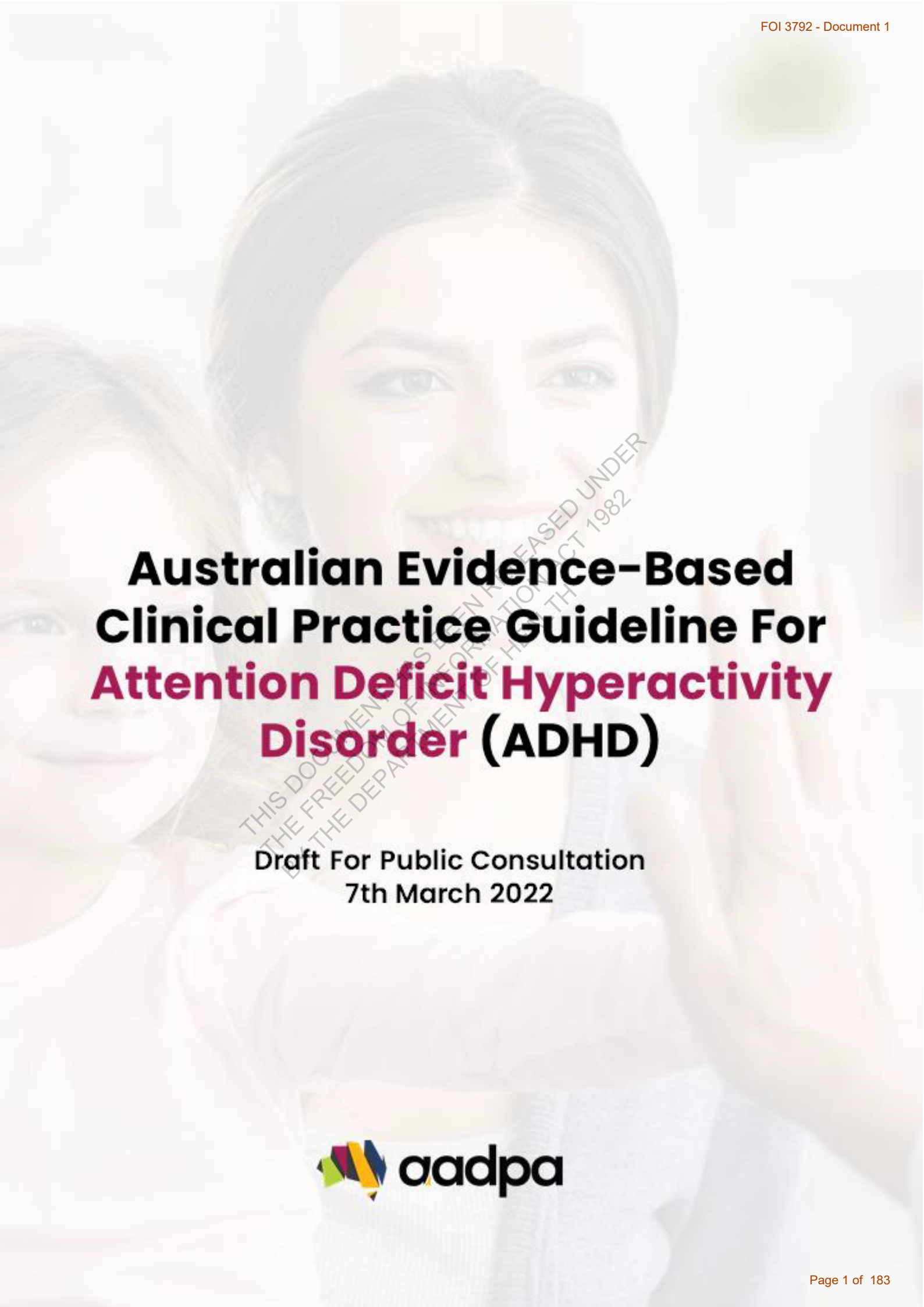

Australian Evidence-Based Clinical Practice Guideline For Attention Deficit Hyperactivity Disorder (ADHD)

Draft For Public Consultation
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aadpa

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Disclaimer: This guideline is a general guide to appropriate practice, to be followed subject to the health care professional's judgement and the person's values, preferences, circumstances and needs. This guideline is designed to provide information to assist decision-making and the recommendations included within are based on the best evidence available at the time of development.

Publication Approval: This guideline is registered on the NHMRC guideline register and will be submitted to the NHMRC for consideration of approval following the public consultation period under section 14A of the NHMRC Act 1992

Contents

Foreword

From the AADPA President

I would like to acknowledge the traditional owners of the lands on which this guideline was developed. I pay my respects to elders' past, present and emerging. I also acknowledge those in Australia living with attention deficit hyperactivity disorder (ADHD). I hope that the language used throughout this guideline respects and honours your lived experience of ADHD.

Professor Mark Bellgrove, President of AADPA

The Australian ADHD Professionals Association (AADPA) was formed in 2016 when a group of professionals came together, motivated by a desire to see a 'better deal' for those Australians living with ADHD. The AADPA membership is interdisciplinary, with members having backgrounds including, but not limited to, psychiatry, paediatrics, psychology, allied health and ADHD coaching, as well as research into the causes and treatments of ADHD.

AADPA was extremely fortunate to obtain funding from the Australian Government's Department of Health (Grant Agreement ID: 4-A168GGT) in 2018 to deliver the Support for People Impacted by ADHD Program. A key piece of early work conducted by AADPA under this grant was the commissioning of Deloitte Access Economics to conduct a full evaluation of the social and economic costs of ADHD in Australia.

This evaluation estimated that over 800 000 people in Australia live with ADHD and that ADHD costs $20.42 billion per year, or $25,071 per individual with ADHD per annum. A further key objective of this grant – and indeed a key motivation for the establishment of AADPA – was the formulation of an Australian clinical practice guideline for ADHD. Accordingly, on 14 August 2019, AADPA registered its intent with Australia's National Health and Medical Research Council (NHMRC) to develop a clinical practice guideline (NHMRC Guideline ID: 273) for ADHD.

Since that time AADPA has engaged widely with the Australian professional and consumer communities to ensure the formulation of a guideline that is evidence-based, acknowledges that caring for individuals with ADHD requires an interdisciplinary approach, and that respects the voices of those with a lived experience of ADHD.

This ADHD clinical practice guideline could not have come to fruition without the hard work and dedication of a large team. I am indebted to our Chairs, Professor Katrina Williams and Dr Edward Petch, for their selfless and steadfast dedication to this process. Dr Marie Misso, our methodologist, has meticulously conducted the required evidence reviews and guided our team through the process of formulating this guideline. Dr Tamara May has provided invaluable project support, including an immense contribution to the preparation of this document. Ms Robyn Scarfe has, as always, has provided wonderful secretariat support from AADPA. Huge thanks also go the members of the Guideline Development Group (GDG) (listed below)

who have given large amounts of their time to ensure that the recommendations made within this guideline are evidence-based and appropriate for the Australian context.

This process has been made all the more difficult due to the constraints placed on us by the COVID-19 pandemic, which has meant that nearly all meetings have been conducted virtually. Thanks to all for their forbearance under these difficult circumstances. I would like to take this opportunity to also thank the AADPA Board and the broader AADPA membership who have waited patiently for the delivery of this guideline; I sincerely hope that it has been worth the wait.

Finally, to the many people living with ADHD in Australia, it is my ardent hope that this guideline will ultimately lead to better care, reduced stigma and improved quality of life.

Prof Mark Bellgrove, PhD, FASSA
President, Australian ADHD Professionals Association (AADPA)
Professor in Cognitive Neuroscience,
Turner Institute for Brain and Mental Health, School of Psychological Sciences
Monash University.

From the Chairs

We acknowledge the traditional owners of the lands for which this guideline is developed, and pay our respects to all elders, past, present and emerging. We also acknowledge the need to live in an undivided Australia, where all people are equal and have access to all they need to thrive.

ADHD Guideline Chairs Professor Katrina Williams and Dr Edward Petch

We hope the language we have used throughout does not offend. Our identification of any specific groups within Australia is only intended to ensure there is awareness of a need for special considerations in care, which we hope will be to the advantage of individuals.

The Australian guideline for the assessment and treatment of people with ADHD and their families is the first produced by the Australian ADHD Professionals Association (AADPA). The Guideline provides people with ADHD, their families and carers, health practitioners, educators, policy makers, researchers and communities with a number of recommendations, specifically tailored to the Australian context. The Guideline was developed in accordance with NHMRC standards for clinical practice guidelines.

The Guideline Development Group (GDG) comprised a broad range of people with experience of ADHD, including those with ADHD, family members, community members, professional groups, Aboriginal and Torres Strait Islander peoples, and health professionals. All GDG members had no identified or undeclared conflicts of interest.

Development of this guideline was funded by AADPA using grant funds from the Australian Department of Health. As well as being a GDG member, Professor Mark Bellgrove, President of AADPA, led meeting organisation and coordination of the methodology, administration and report development. Funding was used to employ Dr Marie Misso as lead guideline methodologist, Ms Robyn Scarfe to assist with secretariat support, Dr Nicole Stefanac to assist with document editing, Ms Kim Fuller to develop the online consultation process and assist with document preparation, and Dr Tamara May, also a GDG member, to provide meeting coordination and report writing and management.

The guidance on how to respond to the needs and preferences of people living with ADHD is based on high-quality scientific evidence, which was systematically reviewed. Where insufficient evidence was available, recommendations reflect the majority views of the GDG. The GDG developed the recommendations independently through a structured consensus process, with no involvement of influence of the funding body and other stakeholder interests.

We are indebted to the funders of this guideline, to the NHMRC for providing a rigorous guideline development framework, to those organisations who have provided representatives or endorsement, to AADPA and its president, and to all the supporting staff, in particular to Drs Tamara May and Marie Misso, who worked unsociable hours to ensure evidence and guideline readiness at each stage. We also gratefully

acknowledge the extensive input from members of the GDG who donated their time, and to all those who provided feedback, support and advice.

That this guideline has been developed during the course of the COVID-19 pandemic, with the attendant difficulties in scheduling and meeting with people from all Australian states and territories, is a testament to the dedication and commitment of the GDG members.

It is our hope that this guideline will be of value to all those living with ADHD.

Dr Edward Petch & Prof Katrina Williams

Executive Summary

Attention deficit hyperactivity disorder (ADHD) is a neurodevelopmental disorder (that most occurs while a person's brain is developing during childhood), with an onset typically before 12 years of age. Symptoms include difficulties with attention and/or hyperactivity and impulsivity which are incongruent with developmental stage and interfere with activities and participation in a person's life including their family or community.

ADHD is the most common neurodevelopmental disorder in children and adolescents. However, ADHD can be diagnosed for the first time in a person of any age. The precise causes are not known, but there are multiple factors that make a person more likely to develop ADHD. ADHD runs in families.

Some groups of people are more likely to receive a diagnosis of ADHD, such as people with a close relative who has ADHD, people with other mental health disorders, and people with other neurodevelopmental disorders. Clinicians should be alert to the possibility of ADHD when providing care for people with risk factors for ADHD. However, routine screening for ADHD in preschools and schools is not recommended. A thorough and careful assessment by an appropriately trained clinician is needed to make a diagnosis of ADHD. A person with ADHD could also have one or more other mental health disorders or medical problems that make diagnosis and treatment more complex.

When a clinician makes the diagnosis of ADHD, they should provide the person (or their parents/carers) with information and support. Clinicians should explain all the treatment options available and information about how they can treat their ADHD and minimise symptoms interfering with the enjoyment of their lives. Services for Aboriginal and Torres Strait Islander people should be culturally safe. Where services are not provided by Aboriginal or Torres Strait Islander providers, non-Indigenous professionals who provide services for Aboriginal and Torres Strait Islander people with ADHD should ensure that all care is based on the principles set out in the *Working Together* report (Dudgeon, Milroy, & Walker, 2014).

As a child with ADHD grows up, their clinicians should plan for a smooth move from health services for children to health services for adolescents, and later for adult health services. It is best if one person takes responsibility for coordinating between the old service and the new service, and collaborates with the person, their family, and all those involved in their care.

Non-medication treatments for people with ADHD and their families

Parent/family training about ADHD should be offered to parents/carers of children with ADHD. Parent/family training can be given to individual families or training programs provided in groups. Families may need more intensive training and support if their child with ADHD also has other co-occurring mental health disorders. Cognitive behavioural therapy should be offered to adolescents and adults with ADHD and may also be helpful for children. Making changes in a person's school, university or workplace can help them function better. This can include physical changes or educating other people on how to helpfully interact with the person.

Medication for people with ADHD

Before prescribing medicines to help people treat their ADHD, clinicians should make a careful assessment of the person's general health and should explain all the treatment options including benefits and possible side effects. Clinicians and people with ADHD (or their parents) should make treatment decisions together, after talking over all the issues to discover which treatment will be best for the person.

For children aged 6 years and over, adolescents and adults starting treatment for ADHD, the first medicine should usually be methylphenidate or dexamfetamine, unless the person is unable to take these medicines due to other health problems.

Longer-lasting medicines (modified-release methylphenidate or lisdexamfetamine) can be helpful, including when a person has done well on their first medicine, and it would be convenient to take it fewer times each day.

If a person has tried one of the usual starting medications but their symptoms have not improved enough after more than 6 weeks, the other option should be tried. If neither methylphenidate or dexamfetamine is effective for an individual, or they are unable use these medicines for other reasons, other medicines (e.g. atomoxetine, guanfacine or clonidine) can be tried, either instead of the first medicine or in combination. For adults, other medicines are sometimes helpful.

Ongoing care for people using ADHD medicines

After someone has started ADHD treatment, their clinician should carefully monitor whether the medicine is effective, whether there are any unwanted effects, and the person's general health including heart rate and blood pressure.

Older children and adolescents should be encouraged over time to take responsibility for taking their medicines. Parents and carers should oversee ADHD medication for children and young people. Children's and young people's height and weight should be measured regularly while they are taking ADHD medication. Sometimes it is helpful to adjust the timing of medicines and meals or snacks, or planning a break in treatment to help a child's growth to catch up.

Sometimes, a person with ADHD and their clinician will decide together that they will stop the medication for a short time. This needs careful planning. For some medicines, the dose must be carefully decreased over time to avoid withdrawal symptoms.

What decision-makers and researchers can do to help people with ADHD

Funding should be made available to support and further build services for people with ADHD and deliver an ADHD helpline accessible to all Australians. Laws and regulations for prescribing ADHD stimulant medicines and for shared care should be uniform between the states and territories in Australia. Much more ADHD research is needed, so that we can better understand many aspects of ADHD and improve the quality of life for people living with ADHD.

Summary of Recommendations

Recommendations are classified as evidence-based recommendations (EBRs), clinical consensus recommendations (CCRs) or clinical practice points (CCPs) (Table 1).

The grade of each recommendation (Table 2) indicates its strength and its direction as for or against an option (e.g. an action or management strategy). See Methods for a detailed description of recommendation development processes.

Table 1. Recommendation types

EBR	Evidence-based recommendation: a structured evidence review was performed to answer a prioritised question to inform the recommendation.
CCR	Clinical consensus recommendation: recommendation was developed in either of the following ways: • Evidence to answer a prioritised question was sought, but there was insufficient evidence to inform an EBR, therefore a narrative review was prepared by an expert subgroup of the guideline development group • For questions of lower priority, or where high-quality evidence is known to be limited or non-existent, evidence was not sought and an expert subgroup within the guideline development group prepared a narrative review.
CPP	Clinical practice point: guidance based on important issues arising from discussion of evidence-based or clinical consensus recommendations, outside the scope of the evidence-finding process.

Table 2. Strength (grade) of recommendations

****	Strong recommendation for the option
***	Conditional recommendation for the option
**	Conditional recommendation for either the option or the comparison
*	Conditional recommendation against the option

No	Type	Recommendation	Strength	Certainty
1	**Identification**			
1.1	**High risk groups**			
1.1.1	EBR CCR#	Clinicians should be aware that the following groups of people, including children, adolescents and adults, have an increased prevalence of ADHD, compared with the general population: **Children:** • in out of home care • diagnosed with mood disorders#	****	⊕⊕◯◯ LOW to ⊕⊕⊕⊕ HIGH

		• diagnosed with oppositional defiant disorder and conduct disorder# **Children and adolescents:** • diagnosed with anxiety disorders • with epilepsy • with a history of substance abuse# **Adults:** • with a history of substance abuse • with a mental health disorder (including borderline personality disorder, intermittent explosive disorder, internet addiction, psychotic disorders) • who experience suicidal ideation **People of all ages:** • with neurodevelopmental disorders including autism spectrum disorder, intellectual disability, tic disorders , language disorders# and specific learning disorders# • born preterm • with a close family member diagnosed with ADHD# • born with prenatal exposure to substances including alcohol and other drugs# • with acquired brain injury# • who are imprisoned# • with low birth weight#		
1.1.2	CPP	Clinicians should be aware that ADHD could be under-recognised in girls and women and that they: • are less likely to be referred for assessment for ADHD • may be more likely to have undiagnosed ADHD • may be more likely to receive an incorrect diagnosis of another mental health or neurodevelopmental disorder	NA	NA
1.2	**Screening and identification**			
1.2.1	CCR	Universal screening for ADHD should not occur at the population level (e.g. in preschools, primary and secondary schools).	NA	NA
1.2.2	CCR	Clinicians conducting diagnostic assessments with people from high-risk groups (as identified in high-risk groups recommendations) could screen for ADHD. Individuals who screen positive should undergo further assessment for ADHD.	NA	NA

1.2.3	CPP	Organisations that provide services to people from high-risk groups could consider systematic screening for ADHD. Screening could involve use of a screening questionnaire, asking questions during clinical interviews or performing observations. Individuals who screen positive should undergo further assessment for ADHD.	NA	NA
2	**Diagnosis and assessment**			
2.1	**Diagnosis**			
2.1.1	CCR	Assessment for diagnosis of ADHD should include all of the following: • a full clinical and psychosocial assessment of the person, including discussion about symptoms in the different domains and settings of the person's everyday life • a full developmental, mental health and medical history, and • observer reports and assessment of the person's symptoms and mental state • a medical assessment to exclude other causes of the symptoms, or associated disorders that also require investigation, intervention and support.	NA	NA
2.1.2	CCR	In an assessment for a diagnosis of ADHD, a clinician should: • assess symptoms and signs of hyperactivity/impulsivity and/or inattention and ensure all the following apply: o symptoms meet the diagnostic criteria in DSM-5, ICD-10 (hyperkinetic disorder) or ICD-11 and o symptoms cause at least moderate psychological, social and/or educational or occupational impairment based on interview, questionnaire and/or direct observation in multiple settings (including school for those in educational settings), and o symptoms are pervasive, occurring in two or more important settings including social, familial, educational and/or occupational settings. • exclude neurodevelopmental or mental health alternative diagnoses, drug, dietary or physical disorders causing symptoms consistent with ADHD • include an assessment of the person's needs, functional or participation impairments and quality of life. • include an assessment of co-occurring disorders, social, familial and educational or occupational circumstances and physical health. • for children and young people, assess their parents' or carers' mental health.	NA	NA

2.1.3	CCR	A diagnosis of ADHD should not be made solely based on rating scale or observational data. However, rating scales are valuable adjuncts and should be incorporated.	NA	NA
2.1.4	CCR	Observations from more than one setting and reporter (e.g. a teacher at school for children) should be used to confirm if symptoms, function and participation difficulties occur in more than one setting.	NA	NA
2.1.5	CCR	ADHD should be considered as a possible diagnosis in all age groups, including adults over age 65 years. Symptom criteria should be considered based on age and developmental level.	NA	NA
2.1.6	CPP	Clinicians should consider the different presentations of ADHD and the fact that many children and adults may not present with the most obvious symptoms of hyperactivity/impulsivity. Clinicians should be aware the inattentive presentation may not be identified until secondary school, following increased demands for organisation and independent study.	NA	NA
2.1.7	CPP	The views of people with ADHD, including children and young people, should be considered when determining the importance of their impairments and limitations.	NA	NA
2.2	**Co-occurring disorders and differential diagnosis**			
2.2.1	CCR	As ADHD commonly co-occurs with othe disorders (see recommendations 1.1.1, 1.1.2), when a diagnosis of ADHD is made the presence of other disorders should be considered, including: • mental health disorders including anxiety and mood disorders and oppositional defiant disorder • other neurodevelopmental disorders (autism spectrum disorder, language disorders, specific learning disorders, , intellectual disability, tic disorders) • epilepsy • acquired brain Injury • fetal alcohol spectrum disorder (FASD) • (in adolescents and adults) mental health disorders including substance use disorders, bipolar disorders, borderline personality disorder, obsessive compulsive disorder.	NA	NA

2.2.2	CCR	• Clinicians should conduct a comprehensive assessment (including history and examination) to identify: • factors that could present similarly to, or exacerbate, ADHD symptoms, including: • sleep disorders • hearing or vision Impairment • thyroid disease • anaemia • medications that may have psychomotor side effects such as: ○ cognitive dulling (e.g. mood stabilisers) ○ psychomotor activation (e.g. decongestants, asthma medication, non-prescribed stimulants like caffeine).	NA	NA
2.2.3	CPP	Treatment and support for identified co-occurring disorders should be offered.	NA	NA
2.3	**Information needs following diagnosis**			
2.3.1	CCR	During the diagnostic process and on-going treatment and support, clinicians should provide the person or their carers with education and information on the causes and potential consequences of ADHD and evidence-based treatments, in a way that instils hope and motivation. Both positive and negative impacts could be discussed, as appropriate, including information about: • understanding of the symptoms of ADHD • identifying and building on individual strengths • common difficulties beyond core ADHD symptoms, such as regulating emotions and switching attention when required, accurately perceiving time, and initiating tasks that are not engaging (even when the importance of a task is understood) • severity of ADHD symptoms and associated impairments that may vary depending on many factors such as stress, or personal interest • treatment and support of ADHD when a person has a co-occurring mental health or neurodevelopmental disorder • secondary impacts of ADHD such as learning difficulties, anxiety, sleep disorders, oppositional symptoms, depression, and reduced self-esteem • environmental modifications that can be made to help to the individual function more effectively • educational and occupational issues and rights to reasonable adjustments at school, university and in the workplace. • possible negative impacts of receiving a diagnosis including stigma and labelling • possible increased risk of self-medicating,	NA	NA

		• increased risks of substance misuse • impacts on driving when ADHD is not treated • possible impacts on relationships.		
2.3.2	CCR	Clinicians should inform people receiving a diagnosis of ADHD (and their families or carers as appropriate) about: • local and national support groups and voluntary organisations (also known as consumer groups) • reputable websites • support for education and employment • eligibility for disability support • eligibility for government benefits and allowances, including carers allowance provisions People who have had an assessment but whose symptoms and impairment fall short of a diagnosis of ADHD may benefit from similar information.	NA	NA
2.3.3	CPP	Clinicians should provide information to people with ADHD (and their families and carers, as appropriate) in a form that is tailored to: • their developmental and reading level, cognitive style, emotional maturity and cognitive capacity, considering any learning disabilities, sight or hearing problems, delays in language development or social communication difficulties • any co-occurring neurodevelopmental and mental health disorders • their individual needs and circumstances, including age, gender, culture, educational level and life stage.	NA	NA
2.3.4	CPP	**Information provided by clinicians should be:** • plainly worded, clearly presented and free of jargon • culturally appropriate and available in the person's first language. **Clinicians should:** • be aware that smaller, more manageable chunks of information are easier to remember, and that visual aids or pictures can be useful • encourage questions • ensure that information is consistent and up to date • be aware that information will need to change over time as circumstances change • provide a written copy of any information provided verbally.	NA	NA

2.3.5	CPP	Clinicians should encourage parents/carers/siblings/partners to monitor their own wellbeing and develop a support network, and seek guidance and support if facing challenges.	NA	NA
2.3.6	CPP	Clinicians should explain to parents and carers that a recommendation of parent/family training is to optimise parenting skills to meet the additional parenting needs of children and young people with ADHD, and does not imply bad parenting.	NA	NA
2.3.7	CPP	Clinicians and educators supporting a person with ADHD should discuss whether the person would like to share information about their ADHD and care with other professionals or service providers (e.g. educators, employees, or sporting groups), where such information sharing will better enable them to support the person with education, employment, community activities or other roles. Consent to share information may be relevant at the time of the ADHD diagnosis, when symptoms change, or when there is transition between settings (e.g. between schools or from primary school to secondary school or to tertiary studies). **Information to provide could include:** • the symptoms of ADHD and how symptoms are likely to affect the person in the relevant setting • the presence of other co occurring disorders (e.g. learning disabilities) that require adjustments in the setting • the treatment plan • identified special needs, including advice for reasonable adjustments and environmental modifications within the setting • the value of open channels of communication between education/workplace/community settings and clinicians.	NA	NA
2.3.8	CPP	When a person with ADHD has a co-occurring disorder, their clinician should offer to contact the relevant other involved clinicians, with consent, to explain: • the validity, scope and implications of a diagnosis of ADHD • how ADHD symptoms are likely to affect the person's daily life (e.g. organisation, time management, motivation) and adherence to specific treatments • the treatment plan and the value of open channels of communication between clinicians.	NA	NA

