying and treating any co-existing conditions
5. Lifestyle changes: regular exercise, sleep hygiene, routines, a balanced diet and avoidance of substances all play a role

IN CONCLUSION

ADHD is a common developmental disorder in children and adolescents which persists into adulthood for some. The presenting symptoms of hyperactivity, inattention/distractibility and impulsivity impact negatively on the individual’s ability to reach their full potential academically and socially.

Early diagnosis and intervention is key to allowing individuals to lead a fulfilled academic career as well as a sustained and successful social life. Left untreated, individuals run the risk of academic and societal under performance.

In South Africa, we are fortunate to now have an extensive armamentarium of treatment options which should help us to individualise the medical management of each patient.

As international research continues to unravel this disorder and treatment options increase, these are indeed exciting days for the diagnosis and management of patients with ADHD.

A MOTHER'S PERSPECTIVE: ADHD FROM CHILDHOOD TO ADULTHOOD

Early childhood ... Our son has ADHD. He's on medication. He's just begun Grade 1, and is managing to finish all his work, but it hasn't been easy.

NURSERY SCHOOL



He spent three years at nursery school, during which time he never brought home a single drawing, painting or anything he had made. His teachers said he never finished anything, and seemed to have trouble concentrating on what he was doing – he was easily distracted and couldn't focus on his 'work'. When I told my friends we hadn't had this problem with his two older sisters, they said, "But he's a boy."

GRADE 0



He had a wonderful, caring and very experienced Grade 0 teacher who, within a month, suggested that he be assessed to establish just what the problem was. A comprehensive set of tests found that he did have a concentration problem, but that nothing really merited further investigation.

His teacher disagreed. She pointed out that the tests were conducted in a one-to-one situation,

but there were 20 other children in the classroom. Under those circumstances, what was assessed as a minor concentration problem became a major disruptive force – a child who became so frustrated that he bit one of his peers, and pinched and kicked, apparently without provocation.

I felt desperate. Our son was earning a reputation for being a monster. He wasn't invited to birthday parties, no one wanted to be his partner, and the teachers said he was defiant and difficult. Where had I gone wrong with this child? I was sure that we had treated him exactly the same way as his sisters. Perhaps I wasn't spending enough time with him, or giving him enough attention? I felt permanently miserable and permanently guilty.

Someone suggested we take him to see a psychiatrist, as they deal with behaviour problems. He was re-assessed and diagnosed as having ADHD. We were told that medication could help and that he should see an Occupational Therapist. She confirmed what we already suspected – that he needed help with fine motor tasks, like writing.

We tried almost every type of medication available, with some improvement but not enough, before we finally found a combination of different medicines which worked. Then it took nearly a year to find the correct dose of that winning combination.

We are fortunate, in that our son only has **some** of the symptoms of ADHD. He isn't hyperactive, and this makes him a lot easier to deal with than a child who is. But if medication can do so much for our little boy, think what it could do for any other child with worse symptoms.

Our son is learning to read and he's keeping up with all the new concepts introduced in class. He is managing all the homework. He chooses to draw, play with construction toys and do jigsaw puzzles at home. The medication hasn't affected his growth. He's been going to Occupational Therapy for seven months so far, and has started art classes.

He has made friends and has been to a number of birthday parties this year. I no longer feel ashamed that he is my son, and he is a much happier little boy.

Perhaps the wisest words I've read about the medication controversy are in the book written by Dr Christopher Green and Dr Kit Chee:

Children, adolescents and even adults with ADHD live their lives with a circling, muddled mind. When medication is effective they become more clear thinking and focused. Humans take addictive drugs to escape the world, not to become fully focused on reality ... You don't get addicted to reality.

(From Understanding A.D.H.D.)

GRADE 5



Four years later ... Our son is now in Grade 5. He is still on medication, which has been adjusted as he's grown. This year we moved him to a smaller school, with about 75 children per grade and caring staff. He is a member of the school choir. He plays cricket and soccer for the A team.

He still needs supervision when it comes to homework and is inclined to be forgetful about anything not related to his particular interests – he might not remember what the homework is for that day, but he can tell me exactly where and when his next match is taking place!

His school encourages him to complete some of his homework on the computer, as it eliminates the necessity for constant erasing and rewriting of untidy or messy work. I have to be flexible about the time set aside for homework, as he seems to manage best after playing a bit first. Sometimes he's too tired after a match so we try to do some extra work the day before or the day after. We keep a book of his choice in the car and he reads to me while we're waiting for his sisters to come out of school. That way it doesn't feel like homework.

I have developed my own method for helping him to keep track of his possessions. Yellow is his colour, so every piece of stationery – pencils, crayons, eraser, sharpener, and ruler – is encircled with yellow tape. There is a yellow tag on his school bag, a yellow label on his sports bag, and so on. This has really helped him.

He spends many hours at the computer, playing games. These increase his manual dexterity or hand-eye co-ordination and many of the games are educational to some degree, although some are played purely for pleasure. He enjoys building small-scale models and cooking. He is very sociable, with a mischievous sense of humour, and is liked by his teachers and peers. What a success story!

AFTER SCHOOL



10 years later ... Three years ago, our son wrote Matric (Grade 12) and achieved three distinctions. We used to wonder whether he would actually pass!

He was captain of the 1st cricket XI, and this sport continues to be something he is passionate about. So much so that he spent five months a year for two years playing for a club in England and a year at the cricket academy at the High Performance Centre in Pretoria.

He was on medication until the day he wrote his last exam and then he decided to see if he could manage without it, and stopped. This was a relatively easy decision to make, as he had decided not to study for a while.

However, this year, he has realised that he is ready for further study, and has said that he will see how things go before he decides whether he needs medication to help him. He is a happy, confident, sensible young man, with the world at his feet.

SUGGESTED READING

Understanding A.D.H.D. by Dr Christopher Green and Dr Kit Chee: A parent's guide to Attention Deficit Hyperactivity Disorder in children

Driven to Distraction by Edward M Hallowell, M.D. and John J Ratey, M.D.: Recognising and coping with ADD from childhood through adulthood

Daredevils and Daydreamers by Barbara D Ingersoll: New perspectives on ADD/ADHD

The A.D.D. / A.D.H.D. Checklist by Sandra F. Rief

Everything You Need to Know About A.D.D. / A.D.H.D. by Eileen Beal (Need to Know Library)

What's the Fuss about ADHD? by Dr Brendan Belsham (South African Child Psychiatrist)

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Faraone SV, Banaschewski T, Coghill D, et al. The World Federation of ADHD International Consensus Statement: 208 evidence-based conclusions about the disorder. *Neurosci Biobehav Rev.* 2021;128:789-818. doi:10.1016/j.neubiorev.2021.01.022



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ONLINE SUPPORT

Attention Deficit and Hyperactivity Support Group of Southern Africa
www.adhasa.co.za

ADDitude magazine
www.additudemag.com

Attention Deficit Disorder Association
www.add.org

CADDRA: Canadian ADHD Resource Alliance
www.caddra.ca

Children and Adults with Attention Deficit/Hyperactivity Disorder
www.chadd.org

The National Institute of Mental Health
www.nimh.nih.gov

To report an adverse event or side effect for Sandoz products, please
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<https://report.novartis.com>

