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Adults with ADHD
essentials for the GP

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Attention deficit hyperactivity disorder (ADHD) is a common childhood disorder that often persists into adulthood. GPs are well placed to have a co-ordinating role in the multimodal management of ADHD and its associated psychiatric comorbidities.

Key points

- ADHD manifests as deficits in behavioural inhibition, cognitive control and motor activity, and is thought to have strong genetic and neurobiological determinants.
- Adult ADHD is a relatively common mental disorder that represents a continuum of symptoms from childhood.
- Detailed assessment of ADHD in adults takes into account the nature and impact of current symptoms and assesses the presence of other medical and psychiatric disorders that may mimic or be associated with ADHD.
- Management of adult ADHD includes both psychological and pharmacological strategies.
- Pharmacological management with stimulant medication should be considered in adults with moderately severe ADHD symptoms, provided no contraindications exist.
- Comprehensive management of ADHD and its psychiatric comorbidities significantly improves outcomes for adults with ADHD.

Early descriptions of childhood ADHD such as that of physician Alexander Crichton (1798) recognised that ADHD 'becomes evident at a very early period of life…and what is very fortunate, it is generally diminished with age'. Despite an age-dependent decline in symptoms, ADHD persists into adulthood in a substantial proportion of childhood sufferers.[1] This persistent disorder, termed adult ADHD, impacts educational goals and is associated with substantial economic and social disadvantage.

Several medical and psychiatric disorders can masquerade as adult ADHD, and rates of a co-existing psychiatric disorder are high.[2] The disorder is usually responsive to psychological and pharmacological treatments, which lead to a substantial improvement in function. A framework for assessing ADHD symptoms and managing the disorder and its comorbidities are an asset in the primary care setting.

WHAT IS ADULT ADHD?

An understanding of the nature of ADHD has come a long way since the early 1900s, when it was viewed as a 'defect of moral control' (George Frederick Still, 1902). The prevailing model comes from the work of Russell Barkley, in which ADHD is considered to arise from a deficit in behavioural inhibition, which drives an inability to adequately control and regulate a variety of cognitive (executive) functions and impacts motor control.[3]

ADHD manifests by a complex interaction of multiple genetic and environmental effects. Twin studies have shown ADHD to be a highly heritable disorder,[4] but the propensity of ADHD to manifest is not a matter of genetics alone. Rather, ADHD may manifest as a result of the balance of promoting or protective factors on a substratum of genetic vulnerability. Factors that impact early brain development in the pre-, peri- or postnatal period, such as

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exposure to drugs and other toxins, nutritional insufficiency and early environment, appear particularly important in this regard. An understanding of the role of the early childhood environment is difficult to interpret in view of the high genetic loading for the disorder, and the likelihood that parental style may be influenced by ADHD in a parent.[5]

HOW COMMON IS IT?

Congruent with Crichton's observations, studies of children with ADHD followed into adulthood show an age-dependent decline in symptom severity. However, a substantial proportion continues to experience impairment from symptoms. A meta-analysis of longitudinal data indicates that on reaching adulthood, clinically significant symptoms are found in up to 80% of childhood ADHD sufferers, with the full-blown diagnosis being apparent in approximately 15%.[1] A large cross-national study in 10 countries[6] and epidemiological work in the USA[7] indicate that adult ADHD is common and affects between 3.4% and 4.4% of adults. The prevalence of adult ADHD has not been evaluated in Australian epidemiological surveys of mental health.