3	**Treatment and support**			
3.1	**Multimodal treatment and support**			
3.1.1	CPP	Clinicians should offer a multimodal treatment and support approach. This should address the person's preferences, unique needs and individual goals, and take into consideration their personal strengths and the impact of any co-occurring disorders. Components of multimodal treatment should include lifestyle changes, non-pharmacological interventions and pharmacological interventions (Recommendations sections 4 and 5). Clinicians could offer treatments in sequence or together, depending on the preferences, needs and goals of the person.	NA	NA
3.1.2	CPP	When there are multiple clinicians and/or educators involved, clinicians should suggest that a care coordinator is involved. People with ADHD or a family member may choose to take on this role. If not, people with ADHD should be supported to arrange an appropriate care coordinator, which could be a clinician from their support team.	NA	NA
3.2	**Transition between services**			
3.2.1	CCR	People who require ongoing care should receive support to transition between services, including transitions between different services and between tiers of the health system (e.g. from paediatric services to adolescent services, or between youth and young adult services to general adult services). Clinicians should identify such people early to allow appropriate planning to occur in advance.	NA	NA
3.2.2	CCR	Transition of care between services for each person should be coordinated. This is best achieved through the identification of an appropriately trained transition lead within the team.	NA	NA
3.2.3	CCR	Transitions should take place with appropriate collaboration between the person with ADHD, their family/carers, and other stakeholders, should be holistic and include education and support.	NA	NA
4	**Non-pharmacological interventions**			
4.1	**Lifestyle and environmental modifications**			
4.1.1	CPP	Clinicians should offer guidance on lifestyle factors to help people with ADHD: • ensure sleep sufficiency and regular physical activity • develop and maintain a healthy diet • ensure use of technology devices (such as smart phones, computers, tablets) is structured and controlled to balance benefits and potential harms.	NA	NA

4.1.2	CPP	Clinicians should offer to help the person with ADHD make environmental modifications to minimise the impact of ADHD symptoms on their day-to-day life. These modifications may include: • adapting expected tasks and routines • adapting physical spaces • arranging for important others to adjust their communication and actions when interacting with the person with ADHD.	NA	NA
4.1.3	CPP	Clinicians should offer to help the person with ADHD make any necessary changes to improve support, relationship quality and minimise adverse interactions.	NA	NA
4.2	**Young children (under 5 years of age)**			
4.2.1	EBR	Parent/family training should be offered to parents/families of young children with ADHD.	****	⊕⊕◯◯ LOW
4.2.2	CCR	Parent/family training should be delivered in individual and/or group format, depending on the availability of services and parent/family preference.	NA	NA

4.2.3	CPP	Parent/family training should be tailored to their child's diagnosis of ADHD and include strategies to:
		• make environmental modifications to promote a positive, predictable and structured environment for preschoolers
		• advocate for their child in health and education settings
		• help minimise the impact of symptoms and implement strategies to improve:
		  ○ attentional and emotional regulation difficulties
		  ○ daily routines and transitions
		  ○ family relationships
		  ○ peer relationships
		  ○ parents' own self-care and resilience.
			NA	NA

4.3	**Children and adolescents (aged 5 to 17 years)**			
	Parent/Family training			
4.3.1	EBR	Parent/family training should be offered to parents/families of children with ADHD.	***	⊕⊕◯◯ LOW
4.3.2	EBR	More intensive parent/family training programs should be offered for parents/families of children with ADHD who have co-occurring oppositional defiant disorder or conduct disorder.	****	⊕⊕⊕◯ Moderate
4.3.3	CCR	Parent/family training could be delivered in an individual or group format depending on the availability of services and parent/family preference.	NA	NA

4.3.4	CPP	Parent/family training should be tailored to their child's diagnosis of ADHD and include strategies to: • make environmental modifications to promote a positive, predictable and structured environment • advocate for their child in health and education settings • help minimise the impact of symptoms and implement strategies to improve: ○ attentional and emotional regulation difficulties ○ daily routines and transitions ○ family relationships ○ peer relationships ○ self-esteem and self-concept development ○ parents' own self-care and resilience.	NA	NA
	Cognitive behaviour therapy			
4.3.5	EBR	Cognitive behaviour therapy could be offered to children with ADHD.	***	⊕⊕◯◯ LOW
4.3.6	EBR	Cognitive behaviour therapy should be offered to adolescents with ADHD.	***	⊕⊕◯◯ LOW
4.3.7	CPP	Cognitive behaviour therapy could be delivered in individual or group format, depending on the availability of services and young person/family preference. Group sessions could provide additional benefits with the opportunity for social support. Individual sessions could be required to address individual needs comprehensively.	NA	NA
4.3.8	CPP	Cognitive behaviour therapy should be specific to the needs of the young person with ADHD. A focus on individual strengths, values and interests should occur in balance with any focus on challenges. Treatment needs commonly include: • psychoeducation *(see section 2.3)* • grief processing and adjustment • understanding the individual's own ADHD symptom profile and impacts, including personal strengths • compensatory strategies and environment modifications to minimise difficulties related to ADHD symptoms, including emotion dysregulation • fostering positive interpersonal skills and relationships • communication, problem-solving and self-advocacy skills • stress management and coping skills • improvement in self-concept, including self-efficacy and self-esteem.	NA	NA
	Other non-pharmacological treatments			

4.3.9	EBR	Attention/memory/cognitive training could be offered to children and young people with ADHD.	**	⊕◯◯◯ VERY LOW
4.3.10	CCR	ADHD coaches could be considered as part of a treatment plan for adolescents with ADHD.	NA	NA
4.4	**Adults (aged 18 years and above)**			
	Cognitive behaviour therapy			
4.4.1	EBR	Cognitive behaviour therapy should be offered to adults with ADHD.	****	⊕⊕◯◯ LOW
4.4.2	CCR	Cognitive behaviour therapy could be delivered in an individual or group format, depending on the availability of services and person's preference. Group sessions may be particularly beneficial due to the opportunity for social support. Individual sessions may be required to address individual needs comprehensively.	NA	NA
4.4.3	CPP	Cognitive behaviour therapy should be specific to the needs of the adult with ADHD. A focus on individual strengths, values and interests should occur in balance with any focus on challenges. Treatment needs commonly include: • psychoeducation *(see section 2.3)* • grief processing and adjustment • understanding the individual's own ADHD symptom profile and impacts, including personal strengths • compensatory strategies and environment modifications to minimise difficulties related to ADHD symptoms, including emotion dysregulation • fostering positive interpersonal skills and relationships • communication, problem-solving and self-advocacy skills • stress management and coping skills • improvement in self-concept, including self-efficacy and self-esteem.	NA	NA
	Other non-pharmacological treatments			
4.4.4	EBR	Attention/memory/cognitive training could be offered to adults with ADHD.	**	⊕◯◯◯ VERY LOW
4.4.5	CCR	ADHD coaches could be considered as part of a treatment plan for adults with ADHD.	NA	NA
4.4	**Adherence to non-pharmacological treatments**			
4.4.1	CPP	Clinicians should support adherence to non-pharmacological treatments by discussing the following with the person with ADHD and/or their parents/caregivers or family:	NA	NA

		• the balance of risks and benefits (e.g. how the treatment can have a positive effect on ADHD symptoms, the time and costs of treatments)
		• the potential barriers to continuing treatment, including:
		  ○ not being sure if it is making a difference
		  ○ the time and organisational skills needed to commit to the treatment
		  ○ the time that might be needed outside of the sessions
		• the fact that treatment could result in increased self-awareness, and the potential impact this may have on the person with ADHD
		• the potential need for long-term adherence beyond the duration of any initial program (e.g. by attending follow-up/refresher support to sustain learned strategies).
		Clinicians should provide strategies to overcome any barriers to adherence, e.g.:
		• scheduling sessions to minimise inconvenience or seeking courses with childcare provision
		• following recommendations for monitoring progress, such as using standard symptom rating scales.		

5	**Pharmacological interventions**			
5.1	**Starting and managing pharmacological treatment**			
5.1.1	CPP	Clinicians initiating medication for ADHD should: • ensure they are familiar with the pharmacokinetic profiles of all the short- and long acting preparations available for ADHD • ensure that treatment is tailored effectively to the individual needs of the child, young person or adult • take account of variations in bioavailability or pharmacokinetic profiles of different preparations to avoid reduced effect or excessive adverse effects.	NA	NA

5.1.2	CPP	Before starting medication for ADHD, a comprehensive assessment should include:
		• confirmation that ADHD diagnostic criteria are met (see recommendations 2.1.1, 2.1.2)
		• evaluation of current educational or employment circumstances
		• risk assessment for substance misuse and drug diversion
		• assessment of physical health, including:
		  ○ a medical history, considering disorders that may be contraindications for specific medicines
		  ○ current medication
		  ○ height and weight (measured and recorded against the normal range for age, height, and sex)
		  ○ a cardiovascular assessment, including baseline pulse and blood pressure (measured with an appropriately sized cuff and compared with the normal range for age).
		Note: An electrocardiogram (ECG) is not needed before starting stimulants, atomoxetine or guanfacine, unless the person has any of the features in recommendation 5.1.3, or a co-occurring disorder that is being treated with a medicine that may pose an increased cardiac risk.
			NA	NA

5.1.3	CCR	People with ADHD should be referred for a cardiology opinion if any of the following is present: • a history of congenital heart disease or previous cardiac surgery • a 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 • palpitations that are rapid, regular and start and stop suddenly • chest pain suggesting cardiac origin • signs of heart failure • a murmur heard on cardiac examination • hypertension.	NA	NA
5.1.4	CCR	People should be referred to an appropriate physician if blood pressure is consistently above age-based normal values, or for children and young people above the 95th centile for age and height.	NA	NA
5.1.5	CPP	Before titration, baseline ADHD symptoms and functional impairments should be recorded. During titration, adverse effects should be monitored and recorded at each dose change. A treating clinician should review progress regularly during the dose-titration period.	NA	NA

5.1.6	CPP	The dose should be titrated against symptoms, functional impairments and adverse effects until the optimal dose has been identified (i.e. the dose at which symptoms are reduced and functional outcomes are improved, with minimal adverse effects).	NA	NA
5.1.7	CCR	Dose titration should be slower and monitoring more frequent if any of the following are present: • other neurodevelopmental disorders (e.g. autism spectrum disorder, tic disorders, intellectual disability), • other mental health disorders such as anxiety disorders, schizophrenia or bipolar disorder, depression, personality disorder, eating disorder, post-traumatic stress disorder, substance misuse and • physical health disorders (e.g. cardiac disease, epilepsy or acquired brain injury).	NA	NA
5.2	**Medication choice – young children aged under 6 years**			
5.2.1	CPP	For children under 6 years: If ADHD symptoms cause significant impairment in more than one setting, a specialist with expertise in child development and managing ADHD in young children (either a paediatrician or a child psychiatrist) should assess the child to identify suitable treatment options. Medication should not be given to young children without an opinion from a specialist with expertise in child development and managing ADHD in young children (either a paediatrician or a child psychiatrist). The younger the child, the more caution should be exercised.[1] [1] No medicine is approved by the Therapeutic Goods Administration for the treatment of ADHD in children aged younger than 6 years. Therefore, the use of medicines is off-label in children aged under 6 years.	NA	NA
5.3	**Medication choice – children and young people (aged 6 to 17 years)**			
5.3.1	EBR	Immediate-release methylphenidate or dexamfetamine (short acting) should be offered as the first-line pharmacological treatment for children and young people with ADHD, where ADHD symptoms are causing significant impairment*. If one is not effective, the other should be trialled. *An alternative first-line agent may be indicated where medical contraindications apply (e.g. a medication containing gluten in a person with coeliac disease).	****	⊕⊕◯ ◯ LOW

5.3.2	EBR	Lisdexamfetamine or modified-release methylphenidate could be offered to children and young people when both the following conditions are met: • The person has achieved a clinically significant reduction in ADHD symptoms after a trial of at least 6 weeks of methylphenidate and/or dexamfetamine at an adequate dose. • A longer-acting agent may be more convenient for the person (see recommendation 5.5.6).	****	⊕⊕◯ ◯ LOW
5.3.3	EBR	Atomoxetine or guanfacine or clonidine should be offered to children and young people if any of the following apply: • the person cannot tolerate methylphenidate or dexamfetamine • symptoms have not responded to separate 6-week trials of dexamfetamine and methylphenidate • the clinician considers that the medicine may be beneficial as an adjunct to the current regimen. Due consideration of risks and safety considerations, especially if medications are used in combination, are required.	****	⊕⊕◯ ◯ LOW
5.4	**Medication choice – adults (aged 18 years and above)**			
5.4.1	EBR	Immediate-release methylphenidate or dexamfetamine (short acting) should be offered as the first line pharmacological treatment for adults with ADHD*. If one is not effective the other type should be trialled. *An alternative first-line agent may be indicated where medical contraindications apply (e.g. a medication containing gluten in a person with coeliac disease).	****	⊕⊕⊕◯ MODERATE
5.4.2	EBR	Lisdexamfetamine or modified-release methylphenidate could be offered to adults when both the following conditions are met: • The person has achieved a clinically significant reduction in ADHD symptoms after a trial of at least 6 weeks of methylphenidate and/or dexamfetamine at an adequate dose. • A longer-acting agent may be more convenient for the person (see recommendation 5.5.6).	****	⊕⊕⊕◯ MODERATE
5.4.3	EBR	Atomoxetine or guanfacine should be offered to adults with ADHD if: • they cannot tolerate methylphenidate or dexamfetamine or • their symptoms have not responded to separate 6-week trials of dexamfetamine and / or methylphenidate or • as an adjunct Due consideration of risks and safety considerations, especially if medications are used in combination, are required.	****	⊕◯◯ ◯ VERY LOW

5.4.4	CPP	Clinicians should apply the same recommendations and principles of prescribing for adults aged over 65 years as for adults below 65 years, with careful monitoring of side effects.	NA	NA
5.5	**Further medication choices**			
5.5.1	CPP	A second opinion or peer review should be obtained if ADHD symptoms are unresponsive to stimulants and one non-stimulant.	NA	NA
5.5.2	EBR	The following could be offered to adults with ADHD, in no particular order: • bupropion • clonidine • modafinil • reboxetine • venlafaxine. Careful monitoring of adverse side effects is required.	***	⊕◯◯◯ VERY LOW
5.6	**Factors influencing medication choices**			
5.6.1	CPP	For people with ADHD who also have co-occurring disorders(e.g. anxiety disorders, mood disorders, tic disorder or autism spectrum disorder), clinicians should offer the medication choices listed in recommendations 5.1–5.5.	NA	NA
5.6.2	CPP	If a person with ADHD experiences an acute psychotic or manic episode during treatment with stimulant medication, the clinician should do all the following: • stop stimulants and review other medication for ADHD • treat the psychotic or manic episode as necessary • consider alternate treatment for ADHD after the episode has resolved.	NA	NA
5.6.3	CPP	Clinicians should consider the impact of appetite suppression from stimulant treatment when people have a co-occurring eating disorder or other medical disorders contributing to weight loss.	NA	NA
5.6.4	CPP	Clinicians should exercise caution when prescribing stimulants if there is a risk of diversion for cognitive enhancement.	NA	NA
5.6.5	CPP	Clinicians should not offer immediate-release stimulants or modified-release stimulants that can be easily injected or inhaled if there is a risk of stimulant misuse or diversion.	NA	NA

5.6.6	CPP	Modified-release once-daily preparations can be offered for any of the following reasons: • convenience • improving adherence • reducing stigma by removing the need to take medication at school or in the workplace • reducing problems of storing and administering controlled drugs at school or work • if there is a risk of stimulant misuse and diversion with immediate-release preparations • if their pharmacokinetic profile offers an advantage for symptom improvement.	NA	NA
5.6.7	CCR	Immediate- and modified-release preparations of stimulants could be offered together to optimise effect (e.g. a modified-release preparation of methylphenidate in the morning and an immediate-release preparation of methylphenidate at another time of the day to extend the duration of effect).	NA	NA
5.7	**Monitoring medication**			
5.7.1	CPP	Clinicians should arrange regular and frequent follow-up until medication is stabilised. Once medication is stabilised, clinicians should proactively arrange individualised monitoring based on a chronic disease management model. The optimal frequency of follow-up depends on individual factors such as co-occurring disorders, medical complications, compliance, response to treatment social supports and lifestyle factors. Monitoring may be conducted by a range of different clinicians, depending on these factors.	NA	NA
5.7.2	CPP	People taking medication for ADHD should be encouraged to monitor and record their adverse effects.	NA	NA
5.7.3	CPP	Standard symptom and adverse effect rating scales should be used for clinical assessment and throughout the course of treatment.	NA	NA
5.7.4	CPP	People receiving treatment for ADHD should have regular review and follow-up according to the severity of their disorder, regardless of whether or not they are taking medication.	NA	NA

5.7.5	CPP	When monitoring medication use, effects on all the following areas should be considered: • height and weight • cardiovascular function • tics • sexual function • seizures • sleep quality • worsening symptoms • the risk of stimulant diversion.		
5.7.6	CCR	For people taking medication for ADHD: • measure height every 6 months in children and young people • measure weight at 3 and 6 months after starting treatment in children at any age, and 6 months thereafter, or more often if concerns arise • plot height and weight of children and adolescents on a growth chart • measure weight every 6 months in adults. If weight loss/insufficient weight gain in children is a clinical concern, consider the following strategies: • taking medication either with or after food, rather than before meals • taking additional meals or snacks early in the morning or late in the evening when stimulant effects have worn off • obtaining dietary advice • consuming high-calorie foods of good nutritional value • taking a planned break from treatment • changing or stopping medication. If a child or young person's height over time is significantly affected by medication (that is, their rate of growth has decreased), consider a planned break in treatment over school holidays to allow 'catch-up' growth, or an alternate medication. Also consider non-medication causes.	NA	NA
5.7.8	CCR	Monitor heart rate and blood pressure and compare with the normal range for age before and after each dose change and every 6 months. Seek appropriate specialist support if indicated.	NA	NA

5.8	**Adherence to medication treatment**			
5.8.1	CPP	Clinicians should be aware that the symptoms of ADHD (in the person with ADHD and/or their parent) may lead to people having difficulty adhering to treatment plans (e.g. remembering to organise repeat prescriptions and collect medication). Ensure that people are fully informed of the balance of risks and benefits of any medication for ADHD. Check that problems with adherence are not due to misconceptions.	NA	NA
5.8.2	CCR	To optimise adherence to medication, clinicians should encourage people with ADHD to use the following strategies: • being responsible for their own health, including taking their medication as needed • following clear instructions about how to take the medication in picture or written format, which may include information on dose, dosage schedule, adverse effects. The instructions should stay with the medication (e.g. a sticker on the side of the packet) • using visual reminders to take medication regularly (e.g. apps, alarms, clocks, pill dispensers, or notes on calendars or fridges) • taking medication as part of their daily routine (e.g. with/after meals or after brushing teeth) • attending peer support groups (for both the person with ADHD and for the families and carers) • making regular appointments with their prescribing clinicians to ensure timely reviews and prescriptions • considering the use of electronic medical records and apps to remind and track medication usage.	NA	NA
5.8.3	CCR	Clinicians should encourage parents and carers to oversee ADHD medication for children and young people.	NA	NA
5.8.4	CCR	To increase medication adherence in children, clinicians could offer parent/family training (see recommendations 4.2.1, 4.3.1) to help them better understand the benefits of medication.	NA	NA
5.9	**Review of medication and discontinuation**			
5.9.1	CPP	ADHD medication should be reviewed and discussed with the person with ADHD (and their families and carers as appropriate) at least once a year. At each review the following should be comprehensively assessed: • the preferences of the child, young person or adult with ADHD (and their family or carers as appropriate) • benefits, including how well the current treatment is working throughout the day • adverse effects • the clinical need and whether medication has been optimised	NA	NA

		• impact on education, employment and participation • effects of missed doses, planned dose reductions and periods of no treatment • effect of medication on existing or new mental health, physical health or neurodevelopmental disorders • need for support and type of support (e.g. psychological, educational, social) if medication has been optimised but ADHD symptoms continue to cause a significant impairment.		
5.9.2	CPP	People with ADHD should be encouraged to discuss their preferences for continuing, stopping or changing medication, and to be actively involved in any decisions about their treatment.	NA	NA
5.9.3	CCR	Trial periods of stopping medication or reducing the dose should be considered when assessment of the overall balance of benefits and harms suggests this may be appropriate. If the decision is made to continue medication, the reasons for this should be documented.	NA	NA
5.9.4	CCR	If a medication is known to have discontinuation symptoms, it should be gradually reduced then discontinued, to minimise these symptoms.	NA	NA
6	**Considerations – Subgroups**			
6.1	**People in the correctional system**			
6.1.1	CPP	Screening and assessment processes should be established to identify the presence of ADHD and co-occurring disorders among people entering the criminal justice system.	NA	NA
6.1.2	CPP	Custodial staff should receive ADHD awareness training.	NA	NA
6.1.3	CPP	Treatment in custodial settings should include pharmacological and non-pharmacological approaches, equivalent to the treatment available in the community.	NA	NA
6.1.4	CPP	Prisons should include ADHD tailored educational and occupational programs to increase engagement and skills development.	NA	NA
6.1.5	CPP	Prisons should establish safe ways of administering stimulant medication to those with ADHD (similar to ways of administering other controlled drugs).	NA	NA
6.1.6	CPP	Prisoners with ADHD should have a comprehensive multi-agency integrated and coordinated care plan, with particularly close coordination between criminal justice, mental health agencies and disability services, and at all transition points, with appropriate identified care pathways into the community.	NA	NA
6.1.7	CPP	Prisons should be resourced to enable identification and treatment of offenders with ADHD to improve clinical and criminal justice outcomes.	NA	NA

6.2	**Aboriginal and Torres Strait Islander Peoples**			
6.2.1	CPP	Clinicians should be aware that ADHD symptom questionnaires and other tools used for screening and assessing ADHD may not be valid in Aboriginal and Torres Strait Islander peoples and should be used with caution. Clinicians should seek the assistance of a cultural interpreter or Aboriginal and Torres Strait Islander health worker.	NA	NA
6.2.2	CPP	Clinicians should conduct a culturally appropriate assessment of ADHD in Aboriginal and Torres Strait Islander peoples. This should include a cultural and social assessment of the meaning and significance of symptoms. The assistance of a cultural interpreter or Aboriginal and Torres Strait Islander health worker should be sought if needed.	NA	NA
6.2.3	CPP	Interventions should include input from parents, families, community, and Elders, as appropriate, to maximise treatment effectiveness given strong family values in Aboriginal and Torres Strait Islander culture. The wishes of parents, families and individuals with ADHD regarding treatment options (e.g. cultural, pharmacological versus non-pharmacological treatments and their combination) should be prioritised.	NA	NA
6.2.4	CPP	Non-pharmacological interventions need to be culturally sensitive and appropriately tailored for Aboriginal and Torres Strait Islander peoples with consideration for the local cultural context.	NA	NA
6.2.5	CPP	Pharmacological interventions should be explained carefully with an awareness of potential cultural issues. Pharmacological options may be more acceptable if offered as part of a broad package aimed at helping a person reach their potential.	NA	NA
7	**Considerations – Service and Policy**			
7.1	**National services**			
7.1.1	CCR	Funding should be made available to deliver an ADHD helpline accessible to all Australians, consistent with those of other major mental health disorders.	NA	NA
7.1.2	CCR	Laws and regulations for stimulant prescribing and shared care should be uniform between the states and territories in Australia.	NA	NA
7.1.3	CCR	People with ADHD should have the same rights of access to the National Disability Insurance Scheme (NDIS) as those with a disability who do not have ADHD. To ensure optimisation of necessary and reasonable NDIS interventions and supports for people with ADHD, a shared understanding of the following are needed: • appropriate accommodations	NA	NA

		• value of suitably qualified ADHD coaches • the importance of a specialist in ADHD as a lead member of the care team.		
7.1.4	CCR	Eligibility and access to support from the NDIS should be decided on the functional needs of the person with ADHD and not based solely on diagnosis.	NA	NA
7.1.5	CCR	Primary care and public mental health services should be accessible to people with ADHD.	NA	NA
7.1.6	CCR	A system of ADHD-specific peer support should be established to ensure that this support is accessible throughout Australia. Peer-support programs already exist, providing opportunities to explore different models on which to base nationally available ADHD specific peer support development. National ADHD-specific peer support should ensure the peer support worker is embedded as part of a multidisciplinary team and works with clinicians to provide training, monitoring and support	NA	NA
7.2	**Education Settings**			
7.2.1 G8_12	CCR	All education settings should identify a learning support coordinator with appropriate training to be the key point of contact for people with ADHD and their clinicians and parents/carers.	NA	NA
7.2.2	CCR	Students with ADHD of all ages require reasonable adjustments to be made to maximise their inclusion and learning opportunities. The types and number of adjustments should be decided as part of an individual learning plan developed with the person with ADHD, their caregivers, education staff and other relevant clinicians.	NA	NA
7.2.3	CCR	Education settings should be supported to implement treatment plans, host inter-agency meetings and could provide space for visiting clinicians to consult and provide intervention.	NA	NA
7.3	**Professional training**			
7.3.1	CCR	Information about ADHD and its treatment should be included in the curriculums of mental health/developmental disorder training for educators, medical and allied health professionals.	NA	NA
7.3.2	CCR	Organisations that provide services to people with ADHD, including all public health services (child, adolescent, adult), should ensure staff are appropriately trained to identify, diagnose and treat ADHD, and provide ongoing monitoring and support.	NA	NA
7.3.3	CCR	Specialist medical practitioners (such as GPs, paediatricians, psychiatrists, and geriatricians) should be supported to increase their skills in identifying, diagnosing and treating people with ADHD, including prescribing stimulants.	NA	NA

7.3.4	CCR	Ongoing professional development in the treatment of ADHD should be made easily available, both interdisciplinary and profession-specific.	NA	NA
7.4	**Service configuration and activities**			
7.4.1	CCR	ADHD services should be configured to ensure they are person- and family-centred.	NA	NA
7.4.2	CCR	Agencies should collaborate with each other, the care coordinator, and the person with ADHD and/or their family, to provide integrated models of care with a focus on shared decision making.	NA	NA
7.4.3	CCR	Development of agreed pathways to simplify navigating the health care system for both consumers and clinicians are needed.	NA	NA
7.4.4	CCR	A readily available source of information for GPs about the referral pathways in their region is needed. For example, Primary Care Networks should identify ADHD specific local referral pathways and provide a directory of these to the general practices they serve.	NA	NA
7.4.5	CCR	As part of the development of agreed referral and care pathways, all relevant organisations should be consulted and their roles clarified, and where possible, expanded.	NA	NA
8	**Considerations – Research**			
8.1.1	CCR	A process for setting research priorities should be established, involving all key stakeholders and following established methods (such as those of the James Lind Alliance).	NA	NA
8.1.2	CCR	Research prioritisation should include individual and health service research, and should consider cost-effectiveness and new models of shared care	NA	NA

Introduction

This Australian clinical guideline on attention deficit hyperactivity disorder (ADHD) addresses the priorities of health professionals and people with a lived experience of ADHD. The guideline integrates the best available evidence with multidisciplinary clinical expertise and consumer preferences to provide clinicians, consumers and policy makers with guidance.

