



A FOCUS ON ADHD IN ADULTS

Adult ADHD is significantly under detected at a population level and untreated individuals suffer lifelong poorer outcomes, writes psychiatrist Dr Raj Tanna



Awareness of Attention-Deficit Hyperactivity Disorder (ADHD) in adults has rapidly increased and newer clinical practice is emerging. Despite a strong evidence base for effective treatments, adults with ADHD remain substantially under recognised and undertreated, resulting in significant lifelong impairment to their lives. Long-term outcome studies demonstrate strong associations with:

- Impaired quality of life, including relationships;
- Poorer issues of self concept;
- Poorer educational attainment and occupational retention;
- Higher comorbidity with addiction and substance use;
- Higher comorbidity with mood and anxiety disorders;
- Higher risk e.g. driving safety, including accidents and death; and
- Suicide.

ADHD as a lifespan disorder

ADHD is conceptualised as a neurodevelopmental disorder which can present in childhood, adolescence or adulthood. The prevalence in adults ranges internationally from 2.5 - 3.4 per cent. Although more commonly presenting in childhood, up to 60 per cent of children with ADHD continue to suffer from symptoms as adults, causing continued impairments, challenging the long-held idea that persistence from childhood into adulthood was rare.

However, most but not all adults diagnosed with ADHD meet criteria during their childhood. Current classification of the disorder is now more consistent with studies allowing for the possibility for a subthreshold level in childhood emerging at full diagnostic level later in life. Recent findings, yet inconclusive, suggest a variant of adult onset ADHD may present without any symptoms in childhood.

Heritability and aetiology

ADHD is highly heritable (70 per cent) with a significant polygenic component influencing risk for the disorder. Family studies demonstrate a prevalence of 20 per cent amongst first degree relatives. Genome wide association studies estimate only 30 per cent of the heritability is explained by common genetic variations within a network of genes involved in neural growth.

Complex gene-environmental interplay is likely to be important, but difficult to elucidate. Prematurity is the only environmental risk factor with sufficient evidence of a temporal association with ADHD. Two factors – maternal smoking during pregnancy and low birth weight – have suggestive evidence. Other prenatal risk factors implicated include drug and alcohol exposure, valproic acid, hypertension and maternal stress.

Such gene-environmental risks lead to multiple brain circuit alterations with several possible pathways to symptoms, with differing presenting individual neurocognitive deficit profiles and impairments.

Functional imaging supports the contemporary view that ADHD is associated with aberrant network activations, for example between aspects of the Default Mode Network (DMN) and Cognitive Control Networks involved in tasks. The DMN is active in the brain at rest, but usually becomes largely deactivated when attention-demanding tasks are initiated. Compellingly, large studies investigating childhood ADHD persistence as opposed to remittance into adulthood found impaired connections within and between the DMN and those supporting attention and cognitive control.

Neuropsychological tests

Adults with ADHD are characterised by variably altered neuropsychological function across a range of executive functioning measures. However, diagnostically executive function-based neuropsychological tests lack ecological

validity; there is no battery of tests to establish a diagnosis of ADHD at the individual level, nor to predict impairment in major life domains. Such testing can aid assessment and individualised interventions, but diagnosis remains based on detailed specialist clinical evaluation by a psychiatrist.

Clinical features and presentation of adult ADHD

Adult ADHD is a heterogenous syndrome characterised by pervasive, impairing levels of inattention, hyperactivity or impulsivity or in combination. The *Diagnostic and Statistical Manual of Mental Disorders (DSM-5)* highlights the importance of mood lability/emotional dysregulation as an associated feature, but given lack of specificity, it is not a criterion.

It's helpful to think of ADHD similarly to personality, as a **trait-like disorder** where the symptoms do not reflect a change from the premorbid state (unlike disorders such as anxiety and depression). As a result, defining the boundary of clinical significance can be challenging and nuanced with evaluations of impairment.

Presentations later in life, such as late adolescence or adulthood, often occur at major life transitions, when the adaptive scaffolding is undermined, such as leaving home, higher education, family transitions and significant occupational changes.

It's worth noting also that high-functioning adults with ADHD may have developed compensatory skills which result in atypical features of daily life impairment. ADHD neurocognitive performance is highly sensitive to the salience of task activities; it's typical for these individuals to excel in certain aspects (such as occupation), but remain highly impaired in the mundane such as self-care, housework, paying bills and maintaining stable relationships.

More typical features presenting in adults

- **Inattention** – can be slow to think, distractible, procrastinate, poor at prioritising.
- **Hyperfocus** – may need high pressure or instant gratification in which they can focus for hours e.g. computer games, social media, TV, internet.
- **Inner Restlessness** – adult equivalence of hyperactivity, this is more subtle and can present as talking too much, mental activity, unable to relax; which may be associated with alcohol or substance use
- **Impulsivity** – can have significant relationship impacts at home, socially and occupationally. Again, it is often associated with instant gratification / reward behaviours and risk taking.
- **Emotional Dysregulation** – irritability, low frustration

tolerance, mood lability and outbursts. These tend to be magnified responses to day-to-day events, short lived, and normalise relatively quickly.