PRESENTATION IN ADULTS

Clinical features

Current diagnostic criteria for ADHD such as those found in the *Diagnostic and Statistical Manual of Mental Disorders IV (DSM IV)* focus on symptoms of relevance for children and adolescents[8] and require six of nine criteria of inattention or six of nine symptoms of hyperactivity/impulsivity from the 18 ADHD symptoms for a diagnosis.[9] However, new criteria have been proposed in the draft *DSM V* that are more applicable to the adult population.[10]

ADHD in adults manifests in the four key domains noted below and summarised in the Table.[2]

- **Attention**. For adults, attentional difficulties may manifest in the individual being easily distracted from a task by extraneous stimuli, having difficulty maintaining attention during effortful tasks (e.g. during meetings, or if a student during a lecture or tutorial) and daydreaming or making careless mistakes in work due to attentional lapses.
- **Hyperactivity**. Hyperactivity symptoms tend to be less prominent in adults than in children,[11] but some adults do experience discomfort or difficulty when required to be still, and may have difficulty relaxing. A cognitive correlate of this hyperactivity is often encountered, with many individuals describing a propensity for racing thoughts or 'mental clutter' with multiple competing streams of thought. Such individuals often take on multiple tasks simultaneously but may fail to complete many of them.
- **Impulsivity**. Impulsivity can manifest verbally in a tendency to interrupt conversations or make tactless comments but also in risk-taking behaviour, which may have many consequences including financial misfortune or physical injury.[11]
- **Organisational ability**. Individuals with ADHD may have marked difficulty with organisational skills, forget deadlines or appointments and have difficulty performing complex or multistep tasks.[11,12]