The guideline promotes accurate and timely diagnosis and optimal and consistent assessment and treatment of ADHD, and improved experience and health outcomes for the estimated 800,000 Australians with ADHD (Deloitte Access Economics, 2019; Sciberras et al., 2022).

This guideline is in part based on the evidenced-based UK National Institute for Health and Care Excellence guidance on the diagnosis and management of attention deficit hyperactivity disorder (NICE, 2018), and was developed by updating the evidence reviews, conducting new evidence reviews for questions not addressed by NICE and adapting the guidance to the Australian context.

Context and background

The Guideline Development Group (GDG) acknowledges that societal barriers are obstacles for full and equal participation in the community for a person with ADHD, rather than viewing ADHD symptoms as a personal impairment. In this guideline we have attempted to balance traditional medical, biopsychosocial and social disability models, to ensure a considered approach to the identification, diagnosis and support of people with ADHD.

ADHD is classified as a neurodevelopmental disorder with an onset typically before 12 years of age (American Psychiatric Association, 2013). The symptoms include difficulties with attention and/or hyperactivity and impulsivity, which are incongruent with developmental stage and interfere with activities and participation (American Psychiatric Association, 2013). For example, the symptoms of ADHD can interfere with cognitive and social development, academic and occupational achievement, or daily living and leisure activities (American Psychiatric Association, 2013).

Inattentive symptoms include difficulty sustaining attention on tasks and directing attention, distractibility and organisational problems. Hyperactivity refers to excessive motor activity and difficulties being still, particularly in structured situations that require self-control. Impulsivity refers to a reduced or inconsistent capacity to pause and reflect before acting, to ensure actions are in keeping with wanted consequences and longer-term goals.

Individuals with ADHD present with different combinations of symptoms. Some present with predominantly inattentive symptoms, some with predominantly hyperactive-impulsive symptoms and some with a combination of both.

There is a growing body of research exploring the numerous strengths and abilities of people with ADHD and positive aspects of ADHD features (Climie & Mastoras, 2015; Mahdi et al., 2017; Sedgwick, Merwood, &

Asherson, 2019). Strengths related to ADHD features include the ability to generate novel ideas, and the ability to hyperfocus, resulting in high levels of productivity and adventurousness (Sedgwick et al., 2019). ADHD occurs in approximately 6–10% of Australian children and adolescents and 2–6% of adults (Graetz, Sawyer, Hazell, Arney, & Baghurst, 2001; Sawyer, Reece, Sawyer, Johnson, & Lawrence, 2018). If left untreated, ADHD results in significant lifelong functional impairment with poor long-term outcomes. The social and economic burden of ADHD in Australia is estimated to be $20 billion per year (Deloitte Access Economics, 2019). There are effective non-pharmacological and pharmacological treatments for ADHD, which can reduce symptoms and improve function and participation, with better personal outcomes and a reduction in community and economic costs.

Purpose of the guideline

This clinical practice guideline for ADHD was developed to provide a roadmap for ADHD clinical practice, research and policy now and in the future, and to help people in Australia who are living with ADHD, and those who care for them, to improve their health and wellbeing.

The goals of this guideline are:

- to standardise clinical practice across Australia by providing clear advice about evidence-based ADHD diagnosis and treatment
- to integrate the voices and opinions of those with lived experience of ADHD into information for clinicians and decision makers
- to focus on everyday functioning and quality of life as well as symptom-based outcome measures
- to address appropriate care based on age, gender, culture, setting and geography.
- to identify areas of unmet need and opportunities for research, advocacy and policy development.

Intended users of the guideline

This guideline is mainly intended for clinicians, including medical and allied health professionals, and for other people involved in the support of people with ADHD such as educators. We anticipate this guideline will also be used by people with ADHD and their families, parents and carers and partners.

Professionals with appropriate credentials and training can use this guideline to guide diagnosis and treatment and provide support for individuals with ADHD. Health Service providers and policy makers can use it to guide local services and policy development. Those in organisations responsible for making funding decisions can use this guideline to develop a deeper understanding of the challenges faced by those with ADHD and the many approaches that, with funding, will make a real difference for individuals and the community.

It is hoped that those who assist individuals with ADHD in educational, occupational, juvenile justice, community, disability and aged-care settings will be able to use this guideline to optimise the functioning and participation of people with ADHD and, ultimately, their wellbeing, welfare and productivity.

To whom the guideline applies

This guideline is relevant to the identification, assessment, treatment and support of young children (aged less than 5 years), children (aged 5–12 years), young people (aged 13–18 years), adults (aged 18 years and over) and older adults (aged 65 and over) with ADHD.

What the guideline does not address

This guideline *does not* provide full safety and usage information on pharmacological interventions. Before using pharmacological interventions recommended in the guideline, prescribers should consider the person's clinical profile and personal preferences. It is recommended that prescribers consult guidance from Therapeutic Guidelines (www.tg.com.au) for detailed prescribing information including indications, drug dosage, method and route of administration, contraindications, supervision and monitoring, product characteristics and adverse effects. Guidance can also be found in product information and from other web resources.

This guideline does not include a formal analysis of the cost effectiveness of recommended practice versus current/established practice. The clinical and organisational impact of cost on recommendations has been considered in GDG meetings using the GRADE approach. The economic feasibility of the recommendations has not been covered.

Consideration of issues relevant to Aboriginal and Torres Strait Islander peoples

Issues relevant to Aboriginal and Torres Strait Islander peoples have been addressed in this guideline through engagement with Aboriginal and Torres Strait Islander representatives via membership of the GDG. Recommendations specific for Aboriginal and Torres Strait Islander peoples have been developed and are documented in section 6.2.

Consideration of issues relevant to special-needs groups and other subgroups

The following special-needs groups have been specifically considered in this guideline:

- Aboriginal and Torres Strait Islander peoples (Chapter 6.2)
- people who are imprisoned (Chapter 6.1).

Other subgroups that have been considered throughout the guideline include:

- culturally and linguistically diverse communities
- women and girls
- people with low socioeconomic status
- children in out of home care
- older adults aged 65 years and above.

Relevant settings

These recommendations are relevant for the identification, assessment and support of people with ADHD in all healthcare settings, including community-based health and hospital settings, public and private sectors, and in educational settings, occupational settings, detention settings and the general community.

International Classification of Functioning, Disability and Health (ICF)

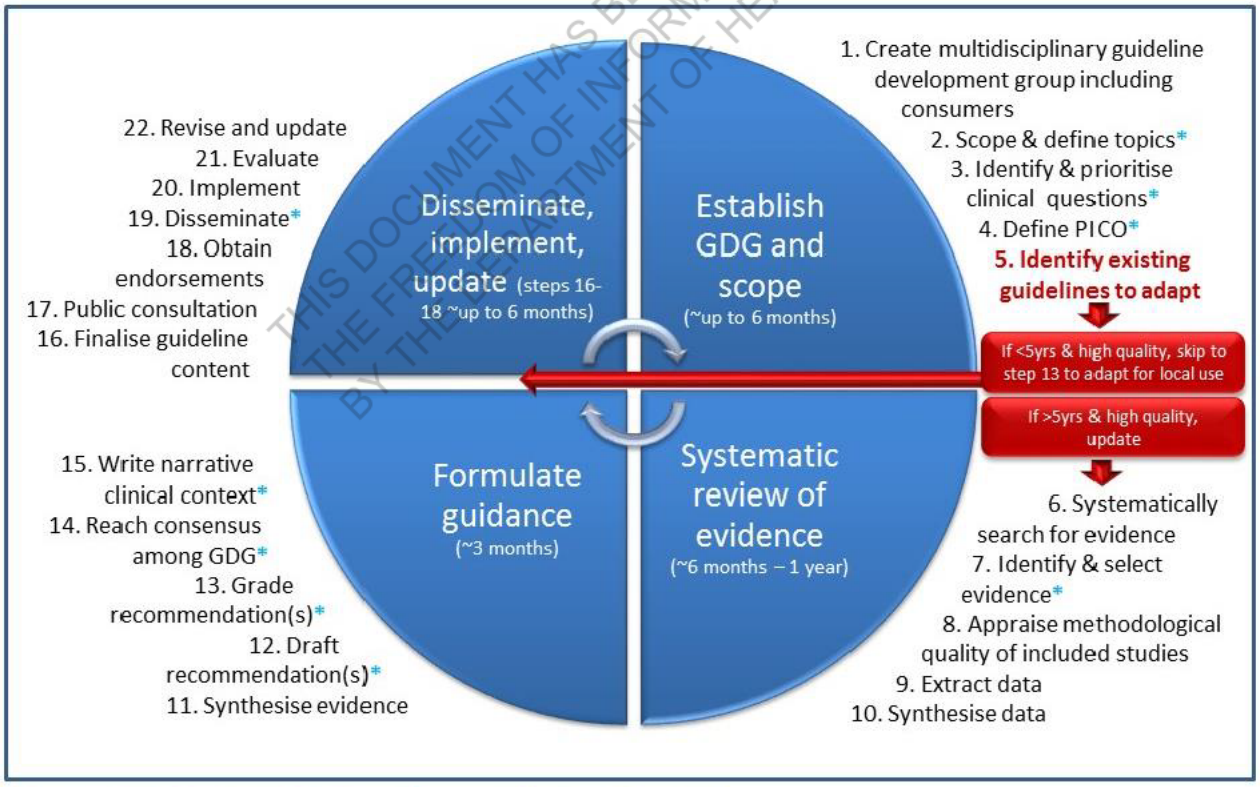
The GDG adopted the World Health Organization's International Classification of Functioning, Disability and Health (ICF) as a conceptual framework to anchor discussions and deliberations. The ICF complements traditional diagnostic systems such as the Diagnostic and Statistical Manual of Mental Disorders – fifth edition (DSM-5)(American Psychiatric Association, 2013) and International Statistical Classification of Diseases and Related Health Problems 11th edition (ICD-11 World Health Organization, 2018), offering a comprehensive, integrative framework of functioning and disability.

The ICF is a useful framework explicitly identifying ways in which ADHD impacts everyday functioning and disability, and the ways in which professionals, society and the government might improve their response/s to these functional challenges. This framework may also serve a pragmatic purpose in aligning this guideline and its recommendations more closely with the priorities of Australian agencies, such as the National Disability and Insurance Agency (NDIA).

Guideline development methods overview

The methods used to develop this guideline are aligned with international gold standard AGREE II criteria, ADAPTE II, and Grading of Recommendations, Assessment, Development and Evaluation (GRADE) to meet the comprehensive NHMRC criteria for approval of evidence-based guidelines. Where prioritised questions were addressed by the existing NICE guideline (NICE, 2018), the evidence reviews were updated and adapted to the Australian context. The steps are summarised in Figure 1 (See **Methods** section for details).

Figure 1: Guideline development process



* Time points and tasks where prioritisation of engagement from GDG is required

Identification of clinical priorities in ADHD care

Clinical questions were identified by the Australian ADHD Professionals Association (AADPA) in consultation with stakeholders (see Introduction). This preliminary list was later refined through a structured prioritisation process conducted by a multidisciplinary group representing a broad range of perspectives and involving people with lived experience of ADHD (see Methods).

Through this process, contributors reached consensus on the clinical questions to be addressed by this guideline (Table 3) and the method for answering each (either a systematic review or narrative review; Table 4)

Table 3. Clinical questions addressed by this guideline

Characterising ADHD • What is ADHD? • What is the prevalence of ADHD in Australia and internationally? • What is the aetiology of ADHD? • What are the outcomes (i.e. prognosis) for individuals diagnosed with ADHD? • Does ADHD have a characteristic course and does its presentation change across the lifespan? • What other disorders commonly co-occur with ADHD?
Diagnosis and assessment • Should screening for ADHD occur at a population level? • Which groups are at high risk of developing ADHD? • Should screening for ADHD occur in high-risk populations? • How should ADHD be assessed, diagnosed and monitored, and by whom? • Which disorder/s need to be excluded to make a diagnosis of ADHD? • Which disorder/s should be considered for a co-occurring diagnosis with ADHD?
Non-pharmacological interventions • What is the clinical effectiveness of non-pharmacological interventions for people with ADHD? • What are the adverse events associated with non-pharmacological treatments for people with ADHD? • Should treatments be provided individually or in groups? Who should deliver them? • Is there a role for ADHD coaches? • Is there a role for peer support workers? • Is there a role for consumer groups (e.g. online forums)? • What educational/school/teacher interventions are possible, and are they effective?

Pharmacological Interventions

- What is the clinical effectiveness of pharmacological treatments for people with ADHD? (And what is the optimal sequence?)
- What are the adverse events associated with pharmacological treatments for people with ADHD?
- How should initial medications be titrated?
- Which clinicians should initiate pharmacological therapy, and continue it long term?
- What principles should clinicians follow when discussing decisions to start, adjust, or discontinue pharmacological treatment for people with ADHD?
- Which factors need to be considered when making initial treatment decisions for ADHD?
- How should ADHD symptoms severity and clinical profile guide treatment decisions?

Multimodal treatment

- What is the clinical effectiveness of combined non-pharmacological and pharmacological interventions for people with ADHD?
- What are the adverse events associated with combined non-pharmacological and pharmacological treatment for people with ADHD?

Care pathways – (non-pharmacological and pharmacological)

- What is/are the most clinically effective initial sequence(s) of non-pharmacological/pharmacological treatment for people with ADHD?
- What is the most clinically effective subsequent sequence of non-pharmacological/pharmacological treatment for people with ADHD when the initial treatment is ineffective, inadequate or treatment is not tolerated?
- How should treatment effectiveness be monitored and supported?
- How should adequacy of treatment response be assessed?
- What are the indicators of remission and when should treatments be stopped?
- What are the most effective approaches to increasing treatment adherence in ADHD for both non-pharmacological and pharmacological approaches?
- How do co-occurring disorders impact treatment effects?
- Does the optimal treatment approach for ADHD vary when co-occurring disorders are present?

Care pathways – pharmacological

- Are there specific clinical effects of discontinuing from pharmacological treatment and if so how should these be supported?
- Should 'drug holidays' from pharmacological treatment for ADHD be recommended and if so when?

Care pathways – principles

- What are the information, support and educational needs of those diagnosed with ADHD, family, carers, and agencies who support people with ADHD?
- At what intervals should clinical care be reviewed for people with ADHD?
- What are shared care models and are they effective?
- What services should prison mental health services provide across life-stages?
- What referral pathways should be established?
- Which agencies should be involved in the treatment and support of ADHD?
- How should services be configured?
- Are health professionals, including psychiatrists, paediatricians, psychologists GPs, nurses, allied health professionals and educators adequately trained to support ADHD?
- For which people with ADHD should a transition to further services take place (preschool to school, primary to secondary school, school to adulthood, older adults)?

Implementation considerations

- How should services for those with ADHD in Australia be funded?
- What should services provide and to whom?
- How should a health professional maintain professional integrity and practice?

Table 4. Types of evidence reviews conducted

	An evidence review was conducted, where a systematic search was run and relevant research was identified and synthesised using GRADE. This method applied to high-priority questions and areas of greatest controversy. May be an update of a NICE evidence review. These reviews were completed by the evidence team and are found in the technical report.
	Narrative evidence reviews contained literature relevant to the question based on the expertise. This method applied to questions that were less well suited to a systematic evidence review format or for lower-priority questions. The narrative review may build upon a NICE evidence review or NICE guideline section. These reviews were completed by GDG members and are found in the technical report.
	An evidence review was conducted, where a systematic search was run and no evidence (or no new evidence where an update of NICE evidence review) was identified. For highly prioritised questions and for those areas of greatest controversy May build upon a NICE evidence review or NICE guideline section Evidence team completed systematic search. GDG member completed a narrative review. Details in technical report.

NICE: UK National Institute for Health and Care Excellence 2018 guideline for the diagnosis and management of ADHD (NICE 2018)

See Methods for details of each type of review.

Developing The Recommendations

Specific, unambiguous, actionable recommendations were drafted by the GDG based on systematic assessment of the best available evidence, together with consideration of the relevance to the Australian population, the balance of benefits and harms, the values and preferences of the community and clinicians, resource implications, feasibility and fairness, based on the GRADE framework.

The process is described in detail in the Methods section.

Interpreting the guideline recommendations

In developing the recommendations in this guideline, evidence was assessed alongside multidisciplinary health professional expertise and consumer perspectives. There are four key elements to each recommendation:

- type
- wording
- certainty of evidence
- grade of recommendation.

Recommendation type is either evidence-based (EBR) or consensus clinical recommendation (CCR). In addition, clinical practice points (CPP) were included for implementation issues such as safety, side effects and risks (Table 1).

Recommendation wording reflects the GPG's overall interpretation of the evidence and other considerations. 'Should' indicates the GPG's judgment that the benefits of the recommended action exceed the harms. 'Could' indicates that the quality of evidence was limited or the available studies did not clearly demonstrate advantage of one approach over another, or the balance of benefits to harm was unclear. 'Should not' indicates either a lack of appropriate evidence, or that the harms were judged to outweigh the benefits.

Certainty of evidence (very low to high) for EBRs reflects the quality and relevance of the evidence, based on information about the number and design of studies addressing the outcome, judgments about the quality of the studies and/or synthesised evidence, across risk of bias, inconsistency, indirectness, imprecision and any other quality considerations; key statistical data; and classification of importance of outcomes (see Methods).

The grade (strength) of EBRs (strong recommendation or conditional recommendation; Table 1) was determined by the GDG based on comprehensive consideration of all elements of the framework (National Health and Medical Research Council, 2009): desirable and undesirable effects, balance of effects, resource requirements, equity, acceptability, and feasibility (see Methods).

This guideline integrates a summary of the clinical need for guidance on each topic, the clinical question, the evidence summary (systematic and/or narrative), the recommendation or practice points and a justification developed by the GDG. The full evidence reviews, narrative reviews and GRADE frameworks supporting each

recommendation, when relevant, can be found in the supplementary Technical Reports, along with voting to reflect degree of consensus (voting results available upon request).

Guideline Development Group Members

Chairs

Professor Katrina Williams, Head of Department of Pediatrics, Monash University; Director of Research & Developmental Paediatrician, Monash Children's Hospital, Victoria.
Dr Edward Petch, Consultant Forensic Psychiatrist, Clinical Associate Professor Department of Justice, Hakea Prison, Western Australia.

Methods

Dr Marie Misso, Evidence synthesis and guideline development methodologist, The Knowledge Synthesis Lab, Victoria

Project management

- Professor Mark Bellgrove, President Australian ADHD Professionals Association (AADPA); Director of Research, Turner Institute for Brain and Mental Health, School of Psychological Sciences, Monash University, Victoria
- Dr Tamara May, Monash University, Victoria
- Dr Nicole Stefanac, Australian ADHD Professionals Association, Victoria
- Ms Robyn Scarfe, Australian ADHD Professionals Association, Victoria

Voting Members of the Guideline Development Group (GDG)

Professor Mark Bellgrove
Ms Edwina Birch
Dr Karina Chaves
Associate Professor Noel Cranswick
Ms Evelyn Culnane
Ms Jane Delaney
Dr Madelyn Derrick
Professor Valsamma Eapen
Ms Chantele Edlington
Associate Professor Daryl Efron
Dr Tatjana Ewais
Mr Michael Gathercole
Ms Ingrid Garner
Dr Karuppiah Jagadheesan
Dr John Kramer
Ms Martha Mack
Dr Tamara May
Mr Evan Savage
Associate Professor Emma Sciberras
Emeritus Professor Bruce Singh
Dr Renee Testa
Ms Lisa Vale
Ms Alyssa Weirman

Representation from relevant colleges and societies

Membership included representatives from the following organisations:

- Australian ADHD Professionals Association (AADPA)
- Royal Australian and New Zealand College of Psychiatrists (RANZCP)
- Royal Australian College of General Practitioners (RACGP)
- Royal Australasian College of Physicians (RACP)
- Australian Psychological Society (APS)
- Occupational Therapy Australia
- Neurodevelopmental and Behavioural Paediatric Society of Australasia (NBPSA)
- Speech Pathology Australia
- Applied Neuroscience Society of Australasia (ANSA).

Consumer representation

The following members provided perspectives of people with ADHD and their families, including consumer organisations:

- Ms Edwina Birch
- Dr Madelyn Derrick
- Ms Ingrid Garner
- Ms Alyssa Weirman.

Representation from, and consultation with, Aboriginal and Torres Strait Islander peoples

Mr Michael Gathercole and Dr Cammi Murrup-Stewart provided perspectives from Aboriginal clinical practice, academic research and advocacy.
Appendix 2 lists members' affiliations and representation.

Management of conflicts of interest

A formal process was followed to identify and manage competing interests among GDG members (Appendix 4).

A Conflict of Interest (COI) was defined as an interest of a member of the GDG that conflicts with, or has the potential to conflict with the duties and responsibilities of membership and the process of guideline development. This includes any outside interest which could be perceived to introduce any bias into the decision making of committee members. Potential members were asked to declare any conflicts of interests over the 3 years preceding the formation of the group and any arising during guideline development.

Conflicts or potential conflicts were managed by a COI Management Group, which consisted of the two GDG Chairs and an independent observer, ethicist Professor Lynn Gillam, who did not otherwise participate in the guideline development process. This group operated within the AADPA policy for the Identification and Management of Potential Conflict of Interests, which was developed to align with standard A6 of the National Health and Medical Research Council (NHMRC) *Procedures and requirements for meeting the 2011 NHMRC standard for clinical practice guidelines (National Health and Medical Research Council, 2011)*. The

interests of the Chairs were scrutinised by the independent ethics expert of the COI Management Group and the President of AADPA. The process is described in detail in Appendix 4.

Approvals sought

This guideline will be submitted for consideration of approval by NHMRC. Approval is also being sought from other relevant organisations.

Methods

This guideline was developed according to the Australian National Health and Medical Research Council (NHMRC) standards and procedures for rigorously developed external guidelines (National Health and Medical Research Council, 2007) and according to the Grading of Recommendations, Assessment, Development and Evaluation (GRADE) approach (The GRADE Working Group 2009).
Multidisciplinary guideline development group

The multidisciplinary Guideline Development Group (GDG) was convened by inviting people with experience living with ADHD, caring for people with ADHD, and academics with experience in ADHD, to participate in the development of the guideline. Disciplines represented included psychology, psychiatry, paediatrics, speech pathology, occupational therapy, nursing, clinical pharmacology, and health services. See Introduction and Appendix 2 for a list of GDG members and their affiliations. Four GDG members represented the voice of the lived experience.

Ethnicity and culture were considered when identifying evidence and when developing all recommendations. Issues related to the Aboriginal and Torres Strait Islander communities were led by a clinical and counselling psychologist and member of the Aboriginal community with further input from an Aboriginal researcher.
An online workshop was held to detail the methods of reviewing evidence and preparing the associated GRADE frameworks. Here, GDG members were informed of when input would be requested and the level of input required.