- **Excessive Mind Wandering** – mental restlessness and drift away from tasks to short, unfocused internal thoughts, with little repetitive or abnormality of content. This correlates with deficient deactivation of the DMN. Excessive mind wandering is highly correlated with ADHD symptoms and has strong predictive value.
- **Sleep Problems** – reported by more than 70 per cent of adults with ADHD; particularly sleep onset problems associated with diurnal rhythm abnormality
- **Self-Regulation / Deficit Executive Function / Inhibition & Working Memory** – presents with difficulties organising, prioritising, using working memory, sustaining and processing problems, accessing recall and self-monitoring of behaviours. But it remains inconclusive if such deficits reflect primary causal processes, hence the lack of ecological validity of measures.

Screening for adult ADHD

The WHO Adult ADHD Self-Report Scale (ASRS, below) is short and easy to score, detecting the vast majority of general population cases with high positive predictive value and specificity.

Table 1. Screening questions in the DSM-5 ASRS Screening scale

1. How often do you have difficulty concentrating on what people say to you, even when they are speaking to you directly ?
2. How often do you leave your seat in situations in which you are expected to remain seated?
3. How often do you have difficulty unwinding and relaxing when you have time to yourself?
4. When in conversation, how often do you find yourself finishing the sentences of people you're talking to before they can finish them themselves?
5. How often do you put things off until the last minute?
6. How often do you depend on others to keep your life in order and attend to details?

Response categories are never 0, rarely 1, sometimes 2, often 3, very often 4.
Screening operating threshold = Total score 14 or higher

Pre-treatment considerations

Current clinical recommendations emphasise assessing the personal and family cardiac history prior to ADHD pharmacotherapy, vigilance about abnormal CV history (e.g.

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sudden or premature deaths, arrhythmias, prolonged QT, hypertrophic cardiomyopathy and Marfan's syndrome). Heart rate and blood pressure should be measured before initiation and monitored routinely during treatment.

In my clinical practice, I increasingly request ECGs at baseline and an echocardiogram for people over 50 years of age. A positive personal or family history may also necessitate a specialist Cardiology review.

Adult ADHD commonly presents with comorbid mood and anxiety disorders, which may necessitate addressing their treatment first, with careful consideration of combined medication effects and side effects.

Treatment of adult ADHD

GPs screening for adult ADHD should consider referral to a specialist psychiatrist with expert knowledge in the field, and authorised as stimulant prescribers.

Optimal treatment includes education, pharmacotherapy, CBT and coaching for ADHD, involving the adult's close relationships. Here I will briefly discuss the mainline medication treatment.

Stimulants (dexamfetamine, lisdexamfetamine and methylphenidate) are the most effective treatments in **adults**. Given the potential for addiction and misuse, they are regulated in Western Australia by the Schedule 8 Medicines Prescribing Code.

A recent network meta-analysis differentiated amfetamines as preferred first choice in adults when considering for both efficacy and safety. Methylphenidate, though efficacious was less well tolerated in the analysis. Third choice Atomoxetine, should be preferred if there are any contraindications to stimulant treatment, intolerance, lack of effectiveness, presence of anxiety disorders or severe tics, or when there is considered a significant risk of diversion and misuse.

Lisdexamfetamine, a longer-acting prodrug formulation, has increasingly been adopted in international guidelines as the preferred first choice, given its ease of one-off administration and lower propensity for abuse.

Long-term safety

Currently there is absence of evidence of significant long-term risks of stimulant use.

Tomography scans show upregulation of striatal dopamine transporter availability, but implications are not clear.

Recently, there has been increasing concern that ADHD pharmacotherapy may be rarely associated with adverse cardiovascular (CV) events. Response attributable to ADHD medication is largely observed in heart rate and blood pressure elevation, with less known about rarer events like acute myocardial infarction, arrhythmias and cardiomyopathy and its longer-term sequelae, which have all been reported in the literature.

Proposed mechanism of CV impacts of stimulants include (a) chronotropic and pressor effects (b) vasospasm induced by increased circulatory catecholamines (c) proinflammatory immune-active products causing vasculitis (d) QT interval prolongation, which is associated with Torsades de pointes, and (e) coronary artery intimal hyperplasia.

The evidence remains equivocal on whether stimulant medications result in significant CV risk, but there are certainly clinical incidents. ■

Key messages

- Adult ADHD is significantly under detected at a population level.
- Untreated individuals suffer lifelong poorer outcomes in many domains, including physical health, mental health, education, occupation and relationships.
- It can present as highly comorbid with substance, mood and anxiety disorders, leading to poorer outcomes.
- Screening questions as above, are simple and quick, with reasonable value.
- Assessment should be made by referral to specialist psychiatrists with expertise in the field.
- Treatments are effective and safe, with some need for monitoring for cardiovascular effects.

Dr Raj Tanna is a specialist in Psychiatry and psychotherapeutic medicine, with a background in Cognitive Neurosciences. He has a special interest in adult ADHD, mood disorders and early intervention, and has led award-winning services in London and Perth. His practice is based at Perth Clinic.

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References available upon request.