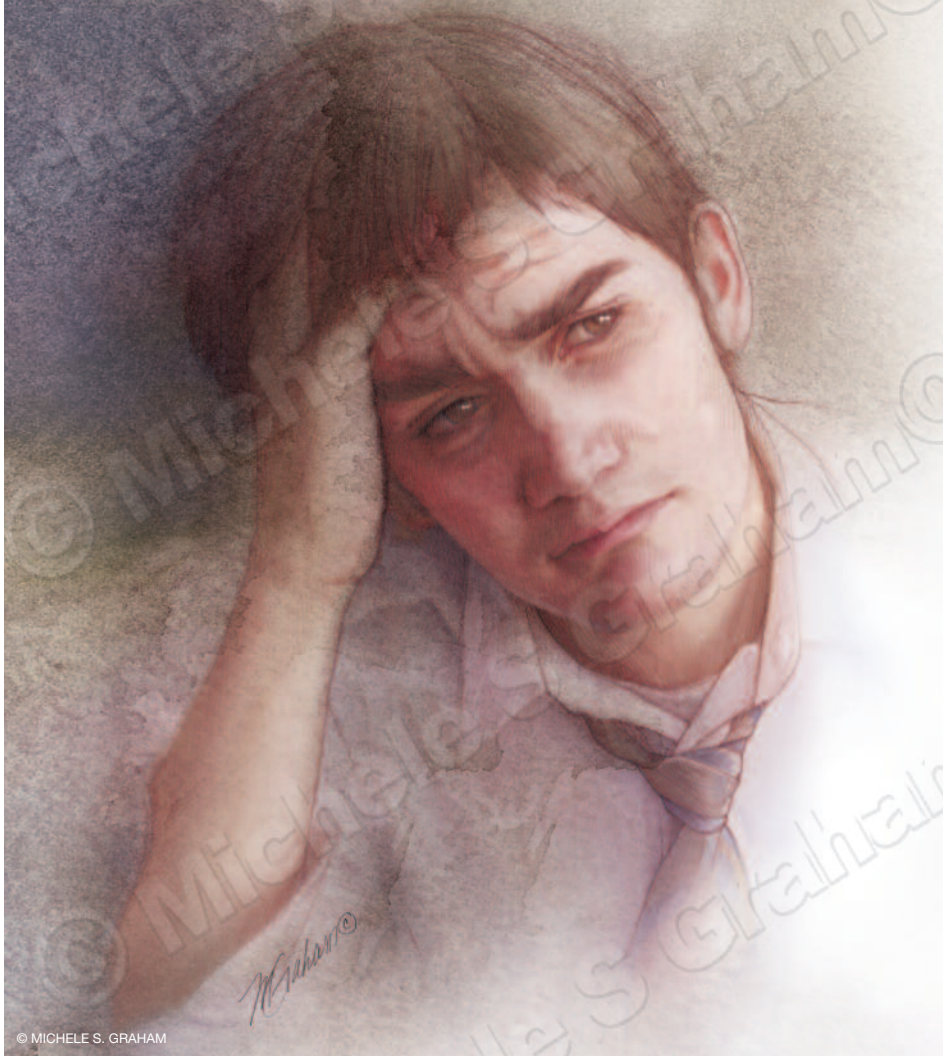

TABLE. CLINICAL FEATURES OF ADULT ADHD

Key domains	Clinical features
Attention	Is easily distracted from a task by extraneous stimuli Has difficulty in maintaining attention during effortful tasks – e.g. during meetings, or if a student during a lecture or tutorial Daydreams Makes careless mistakes in work
Hyperactivity	Is uncomfortable or has difficulty when required to be still Has difficulty relaxing Has propensity for racing thoughts or 'mental clutter' with multiple competing streams of thought
Impulsivity	Has tendency to interrupt conversations or make tactless comments Displays risk-taking behaviour
Organisation	Forgets deadlines or appointments Has difficulty performing complex or multistep tasks

THROUGH THE LOOKING GLASS: THE PERSPECTIVE OF AN ADULT WITH ADHD

It's like going through life slightly out of sync with everyone else. At first I didn't know there was a problem with me. Before treatment was like being shortsighted before you get glasses. When I got treatment all of a sudden it dawned on me that the problem was not the outside world, but me. Suddenly I could understand comments like 'why are you late, you're always late…but if you weren't going to come, why didn't you call….you lost them AGAIN…that's not funny you know'. Up until then, I thought it was just a really intolerant world.

At a gathering of friends, my mind races, it's loud, I'm loud, and I'm trying to listen but that poster over there for that new film looks great, maybe I can see it this afternoon, nope this afternoon I have to do the shopping, bugger I forgot to make a list of what we need, but maybe I can fit that movie in anyway…whoops, sorry...what were you were saying? Anxiety and self-doubt sets in, 'what did I miss…did I just put my foot in it…what must they think?'

In the three years I shared a house with my brother I didn't vacuum once. I'd get it out. I'd switch it on. Then something would distract me, I'd go off and do something else, which led to something else, and in the end I'd run out of time to finish what I'd started. That, combined with forgetting to buy the milk and forgetting to pay the bills, made me a pain to live with. Ask any partner of an ADHD adult, and they'll tell you that it's really tiring at times.

There are some plusses too. You can think fast and you have energy. You don't need that much sleep – but you should really get more. You can take some risks and you quite like it – hey it can be a plus. You can create, and tell stories. You have a slightly different way of seeing the world. These are the bits of your ADHD that you wouldn't be willing to do without. But you need to accept responsibility for the whole you, be your own 'parent' as you learn about and self-manage your symptoms.

Emotional dysregulation is a feature for some individuals, manifesting as low frustration tolerance or rapid mood swings.[13]

The manifestation of the disorder is variable, with some individuals having a predominance of inattentive symptoms, hyperactive–impulsive symptoms or a combination of both.[9] An illustration of the lived experience of adult ADHD is given in the box on this page.

Reasons for presentation

Adults present to GPs requesting assessment or management for ADHD in a variety of contexts. The most familiar and least complex of these is a planned transition of the young adult from paediatric or child and adolescent psychiatric services. In this setting, the management plan is usually well documented, and the primary role of the GP may be to assist the young person in finding a suitable adult psychiatrist or psychologist for ongoing treatment.

Individuals who have been treated for ADHD during childhood may come forward for reassessment following a break in treatment. In some instances reassessment is triggered by difficulties experienced in less structured study settings such as tertiary education or work environments.[2]

Some individuals present for their initial assessment as adults. This is most often triggered by the diagnosis of ADHD in their offspring. As comorbidity with other mental disorders is high, ADHD may also be raised as a possible diagnosis in the context of management of another mental disorder such as depression, anxiety disorder or substance abuse.[14-16] Less often, an assessment request may be triggered by contact with the criminal justice system, or occasionally by concerns from a spouse or other members of a family.[15]

In all instances, a careful appraisal of the trigger and motivation for presentation is advisable.