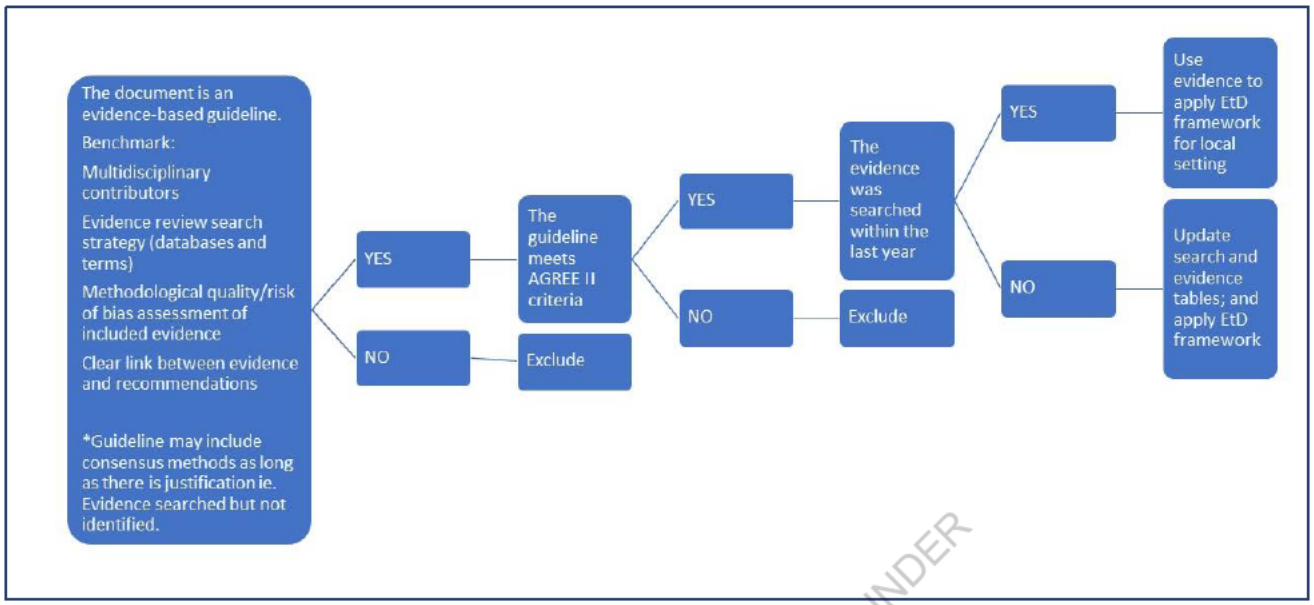
Conflict of interest

Conflict of interest was managed by the Conflict of Interest Management Group (see Introduction and Appendix 4).

Identification of previous guidelines

ADAPTE II methods (ADAPTE Collaboration, 2009) were followed to identify existing current high-quality, evidence-based guidelines published during the previous 5 years (Figure 1). The objective was to choose an existing evidence-based guideline in which the clinical questions were sufficiently similar to the scope agreed through during the stakeholder engagement process led by the Australian ADHD Professionals Association (AADPA) (Table 3), and adapt or update the evidence and/or recommendations to the Australian setting. Where the supporting evidence was superseded by new research, the supporting systematic evidence review was updated and recommendations redrafted.

Figure 1. Process for identifying candidate ADHD clinical practice guidelines suitable for adaptation



Search methods

The evidence team undertook a systematic search for existing guidelines that address ADHD (search conducted in July 2019). To be eligible, the guideline must have included a description of evidence-based guideline development methods and must have contained the following benchmark criteria:

- multidisciplinary working group
- evidence review with search strategy
- methodological quality/risk of bias assessment of included evidence.

Phase 1: Searches of relevant guideline websites

- Websites of national and international guideline clearinghouses, guideline developers, centres of evidence-based practice, government health services and websites of specific relevance known to contain evidence-based guidelines were searched.
- Eighteen websites and 9 guidelines were identified.

Phase 2: Internet searches to identify topic-specific websites

- Additional websites of specific relevance were sought via an internet search using the Google 'Advanced Search' function with the following string and the English language filter:
- (Attention Deficit Hyperactivity Disorder OR attention deficit OR ((hyperactivity OR hyperkinetic) AND disorder) OR ADHD) AND (professional OR association OR organisation OR organization OR college OR society OR academy OR peak)
- 155 results were retrieved, of these there were 17 websites that were further examined.

Phase 3: Topic-specific website searches to identify relevant evidence-based guidelines

- Where an internal search engine was available, websites were searched. If no search engine was available, lists of guidelines, publications or other resources identified on the site were scanned for relevant documents.
- 2 guidelines were identified.

Phase 4: Internet searches to identify relevant evidence-based guidelines

- An internet search strategy was conducted to identify evidence-based guidelines using the Google 'Advanced Search' function with the following string and the English language filter:
- (Attention Deficit Hyperactivity Disorder OR attention deficit OR ((hyperactivity OR hyperkinetic) AND disorder) OR ADHD) AND (guideline OR evidence OR systematic)
- 128 results were retrieved.

A total of 25 guidelines published between 2001 and2018 were identified. Of these, 3 guidelines completed evidence review searches within the previous 5 years. The most current of these guidelines (NICE 2018) covered the same content as the other two guidelines (German Association of the Scientific Medical Societies (AWMF), 2017; Kemper et al., 2018). The existing guideline selected for adaptation was the UK National Institute for Health and Care Excellence (NICE) 2018 guideline *Attention Deficit Hyperactivity Disorder: diagnosis and management* [NICE guideline NG87], referred to as 'the NICE guideline' in this guideline. Approval was provided to AADPA to update the NICE 2018 guideline by the National Institute for Health and Care Excellence, UK on 25th October 2021

Clinical question identification

The evidence team compiled and consolidated the questions addressed by these three existing high-quality guidelines, which helped to engage stakeholders to identify and prioritise the key areas of interest for these guidelines.

To develop a set of indicative questions to be addressed within the Australian ADHD guideline, the Australian ADHD Professionals Association (AADPA) led several rounds of stakeholder engagement, including via face-to-face meetings and email correspondence. AADPA sought engagement from relevant stakeholder groups who were involved in the diagnosis, treatment, support or education of Australians living with ADHD. An indicative list of questions to be addressed was developed from these rounds of stakeholder engagement.

Clinical question prioritisation and management

Clinical questions were prioritised by the GDG to guide the evidence team and to reach consensus on which clinical questions were addressed either by an update of a NICE evidence review, a new evidence review, or clinical expert narrative review (Table 4).

The prioritisation consensus process was led by Dr Marie Misso and the GDG Chairs, Dr Edward Petch and Professor Katrina Williams. GDG members were asked to rank each question using a 1–9 scale, where 9 was

the highest priority (Figure 2). This approach to consensus priority assignment was based on the GRADE approach devised for prioritising clinical questions. The directory of clinical questions (Table 5) lists all questions addressed by this guideline.

Figure 2. Rating scale for assigning priorities to clinical questions

Rating scale:								
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
of **least** importance								of **most** importance
Of limited importance (may not be reviewed or addressed in the guideline if time does not permit)			**Important** (likely to be included in the guideline whether narrative or evidence review)			**Critical** (will be reviewed and included in the guideline)		

Adapted from GRADE.

Table 5. Guideline scope and directory of clinical question

Question	Guideline Section	Evidence Review In Tech Report	Narrative Review In Tech Report
Characterising ADHD			
What is ADHD?	Background	NA	NA
What is the prevalence of ADHD in Australia and internationally?	Background	NA	NA
What is the aetiology of ADHD?	Background	NA	NA
What are the outcomes (i.e. prognosis) for people diagnosed with ADHD?	Background	NA	NA
Does ADHD have a characteristic course and does its presentation change across the lifespan?	Background	NA	NA
What other disorders commonly co-occur with ADHD	Background	NA	NA
Diagnosis and assessment			
Should screening for ADHD occur at a population level?	Chapter 1	-	Section 2.4
Which groups are at high risk of developing ADHD?	Chapter 1	Section 2.2	-
Should screening for ADHD occur in high-risk populations?	Chapter 1	-	Section 2.4
How should ADHD be assessed, diagnosed and monitored, and by whom?	Chapter 2 Principles	-	Section 3.1
Which disorder/s need to be excluded to make a diagnosis of ADHD?	Chapter 2	-	Section 3.2
Which disorder/s should be considered for a co-occurring diagnosis with ADHD?	Chapter 2	-	Section 3.2
Non -pharmacological interventions			

Question	Guideline Section	Evidence Review In Tech Report	Narrative Review In Tech Report
What is the clinical effectiveness of non-pharmacological interventions for people with ADHD?	Chapter 4	Section 5.1	-
What are the adverse events associated with non-pharmacological treatments for people with ADHD?	Chapter 4	Section 5.1	-
Should treatments be provided individually or in groups? Who should deliver them?	Chapter 4	Section 5.1	-
Is there a role for ADHD coaches?	Chapter 4	-	Section 5.4
Is there a role for peer support workers?	Chapter 4	-	Section 11.2
Is there a role for consumer groups (e.g., online forums)?	Chapter 4	-	Section 11.3
What educational/school/teacher interventions are possible, and are they effective?	Chapter 4	Section 5.1	-
Pharmacological Interventions			
What is the clinical effectiveness of pharmacological treatments for people with ADHD (and what is the optimal sequence?)?	Chapter 5	Section 6.1	-
What are the adverse events associated with pharmacological treatments for people with ADHD?	Chapter 5	Section 6.2	-
How should initial medications be titrated?	Chapter 5		Section 6.3
Which clinicians should initiate pharmacological therapy, and continue it long term?	Chapter 5 Principles		Section 6.4
What principles should clinicians follow when discussing decisions to start, adjust, or discontinue pharmacological treatment for people with ADHD?	Chapter 5		Section 6.4
Which factors need to be considered when making initial treatment decisions for ADHD?	Chapter 3		Section 6.4
How should ADHD symptoms severity and clinical profile guide treatment decisions?	Chapter 3		Section 6.4
Multimodal treatment			
What is the clinical effectiveness of combined non-pharmacological and pharmacological interventions for people with ADHD?	Chapter 3	Section 7.1	
What are the adverse events associated with combined non-pharmacological and pharmacological treatment for people with ADHD?	Chapter 4 Chapter 5	Section 7.1	
Care pathways – (non-pharmacological and pharmacological)			
What is/are the most clinically effective initial sequence(s) of non-pharmacological/pharmacological treatment for people with ADHD?	Chapter 3 Chapter 5		Section 6.4

Question	Guideline Section	Evidence Review In Tech Report	Narrative Review In Tech Report
What is the most clinically effective subsequent sequence of non-pharmacological/pharmacological treatment for people with ADHD when the initial treatment is ineffective, inadequate or treatment is not tolerated?	Chapter 3 Chapter 5	Section 8.6	
How should treatment effectiveness be monitored and supported?	Chapter 5	-	Section 6.6
How should adequacy of treatment response be assessed?	Chapter 5	-	Section 6.6
What are the indicators of remission and when should treatments be stopped?	Chapter 5	-	Section 6.6
What are the most effective approaches to increasing treatment adherence in ADHD for both non-pharmacological and pharmacological approaches?	Chapter 4 Chapter 5	Section 10.8	
How do co-occurring disorders impact treatment effects?	Chapter 4 Chapter 5	-	Section 6.5
Does the optimal treatment approach for ADHD vary when co-occurring disorders are present?	Chapter 4 Chapter 5	-	Section 6.5
Care pathways – pharmacological			
Are there specific clinical effects of discontinuing from pharmacological treatment and if so how should these be supported?	Chapter 5	Section 10.5	-
Should 'drug holidays' from pharmacological treatment for ADHD be recommended and if so when?	Chapter 5	Section 10.7	-
Care pathways – principles			
What are the information support and educational needs of those diagnosed with ADHD, family, carers, and agencies who support people with ADHD?	Chapter 2	-	Section 4.1
At what intervals should clinical care be reviewed for people with ADHD?	Chapter 5	-	Section 6.7
What are shared care models and are they effective?	Chapter 7	Section 11.5	Section 11.4
What services should prison mental health services provide across life-stages?	Chapter 6	-	Section 11.6
What referral pathways should be established?	Chapter 7	-	Section 12.5
Which agencies should be involved in the treatment and support of ADHD?	Chapter 7	-	Section 11.4
How should services be configured?	Chapter 7	-	Section 11.4
Are health professionals, including psychiatrists, paediatricians, psychologists GPs, nurses, allied health professionals and educators adequately trained to support ADHD?	Chapter 7	-	Section 11.1

Question	Guideline Section	Evidence Review In Tech Report	Narrative Review In Tech Report
For which people with ADHD should a transition to further services take place (preschool to school, primary to secondary school, school to adulthood, older adults)?	Chapter 3	-	Section 10.9
Implementation considerations			
How should services for those with ADHD in Australia be funded?	Beyond scope of current guidelines – economic evaluation required	NA	NA
What should services provide and to whom?	Chapter 7	NA	NA
How should a clinician maintain professional integrity and practice?	Principles Chapter 7	NA	NA

Narrative reviews prepared by GDG members

Narrative evidence reviews were completed:

- where questions were less well suited to a systematic evidence review format
- for lower prioritised questions
- where there was insufficient evidence identified for a question where an evidence review was conducted.

Narrative reviews were prepared by GDG members according to their content expertise. Reviews included key information to answer the clinical question and to guide the GDG to draft consensus recommendations and/or practice points, and were informed by research and clinical experience. For some questions, the narrative review was based on an existing guideline, systematic review or other existing guidance document. Narrative reviews cited source references.

Updated evidence reviews for questions addressed by the NICE guideline

The selection criteria and search methods used in the NICE guideline (NICE, 2018) (https://www.nice.org.uk/guidance/ng87) were adopted and rerun from the last search date (see below). We excluded many high-quality systematic reviews of clinical trials evaluating the effectiveness of interventions that had been identified in the NICE guideline and in this update. Some of the studies included in these systematic reviews did not match the selection criteria. The studies in each review were checked, and the data from relevant studies were independently extracted and assessed for quality.
Additional identified evidence was tabulated, assessed for quality and GRADE (The GRADE Working Group, 2009), and integrated with the existing NICE evidence. The processes for appraisal, extraction and synthesis are described below.

Evidence reviews for questions not addressed by an existing guideline

Clinical question scope and criteria for selection of evidence

The PICO framework was used to explore the components of each clinical question and finalise the selection criteria:

P: population

I: intervention

C: comparison

O: outcomes.

These components were used to design the search strategies and to include and exclude studies in the evidence review screening stage. Evidence was identified as the best available and selected to inform recommendations if it fulfilled all the following criteria:

- current (published within the past 5 years)
- comprehensive (with the most outcomes relevant to PICO)
- high-quality (systematic review meeting benchmark criteria in Table 6)
- all selection criteria met.

Additional systematic reviews that met benchmark and selection criteria were used if they reported additional outcomes, relevant to the PICO, that were not addressed in the first, most comprehensive systematic review. Additional studies that met the selection criteria and were not included in the systematic reviews were also used, as appropriate to the level of evidence specified for each type of question.

For example, randomised controlled trials (RCTs) were included for clinical questions about interventions. In some instances, where a systematic review met the benchmark criteria but did not meet the selection criteria, or contained synthesised studies that did not meet the selection criteria, we adopted the systematic review's appraisals of the risk of bias for individual studies that meet the PICO.

This practice was adopted for efficiency, to optimise the use of resources by avoiding unnecessary duplication of time and work. Systematic reviews that met the benchmark and the selection criteria were not included if they did not report data additional to the highest included evidence and/or the search date preceded the highest included evidence.

Table 6. Benchmark criteria for existing systematic reviews

Existing systematic reviews were included if they met all the following conditions:
1.The reviewers completed a search in at least Medline/Pubmed and another relevant database.
2. The systematic review lists key search terms.
3. The systematic review lists selection criteria.
4. The reviewers used an appropriate framework to assess risk of bias/quality appraisal.
5. (This criterion applies to intervention questions). Where a systematic review included non-RCT studies, it also conducted a sub-analysis restricted to RCT evidence.

Systematic search for evidence

A broad-ranging systematic search strategy for terms related to ADHD was adopted from the NICE guideline (NICE, 2018) (https://www.nice.org.uk/guidance/ng87). It was combined with specific searches tailored for the clinical question according to the selection criteria/PICO developed by the GDG.

The search terms used to identify studies addressing the population of interest were not limited, so that studies addressing people with ADHD in all cultural, geographical and socioeconomic backgrounds and settings would be identified by the search.

While a formal analysis of cost-effectiveness was not conducted for this guideline, studies addressing a clinical question that also reported cost effectiveness were documented in the GRADE process. The search strategy was limited to English language articles and there were no limits on year of publication.

The following electronic databases were employed to identify relevant evidence:

- Medline (OVID) with Medline in-process and other non-indexed citations (OVID)
- PsycINFO (OVID)
- EBM Reviews (OVID)
    - Cochrane Database of Systematic Reviews (Cochrane Reviews)
    - Database of Abstracts of Reviews of Effects (Other Reviews)
    - Cochrane Central Register of Controlled Trials (Clinical Trials)
    - Cochrane Database of Methodology Reviews (Methods Reviews)
    - The Cochrane Methodology Register (Methods Studies)
    - Health Technology Assessment Database (Technology Assessments)
    - NHS Economic Evaluation Database (Economic Evaluations)
- EMBASE (OVID)

The bibliographies of relevant systematic reviews and primary studies identified by the search strategy were also be searched for identification of additional studies.

Inclusion of studies

To determine the evidence to be assessed further, an evidence team reviewer scanned the titles, abstracts and keywords of every record retrieved by the search strategy using the PICO selection criteria established *a priori*. Full articles were retrieved for further assessment if the information in the citation and abstract suggested that the study met the selection criteria and needed to be confirmed. Uncertainty was resolved through discussion among the evidence team and the clinical leads.

Appraisal of the methodological quality/risk of bias of included studies

Methodological quality of the included studies was assessed using criteria developed *a priori* according to study design (i.e. quality appraisal criteria used for an RCT is different to that used for a cohort study) as outlined in GRADE. Using this approach, each study was allocated a risk of bias rating (see, Table 7).

Table 7. Risk of bias ratings

Rating	Description
Low	All of the criteria have been fulfilled or, where criteria have not been fulfilled, it is very unlikely the conclusions of the study would be affected.
Moderate	Some of the criteria have been fulfilled and those criteria that have not been fulfilled may affect the conclusions of the study.
High	Few or no criteria fulfilled or the conclusions of the study are likely or very likely to be affected.
Insufficient information	Not enough information provided on methodological quality to enable risk of bias to be determined.

Data extraction

According to the selection criteria, data were extracted from included studies into 'Characteristics of included studies' tables (see Technical report). Information was collected on general details (title, authors, reference/source, country, year of publication, setting), participants (age, gender, withdrawals/losses to follow-up, subgroups), results (point estimates and measures of variability, frequency counts for dichotomous variables, number of participants, intention-to-treat analysis) and validity of results.

Data synthesis

In order to make a summary statement about the effect of the intervention to inform evidence-based recommendations, data were presented in tables, and where appropriate, using statistical methods such as meta-analyses. When participants, interventions, outcome measures and timing of outcome measurements were considered sufficiently similar, the Review Manager 5.3 software was used for meta-analyses. Where appropriate, subgroup analysis was conducted according to the specifications of the *a priori* selection criteria/PICO. Network meta-analysis was considered for the intervention questions, but was deemed inappropriate due to differences in study populations, the aspects of the interventions and insufficient data available for the relevant outcomes.

Quality/certainty of the body of evidence using GRADE evidence profiles

A GRADE evidence profile/table was prepared for each comparison within each clinical question, listed by outcome. For comparisons where no new evidence was found for a question addressed by the existing NICE guideline, GRADE tables can be found in the NICE guideline (NICE, 2018) evidence documents (https://www.nice.org.uk/guidance/ng87).For comparisons where new evidence was integrated with NICE evidence, this is indicated in the GRADE tables (see Technical report).

For each prioritised outcome, a certainty rating was documented based on consideration of the number and design of studies addressing the outcome, and on judgments about the risk of bias of the studies and/or synthesised evidence, inconsistency, indirectness, imprecision and any other considerations that may have influenced the quality/certainty of the evidence.

This overall quality/certainty of evidence reflected the extent to which our confidence in an estimate of the effect is adequate to support a particular recommendation (The GRADE Working Group, 2009) and results in an assessment of the quality/certainty of a body of evidence in one of four grades (Table 8) adapted from GRADE (The GRADE Working Group, 2009).

Table 8. Quality/certainty of the body of evidence

High		We are very confident that the true effect lies close to that of the estimate of the effect.
Moderate		We are moderately confident in the effect estimate: The true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different.
Low	OO	Our confidence in the effect estimate is limited: The true effect may be substantially different from the estimate of the effect.
Very Low	OOO	We have very little confidence in the effect estimate: The true effect is likely to be substantially different from the estimate of effect.

The GRADE Working Group notes that the quality of evidence is a continuum; any discrete categorisation involves some degree of arbitrariness. Nevertheless, advantages of simplicity, transparency, and vividness outweigh these limitations (The GRADE Working Group, 2009).

Drafting recommendations

Specific, unambiguous, actionable recommendations were drafted. In developing and interpreting the recommendations in this guideline, evidence was assessed alongside multidisciplinary health professional expertise and consumer perspectives. There are four key elements to each recommendation: type, wording, certainty of evidence (applies to EBRs) and grade of recommendation (applies to EBRs).

Types and wording of recommendations

Recommendation type is either evidence-based (EBR) or consensus (CCR). In addition, clinical practice points (CPP) were included for implementation issues such as safety, side effects and risks (Table 9).
For evidence-based recommendations (EBRs) and consensus clinical recommendations (CCRs), the terms "should", "could" and "should not" were used to reflect the interpretation of the quality/certainty of the body of evidence and judgements of the multidisciplinary GDG. The word "should" was used in the recommendations where the GDG judged that the benefits of the recommendation exceed the harms.
The word "could" was used when the quality of evidence was limited or the available studies did not clearly demonstrate advantage of one approach over another, or when the balance of benefits to harm was unclear.
The words "should not" were used when there was either a lack of appropriate evidence, or the harms were judged to outweigh the benefits.

Table 9: Recommendation types

EBR	Evidence-based recommendation: a structured evidence review was performed to answer a prioritised question to inform the recommendation.
CCR	Clinical consensus recommendation: recommendation was developed in either of the following ways: • Evidence to answer a prioritised question was sought, but there was insufficient evidence to inform an EBR, therefore a narrative review was prepared by an expert subgroup of the guideline development group • For questions of lower priority, or where high-quality evidence is known to be limited or non-existent, evidence was not sought and an expert subgroup within the guideline development group prepared a narrative review.
CPP	Clinical practice point: guidance based on important issues arising from discussion of evidence-based or clinical consensus recommendations, outside the scope of the evidence-finding process.

Discussion of recommendations in GRADE evidence-to-recommendation framework

The GRADE evidence-to-recommendation framework was used to document the discussion, judgments and decisions to reach consensus about evidence-based recommendations through assessment of the evidence, clinical expertise and the person's preference for factors such as: the balance of benefits and harms of the intervention; certainty of the evidence; resource requirements; equity; acceptability; feasibility; subgroup considerations; implementation considerations; monitoring and evaluation; and research priorities. Using the framework, each of the evidence-based recommendations was given an overall grading of conditional or strong for or against the option/intervention within the recommendation (The GRADE Working Group, 2009).

The system for classifying the strength of the recommendations, as defined in Table 10, was adapted from the GRADE approach (The GRADE Working Group, 2009).

The GDG acknowledges that lack of evidence is not evidence of the lack of an effect. This consideration is reflected in the strength assigned to recommendations on interventions that are not supported by evidence. For some interventions, to the evidence review found a lack of evidence of effect. The GDG acknowledges that this refers to lack of evidence of effect greater than that of placebo; people with ADHD may receive some benefits from the intervention, but these do not exceed the beneficial effects that can be expected from a placebo therapy (The Royal Australian College of General Practitioners, 2009).

Table 10: Strength of recommendations

Target group	Strong recommendations#	Conditional (weak) recommendations for the option (test or treatment)	Conditional (weak) recommendation for either the option or the comparison	Research only recommendations	Clinical practice points (CPP)##
Rating	********	*******	******	**NA**	**NA**
People with ADHD	Most people in your situation would want the recommended course of action and only a small proportion would not.	The majority of people in your situation would want the recommended course of action, but some would not.	There is considerable lack of clarity over whether the majority of people in your situation would want the recommended course of action or not.	The test or intervention should only be considered by people and clinicians within the setting of a research trial for which appropriate approvals and safety precautions have been established.	Clinicians, people and policy makers are informed on the clinical implications relevant to implementation of recommendations.
Health Professionals	Most people should receive the recommended course of action.	Recognise that different choices will be appropriate for different people and that greater effort is needed with individuals to arrive at management decisions consistent with values and preferences. Decision aids and shared decision making are important here.		The test or intervention should only be considered by peole and clinicians within the setting of a research trial for which appropriate approvals and safety precautions have been established.	
Policy makers	The recommendation can be adopted as policy in most situations.	Policy making needs to consider perspectives and involvement of diverse stakeholders.	Policy decisions remain unclear.	Policy makers need to be aware of the need for evidence gaps and health professional and consumer prioritised research gaps.	

Adapted from GRADE (The GRADE Working Group, 2009)

Strong recommendations based on high quality evidence will apply to most people with ADHD for whom these recommendations are made, but they may not apply to all people in all conditions; no

recommendation can take into account all of the often-compelling unique features of individual people and clinical circumstances.

A clinical practice point (CPP) is developed by the GDG to support recommendations. Advice can be provided to enhance shared decision making, and on factors to be considered in implementing a specific test or intervention.

Public consultation

Public and targeted consultation of the drafted guideline will be open for a period of thirty days in accordance with the legislative requirements set out in section 14A of the *National Health and Medical Research Council Act 1992* as outlined in the NHMRC standards and procedures for externally developed guidelines (2007) (National Health and Medical Research Council, 2007).

External review

The guideline will be reviewed independently by relevant professional experts, professional colleges and societies and through public consultation. An independent AGREE II assessment will also be conducted. Scheduled review and update of the guideline.

The GDG will be re-convened to review relevant sections of this guideline if any of the following occur within five years:

- a change in the indications registered by regulatory bodies for any drug included in this guideline; or
- publication of any new major randomised controlled trials or systematic reviews that potentially have a bearing on the safety of the recommendations in this guideline.

After 5 years the guideline panels will be reconvened and the guideline updated as per NHMRC processes.

Background

Features of ADHD

What is ADHD?

Attention deficit hyperactivity disorder (ADHD) is a neurodevelopmental disorder with an onset typically before 12 years of age. The symptoms include difficulties with attention and/or hyperactivity and impulsivity which are incongruent with developmental stage and interfere with activities and participation. Symptoms include:

- inattention, including difficulty sustaining attention on tasks which do not provide significant stimulation or frequent rewards, distractibility or disorganisation
- hyperactivity, including excessive motor activity and difficulties being still, particularly in structured situations that require self-control
- impulsivity, including a tendency to act in response to immediate stimuli, without consideration of the risks and consequences.

A diagnosis of ADHD is suggested when these symptoms occur often and negatively impact functioning in several areas including psychological, social, academic, occupational, and activities of daily living and leisure.

The two main diagnostic systems used internationally and in Australia to diagnose ADHD are the Diagnostic and Statistical Manual of Mental Disorders currently in its 5th Edition (DSM-5) (American Psychiatric Association, 2013); and the International Classification of Diseases 11th Edition (ICD-11) (World Health Organization, 2018).

Both the DSM-5 and ICD-11 classifications include three presentations (or subtypes) of ADHD with different combinations of symptoms:

- inattentive presentation, allocated when the symptom threshold for inattention is met
- hyperactive-impulsive presentation, allocated when the symptom threshold for hyperactivity-impulsivity is met
- combined presentation, allocated when the symptom thresholds for both the inattentive and hyperactive-impulsive presentation are met.

DSM-5 provides a list of 9 inattentive and 9 hyperactive-impulsive symptoms. For children, 6 of the 9 symptoms must be present to reach the threshold for diagnosis; for people aged over 17 years, only 5 symptoms are required. Adult-specific descriptions of symptoms are provided in the DSM-5 (American Psychiatric Association, 2013). The ICD-11 provides fewer specific requirements regarding symptom thresholds allowing for more flexibility and clinical judgement.

DSM-5 and ICD-11 both require difficulties to have been present for at least 6 months and to have occurred in more than one setting (such as home, school, work, with friends or relatives), with onset before age 12 years, but both note that some individuals may not come to clinical attention until after this age.

Prevalence

What is the prevalence of ADHD in Australia and internationally?

ADHD is the most common neurodevelopmental disorder in children and adolescents. The prevalence of ADHD in children and adolescents internationally is 5–8% (Polanczyk, De Lima, Horta, Biederman, & Rohde, 2007; Thomas, Sanders, Doust, Beller, & Glasziou, 2015; Willcutt, 2012), and in Australia is between 6% and 10% (Graetz et al., 2001; Lawrence et al., 2015).

There are no Australian adult prevalence studies using current DSM-5 diagnostic criteria, which specify a reduced symptom count of five (rather than 6) symptoms of inattention and hyperactivity/impulsivity for adults. The prevalence of adult ADHD in Australia is likely to be similar to that found internationally, which is between 2% and 6% of the population (Simon, Czobor, Bálint, Mészáros, & Bitter, 2009; Song et al., 2021; Willcutt, 2012). The prevalence of ADHD is higher in boys than girls, with this disparity reducing somewhat in adulthood. The inattentive presentation is the most prevalent.

The best estimates of the prevalence of ADHD in Australia come from the first and second Australian Child and Adolescent Surveys of Mental Health and Wellbeing. The first study conducted in 1998 included 3,597 children aged 6 to 17 years. It reported prevalence figures using DSM-IV of 7.5% overall, 9.4% in those aged 7–12 years, and 6.8% in those aged 12–14 years (Graetz et al., 2001). Subtype analysis found that inattentive type (3.7%) were more common than the combined (1.9%) and hyperactive-impulsive types (1.9%).

The second survey (Young Mind Matter), conducted in 2013/14 through interviews with 6,300 parents, reported that ADHD was the most comment mental health disorder in Australian children aged 4–17 years (Lawrence et al., 2015). ADHD occurred in 8.2% of children aged 4–11 years (10.9% boys, 5.4% girls), and 6.3% in children aged 12–17 years (9.8% boys, 2.7% girls) (Lawrence et al., 2015). Thus, ADHD prevalence in Australian children and young people is estimated to be between 6% and 10%. It is more common in boys than girls, and the inattentive presentation is the most common.

Only one Australian study of adults with ADHD was identified, which explored ADHD prevalence in identical twins using telephone interviews. The investigators reported a slightly lower than expected proportion of adults with ADHD. However, the study did not use clinical diagnoses or clinician assessment of ADHD, drew from a relatively small sample size and used DSM-III and DSM-IV criteria via telephone interviews with researchers (Ebejer et al., 2012). It reported a prevalence of 1.1% meeting DSM-IV criteria (N=21 women and N=28 men) and 2.3% if the age 7 years onset criterion was excluded.

Aetiology

What are the causes of ADHD?

In most cases ADHD can be considered a multifactorial disorder, where multiple biological and environmental risk factors, cumulatively increase the likelihood of developing the disorder. ADHD is highly heritable. Disruption to dopamine and noradrenaline, particularly lowered synaptic levels, is thought to be a key to the pathophysiology of ADHD (Arnsten & Pliszka, 2011; Levy, 1991; Pliszka, McCracken, & Maas, 1996).

Meta-analysis has revealed that individuals with ADHD show less activation in regions of the brain that are associated with inhibitory control (Hart, Radua, Nakao, Mataix-Cols, & Rubia, 2013). A number of environmental factors contributing risk towards the development of ADHD have emerged. As with genetic risk factors, these environmental exposures are not specific to ADHD, but may contribute to the general risk of developmental pathology across clinical syndromes. In most children with ADHD, no environmental risk factors are identified.

Biological risk factors and pathogenesis

Genetics

Whether considered as a continuous trait that varies in the general population or as a discrete diagnostic category, ADHD is highly heritable in both children and in adults with heritability estimated at 70–80% (Faraone et al., 2021; Faraone & Larsson, 2019; Larsson, Chang, D'Onofrio, & Lichtenstein, 2014; Levy, Hay, McStephen, Wood, & Waldman, 1997). Recent genome-wide association meta-analysis identified 12 independent genomic loci that increase susceptibility to ADHD.

Notably, significant genetic correlations were observed between ADHD and 43 other phenotypes, including educational outcomes, major depressive disorder, smoking, obesity-related phenotypes and mortality (Demontis et al., 2019). These findings explain the well-recognised clinical phenomenon whereby individuals with a similar genetic risk burden (e.g., full biological siblings) may present with different developmental or mental health disorders such as ADHD, intellectual disability, autism spectrum disorder, or mood disorders, a concept in developmental psychopathology known as multifinality. The molecular pathways by which genes confer risk for ADHD and related disorders are not yet known.

Neurotransmitter differences

The clinical effectiveness of psychostimulants in treating ADHD has led to the hypothesis that disruption to dopamine and noradrenaline – particularly lowered synaptic levels – is a key to the pathophysiology of ADHD (Arnsten & Pliszka, 2011; Levy, 1991; Pliszka et al., 1996). For instance, methylphenidate, which is used to treat ADHD, raises extracellular levels of dopamine and noradrenaline (Gamo, Wang, & Arnsten, 2010). Amphetamine (another stimulant treatment) also raises levels of dopamine and noradrenaline, but also interacts with other neurochemicals including acetylcholine, serotonin, opioids and glutamate (Cortese, 2020). Non-stimulant medications such as atomoxetine, clonidine or guanfacine also act by affecting noradrenaline levels (Cortese, 2020). Support for disruption to monoamine signalling (noradrenaline and

dopamine are monoamines) has also arisen from the neurochemistry of animal models of ADHD (Gainetdinov et al., 1999; Giros, Jaber, Jones, Wightman, & Caron, 1996; Rahi & Kumar, 2021; Russell, Allie, & Wiggins, 2000). Although molecular imaging studies focusing on transporter and receptor densities of the dopamine system in individuals with ADHD showed initial promise, subsequent studies have proven equivocal (Fusar-Poli, Rubia, Rossi, Sartori, & Balottin, 2012).

Brain Imaging

Large-scale brain imaging consortia, such as ENIGMA (http://enigma.ini.usc.edu), have significantly enhanced our understanding of the structural brain correlates of ADHD. Hoogman et al. (2017) performed a cross-sectional mega-analysis of subcortical structural brain differences between individuals with and without ADHD across ages. They reported smaller volumes of the nucleus accumbens, amygdala, caudate, hippocampus and putamen, and overall intracranial volumes, with effect sizes generally higher in children than adults (Hoogman et al., 2017). A subsequent analysis by the same group examined the structure of cortical areas and found lower surface area values for frontal, cingulate and temporal regions in children but not in adolescents or adults (Hoogman et al., 2019) (see also Faraone et al., 2021 for review). Further, using computational neuroanatomic techniques, Shaw et al. (2007) found a delay in cortical maturation, particularly in the prefrontal regions that play a critical role in the control of cognitive processes such as attention.

Studies of functional brain imaging are typically performed at rest or under cognitive challenge. Meta-analysis has revealed that individuals with ADHD show less activation in regions of the brain that are associated with inhibitory control, such as the inferior frontal cortex, supplementary motor areas and basal ganglia, as well as dorsolateral prefrontal, parietal and cerebellar areas important for attention, compared to those without ADHD (Hart et al., 2013). In resting-state fMRI (rs fMRI) the subject is not required to perform a task but rather is asked to lie quietly in the MRI scanner, thus permitting ease of scanning across a wide-age range.

Typically, investigators are interested in patterns of correlated activity across the brain. Such analyses have identified a number of distinct networks across the brain. One such network, known as the default mode network, is active during wakeful rest. It has been proposed that individuals with ADHD are less able to suppress default-mode activity that may break through to intrude during task-active scenarios, and may contribute to fluctuating performance and inattention (Kelly, Uddin, Biswal, Castellanos, & Milham, 2008), although recent studies have provided conflicting evidence of this (Cortese, Aoki, Itahashi, Castellanos, & Eickhoff, 2021; Sutcubasi et al., 2020). Although brain imaging offers potential to reveal novel biological insights, the reliability of findings on ADHD is compromised by heterogeneity within and between studies and the effects of age and medication history.

Environmental risk factors

A number of environmental factors have emerged as contributing towards the risk of developing ADHD. These were recently comprehensively reviewed in the World Federation of ADHD International Consensus Statement (Faraone et al., 2021) and include exposure to toxicants such as lead, phthalate, organophosphate pesticides, long-term maternal use of paracetamol during pregnancy, and prenatal exposure to the anti-epileptic drug valproate. Prenatal exposure to maternal smoking has also been linked to

an increased incidence of ADHD, but this effect is significantly diminished when adjusting for family history of ADHD, suggesting a link to an underlying genetic predisposition rather than a pure environmental risk per se (Faraone et al., 2021).

Research has focused on prenatal and birth complication events as potential risk factors for ADHD. Marked preterm birth (gestational age less than 32 weeks) and very low birth weight (birth weight less than 1.5 kg) have emerged as risk factors for ADHD from meta-analyses of large datasets. Maternal obesity, hypertension, preeclampsia, and hypothyroidism during pregnancy have also been associated with increased risk of ADHD in offspring (Faraone et al., 2021).

A number of large-scale studies and meta-analyses of cohort studies have linked the risk for ADHD to nutrient deficiencies (Faraone et al., 2021). These include lower overall blood levels of ferritin, and omega-3 polyunsaturated fatty acids (PUFAs) in individuals with ADHD, compared with non-ADHD controls and the association of lower maternal vitamin D levels with increased risk of ADHD in offspring (Faraone et al., 2021).

There is also a range of situational/environmental factors that can substantially increase the risk for development of ADHD. These factors include intrauterine exposure to maternal stress (e.g. death of a close relative during pregnancy), trauma (e.g. sexual abuse) and physical neglect (particularly for ADHD inattentive type), and psychosocial adversity (lowered family income, out-of-home care, paternal criminality, or maternal mental disorder) (Faraone et al., 2021).

As with genetic risk factors, these environmental exposures are not specific to ADHD. Rather they may contribute to the general risk of developmental pathology across clinical syndromes. In most children with ADHD, no environmental risk factors are identified.

Gene–environment interactions are also important to consider. Relevant parenting behaviours such as smoking and parenting style are likely influenced by genetic factors (Rutter, 2005). Furthermore, these risks may be epigenetically transmitted across generations (Nigg, 2018).

Cross-disciplinary research integrating genetic, neurobiological, environmental, and social data is needed to further advance our understanding of the aetiological pathways leading to ADHD.

Outcomes

What are the outcomes (i.e. prognosis) for individuals diagnosed with ADHD?

Much of the existing research focuses on average outcomes for individuals with ADHD, with less focus on how outcomes, including positive outcomes, may vary. Little is known about the outcomes associated with adults with ADHD in Australia. Additionally, little is known about outcomes for older adults.

On average, children with ADHD have poorer outcomes across multiple domains compared with children without ADHD. There is a substantial literature now demonstrating that ADHD affects numerous areas of functioning for children with ADHD, including social and academic functioning, increased family conflict, peer rejection, conduct difficulties and reduced self-esteem (Faraone et al., 2015).

Many individuals with ADHD will go on to complete school and attend university, but the factors associated with positive outcomes are less well understood (Dvorsky & Langberg, 2016). Factors that may promote positive outcomes in children with ADHD include social acceptance by peers, positive parenting approaches, and positive self-perceptions (Dvorsky & Langberg, 2016).

It is well established that ADHD is a long-term disorder, persisting in most and associated with a broad range of poorer outcomes in late adolescence and adulthood (Cherkasova et al., 2021; Di Lorenzo et al., 2021). A recent systematic review examined the long-term adult outcomes associated with ADHD across seven prospective ADHD cohort studies in the United States (10- to 30-year follow-up, mean age range 22–41 years). Across these studies, symptoms of ADHD persisted for 60–86% of individuals with ADHD, although there was substantial variation in the percentage who continued to meet the full criteria for ADHD (5.7% to 77%) due to differences in diagnostic classification systems used and variation in informants (Cherkasova et al., 2021). Mental health disorders such as disruptive behaviour disorders, including conduct disorder and oppositional defiant disorder, anti-social personality disorder, and substance misuse were commonly reported outcomes (Cherkasova et al., 2021).

Beyond mental health outcomes, individuals with ADHD have poorer educational and future employment outcomes in adulthood (Cherkasova et al., 2021; Christiansen, Labriola, Kirkeskov, & Lund, 2021). One meta-analysis found that individuals with ADHD were nearly four times more likely not to complete school: odds ratio (OR) 3.7; 95% confidence index (CI) 1.96–6.99) (Erskine et al., 2016). A recent systematic review identified 6 prospective studies (1380 with ADHD, 888 without ADHD) examining employment outcomes and found that individuals with a childhood history of ADHD had poorer employment quality including reduced income, and were more likely to receive public assistance (Christiansen et al., 2021). Individuals with ADHD had reduced educational attainment and lower occupational achievement (Christiansen et al., 2021).

Additionally, individuals with childhood ADHD have been reported to have poorer physical health in adulthood, including increased mortality and reductions in life expectancy, risky driving including accidents and infringements, obesity, and sleep problems (Cherkasova et al., 2021; Cortese et al., 2016; Diaz-Roman, Mitchell, & Cortese, 2018; Faraone et al., 2015; Li, Xie, Lei, Li, & Lei, 2020; Lugo et al., 2020). Health-related quality of life is also poorer in children with ADHD compared to peers across multiple domains including physical, psychosocial, achievement, and family life (Danckaerts et al., 2010; Faraone et al., 2015; Lee et al., 2016).

There is a growing number of Australian studies documenting the outcomes associated with ADHD with results generally consistent with the systematic reviews and meta-analyses reviewed above. One community-based cohort study tracking children with ADHD (n=179) from age 7 to age 10, found that ADHD was associated with poorer academic functioning, poorer emotional and behavioural functioning, poorer social functioning, and higher rates of co-occurring internalising and externalising mental health disorders, compared to children without ADHD (n=212) (Efron et al., 2020; Zendarski et al., 2022). This study found that

best predictors of outcomes at age 10 were age 7 measures of working memory (academic functioning), severity of ADHD symptoms (parent- and teacher-reported emotional and behavioural functioning) and autism symptom severity (parent-reported emotional functioning and parent-reported social functioning) (Efron et al., 2020).

Another prospective cohort study conducted in Victoria, which examined outcomes for adolescents with ADHD (n=130) in the early years of high school, found they had poorer academic performance across multiple domains, poorer school engagement and increased school suspensions compared with state averages (Zendarski, Sciberras, Mensah, & Hiscock, 2017a, 2017b). Depression, lower adolescent supervision and devaluing education were associated with poorer school attitudes (Zendarski et al., 2017b).

Higher cognitive ability, higher neighbourhood socioeconomic status and attending an independent school was associated with lower risk of school suspension, while higher levels of conduct and ADHD symptoms were associated with increased risk of suspension. Increased inattention symptoms, bullying, lower adolescent supervision, male sex, and lower school neighbourhood socio-economic status were associated with poorer performance on one or more academic domains (Zendarski et al., 2017a).

A large population-based data linkage study conducted in Western Australia found adverse effects of ADHD on academic performance, with 23% of boys and 28% of girls with ADHD having numeracy scores below benchmarks in the third year of school (11% for boys and girls without ADHD) (Silva et al., 2020). Linked hospital data showed that children with ADHD also had increased risk of early hospitalisations before the age of 4 (Silva, Colvin, Hagemann, Stanley, & Bower 2014). There was also an increased odds of having a community-correction (OR = 2.48, 95% CI 2.22-2.76) or an incarceration record (OR = 2.63, 95% CI 2.01-3.44) compared to boys without ADHD (Silva, Colvin, Glauert, & Bower, 2014). Odds of having a community-correction (OR = 2.86, 95% CI 2.03-4.03) or incarceration record (OR = 7.27, 95% CI 2.29-23.08) were even higher for girls with ADHD compared to girls without ADHD. The most common reason for the first justice record was for the offences of burglary and breaking and entering (Silva, Colvin, Glauert, et al., 2014).

Characteristic course and changes across the lifespan

Does ADHD have a characteristic course and does its presentation change across the lifespan?

ADHD is a disorder which occurs across the lifespan, although it can present in different ways and in combination with different disorders at different ages. Little is known about the presentation of ADHD in older age. The symptoms of ADHD are present before the age of 12 years, but a diagnosis may not occur until later when functional impact may become more obvious as demands for independence increase.

Young children

It is developmentally appropriate for preschoolers to be active, impulsive and unable to sit still and concentrate for long periods of time, and therefore educational settings for preschoolers vary substantially from school for older children (Halperin & Marks, 2019; Wigal et al., 2020). This can make identifying symptoms of ADHD that exceed what is developmentally appropriate for this age group quite a challenge

(Halperin & Marks, 2019). Preschoolers who do have ADHD exhibit a very high level of overactivity, impulsivity and/or attention difficulties that can cause significant impairment in daily life. Hyperactivity and impulsivity symptoms are the most evident symptoms of ADHD in preschoolers (Franke et al., 2018; Halperin & Marks, 2019; Willcutt, 2012), and the DSM-5 items assessing hyperactivity/impulsivity clearly distinguish between preschoolers with and without ADHD (Halperin & Marks, 2019). Co-occurring disorders are common in preschoolers with ADHD, with up to 70% meeting criteria for one or more co-occurring disorders (Wigal et al., 2020), most commonly oppositional defiant disorder, communication disorders and anxiety (Wigal et al., 2020). ADHD in preschoolers tends to persist into childhood and adolescence (Halperin & Marks, 2019; Wigal et al., 2020).

Children and young people

The ADHD inattentive type is the most common presentation of ADHD, although ADHD combined type is more likely to present to clinical services (Willcutt, 2012). This is because in primary school-aged children, hyperactivity and impulsivity symptoms are usually the most overt symptoms of ADHD; inattention symptoms become more evident as children progress through school (Franke et al., 2018; Willcutt, 2012) and academic and cognitive demands increase.

Commonly observed impairments in the school environment include academic underachievement and peer relationship difficulties (American Psychiatric Association, 2013). Children and adolescents tend to also have more strained relationships with parents and siblings (Young et al., 2020). The nature of impairments associated with ADHD vary somewhat based on developmental age.

For example, in peer relationships common difficulties experienced by younger children with ADHD may include peer rejection and having fewer friends. As social relationships become more complex in adolescence, these difficulties may increase and be associated with increases in loneliness and use of maladaptive coping strategies (Young et al., 2020). As young people with ADHD transition into adulthood, risk taking may increase (including earlier sexual activity, risky driving, early pregnancy, delinquency, criminality and substance misuse) (Franke et al., 2018; Young et al., 2020).

Co-occurring disorders during childhood are common, and can include disruptive behaviour disorders, anxiety and mood disorders, learning and language disorders, intellectual disabilities, sleep difficulties and tics (Faraone et al., 2015; Franke et al., 2018). Emotion regulation difficulties (Shaw, Stringaris, Nigg, & Leibenluft, 2014) affecting up to 40-50% of children with ADHD (Faraone et al., 2019), and autism spectrum disorder co-occurs with ADHD in 20–50% of cases (Franke et al., 2018).

Adults

DSM-5 includes examples alongside each ADHD symptom to enable better identification of symptoms in adults (American Psychiatric Association, 2013) – see Table 11 for examples.

Table 11. DSM-5 ADHD symptoms

Inattention symptoms		**Hyperactivity symptoms**	
Symptoms	**Example given for adolescents/adults**	**Symptoms**	**Example given for adolescence/adults**
Fails to give close attention to details or makes careless mistakes in schoolwork, work, or other activities	e.g., overlooks or misses details, work is inaccurate	Fidgets with or taps hands or feet or squirms in seat	
Has difficulty sustaining attention in tasks or play activities		Leaves seat in situations when remaining seated is expected	e.g., leaves place in the office or other workplace
Does not seem to listen when spoken to directly		Runs about or climbs excessively in situations in which it is inappropriate (may be limited to feeling restless)	
Does not follow through on instructions & fails to finish schoolwork, chores or duties in the workplace	e.g., starts tasks but quickly loses focus	Unable to play or engage in leisure activities quietly	
Has difficulty organizing tasks and activities		'On the go' acting as if 'driven by a motor'	e.g., unable to be or uncomfortable being still for extended time, as in restaurants, meetings
Avoids, dislikes, or is reluctant to engage in tasks that require sustained mental effort	e g., preparing reports, completing forms	Talks excessively	
Loses things necessary for tasks or activities	e.g., wallets, keys, glasses	Blurts out an answer before a question has been completed	
Is easily distracted by extraneous stimuli (may include unrelated thoughts)		Has difficulty waiting his or her turn	e.g., while waiting in line
Is forgetful in daily activities	e.g., chores, running errands, returning calls	Interrupts or intrudes on others	e.g., may intrude into or take over what others are doing

Adapted from American Psychiatric Association, 2013

The rate of persistence of ADHD into adulthood varies across studies. Some suggest that adults are more likely to continue to present with inattention symptoms relative to overt symptoms of hyperactivity (Franke et al., 2018). However, it can be difficult to distinguish between the presence or absence of symptoms given the different strategies and coping mechanisms that adults may have acquired to manage or mask their symptoms.

ADHD may be easier to identify in women during adulthood, where women may become aware of their symptoms and self-refer for assessment (Franke et al., 2018; Young et al., 2020). Furthermore, an exacerbation of ADHD symptoms and impairments may be seen during transition periods, such as transitioning to living away from the family and commencing university/employment (Young et al., 2020). Inattention symptoms in adulthood may be noticed when individuals appear distractible, slower to present and formulate ideas, or have difficulty following conversations (Franke et al., 2018; Kooij et al., 2019). Some adults with ADHD may experience 'hyperfocus' and focus on specific activities for many hours when it is of high interest (Kooij et al., 2019).

Mind wandering and mental restlessness may also be present.(Kooij et al., 2019) Inattentive symptoms can be problematic in the work context if they cause organisational difficulties, or problems prioritising and starting work, and shifting between tasks (Kooij et al., 2019). There are many differences in the expression of hyperactivity between childhood and adulthood, many of which are less overt in adulthood (Franke et al., 2018). Adults can present with more subtle hyperactivity (such as feeling restless and not being able to relax)(Kooij et al., 2019). Impulsivity in adults can manifest in excessive spending, binge eating, interpersonal conflict, and risk taking (Kooij et al., 2019)

Adults with ADHD are equally likely to meet criteria for one or more co-occurring disorders and experience significant impairments in daily life including occupational and relationship functioning (e.g., difficulties in romantic relationships)(Faraone et al., 2015; Franke et al., 2018). Emotional regulation difficulties are also common (Beheshti, Chavanon, & Christiansen, 2020; Franke et al., 2018; Shaw et al., 2014; Young et al., 2020).