ADULT ADHD: DIFFERENTIAL DIAGNOSES

Medical

- Past head injury or anoxia
- Sleep disorders – e.g. sleep apnoea
- Recent viral infection, including HIV infection
- Chronic medical illness – e.g. renal or liver failure
- Seizure disorder – e.g. petit mal
- Endocrine disorder – e.g. hypothyroidism, hyperthyroidism, hypoglycaemia

Psychiatric

- Anxiety disorder
- Major depression
- Bipolar disorder
- Cyclothymia
- Antisocial and borderline personality disorders
- Substance use disorders (abuse of alcohol, chronic cocaine or amphetamine use, cannabis)

Medication effects

- Effect of prescribed medications – e.g. benzodiazepines, anticholinergic drugs, anticonvulsants

DIAGNOSIS

Despite advances in the understanding of its neurobiology, ADHD remains a clinical diagnosis. The potential medical and psychiatric differential diagnoses and comorbidities underscore the need for thorough diagnostic assessment, which is usually best undertaken by an experienced psychiatrist. However, GPs have an important role assessing the presenting symptoms and determining the need for further medical or psychiatric evaluation.

The main steps in diagnosis include an evaluation of current symptoms, exclusion of other disorders that could account for symptoms, evaluation of psychiatric comorbidities and evaluation of the impact of ADHD symptoms over the lifespan.[2]

Evaluating current symptoms

The initial assessment aims to determine whether the presenting symptoms are consistent with ADHD. ADHD symptoms in adults should represent an extension of symptoms from childhood. Symptoms may not be seen in all domains because of differential improvement in hyperactivity–impulsivity,[2] or because some individuals have a predominantly inattentive or hyperactive–impulsive subtype of the disorder. The inattentive subtype is seen in a minority of individuals, usually women,[16] but is often overlooked.

Having conducted an evaluation of current symptoms, the GP may decide referral for specialist assessment is warranted, and where possible he or she should provide background detail including the history of any previous childhood symptoms or history of past assessments or treatment.[2]

Excluding other conditions mimicking ADHD

A second step in the diagnostic process is to exclude alternative explanations for the symptoms. Medical and psychiatric differential diagnoses should be considered (see the box on this page). The GP is in an ideal situation to perform initial screening for these disorders. The presence of the other disorders does not necessarily exclude ADHD.

Routine blood tests screening for other factors that could impact on cognitive function (full blood count, electrolytes, renal function, liver function tests, calcium levels, fasting blood glucose and thyroid function) are recommended. Baseline evaluation of weight, blood pressure and cardiovascular risk factors should also be performed and communicated to the specialist on referral.[2]

Evaluation of psychiatric comorbidities

High rates of other psychiatric diagnoses in individuals with ADHD highlight the complex vulnerability that can be experienced by people with ADHD (see the box on this page).[2] ADHD may not have been recognised previously, which emphasises the importance of considering referring individuals with other psychiatric diagnoses who experience an unusually high level of impulsivity, hyperactivity or inattention. The high rates of comorbidity also highlight a potential role for the GP in the monitoring, detection and management of new-onset psychiatric disorders in the course of ongoing treatment for ADHD.

COMMON PSYCHIATRIC DISORDERS COMORBID WITH ADHD

- Major depression
- Bipolar disorder
- Anxiety disorders
- Substance use disorders
- Personality disorders, especially antisocial and borderline personality disorders
- Specific learning disorders
- Intellectual disability

Evaluating the impact of ADHD symptoms

Adult ADHD is considered an extension of a childhood neurodevelopmental condition. As such, evidence of childhood ADHD, whether treated or not, will be apparent in the individual's history. Some adults will not have received diagnostic assessment as a child, especially those whose schooling/childhood predates the widespread awareness of ADHD, and those from communities or families who may have been less aware or open to its existence. Various sources, including parental retrospective accounts of childhood behaviour, school reports or old psychological assessments may be sought to assist in establishing the likelihood of significant childhood ADHD symptoms,