The concept of 'adult-onset ADHD' has sometimes been cited in clinical literature, referring to adults whose ADHD symptoms commenced in adulthood (Franke et al., 2018; Taylor, Kaplan-Kahn, Lighthall, & Antshel, 2021). A recent systematic review suggested three reasons for the perceived onset of ADHD in adulthood: 1) symptoms not previously being sufficiently elevated or impairing due to lower environmental demands, the presence of supports in the environment or other protective factors such as high IQ; 2) failure to identify ADHD in the presence of other disorders or falsely considering ADHD when another disorder is a better explanation of the symptoms; and 3) that ADHD symptoms may actually have been present in childhood but were not identified (Taylor et al., 2021).

Older adults

Very little research has examined the presentation of ADHD in older adults (Franke et al., 2018). One study of 296 adults with ADHD (mean age 69.55 years) reported that the negative impairments associated with ADHD across family, social, financial and organisational difficulties were stable over time, based on individuals' retrospective reports (Philipp-Wiegmann, Retz-Junginger, Retz, & Roesler, 2016).

Co-occurring disorders

What other disorders commonly co-occur with ADHD?

There is high prevalence of co-occurring disorders in individuals with ADHD. These disorders may result in higher rates of daily difficulties and can require treatment. The prevalence of co-occurring disorders in ADHD changes over age and with development. In children and adolescents with ADHD, around two-thirds will have a co-occurring mental health disorder (Gnanavel, Sharma, Kaushal, & Hussain, 2019; Reale et al., 2017).

The most common co-occurring disorders in childhood are specific learning disorders, oppositional defiant disorder, language disorders and anxiety disorders, with depressive disorders and substance use disorders emerging in adolescence. Adults with ADHD also have a high prevalence of co occurring disorders with up to 80% having at least one additional mental health disorder (Katzman, Bilkey, Chokka, Fallu, & Klassen, 2017; Kessler et al., 2006). The highest rates of co-occurring mental health disorders in adults with ADHD are for depressive disorders, bipolar disorders, anxiety disorders and substance use disorders (Kessler et al., 2006).

Principles and assumptions

Questions about good clinical practice in the care of people with attention deficit hyperactivity disorder (ADHD), identified through a stakeholder engagement process, included the following:

- How should ADHD be assessed, diagnosed and monitored, and by whom?
- How often should people with ADHD be seen?
- Are health professionals, including psychiatrists, paediatricians, psychologists, GPs, nurses, allied health professionals and educators adequately trained to treat and support individuals with ADHD?
- For which people with ADHD should a transition between services take place between life stages (preschool to school, primary to secondary school, school to adulthood, older adults)?
- Which clinicians should initiate pharmacological therapy, and continue it long term?
- What principles should clinicians follow when discussing decisions to start, adjust, or discontinue pharmacological treatment for people with ADHD?
    - Which factors need to be considered when making initial treatment decisions for ADHD?
    - How should ADHD symptoms severity and clinical profile guide treatment decisions?

These questions have been addressed in part by the underlying principles described in this chapter.
This clinical practice guideline makes certain assumptions about ADHD, the context in which care is delivered to people with ADHD, and the services and people who deliver it. Therefore, this guideline should be used with consideration of the following principles and assumptions:

Diagnosis

ADHD is a diagnosis made when an individual has a constellation of symptoms and functional impairment. The diagnostic framework is scientifically valid and can be reliably applied. The diagnostic criteria include the functional impairment of symptoms and the context in which they occur (Royal Australia and New Zealand College of Psychiatrists, 2013).

Approach

The approach for assessment, diagnosis, intervention, and support should occur within a holistic, multi- or inter-disciplinary framework and often involves a multiagency approach. Holistic care incorporates biological, psychological, educational, social, spiritual and cultural dimensions, and includes all aspects of a person's functioning, activities, participation, abilities and disabilities and the context in which they occur. Individualised plans for interventions, support, care coordination and support will be based on scientific research and evidence, particularly regarding effectiveness, and on best practice principles that are appropriate for the resource setting.

Format

Services for the diagnosis, treatment and support of individuals with ADHD could be provided in a variety of formats. Some services necessitate in-person sessions, such as those that require physical examinations. In-person consultations can sometimes assist the clinician to develop a more nuanced understanding of the person with ADHD (and their family).

For some services, either telehealth or in-person formats could be provided, with the following considerations:

- the person's and their family's preference
- required distance of travel
- infrastructure available: private room; quiet space; distraction free
- access to computer/phone; stable internet connection; sufficient data
- for children, ensuring appropriate childcare is available during feedback or parent sessions
- support person available for family
- interpreter available, if required.

Best practice

Best-practice principles include individualised plans developed in accordance with principles of co-production, where people with ADHD, families and carers are at the centre of decision-making about all aspects of their healthcare. This requires advocacy, attentive listening, engagement in integrated care pathways that foster continuity of care, the exercise of choice and meaningful informed consent, compassion, empowerment, hope, transparency and partnership. The best approach to clinical practice will therefore be person-centred and will promote the independence of the person with ADHD. It will be inclusive, provide choice and give control. It will also be inclusive of other stakeholders. Best practice also requires a recovery-orientated and trauma-informed approach and enables supported decision making.

Professionals

Professionals should be appropriately trained and credentialled. They should:

- be in good standing with their professional bodies and adhere to the contemporary standards of good practice for their profession
- act professionally, with integrity and share the core values required of them by their profession.
- adhere to the codes of conduct, ethical guidelines and policies and procedures required by their employing organisation and their profession
- have an adequate knowledge of applicable laws and regulations in the jurisdiction in which they are practicing, particularly as they relate to medicines, prescribing, safety and use of stimulants
- maintain their professional performance through continuing professional development as required.
- ensure they only deliver care to people with ADHD when they have the competence to do so.

Those not regulated by the Australian Health Practitioner Regulation Agency (e.g. ADHD coaches, speech pathologists, counsellors, and peer support workers, should ensure they have undergone formalised training from reputable training providers.

Services

Services have the responsibility to deliver care to people with ADHD. In order to enable professionals to provide optimal care and treatment, the system in which they work should be built on sound best-practice principles based on evidence, informed by lived experience, and designed to produce the best outcomes for people with ADHD. All services need to remain fully accredited and have appropriate clinical governance systems to ensure safety and quality. They must provide a skilled and well-resourced workforce.

Services need to ensure that staff will comply with safety systems to protect people with ADHD, will communicate with others effectively, will provide continuity of care, will maintain partnerships with people with ADHD and their family and carers as above, will maintain trust, honesty, and respect, and will act with sound ethical principles.

Services should strive for equitable access to timely quality care, irrespective of locality or circumstance, cultural background, language, identity or age. Services should be culturally safe. Services should acknowledge the strengths and abilities of people with ADHD and contribute to each person with ADHD reaching their potential. Services should not discriminating on the basis of a person having ADHD.

Apart from prescribing, which is restricted to medical practitioners (and, in some circumstances, nurse practitioners), this guideline does not specify which professionals (clinicians) can diagnose, assess and treat ADHD. Restricting permission to provide ADHD care to clinicians with certain credentials can reduce access to services and care and extend waiting lists, deprive certain professionals of autonomy, and can foster the establishment of siloed working. Instead, it is assumed that as professionals, clinicians only provide services for which they are appropriately trained and credentialed (see above).

When reading this guideline

All the recommendations made in this guideline are predicated on the assumption that professionals themselves and the organisations in which they deliver care operate according to these principles. As such, they form the basis upon which high-quality care can be delivered. Adherence to these principles and practice is what people with ADHD should expect from their professionals and the services that employ them. If followed, along with recommendations of this guideline, equity will be assured, all systems will be respectful, and the health and wellbeing of individuals with ADHD – and those who care for them – will be improved.

Language use

The Guideline Development Group (GDG) acknowledges that language can influence attitudes and impact on people's lives. Phrases like 'children with ADHD', 'children living with ADHD' or 'person with lived experience of ADHD' are examples of 'person-first language'. In contrast, 'identity-first language' puts the disorder first (e.g. 'hyperactive person'). Both person-first and identity-first language could be preferred by different individuals, in different contexts and at different times.

The language used in this guideline is primarily person-first, consistent with the approach set out in the guide ***Talking About ADHD*** (https://aadpa.com.au/talking-about-adhd) prepared by the Australian ADHD Professionals Association (AADPA) and endorsed by a range of national and international professional and consumer organisations (Table 12). Although this guideline has been written with careful consideration of language, it is possible that our words could unintentionally offend some readers. We apologise if this happens.

The GDG acknowledges and respects the Traditional Custodians of the Lands on which we work and pays respect to elders' past, present and emerging. Throughout this document, the phrase 'Aboriginal and Torres Strait Islander peoples' is used to refer to Australian Indigenous peoples.

Table 12: Guide to talking about ADHD

Avoid	Use
Suffer Suffering	Live or Lives with Struggles
Label	Diagnosis
Behaviour	Symptoms Traits Characteristics
Manage a child	Care for Support
Manage behaviour	Scaffold Guide
Deficit	Difference Neurodiverse
Treatable	Thrive with treatment and support

Source: Talking about ADHD (AADPA, 2021)

Chapter 1. Identification

1.1 High-risk groups

Clinical questions

Which groups are at high risk of developing ADHD?

Clinical practice gaps, uncertainties and need for guidance

Attention deficit hyperactivity disorder (ADHD) often co-occurs with other disorders. Individuals may come to clinical attention for co-occurring disorders and receive treatment for the co-occurring disorder, but ADHD may remain undiagnosed and untreated. This can result in significant costs to the individual, their family and, more broadly, to society due to the impact of undiagnosed ADHD symptoms. Understanding which groups are at high risk of developing ADHD is important so clinicians can be alert for identifying ADHD in these groups.

Summary of evidence review

The updated evidence review identified 15 studies which explored groups of people who were more likely than the general population to have ADHD or are more likely to have missed a diagnosis of ADHD. In children and adolescents, this included studies of anxiety disorders autism spectrum disorder, epilepsy, family history of ADHD, imprisoned, intellectual disability, children in out of home care, mood disorders, oppositional defiant disorder, premature birth, substance abuse, and tic disorders.

GRADE certainty of the evidence in the child and adolescent studies was very low for 2 areas, low in 4 areas, and moderate for 6 areas. Of the 12 different high-risk groups explored, 8 had significantly higher risk of having ADHD than the control groups. In adults, included studies explored 9 different high-risk groups: people with borderline personality disorder, people with a family history of ADHD, people with intermittent explosive disorder, people with internet addiction, people with psychotic disorders, people with substance use disorder, people who have made a suicide attempt, people with suicidal ideation, and people with treatment-resistant depression. GRADE certainty of the evidence in the adult studies was low for 8 high-risk groups and moderate for one. Seven of the 9 high-risk groups had significantly higher risk of ADHD than the control groups.

Summary of narrative review

For several groups, identified studies did not meet the criteria for inclusion in the systematic review as indicated below by the hash symbol (#). However, several systematic reviews or quality studies have been conducted for these groups. A systematic review and meta-analysis on the prevalence of ADHD in incarcerated individuals from 42 studies found 30% of youth and 26% in adults in prison had ADHD (Young, Moss, Sedgwick, Fridman, & Hodgkins, 2015), echoed in a more recent review (Baggio et al., 2018). There is a high prevalence of ADHD in children and young people with mood disorders including bipolar and major depressive disorder (Sandstrom, Perroud, Alda, Uher, & Pavlova, 2021) and in adolescents with substance use (Lange, Rehm, Anagnostou, & Popova, 2018). Children and adolescents at higher risk of ADHD also

include those with language disorders (Korrel, Mueller, Silk, Anderson, & Sciberras, 2017) and those with specific learning disorders (Boada, Willcutt, & Pennington, 2012; Morsanyi, van Bers, McCormack, & McGourty, 2018). Around half of people with fetal alcohol spectrum disorder may have ADHD (Lange, Rehm, et al., 2018). People with acquired brain injury have higher rates of premorbid ADHD (Ilie et al., 2015). Low birth rate has also been associated with an increased risk of ADHD (Momany, Kamradt, & Nikolas, 2018).

Evidence also suggests that girls and women with ADHD may frequently go unrecognised or be diagnosed late (Hinshaw, Nguyen, O'Grady, & Rosenthal, 2021; Quinn & Madhoo, 2014), with a lower gender ratio in adulthood-diagnosed versus childhood-diagnosed ADHD (May, Aizenstros, & Aizenstros, 2021). This difference may be due to various factors including a low clinical suspicion for girls, in whom inattentive symptoms may be more prominent than hyperactivity-impulsivity symptoms (Quinn & Madhoo, 2014). Girls and women with ADHD may experience high levels of emotion dysregulation and sometimes receive other diagnoses such as anxiety and depression (Quinn & Madhoo, 2014). Parents may under-recognise girls hyperactivity-impulsivity symptoms, or a diagnosis might be made in girls only when other co-occurring emotional or externalising symptoms are present (Mowlem, Agnew-Blais Taylor, & Asherson, 2019).

Evidence-to-recommendation statement

The evidence-based recommendations were needed to raise awareness that the prevalence of ADHD is higher in some groups and to avoid health professionals missing a diagnosis of ADHD. While evidence was not identified in the evidence review for the groups indicated by the hash symbol (#), the experience of the committee and emerging research outlined in the narrative review suggested that these groups experience high prevalence of ADHD and can frequently be diagnosed late or have a missed diagnosis. These groups include girls and women, and the Guideline Development Group (GDG) agreed a specific recommendation is warranted to draw clinical attention to this subgroup.

See Technical report, section 2.2 for further details.

Recommendations

1.1.1	EBR CCR#	Clinicians should be aware that the following groups of people, including children, adolescents and adults, have an increased prevalence of ADHD, compared with the general population: **Children:** • in out of home care • diagnosed with mood disorders# • diagnosed with oppositional defiant disorder and conduct disorder# **Children and adolescents:** • diagnosed with anxiety disorders • with epilepsy • with a history of substance abuse# **Adults:** • with a history of substance abuse • with a mental health disorder (including borderline personality disorder, intermittent explosive disorder, internet addiction, psychotic disorders) • who experience suicidal ideation **People of all ages:** • with neurodevelopmental disorders including autism spectrum disorder, intellectual disability, tic disorders , language disorders# and specific learning disorders# • born preterm • with a close family member diagnosed with ADHD# • born with prenatal exposure to substances including alcohol and other drugs# • with acquired brain injury# • who are imprisoned# • with low birth weight#	****	⊕⊕◯◯ LOW to ⊕⊕⊕⊕ HIGH
1.1.2	CPP	Clinicians should be aware that ADHD could be under-recognised in girls and women and that they: • are less likely to be referred for assessment for ADHD • may be more likely to have undiagnosed ADHD • may be more likely to receive an incorrect diagnosis of another mental health or neurodevelopmental disorder	NA	NA

Clinical considerations for implementation of the recommendations

It is important to ensure that training programs for professionals who are likely to come into clinical contact with people with ADHD adequately cover ADHD and how to recognise it in its various presentations or in combination with other disorders, particularly in higher-risk groups. These professionals include clinicians (whether paediatricians, child and adolescent psychiatrists, adult psychiatrists and forensic psychiatrists,

psychologists, and all allied health and support worker professionals), and educators at all levels of the education system including technical and further education (TAFE) and tertiary settings. Such training is also needed for employers who come into contact with high-risk groups, such as prison officers and providers of out-of-home care.

It is challenging to provide adequate services, and timely access to such services, for all who have ADHD and who require care and treatment (especially those at high risk), particularly when faced with competing demands in already overstretched services. People living in remote communities in rural locations face particular challenges to accessing services. In developing business cases for better access to ADHD care, the cost of ensuring equitable access to services must be balanced against the wider societal cost of not doing so.

See Technical report, section 2.2 for further details.

1.2 Screening and identification

Clinical questions

Should screening for ADHD occur at a population level?

Should screening for ADHD occur in high-risk populations?

Clinical practice gaps, uncertainties and need for guidance

There is evidence that ADHD is underdiagnosed internationally and in Australia (Asherson et al., 2012; Deloitte Access Economics, 2019; Ginsberg, Quintero, Anand, Casillas, & Upadhyaya, 2014; Sciberras et al., 2020). Failing to provide people with a diagnosis of ADHD, and therefore failing to offer effective treatment, carries a high cost (Asherson et al., 2012; Deloitte Access Economics, 2019; Ginsberg et al., 2014; Sciberras et al., 2020). Whether to screen for ADHD at a population level needs to be considered.

This includes exploring the sensitivity and specificity of screening tools, and the benefits and costs of screening in identifying true cases and false positive cases to the healthcare system, individuals and their families.

It is also well established that certain groups are at much higher risk of developing ADHD (see question 2.3). Costs of screening high-risk groups are therefore likely to be less than screening the general population, but universal screening may be similarly limited by the sensitivity and specificity of tools, and costs and burden to the healthcare system of screening. Guidance is thus required as to whether screening for ADHD should occur at a population level or within high-risk populations.

Summary of narrative review

Population-level screening

It is acknowledged that there may be frequent underdiagnosis of ADHD in a range of education and health settings. However, based on the findings of poor screening test accuracy, universal screening for ADHD should not occur at the population level (e.g. in preschools, primary and secondary schools).

High-risk group screening

While there is an increased risk of ADHD in certain high groups (see 2.1), accurate screening tools are lacking. Commonly used ADHD screening measures may result in low specificity (e.g. high false positives) in high-risk groups such as those with other mental health disorders with overlapping symptoms. The cost associated with allowing people with ADHD in high-risk groups to remain undiagnosed and untreated likely outweighs the costs of screening in this sub-population.

Screening for ADHD should occur when conducting diagnostic assessments of individuals in high-risk groups with a higher prevalence of ADHD than the general population as identified in 2.3. However, screening tools may identify a high number of false positives in such groups. Services and clinicians should be aware of this risk and the implications for their services, such as additional assessment costs, should they choose to implement screening. Screening should be followed by further assessment for ADHD. Additional research on screening tools needs to be conducted to establish valid and reliable measures.

ADHD screening tools have not been validated in some high-risk groups, such as Aboriginal and Torres Strait Islander peoples, individuals with acquired brain injury and those with suicidal ideation. The reliability and validity of using existing ADHD screening tools in these groups is unknown.

Recommendations

1.2.1	CCR	Universal screening for ADHD should not occur at the population level (e.g. in preschools, primary and secondary schools).	NA	NA
1.2.2	CCR	Clinicians conducting diagnostic assessments with people from high-risk groups (as identified in high-risk groups recommendations) could screen for ADHD. Individuals who screen positive should undergo further assessment for ADHD.	NA	NA
1.2.3	CPP	Organisations that provide services to people from high-risk groups could consider systematic screening for ADHD. Screening could involve use of a screening questionnaire, asking questions during clinical interviews or performing observations. Individuals who screen positive should undergo further assessment for ADHD.	NA	NA

Clinical considerations for implementation of the recommendations

A high number of people screening positive for ADHD places a burden on the healthcare system to assess, diagnose and treat these individuals. In the absence of an accurate screening tool, the implications of false positives increase the burden on assessment services, resulting in wasted resources and associated costs.

The reliability and validity of screening instruments needs to be improved to avoid unnecessary costs for assessment of false positives and failure to identify true positives. Services should conduct screening in high-risk groups based on their own cost-benefit analysis of the measures they choose for screening.

Screening has not been studied in subgroups such as Aboriginal and/or Torres Strait Islander peoples, or cultural and linguistically diverse communities, and this lack of evidence is likely to affect health equity. People with ADHD within these subgroups or in groups with lower socioeconomic status may remain under diagnosed.

See Technical report, section 2.4 for further details.

Chapter 2. Diagnosis and assessment

2.1 Diagnosis

Clinical questions

How should ADHD be assessed, diagnosed, and monitored, and by whom?

Clinical practice gaps, uncertainties and need for guidance

A consistent, high-quality process for evidence-based assessment, diagnostic investigation and monitoring is needed for attention deficit hyperactivity disorder (ADHD) in the Australian context.

Summary of narrative review

Identified sources of guidance on assessment, diagnosis and monitoring included the UK National Institute for Health and Care Excellence (NICE) ADHD guidelines (NICE 2018), which are the highest-rated guidelines for ADHD using the Appraisal of Guidelines for Research & Evaluation (AGREE II) tool (Razzak et al., 2021), National Health and Medical Research Council ADHD practice points (National Health and Medical Research Council, 2012), Royal Australasian College of Physicians ADHD guidance (Royal Australasian College of Physicians, 2009), Canadian ADHD guidelines (Canadian ADHD Resource Alliance 2018), Diagnostic and Statistical Manual of Mental Disorders Fifth Edition (American Psychiatric Association, 2013) and the International Classification of Diseases 11th edition (World Health Organization, 2018).

A recent review of the quality of 5 major international diagnostic guidelines (National Institute for Health and Care Excellence guidelines, Scottish Intercollegiate Guidelines Network, Canadian Attention Deficit Hyperactivity Disorder Resource Alliance (CADDRA), British Association of Psychopharmacology and the American Academy of Paediatrics) reported that all guidelines recommended a categorical diagnosis

approach based on the DSM or ICD classifications (Razzak et al., 2021). All recommended using interview and questionnaires, as well as informants, as key components of the diagnostic process.

These 5 guidelines noted that neuropsychological testing was not required for the diagnosis of ADHD. CAADRA also undertook a review of systematic reviews and meta-analyses published between 2006 and 2016 on the diagnosis of ADHD and found no other strategies that achieved additional benefit beyond that of clinician interview in combination with rating scales. Direct observations such as observing children in their educational setting, neuropsychological and psychoeducational assessments, computerised cognitive assessments, neuroimaging and electroencephalography (EEG) did not increase the accuracy of diagnosis.

See Principles and assumptions for guidance on who should diagnose ADHD.
See section 5.3 for guidance on monitoring care for those with ADHD.

Recommendations

2.1.1	CCR	Assessment for diagnosis of ADHD should include all of the following: • a full clinical and psychosocial assessment of the person, including discussion about symptoms in the different domains and settings of the person's everyday life • a full developmental, mental health and medical history, and • observer reports and assessment of the person's symptoms and mental state • a medical assessment to exclude other causes of the symptoms, or associated disorders that also require investigation, intervention and support.	NA	NA
2.1.2	CCR	In an assessment for a diagnosis of ADHD, a clinician should: • assess symptoms and signs of hyperactivity/impulsivity and/or inattention and ensure all the following apply: ○ symptoms meet the diagnostic criteria in DSM-5, ICD-10 (hyperkinetic disorder) or ICD-11 and ○ symptoms cause at least moderate psychological, social and/or educational or occupational impairment based on interview, questionnaire and/or direct observation in multiple settings (including school for those in educational settings), and ○ symptoms are pervasive, occurring in two or more important settings including social, familial, educational and/or occupational settings. • exclude neurodevelopmental or mental health alternative diagnoses, drug, dietary or physical disorders causing symptoms consistent with ADHD • include an assessment of the person's needs, functional or participation impairments and quality of life.	NA	NA

		• include an assessment of co-occurring disorders, social, familial and educational or occupational circumstances and physical health. • for children and young people, assess their parents' or carers' mental health.		
2.1.3	CCR	A diagnosis of ADHD should not be made solely based on rating scale or observational data. However, rating scales are valuable adjuncts and should be incorporated.	NA	NA
2.1.4	CCR	Observations from more than one setting and reporter (e.g. a teacher at school for children) should be used to confirm if symptoms, function and participation difficulties occur in more than one setting.	NA	NA
2.1.5	CCR	ADHD should be considered as a possible diagnosis in all age groups, including adults over age 65 years. Symptom criteria should be considered based on age and developmental level.	NA	NA
2.1.6	CPP	Clinicians should consider the different presentations of ADHD and the fact that many children and adults may not present with the most obvious symptoms of hyperactivity/impulsivity. Clinicians should be aware the inattentive presentation may not be identified until secondary school, following increased demands for organisation and independent study.	NA	NA
2.1.7	CPP	The views of people with ADHD, including children and young people, should be considered when determining the importance of their impairments and limitations	NA	NA

Clinical considerations for implementation of the recommendations

These recommendations are consistent with current practice, and therefore are likely to be feasible and accepted. Current barriers to diagnostic and treatment services for people with ADHD include a lack of ADHD-specific clinician expertise and limited public, low-cost diagnostic services, particularly for those with low socio-economic status and those in rural and remote areas of Australia.

See Technical report, section 3.1 for further details.

2.2 Co-occurring disorders and differential diagnosis

Clinical questions

Which disorder/s need to be excluded to make a diagnosis of ADHD?

Which disorder/s should be considered for a co-occurring diagnosis with ADHD?

Clinical practice gaps, uncertainties and need for guidance

A consistent assessment, diagnostic and monitoring process is needed for accurate diagnosis of ADHD and co-occurring diagnoses in the Australian context.

Summary of narrative review

A high proportion of people with ADHD have co-occurring neurodevelopmental, mental health and medical disorders (Background section). ADHD can be diagnosed in the presence of other disorders.

In children the most common co-occurring disorders are oppositional defiant disorder, language disorders and anxiety disorders, with depressive disorders and substance use disorders emerging in adolescence. Among adults with ADHD, the most commonly co-occurring mental health disorders are depressive disorders, bipolar disorders, anxiety disorders, personality disorders and substance use disorders (Kessler et al., 2006). Epilepsy, acquired brain injury, and fetal alcohol spectrum disorder can co-occur with ADHD (Ilie et al., 2015; Lange, Rehm, et al., 2018).

Several medical disorders can also present with symptoms and signs similar to those of ADHD. These include sleep disorders (Baddam et al., 2021), hearing or vision impairment, thyroid disease (American Psychiatric Association, 2013) and anaemia (Konofal, Lecendreux, Arnulf, & Mouren, 2004). Several medications can also produce symptoms similar to those of ADHD (American Psychiatric Association, 2013).

Neurodevelopmental, mental health and medical disorders should be considered in the differential diagnosis, as these are commonly co-occurring disorders that require identification and management, or may be alternative diagnoses potentially misdiagnosed as ADHD (American Psychiatric Association, 2013). There are no specific disorders that must be excluded for a diagnosis of ADHD. However, DSM-5 provides specific advice on differential and co-occurring diagnoses (American Psychiatric Association, 2013).

Given that the symptoms of ADHD may overlap with symptoms of other related disorders, careful consideration of the onset and course of symptoms is required to make decisions about first-line management. For example, difficulties with concentration and focusing attention that are associated with a depressive episode are limited in duration, whereas attention problems due to ADHD persist long term. For people with a co-occurring disorder, the onset, duration and pattern of functional impairment can help differentiate the effects of ADHD from those of the other disorder, to help guide the treatment plan.
It is important that clinicians are aware of which disorders commonly co-occur with ADHD, because their presence may result in a missed diagnosis of ADHD.

Recommendations

2.2.1	CCR	As ADHD commonly co-occurs with other disorders (see recommendations 1.1.1, 1.1.2), when a diagnosis of ADHD is made the presence of other disorders should be considered, including: • mental health disorders including anxiety and mood disorders and oppositional defiant disorder • other neurodevelopmental disorders (autism spectrum disorder, language disorders, specific learning disorders, , intellectual disability, tic disorders) • epilepsy • acquired brain Injury • fetal alcohol spectrum disorder (FASD) • (in adolescents and adults) mental health disorders including substance use disorders, bipolar disorders, borderline personality disorder, obsessive compulsive disorder.	NA	NA
2.2.2	CCR	Clinicians should conduct a comprehensive assessment (including history and examination) to identify: • factors that could present similarly to, or exacerbate, ADHD symptoms, including: o sleep disorders o hearing or vision Impairment o thyroid disease o anaemia • medications that may have psychomotor side effects such as: o cognitive dulling (e.g. mood stabilisers) o psychomotor activation (e.g. decongestants, asthma medication, non-prescribed stimulants like caffeine).	NA	NA
2.2.3	CPP	Treatment and support for identified co-occurring disorders should be offered.	NA	NA

Clinical considerations for implementation of the recommendations

These recommendations are generally consistent with the existing practice of conducting differential diagnostic assessments. While training in differential and co-occurring diagnosis is usual practice for those involved in the diagnosis of neurodevelopmental and mental health disorders, specific information on ADHD should be covered by training, as recommended here. That there is a lack of research on co-occurring disorders in particular subgroups, including Aboriginal and Torres Strait Islander peoples.
These recommendations are generally consistent with current clinical practice, so no barriers to acceptability or feasibility are anticipated.

See Technical report, section 3.2 for further details.

2.3 Information and support needs following diagnosis

Clinical questions

What are the information, support and educational needs of those diagnosed with ADHD, family, carers, and agencies supporting people with ADHD?

Is there a role for consumer groups (e.g. online forums)?

Clinical practice gaps, uncertainties and need for guidance

The NICE ADHD guideline (NICE, 2018) identified the need for information targeting various groups, with the objectives of:

- better understanding symptoms
- reducing stigma and prejudice
- promoting understanding, better treatment and support in settings such as education, physical health care, and employment
- increasing self-understanding.

There is an opportunity to provide positive information, which can mitigate stress experienced by families and individuals with ADHD, and reduce stigma associated with the disorder.

Summary of narrative review

There is no robust research on what information and support should be routinely provided at diagnosis to people with ADHD. Parents of children with ADHD have expressed the need for concise, tailored and reliable information (Ahmed, Borst, Yong, & Aslani, 2014). This includes information on the causes, mechanisms and potential impacts of having ADHD (Ahmed et al., 2014).

There is a clear need to provide information to the person with ADHD, parents, families, education institutions and workplaces, to educate people about the symptoms and functional impact of ADHD, treatment, support required, and to dispel myths. Given a lack of research in this area, the NICE guideline recommendations have been adapted to suit the Australian context.

Consumer groups provide a major avenue of information and support for individuals and families, as well as an entry point to gain extra information and support in education institutions such as universities, mental health services and workplaces. The internet and online peer support groups also provide information on ADHD to consumers and those involved in ADHD support. There are currently no ADHD-specific helplines in Australia. The ADHD Foundation runs the National ADHD Helpline, but it relies solely on volunteers, so does not have the funding to service the broad Australian community.

There is a lack of Australian information on ADHD available to those for whom English is their second language, or for Aboriginal and Torres Strait Islander communities (see section 6.2). There is also a lack of

information for older adults. Support services could be delivered through psychoeducation and support, and by nurse educators, social workers, and peer support workers.

Consumer groups

Consumer groups are voluntary organisations that promote the interests of people, carers and consumers through a variety of means. Consumer groups provide opportunities for people with a lived experience and carers to share experiences, utilise self-help, peer support and access health related information resources (Allsop, Jones, & Baggott, 2004; Jones, 2008). Consumer groups also conduct research and advocate on behalf of the consumers they represent, to stimulate the development of health services that are responsive to the needs of those consumers (Allsop et al., 2004; Jones, 2008). Consumer groups rely on funding or donations.

Consumer group composition falls into three broad membership categories:

- National alliance group –, overarching umbrella organisations that act on behalf of geographically dispersed consumer organisations
- Population-based groups consisting of individual members within a broad population category such as carers
- Condition-based groups consisting of individual members living with or with a special interest in a particular health disorders such as ADHD (Jones, Baggott, & Allsop, 2004).

In Australia, ADHD consumer groups represent diverse sections of the ADHD community. There are 3 nationally registered bodies (ADHD Foundation, ADHD Australia, and National ADHD Forum) and several state organisations, many of which have an online presence.

Recommendations

2.3.1	CCR	During the diagnostic process and on-going treatment and support, clinicians should provide the person or their carers with education and information on the causes and potential consequences of ADHD and evidence-based treatments, in a way that instils hope and motivation. Both positive and negative impacts could be discussed, as appropriate, including information about: • understanding of the symptoms of ADHD • identifying and building on individual strengths • common difficulties beyond core ADHD symptoms, such as regulating emotions and switching attention when required, accurately perceiving time, and initiating tasks that are not engaging (even when the importance of a task is understood) • severity of ADHD symptoms and associated impairments that may vary depending on many factors such as stress, or personal interest	NA	NA

		• treatment and support of ADHD when a person has a co-occurring mental health or neurodevelopmental disorder • secondary impacts of ADHD such as learning difficulties, anxiety, sleep disorders, oppositional symptoms, depression, and reduced self-esteem • environmental modifications that can be made to help to the individual function more effectively • educational and occupational issues and rights to reasonable adjustments at school, university and in the workplace. • possible negative impacts of receiving a diagnosis including stigma and labelling • possible increased risk of self-medicating, • increased risks of substance misuse • impacts on driving when ADHD is not treated • possible impacts on relationships.		
2.3.2	CCR	Clinicians should inform people receiving a diagnosis of ADHD (and their families or carers as appropriate) about: • local and national support groups and voluntary organisations (also known as consumer groups) • reputable websites • support for education and employment • eligibility for disability support • eligibility for government benefits and allowances, including carers allowance provisions People who have had an assessment but whose symptoms and impairment fall short of a diagnosis of ADHD may benefit from similar information.	NA	NA
2.3.3	CPP	Clinicians should provide information to people with ADHD (and their families and carers, as appropriate) in a form that is tailored to: • their developmental and reading level, cognitive style, emotional maturity and cognitive capacity, considering any learning disabilities, sight or hearing problems, delays in language development or social communication difficulties • any co-occurring neurodevelopmental and mental health disorders • their individual needs and circumstances, including age, gender, culture, educational level and life stage.	NA	NA

2.3.4	CPP	Information provided by clinicians should be: • plainly worded, clearly presented and free of jargon • culturally appropriate and available in the person's first language. Clinicians should: • be aware that smaller, more manageable chunks of information are easier to remember, and that visual aids or pictures can be useful • encourage questions • ensure that information is consistent and up to date • be aware that information will need to change over time as circumstances change • provide a written copy of any information provided verbally.	NA	NA
2.3.5	CPP	Clinicians should encourage parents/carers/siblings/partners to monitor their own wellbeing and develop a support network, and seek guidance and support if facing challenges.	NA	NA
2.3.6	CPP	Clinicians should explain to parents and carers that a recommendation of parent/family training is to optimise parenting skills to meet the additional parenting needs of children and young people with ADHD, and does not imply bad parenting.	NA	NA
2.3.7	CPP	Clinicians and educators supporting a person with ADHD should discuss whether the person would like to share information about their ADHD and care with other professionals or service providers (e.g. educators, employees, or sporting groups), where such information sharing will better enable them to support the person with education, employment, community activities or other roles. Consent to share information may be relevant at the time of the ADHD diagnosis, when symptoms change, or when there is transition between settings (e.g. between schools or from primary school to secondary school or to tertiary studies). **Information to provide could include:** • the symptoms of ADHD and how symptoms are likely to affect the person in the relevant setting • the presence of other co-occurring disorders (e.g. learning disabilities) that require adjustments in the setting • the treatment plan • identified special needs, including advice for reasonable adjustments and environmental modifications within the setting • the value of open channels of communication between education/workplace/community settings and clinicians.	NA	NA

2.3.8	CPP	When a person with ADHD has a co-occurring disorder, their clinician should offer to contact the relevant other involved clinicians, with consent, to explain: • the validity, scope and implications of a diagnosis of ADHD • how ADHD symptoms are likely to affect the person's daily life (e.g. organisation, time management, motivation) and adherence to specific treatments • the treatment plan and the value of open channels of communication between clinicians.	NA	NA

Clinical considerations for implementation of the recommendations

Whilst implementing these recommendations will increase costs, adequately educating people with ADHD will likely improve their functioning and thus reduce overall costs to the community and the health system. A co-ordinated approach connecting multidisciplinary health professionals with families, educational organisations and workplaces is likely to be accepted by stakeholders. However, it may be difficult to ensure that this approach is delivered equitably to those in all geographical regions, for all sociocultural subgroups and at socio-economic levels.

See Technical report, section 4.1 and 11.3 for further details.

Chapter 3. Treatment and support

3.1 Multimodal treatment and support

Clinical questions

Which factors need to be considered when making initial treatment decisions for ADHD?

How should ADHD symptoms severity and clinical profile guide treatment decisions?

Does the optimal treatment approach for ADHD vary when co-occurring disorders are present?

What is/are the most clinically effective initial sequence(s) of pharmacological/non-pharmacological treatment for people with ADHD?

Clinical practice gaps, uncertainties and need for guidance

After a diagnosis of ADHD, the person and their clinician need to decide which treatment options are most appropriate, and the order in which these should be initiated and/or trialled.

Key principles underpin treatment decisions (see Principles and assumptions):

- People with ADHD should be involved in making decisions about their own care, as appropriate to their age and developmental stage.
- The clinician should fully inform the person about the options for care, the benefits and possible complications of each.
- The acceptability and feasibility of each treatment for each person (dependent on age, location, resources, service capacity) should be considered.

Summary of evidence review

Evidence reviews conducted for these questions identified no new evidence.
NICE reviewed the evidence available to compare the effectiveness of non-pharmacological strategies and pharmacological strategies. The review included a wide range of potential outcomes, including adverse events. The quality of evidence was low or very low. Most evidence evaluated treatments in children and adolescents aged 5–18 years. No evidence was identified that compared outcomes for different treatment modes in children aged 5 years. The NICE reviewers noted that comparisons were sometimes difficult due to the variety of outcomes assessed and methodological differences between trials. No comparison between any two combined treatments clearly showed a consistent, clinically important benefit of one option over another.

Overall, the NICE evidence review found that pharmacological treatment was more effective than nonpharmacological treatment in reducing ADHD symptoms. Combined pharmacological and non-pharmacological treatment was better than either alone. Each mode was more effective than the other in targeting specific aspects of ADHD: pharmacological treatments were more effective for reducing core

ADHD symptoms, and non-pharmacological treatments were more effective for improving functional outcomes for people with ADHD.

There is currently no evidence from which to ascertain whether it is generally more effective to start treatment with pharmacological approaches or non-pharmacological approaches, or the optimal time to start treatment. In the absence of direct evidence, these decisions should consider availability, cost, preferences and potential harms.

Summary of narrative review

Initial treatment decisions and sequence

Recommendation for the use of combined pharmacological and non-pharmacological treatments are based on the balance of availability, costs, preferences, values assigned to consequences and resulting judgements. Non-pharmacological treatments can be combined with medication. If medication is not effective enough, non-pharmacological treatments can be added to the treatment plan. Alternatively, if non-pharmacological approaches are tried first and functional impairment remains, medication can be added. Combined treatment has the advantage of addressing multiple facets of ADHD, as non-pharmacological treatments and pharmacological treatments have different targets. Current evidence best supports the use of pharmacological treatments for treating the core symptoms of ADHD, and suggests non-pharmacological treatments may be more beneficial for improving the function and participation of people with ADHD and for treating commonly co-occurring disorders, such as affect dysregulation, anxiety, and low mood.

Treating health professionals should consider combined treatment:

- if it is available, feasible and cost-effective for the person and in the local context, and the available treatment is appropriate for symptoms function or participation needs
- in people who experience an inadequate response to pharmacological or non-pharmacological treatment alone.

These decisions should consider potential adverse effects and costs, both direct and indirect. Treatment effects should be monitored for effectiveness including treatment-specific outcomes, and adverse events. Timing of the effect of intervention may also be a factor given stimulant medication works immediately whereas some non-stimulant medications may take several weeks to have an effect, and similarly for non-pharmacological treatments.

These recommendations are based on the current evidence, which indicates that combined treatments are more effective in treating ADHD symptoms than either pharmacological treatment or non-pharmacological treatment in isolation and that this benefit is larger and more consistently observed when compared with non-pharmacological treatment.

Impact of symptom severity and co-occurring disorders on treatment

Research on ADHD symptom severity and treatment is extremely limited. Multimodal treatment allows for a tailored approach. The clinical profile may guide treatment decisions. For example, non-stimulant drugs may be indicated for a person with co-occurring tics. In addition to discussing severity of symptoms, degree of

impairment, individual and family views of treatment options, the clinician should explain all the available treatment options and the benefits and harms of each.

See section 5.2 for further information managing co-occurring disorders.

Treatment decisions should also consider the person's medical disorders (e.g. cardiovascular disease) and medication safety during pregnancy and breastfeeding.

Care integration and coordination

ADHD treatment and support requires a multimodal, multidisciplinary and multi-agency approach, particularly when there are co-occurring disorders that significantly impact on a person's functioning and quality of life (Coghill, 2017). Where there are multiple clinicians, professionals and services involved in the treatment and support of a person with ADHD, a care coordinator can be employed or nominated. This role can adopted by the person themselves or by the carer of a child with ADHD.

Ideal models of care are integrated, transdisciplinary, whereby professionals from multiple agencies collaborate with each other, and the person and/or child and family with ADHD, to form a team. This care team should, from the beginning, allow sharing and integration of expertise into a single treatment plan (Bell, Corfield, Davies, & Richardson, 2010; Miller & Eastwood, 2016). The care coordinator should advocate for the preferences and needs of the person with ADHD so that a shared care decision-making model is adopted for treatment planning (Davis, Claudius, Palinkas, Wong, & Leslie, 2012).

Evidence-to-recommendation statement

Factors to be considered when making treatment decisions addressed by NICE have been adapted for the Australian context. Regarding sequence of treatments, NICE noted there were many comparisons showing no clinical difference and relatively frequent inconsistencies across the evidence base. The NICE review noted that broader outcomes, reflecting improvement in daily life, were less commonly reported in studies than symptom outcomes.

This imbalance is important because non-pharmacological interventions often target outcomes that go beyond the symptoms of ADHD. The review also noted that it was more difficult to include a caregiver-blinded or person-blinded control group for non-pharmacological intervention studies than for pharmacological studies, and that this difference in study design makes it difficult to reach an unbiassed overall interpretation of the relative effectiveness of non-pharmacological treatments. Given these considerations, the NICE committee concluded that there was insufficient evidence to make strong recommendations about any sequence or combinations of treatments.

Given the lack of evidence regarding combined treatment, we suggest a multimodal treatment and support approach, could include pharmacological and/or non-pharmacological treatments either alone or in combination, with no recommendation about order of treatment. We suggest that treatment order and combination is decided individually based on the persons' needs and preferences.

See Technical report, sections 6.1 6.4, and 6.5 for further details.

Recommendations

3.1.1	CPP	Clinicians should offer a multimodal treatment and support approach. This should address the person's preferences, unique needs and individual goals, and take into consideration their personal strengths and the impact of any co-occurring disorders. Components of multimodal treatment should include lifestyle changes, non-pharmacological interventions and pharmacological interventions (Recommendations sections 4 and 5). Clinicians could offer treatments in sequence or together, depending on the preferences, needs and goals of the person.	NA	NA
3.1.2	CPP	When there are multiple clinicians and/or educators involved, clinicians should suggest that a care coordinator is involved. People with ADHD or a family member may choose to take on this role. If not, people with ADHD should be supported to arrange an appropriate care coordinator, which could be a clinician from their support team.	NA	NA

Clinical considerations for implementation of the recommendations

Multimodal treatment and support is currently part of usual care in most Australian health contexts for ADHD. The ability to offer non-pharmacological interventions may be limited by cost and clinician availability, which may be influenced by geographical region. Some medications used to treat ADHD are not available on the Pharmaceutical Benefits Scheme for some people with ADHD, so cost may reduce accessibility for some people. Similarly, non-pharmacological treatments may vary in the timing of effect, frequency and duration of sessions needed

Usual care in Australia often involves care coordination by an individual, either formally or informally. In contexts where this is not occurring (e.g. care coordinators may be less likely to be involved in the care of adults with ADHD), ensuring the availability of people to fulfil this role may incur additional costs and resources.

See Technical report, section 6.4 for further details.

3.2 Transitions

Clinical questions

For which people with ADHD should a transition to further services take place (preschool to school, primary to secondary school, school to adulthood, older adults)?

Clinical practice gaps, uncertainties and need for guidance

Well-managed transitions between services at key developmental stages throughout the life span of people with ADHD are important to ensure continuity of care, but are absent in many services (Ford, 2020; Paul et al., 2013). Many individuals drop out of services at these transition points, particularly during adolescence

and early adulthood (Montano & Young, 2012), resulting in increased anxieties for people with ADHD and their families during this period (Shanahan, Ollis, Balla, Patel, & Long, 2020). Poor transition contributes to long-term negative health and social outcomes for people with ADHD (Appleton, Elahi, Tuomainen, Canaway, & Singh, 2021; Young et al., 2021) and potentially death (Dalsgaard, Østergaard, Leckman, Mortensen, & Pedersen, 2015) if left untreated.

Even when paediatric (or child and adolescent mental health) services recognise the need to refer people to other services, there are barriers that may prevent effective transfer of care (Marcer, Finlay, & Baverstock, 2008). These barriers include inadequate ADHD education in primary care (Montano & Young, 2012), lack of expert services to which adults with ADHD can be referred (Coghill, 2017; Hall et al., 2013), lack of planning, differences in service delivery models between adult and mental health services (Ford, 2020), gaps in communication between child and adult services (Hall et al., 2013), and perceived unhelpful attitudes of some healthcare professionals experienced by people with ADHD (Matheson et al., 2013; Tatlow-Golden, Prihodova, Gavin, Cullen, & McNicholas, 2016). There is a strong need to ensure clear guidance on clinical transitions for people with ADHD, to prevent these negative outcomes and overcome the identified transition barriers.

Summary of narrative review evidence

Transition here refers to the transfer of care of a person with ADHD from one service to another. It includes referral from the existing service, transfer of appropriate information, and acceptance by the accepting agency, with subsequent care and responsibility for future transfers. Disruption in care or discontinuation of care can occur due the barriers listed above. Transitions are particularly important for people in high-risk groups. For example, those with severe symptoms or co-occurring symptoms require early identification to allow sufficient planning. The major transition is between child and adult services, but transitions between one service and another must also be supported. Comprehensive information exchange is key to continuity of care.

From the time of diagnosis onward, future transition points should be anticipated and comprehensively planned. Transition should be a shared responsibility among treating clinicians. All are responsible both for initiating discussion and engaging in planning. The process should be managed in collaboration between referring and receiving services. For example, paediatric and adult specialists, and should involve primary care and people with ADHD and their families. Individualised transition plans help guide the planning of transition support and transfer of care arrangements. These plans should also identify risk factors and management strategies, especially for higher-risk populations.

Identifying a transition lead or leads would help people with ADHD and their families coordinate this complex process, and this practice can bring key stakeholders together to enable optimal transition and handover. The lead role may be fulfilled by a paediatrician, general practitioner, psychiatrist, psychologist, other allied health professional, or a dedicated transition lead.

Adolescents transitioning to adulthood and to adult services need education, support and preparation before and during the process. These should be provided in tandem with education and support for parents and carers who have a key role in enabling a successful transition, as advocate, navigator and care coordinator.

Recommendations

3.2.1	CCR	People who require ongoing care should receive support to transition between services, including transitions between different services and between tiers of the health system (e.g. from paediatric services to adolescent services, or between youth and young adult services to general adult services). Clinicians should identify such people early to allow appropriate planning to occur in advance.	NA	NA
3.2.2	CCR	Transition of care between services for each person should be coordinated. This is best achieved through the identification of an appropriately trained transition lead within the team.	NA	NA
3.2.3	CCR	Transitions should take place with appropriate collaboration between the person with ADHD, their family/carers, and other stakeholders, should be holistic and include education and support.	NA	NA

Clinical considerations for implementation of the recommendations

The feasibility of implementing optimal transition practices may depend on a range of factors including geographic location, existing linkages to relevant supports in the community, availability of and access to appropriate services, and availability of dedicated time, resources and personnel. Due to a lack of public adult ADHD services, most adults with ADHD receive care in the private sector, resulting in significant cost to consumers.

The absence of an identified transition lead during key points of transition may lead to disjointed care, anxiety and stress for people with ADHD and their families, and gaps in care, all of which can result in poorer health outcomes. Whilst transition leads are often available in paediatric services, this may not be the case in adult settings. Transition lead roles should be included in economic evaluations assessing cost benefits of effective transition between services for those with ADHD.

See Technical report, section 10.9 for further details.

Chapter 4. Non-pharmacological interventions

Clinical questions

What is the clinical effectiveness of non-pharmacological treatments for people with ADHD?

What are the adverse events associated with non-pharmacological treatments for people with ADHD?

Should treatments be provided individually or in groups? Who should deliver them?

Clinical practice gaps, uncertainties and need for guidance

There is a need to evaluate the effectiveness of non-pharmacological treatment options to guide Australian clinicians and those with attention deficit hyperactivity disorder (ADHD) when choosing appropriate evidence-based intervention options.

4.1 Lifestyle changes and environmental modifications

Environmental modifications are changes that are made to the environment to minimise the impact of a person's ADHD on their day-to-day life and maximise their activities, participation and quality of life. Environmental factors include physical factors and social factors (such as attitudes, relationships and supports, institutions, services, policies and laws). Lifestyle changes involve modifying aspects of daily life to improve health. Lifestyle factors include diet, exercise or activity levels, sleep patterns, drug and alcohol use including smoking, and use of modern technologies such as electronic devices.

Summary of evidence review

Outcome measures explored in the evidence reviews are listed in Table 13.
See Technical report, section 5.1 for further details.

Table 13. Outcomes reported in evidence reviews

Outcome	Description or definition
ADHD symptoms	Includes inattentive, hyperactive-impulsive and total ADHD symptoms (combined inattention and hyperactive-impulsive). Raters include the person with ADHD, a parent, teacher, clinician or other informant.
Quality of life	Includes parent, teacher or self-reported measures, for example Health-related quality of life (HRQoL)
Other symptoms or characteristics	(Applies to children and young people) Includes any non-ADHD symptoms or characteristics (e.g. symptoms of other disorders, or characteristics such as a parent report of executive functioning)
Function	(Applies to adults) Functional measures such as adaptive behaviour
Clinical global impression	Clinician rating of whether the intervention resulted in improvement
Adverse events	Reduction in adverse events; Serious adverse events

Emotional dysregulation	Self-reported or reported by a parent, teacher or clinician
Academic outcomes	(Applies to children and young people) Includes literacy, numeracy and combined academic measures
Self-harm	Self-reported or reported by a parent, teacher or clinician

Lifestyle changes – exercise and relaxation

No evidence was identified that evaluated the effectiveness of lifestyle interventions for ADHD in children under the age of 5 or in adults. NICE identified very limited evidence in children and young people (ages 5–18 years) and our updated search identified an additional 2 randomised controlled trials (RCTs) of low to very low certainty and with very small sample sizes.

Relaxation versus waitlist/usual care

No new evidence was found. NICE previously identified one very low-quality study which found no clinically important benefits for total ADHD symptoms.