ADHD SUPPORT GROUPS

New South Wales
website: www.add.org.au/
email: info@add.org.au

Australian Capital Territory
Canberra & Queanbeyan ADD Support Group Inc
website: www.addact.org.au
email: addact@shout.org.au

Victoria
ADHD Coalition of Victoria Inc
website: www.ADHDcoalitionvic.org.au

Tasmania
ADHD Tasmania
email: adhdtas@bigpond.net.au

South Australia
Attention Disorder Association of South Australia Inc (ADASA)
website: www.adasa.com.au
email: admin@adasa.com.au

Queensland
ADD Association Queensland Inc
website: www.addaq.org.au
email: addaq@addaq.org.au

Western Australia
Learning & Attentional Disorders Society of Western Australia Inc (LADS)
website: www.ladswa.com.au
email: lads@cnswa.com

regardless of whether a formal diagnosis was made.[2]

Careful questioning can help determine the impact on the individual's educational attainments, social life, relationships and occupational setting. It is helpful to document the impact and course of symptoms across the lifespan. The strategies the individual uses to self-manage symptoms, together with the history of response to previous interventions and engagement with treating professional, are also useful to understand.[2]

It is recommended that an individual be referred for specialist assessment by a practitioner with experience in adult ADHD if ADHD symptoms:

- are considered to be present
- cause substantial impact on the individual
- do not have a higher order medical or psychiatric explanation, and
- are likely to be a continuity of symptoms from early childhood as suggested by retrospective assessment.

In most states and territories in Australia, such assessments are undertaken by adult psychiatrists or clinical psychologists, and occasionally by behavioural neurologists. However, in most jurisdictions, prescription of the stimulant medication, the mainstay of ADHD pharmacological management, is limited to psychiatrists.[2]

MANAGEMENT

Overall context

ADHD requires a broad approach to management embracing both nonpharmacological (psychological) and pharmacological approaches. An individual management plan is usually drawn up by a treating specialist in collaboration with the person with ADHD. It may involve periodic review by the GP, aimed at reviewing the safety and progress of treatment and management of any comorbid medical or psychiatric disorders.

The emphasis in management depends in part on the severity of symptoms and presence of comorbid conditions. For many adults, pharmacological treatments become less important over time owing to the continuing attenuation of symptoms in early adulthood and as the individual learns techniques to self-manage symptoms.[2]

Psychological treatment

Individuals diagnosed with ADHD for the first time in adulthood benefit from support and education to assist adjustment to the diagnosis. Initial information is usually provided by professionals involved in diagnosis and by specific ADHD consumer support services (see the box on this page). The diagnostic assessment will help to identify particular needs and coping strategies already used by the individual.

Specific psychoeducation, counselling and psychotherapy may assist those individuals who experience adjustment difficulties, low self-esteem, mild depression or anxiety.[2] Many individuals benefit from individual or group cognitive behaviour therapy (CBT), which aims to improve functioning by targeting specific ADHD symptoms, especially impulsivity and organisational difficulties. Cognitive therapy alone may be sufficient to manage mild ADHD symptoms. Social skills training and improvement of self-esteem may also be a focus of interventions.[2] Managing ADHD symptoms in an affected parent may also improve parental monitoring and consistency, which could benefit children, particularly those who also have ADHD.[17]

Medication

Pharmacological treatment is generally undertaken in conjunction with nonpharmacological strategies. Medications for ADHD are broadly divided into stimulants (for example methylphenidate and dexamphetamine) and nonstimulants (for example atomoxetine). Controlled trials in adults of medications in both categories generally indicate response rates similar to those seen in children. Methylphenidate or dexamphetamine is usually recommended as first-line treatment when adult ADHD is severe. Methylphenidate has an advantage as it is available in both immediate and sustained-release preparations. The nonstimulant atomoxetine is of greatest use in individuals who are unable to tolerate stimulants or in whom stimulants are contraindicated.

Careful identification of the goals of medication management is important. For example, a young adult engaged in

tertiary studies may benefit from time-limited use of medication, the necessity of which is reviewed at the completion of that particular educational goal. All adults should be questioned frequently about compliance and side effects. Routine monitoring of blood pressure, cardiac risks and biochemical profile is advisable.

Both methylphenidate and dexamphetamine are classified as Schedule 8 drugs and are subject to specific prescribing regulations, which vary from one state or territory to another.[2]

PARTICULAR CHALLENGES

Substance abuse

Although there have been concerns in the past that childhood treatment with stimulants may predispose to substance abuse in later life, studies suggest that this is not the case and that stimulant treatment for ADHD may even decrease the likelihood of comorbid substance abuse compared with no treatment.[18]

Adults with ADHD have a higher prevalence of substance abuse disorders than adults without ADHD. In one study most adults with ADHD reported self-medication for tiredness or impaired mood as the reason for their use of cigarettes, alcohol and other illicit stimulants. Only 22% of patients attributed their use to 'getting high'.[19] The presence of comorbid substance abuse presents significant obstacles to the evaluation and treatment of patients with ADHD, and such patients should be referred to experts in both fields. Conversely, patients with a history of substance abuse who display unusually high levels of inattention, impulsivity or hyperactivity should be referred for evaluation of possible ADHD. However, ideally, ADHD assessment should be postponed until the substance abuse is controlled.[2]

Before patients with ADHD and comorbid substance abuse are prescribed treatment, a full history of substance abuse and previous treatments needs to be taken. Medications with low abuse potential are the recommended pharmacotherapeutic options for such patients (i.e. atomoxetine in Australia).[2]

Elite sport

Use of stimulant medications by elite athletes in competition is not allowed, and strict prohibition rules apply for a defined period before competing. An elite athlete with ADHD may be granted an exemption to use stimulants during non-competition times; however, extensive documentation is required by the relevant authority.[20]

Full documentation of the requirements of drugs in sport and the Therapeutic Use Exemption (TUE) scheme are available on the World Anti-Doping Agency website (www.wada-ama.org).

Driving

ADHD symptoms of inattention and impulsivity contribute to a higher risk of traffic infringements and accidents in adults with ADHD.[21] Optimal symptom control is therefore desirable for drivers. However, ADHD is not a contraindication to driving and licensed drivers are not required to declare ADHD or stimulant treatments as a condition of licensing. Although medical assessment guidelines caution practitioners to warn that high-dose stimulants may impair driving, this is not an issue given the modest stimulant doses used clinically.

Vocational choices

ADHD often has a significant impact on work performance, productivity and household income.[22,23] An individual with ADHD may have problems remaining focused on task, remembering instructions and meeting deadlines. Deficits in planning and organisation can have a major impact, particularly for those who work in unstructured environments. ADHD may be associated with increased

risk of workplace accidents. Some individuals find self-employment and workplaces in which they can be mobile and physically active to their advantage.

Workplace assessments with follow-up advice to the employee and employer may be helpful in reducing the impact of ADHD on work productivity.[2] Some workplaces, especially those of high-risk occupations such as those that may involve the use of fire-arms under pressure, will not engage new employees with ADHD who are receiving or require active treatment.

ADHD AND SELF-HELP

ADHD support groups are a valuable resource for adults with ADHD and their families. They provide understanding, sharing of experience, education and access to resources. Some of the major support groups are listed in the box on page 26. Many internet resources encourage 'self-assessment' for adult ADHD, some using dubious methods. However, reliance should be placed on thorough clinician assessment. Many good internet resources exist, including an Australian site specifically for adults with ADHD (www.add.org.au).

CONCLUSION

ADHD persists into adulthood in a substantial minority of children with ADHD and is associated with significant psychiatric comorbidity. Assessment and management of adult ADHD are the shared domains of both the GP and specialist. Appropriate management of adult ADHD and its associated features leads to considerable improvement in function and productivity for adults with the condition. MT

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