Exercise versus waitlist/usual care

No new evidence was found. NICE previously identified one low quality study of moderate intensity physical activity which found a clinically important benefit for inattention symptoms and academic performance and a clinically important harm for function/other symptoms.

Exercise (exergaming) versus waitlist

New evidence was identified for a new comparison consisting of one new RCT comparing cognitively and physically demanding exergaming to a waitlist (Benzing & Schmidt, 2017). There was a statistically significant benefit of exergaming for global index score, and no statistically significant differences for ADHD symptoms.

Equine therapy versus control/none

New evidence was identified for a new comparison consisting of one RCT with high risk of bias and very low certainty (Garcia-Gomez et al., 2016). There was no difference in teacher-rated other symptoms using the Behavioural Assessment System for Children (BASC), and a statistically significant improvement in parent rated interpersonal relationships, but not for other areas of quality of life.

Summary of narrative review evidence

Environmental modifications

Environmental factors were defined according to the International Classification of Functioning, Disability and Health (ICF). Environmental factors that may be relevant to functioning for people with ADHD include physical, social and attitudinal environments in which people live and conduct their lives (World Health Organization). Appropriate environmental modifications will be specific to the circumstances of each person with ADHD and should be decided based on their needs.

Examples of modification of physical factors include changes to seating arrangements, changes to lighting and noise, reducing distractions (e.g. using headphones), optimising work or education to have shorter periods of focus with movement breaks (including the use of 'I need a break' cards), reinforcing verbal requests with written instructions and, for children, the appropriate use of classroom supports.
Examples for modification of social factors may include managing expectations of others, optimising positive relationships, providing opportunities to reward effort and success, arranging services to be accessible and flexible. Environmental modifications also include other people adjusting their actions and communication, and so the involvement of parents of children and young people, or partners of adults can be important.

Opportunities that build on personal strengths and interests should be incorporated alongside opportunities to make adjustments to minimise the impact of ADHD symptoms.

Evidence-to-recommendation statement

There was no strong evidence for relaxation, exercise, exergaming or equine therapy. The few studies identified were small and of low to very low quality, with moderate to high risk of bias. Given the lack of evidence, no specific recommendations about these lifestyle interventions were made, but we suggest several clinical practice points to guide practice. Further information about lifestyle changes and environmental modifications is provided in the resource material which support this clinical guideline.

Recommendations

4.1.1	CPP	Clinicians should offer guidance on lifestyle factors to help people with ADHD: • ensure sleep sufficiency and regular physical activity • develop and maintain a healthy diet • ensure use of technology devices (such as smart phones, computers, tablets) is structured and controlled to balance benefits and potential harms.	NA	NA
4.1.2	CPP	Clinicians should offer to help the person with ADHD make environmental modifications to minimise the impact of ADHD symptoms on their day-to-day life. These modifications may include: • adapting expected tasks and routines • adapting physical spaces • arranging for important others to adjust their communication and actions when interacting with the person with ADHD.	NA	NA
4.1.3	CPP	Clinicians should offer to help the person with ADHD make any necessary changes to improve support, relationship quality and minimise adverse interactions.	NA	NA

See Technical report, section 5.1 for further details.

4.2 Parent/family training

Parent/family training refers to interventions aiming to help parents to optimise parenting skills to meet the additional parenting needs of children and young people with ADHD, through training delivered directly to parents (or primary carers). The intervention may target effects of ADHD on the child or may also include effects on the family. Components may include general parenting guidance, ADHD-specific guidance, or a mix of both.

Summary of evidence review

Young children

Parent/family training versus waitlist/usual care

New evidence was identified from 2 studies (Lange, Daley, et al., 2018; Sonuga-Barke et al., 2018) and integrated into the NICE evidence (4 studies), resulting in 6 studies with low- to moderate-certainty evidence. There were statistically significant benefits of family training over waitlist/usual care for total symptoms, inattention symptoms and hyperactivity ADHD symptoms (parent and clinician rated) and for other symptoms and conduct (parent rated).

No statistically significant differences were found for ADHD total, inattention and hyperactivity symptoms and other symptoms, for conduct symptoms based on teacher report, or for parent-rated and child-rated global impressions of parent-child interactions. Larsen et al (2021) reported additional analysis from the original study by Lange, Daley, et al. (2018). When using the Child Health Questionnaire, (change from baseline) quality of life of children was not statistically different between parent/family training and waitlist/usual care.

Parent/family training versus parent/family training

New evidence was identified for a new comparison consisting of one RCT, with a low risk of bias and moderate certainty, in preschool children with ADHD, comparing the New Forest Parenting Programme and the Incredible Years program over 12 weeks. There were no statistically significant differences for parent- and teacher-rated ADHD symptoms and conduct problems using the Swanson, Nolan, and Pelham (SNAP) Questionnaire, or for conduct problems using Eyberg Child Behaviour Inventory. The cost per family of New Forest Parenting Programme when calculated in the UK setting was significantly lower than that of Incredible Years (£1591 versus £2103).

Children and young people

Parent/Family training versus waitlist/usual care

New evidence was identified in one study (Daley, Tarver, & Sayal, 2021) and integrated into the NICE evidence (6 studies) resulting in seven studies with very low-certainty to moderate-certainty evidence. A RCT with a high risk of bias (Daley et al., 2021) reported no statistically significant benefits of parent/family training over waitlist/usual care for all outcomes (Eyberg Child Behaviour Inventory subscales: intensity and problem, quality-of-life satisfaction, comfort, resilience, risk avoid, and achievement, social functioning at school, relationship with parents, relationships with siblings, relationships with peers, and performance in

games). In the remaining studies, there were statistically significant benefits of parent/family training over waitlist/usual care for parent-rated ADHD inattention, hyperactivity and total symptoms, and for investigator-rated Clinical Global Impression scale. There were no clinically important benefits for teacher-rated ADHD total symptoms, parent-, teacher- and self-rated other symptoms, and academic literacy and numeracy outcomes. NICE 2018 noted that in a follow up study (low quality), there was a clinically important harm for ADHD hyperactivity symptoms.

Parent/family training versus relaxation

No new evidence was found. NICE previously identified one very low quality study of parent/family training versus relaxation (Horn, Ialongo, Greenberg, Packard, & Smith-Winberry, 1990). There was a clinically important benefit for teacher reported ADHD hyperactivity symptoms, and no clinically important benefit for parent reported ADHD hyperactivity symptoms, parent- and teacher-reported other symptoms, academic literacy and numeracy outcomes.

Parent/family training versus psychoeducation

No new evidence was found. NICE previously identified one moderate quality study of parent/family training versus psychoeducation. There was no clinically important benefit for parent- and teacher-rated academic outcomes.

Parent/family training & relaxation versus parent/family training

No new evidence was found. NICE previously identified one very low-quality study (Horne, 1990 noted above) of parent/family training versus relaxation. There was a clinically important benefit for teacher-reported ADHD hyperactivity symptoms and other symptoms, and no clinically important benefit for parent-reported ADHD hyperactivity symptoms, other symptoms, or academic literacy and numeracy outcomes.

Parent/family training & relaxation versus relaxation

No new evidence was found. NICE previously identified one very low-quality study (Horne, 1990 noted above) of parent/family training and relaxation versus relaxation only. There was no clinically important benefit for teacher- and parent-reported ADHD hyperactivity symptoms, other symptoms, or academic literacy and numeracy outcomes. There was a clinically important harm of the intervention for teacher-reported other symptoms.

Parent/family training & Organisation/school based versus waitlist/usual care

No new evidence was found. NICE previously identified two low to moderate quality studies of parent/family training and organisation/school-based intervention versus waitlist control. There were clinically important benefits for parent-rated total ADHD symptoms, parent- and teacher-rated ADHD inattention and hyperactivity symptoms, other symptoms, emotion dysregulation, parent rated literacy outcomes and numeracy outcomes and teacher-rated academic performance. There was a clinically important harm of ADHD hyperactivity symptoms based on classroom observer report but evidence was very low quality.

Evidence to recommendation statement

The effectiveness of parent /family training varied according to raters (parents, clinicians or teachers). Evidence suggests improvements associated with parent/family training for ADHD symptoms and other symptoms based on parent-report in children younger than 5 years. There is also very little available research in the under-5 population on which subgroups of children with ADHD may benefit more or less from parent/family training interventions. There is limited evidence to suggest improvements from teacher report, which is not surprising given the focus of parent/family training is on the home context. Parent/family training can be recommended to improve functioning at home including parent-child and broader family dynamics for children younger than 5 years, but without the expectation that it will improve functioning in other settings, such as early childhood education settings. It is important to note that medication is not routinely offered for young children with ADHD under 5. Therefore, parent/family training is the main treatment option for children with ADHD under 5 years.

We have not made recommendations about the duration of training because no studies were identified that evaluated brief parenting approaches. NICE's decision to recommend brief approaches appears to be based on prioritisation of teacher informants of outcome and cost effectiveness considerations. Overall, review of the evidence suggests small-to-moderate improvements in functioning based on parent report, although it should be noted that most studies had high levels of bias.

Very few studies have examined whether treatments should be provided individually or in groups. In the preschool area, only one study in the reviewed period compared two different types of parent/family training programs (one individual delivered at home and the other group based) and found that both interventions were largely similar in benefit (Sonuga-Barke et al., 2018). However, in this study the individual, home-based intervention was considerably cheaper to deliver (Sonuga-Barke et al., 2018). Given the lack of evidence to support the superiority of one type of intervention delivery over another, for each recommendation we provide a clinical practice point about how this should best be delivered.

See Technical report, section 5.1 for further details.

Recommendations

4.2	Young children (under 5 years of age)			
4.2.1	EBR	Parent/family training should be offered to parents/families of young children with ADHD.	****	⊕⊕◯◯ LOW
4.2.2	CCR	Parent/family training should be delivered in individual and/or group format, depending on the availability of services and parent/family preference.	NA	NA
4.2.3	CPP	Parent/family training should be tailored to their child's diagnosis of ADHD and include strategies to: • make environmental modifications to promote a positive, predictable and structured environment for preschoolers • advocate for their child in health and education settings • help minimise the impact of symptoms and implement strategies to improve:	NA	NA

		• attentional and emotional regulation difficulties • daily routines and transitions • family relationships • peer relationships • parents' own self-care and resilience.		
4.3	**Children and adolescents (aged 5 to 17 years)**			
	Parent/Family training			
4.3.1	EBR	Parent/family training should be offered to parents/families of children with ADHD.	***	⊕⊕◯◯ LOW
4.3.2	EBR	More intensive parent/family training programs should be offered for parents/families of children with ADHD who have co-occurring oppositional defiant disorder or conduct disorder.	****	⊕⊕⊕◯ Moderate
4.3.3	CCR	Parent/family training could be delivered in an individual or group format depending on the availability of services and parent/family preference.	NA	NA
4.3.4	CPP	Parent/family training should be tailored to their child's diagnosis of ADHD and include strategies to: • make environmental modifications to promote a positive, predictable and structured environment • advocate for their child in health and education settings • help minimise the impact of symptoms and implement strategies to improve • attentional and emotional regulation difficulties • daily routines and transitions • family relationships • peer relationships • self-esteem and self-concept development • parents' own self-care and resilience.	NA	NA

Clinical considerations for implementation of parent/family training in children and young people

The greatest benefits of parent/family training are probably improvements in quality of life and in broader functioning for children with ADHD and their family members, and improvements in family relationships. For the intervention to be most effective, and to avoid risk of harm, it is important that the intervention is ADHD-specific, and that the clinician has ADHD-specific expertise and is aware of broader socio-political factors that may affect families, including stigma, the social model of disability, the human rights model of disability, and the emerging neurodiversity movement. The ongoing benefits of the intervention may be optimised if parents are provided with the skills to model and coach their child, with their child taking on increasing responsibility for this as they approach adulthood.

It is important to note that parent and family support may be needed when parents undertake parent/family training, as these are families already under considerable stress (particularly if the child has severe ADHD).

Assessment of parental approaches and family structures could create additional stress. When implementing parent/family training, both the positive effects (e.g., improvements in symptom severity, child/family functioning, and parent mental health) and any adverse effects should be monitored.

A children with ADHD are generally not eligible for publicly funded services, parent/family training approaches may need to be accessed in the private sector. Therefore, in recommending parent/family training as a routine treatment, health inequity may result. However, the cost is not likely to be ongoing (as it might be in the case of pharmacological treatments) and instead involve attending a program, followed by less frequent support as needed. Parent/family training can also be accessed through some community organisations (often delivered in a group format). People living in rural/remote areas may have limited access to practitioner or may need to spend more time travelling to appointments. Some parents may prefer individual training over group-based training. Telehealth and online programs are also becoming more available. Workforce development may ensure that health inequity impacts are minimised.

These recommendations should be adjusted for application in Aboriginal and Torres Strait Islander communities. Adjustments could include, but are not limited to, funding training of Aboriginal and Torres Strait Islander allied health professionals, and the incorporation of Aboriginal and Torres Strait Islander cultural practices (see section 6.2). Additionally, the acceptability and feasibility of these recommendations needs to be investigated for culturally and linguistically diverse populations.

4.3 Cognitive behavioural therapy (CBT)

Cognitive behaviour therapy (CBT) is psychological therapy. CBT for ADHD primarily aims to reduce or prevent the negative impacts of ADHD symptomology via targeted adjustment of cognitions, emotions and/or behaviours. It usually includes psychoeducation. Dialectical behaviour therapy (DBT) is a modified CBT-based approach which includes third-wave CBT approaches such as mindfulness and acceptance.

Summary of evidence review

Young children

No evidence was identified to assess effectiveness of CBT in this age group.

Children and young people

CBT versus waitlist/usual care

New evidence was identified for a new comparison consisting of one RCT (Lan, Liu, & Fang, 2020), with high risk of bias and very low-certainty evidence, in children with ADHD, comparing social skills training and waitlist/usual care. There were statistically significant benefits of social skills training over waitlist/usual care for ADHD hyperactivity symptoms, social adjustment (problems with peers), and social skills (cooperation, responsibility, assertion, and empathy); but not for social adjustment (interaction with peers) or social skills (self-control). There were no statistically significant differences for ADHD inattention symptoms, working memory, and Conners' continuous performance tasks (commission and omissions).

CBT versus non-specific supportive therapy

New evidence was identified for a new comparison consisting of one RCT (Curtis, Heath, & Hogan, 2021), with moderate risk of bias and very low-certainty evidence, in children with ADHD, comparing structured dyadic behaviour therapy (intervention) with child-centred dyadic therapy (control). There were statistically significant benefits of structured dyadic behaviour therapy for ADHD inattention, hyperactivity and for oppositionality and externalising symptoms index, but no statistically significant differences were reported for conduct problems, attention problems and behavioural symptoms index.

CBT plus parent/family training versus non-specific supportive therapy

No new evidence was found. NICE previously identified one low- to moderate-quality studies of CBT with a parent/family training component compared to non-specific supportive therapy (Fehlings, Roberts, Humphries, & Dawe, 1991). There was a clinically important benefit for parent- and teacher-reported ADHD inattention and hyperactivity symptoms post intervention, but not for inattention at later follow-up.

CBT plus parent/family training versus waitlist/usual care

New evidence was identified for a new comparison consisting of two RCTs (Hahn-Markowitz, Berger, Manor, & Maeir, 2017; Qian et al., 2017), with high risk of bias and very low- to moderate-certainty evidence, in children with ADHD, comparing executive skills training with families in a group setting (Qian et al., 2017) and meta-cognitive learning of executive strategies with parent and child together, with waitlist/usual care.

There were statistically significant benefits of the interventions over waitlist/usual care for parent-reported ADHD inattention, hyperactivity, and total symptoms, other symptoms using the Behavior Rating Inventory of Executive Function scale (BRIEF) and self-rated quality of life. There were no statistically significant benefits for the interventions over waitlist/usual care for teacher-reported ADHD total symptoms and other symptoms using the BRIEF and parent rated BRIEF subscales of shift, emotional control and plan/organise; and parent rated function including family learning and school, social activities, life skills, self-concept, and risky activities.

CBT plus parent/family training versus waitlist/usual care in children with ADHD AND anxiety

New evidence was identified for a new comparison consisting of a single pilot RCT (Sciberras et al., 2018) conducted in children with ADHD and anxiety, comparing CBT (Cool kids program) and usual care over 12 weeks with assessments taken at 5 months (approximately 6 weeks post intervention). There was insufficient evidence to decide the benefit of CBT in this group of children given the very small sample size included.

CBT plus parent/family training versus CBT plus parent/family training

New evidence was identified for a new comparison consisting of a single small RCT (Ahmadi et al., 2020) conducted in children with ADHD and co-occurring PTSD, comparing reminder-focused positive psychiatry and trauma-focused cognitive behaviour therapy. Given the very low certainty of the outcome data in this study with very serious risk of bias and very serious imprecision, there was insufficient evidence to support or refute the use of either intervention for any outcome.

CBT plus parent/family training plus exercise versus CBT plus parent/family training

New evidence was identified for a new comparison consisting of 2 RCTs (Halperin et al., 2020; Vibholm et al., 2018) with very low- to low-certainty evidence. Halperin et al. (2020) compared parent education and support to parent education and exercise with their child (TEAMS) training, executive, attention, and motor skills). There was a statistically significant benefit of CBT plus parent/family training over the exercise condition for clinician rated ADHD severity, using the Clinical Global Impression scale. There were no statistically significant differences for ADHD total symptoms (parent- and teacher-rated) and parent-rated other symptoms and function at home and teacher-rated function at school. Vibholm et al. (2018) also compared TEAMS and found improvement in parent-rated ADHD total symptoms and other symptoms.

CBT + Parent/Family training + Organisation/school-based intervention (High intensity program) vs CBT + Parent/Family training + Organisation/school-based intervention (Low intensity program)

New evidence was identified for a new comparison consisting of one RCTs (Sibley et al., 2018) with a high risk of bias, conducted in children with ADHD, comparing high-intensity and low-intensity summer treatment programs over 12 weeks. There was insufficient post intervention data to analyse and determine statistical significance for the outcomes reported.

Psychoeducation versus waitlist/usual care

No new evidence was found. NICE previously identified two very low quality RCTs (Ferrin et al., 2020; Looyeh, Kamali, & Shafieian, 2012). There was a clinically important benefit for teacher rated ADHD total, inattention, and hyperactivity symptoms. There were no clinically important benefits for parent-reported ADHD inattention, hyperactivity symptoms and other symptoms. There was a clinically important harm for teacher-reported other symptoms.

Adults

CBT versus waitlist/usual care

New evidence was identified in 4 RCTs (Anastopoulos, Langberg, Eddy, Silvia, & Labban, 2021; Dittner, Hodsoll, Rimes, Russell, & Chalder, 2018; Hepark et al., 2019; Janssen et al., 2019) and integrated into the NICE evidence (5 studies) resulting in 9 studies with low- to moderate-certainty evidence. New studies explored CBT (Anastopoulos et al., 2021; Dittner et al., 2018) and mindfulness based cognitive therapy (Hepark et al., 2019; Janssen et al., 2019).

There were statistically significant benefits of CBT over waitlist/usual care for self-rated and investigator rated ADHD total, inattention, hyperactivity/impulsivity symptoms, improvement in ADHD symptoms; and self-rated functioning, satisfaction, problems, wellbeing, quality of life; and informant rated ADHD hyperactivity/impulsivity symptoms. There were no significant differences in self-rated emotional dysregulation and in academic outcomes. There was insufficient evidence to support or refute the use of CBT for functioning, behaviour regulation, and metacognition measured by BRIEF.

CBT/DBT versus Non-specific supportive therapy

No new evidence was found. NICE previously identified 3 RCTs of very low to moderate quality exploring DBT skills training (Hirvikoski et al., 2011) and CBT (Philipsen et al., 2015) and meta-cognitive therapy (Solanto et al., 2010). There was a clinically important benefit of self-rated Clinical Global Impression scale in one study. There was no clinically important benefit for ADHD total, inattention, hyperactivity symptoms (observer rated/investigator rated and self-rated), self-rated functioning, emotional dysregulation and no difference in serious adverse events.

CBT versus CBT

New evidence was identified for a new comparison consisting of 2 RCTs (Bachmann et al., 2018; Hoxhaj et al., 2018) with low-certainty evidence comparing mindfulness and psychoeducation. There were no statistically significant differences using the Conners ADHD rating scale (self-rated and observer-rated), including subscales for inattention/memory problems, hyperactivity/restlessness, impulsivity/emotional lability, problem with self-concept, ADHD symptoms – total, inattentive and hyperactive/impulsive, and ADHD index, and no statistically significant differences using the Brief Symptom Inventory Global Severity Index, Positive Symptom Distress Index, Positive symptom total, or for quality of life.

CBT versus attention/memory/cognitive training

No new evidence was found. NICE previously identified one very low quality RCT (Virta et al., 2010) comparing short CBT with cognitive training. There was a clinically important benefit for Clinical Global Impression scale. There was no clinically important benefit for self-rated quality of life.

CBT versus psychoeducation

New evidence was identified for a new comparison consisting of a single pilot RCT, with moderate risk of bias and low-certainty evidence, conducted in adults with ADHD, comparing psychoeducation (n=17) and CBT (n=15) over 12 weeks (Vidal et al., 2013). There were no statistically significant differences for ADHD symptoms including the Conners' ADHD rating scale (inattention, hyperactivity, impulsivity, self-esteem), Clinical Global Impression scale and quality of life measures.

Evidence to recommendation statement

In children and young people (aged 5–18 years), the evidence for CBT approaches was not robust. However, reviewed evidence combined studies focusing on both children and adolescents. There was some evidence supporting benefits for broader functioning/organisational skills. The NICE guideline suggest that CBT can be considered for adolescents with ADHD who have tried medication and whose symptoms are still causing impairment. Here we have recommended CBT for adolescents, given the robust evidence for CBT in adults. Given the more limited evidence for the benefits of CBT approaches in children, we have recommended consideration of CBT in this group.

In adults, evidence suggests benefits of CBT over waitlist/usual care (and no harm). Self-rated benefits of CBT over waitlist/usual care are moderate to very large in magnitude in multiple studies of moderate certainty (and self and investigator-rated benefits are very large in one low certainty study). There is likely to have been a dilution of effects of CBT in several of the included studies due to a) intervention access by

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waitlist/usual care groups, and b) Nonspecific supportive therapy comprising similar components of intervention to CBT/DBT. All three studies contributing to the comparisons with nonspecific supportive therapy included ADHD-specific psychoeducational and counselling components (Hirvikoski et al., 2011; Philipsen et al., 2015; Solanto et al., 2010). It is important to note that the available outcomes do not capture the intended range of benefits, which may be greater in range and magnitude, and evident at time points beyond the follow up points of many RCTs. Given the lack of evidence to support the superiority of one type of intervention delivery (i.e. individual or group) over another, for each recommendation we provide a clinical practice recommendation about how this should best be delivered.

See Technical report, section 5.1 for further details.

Recommendations

4.3	**Children and young people aged 5 to 17 years**			
4.3.5	EBR	Cognitive behaviour therapy could be offered to children with ADHD.	***	⊕⊕◯◯ LOW
4.3.6	EBR	Cognitive behaviour therapy should be offered to adolescents with ADHD.	***	⊕⊕◯◯ LOW
4.3.7	CPP	Cognitive behaviour therapy could be delivered in individual or group format, depending on the availability of services and young person/family preference. Group sessions could provide additional benefits with the opportunity for social support. Individual sessions could be required to address individual needs comprehensively.	NA	NA
4.3.8	CPP	Cognitive behaviour therapy should be specific to the needs of the young person with ADHD. A focus on individual strengths, values and interests should occur in balance with any focus on challenges. Treatment needs commonly include: • psychoeducation (see section 2.3) • grief processing and adjustment • understanding the individual's own ADHD symptom profile and impacts, including personal strengths • compensatory strategies and environment modifications to minimise difficulties related to ADHD symptoms, including emotion dysregulation • fostering positive interpersonal skills and relationships • communication, problem-solving and self-advocacy skills • stress management and coping skills • improvement in self-concept, including self-efficacy and self-esteem.	NA	NA
4.4	**Adults (aged 18 years and above)**			
4.4.1	EBR	Cognitive behaviour therapy should be offered to adults with ADHD.	****	⊕⊕◯◯ LOW

4.4.2	CCR	Cognitive behaviour therapy could be delivered in an individual or group format, depending on the availability of services and person's preference. Group sessions may be particularly beneficial due to the opportunity for social support. Individual sessions may be required to address individual needs comprehensively.	NA	NA
4.4.3	CPP	Cognitive behaviour therapy should be specific to the needs of the adult with ADHD. A focus on individual strengths, values and interests should occur in balance with any focus on challenges. Treatment needs commonly include: • psychoeducation (see section 2.3) • grief processing and adjustment • understanding the individual's own ADHD symptom profile and impacts, including personal strengths • compensatory strategies and environment modifications to minimise difficulties related to ADHD symptoms, including emotion dysregulation • fostering positive interpersonal skills and relationships • communication, problem-solving and self-advocacy skills • stress management and coping skills • improvement in self-concept, including self-efficacy and self-esteem.	NA	NA

Clinical considerations for implementation of the recommendations

In general, CBT does not target ADHD symptomology. Rather, it targets functional/behavioural change, psychological distress, and other mental health factors. To use CBT in the context of ADHD, it is important that the CBT clinician has ADHD-specific CBT expertise, and where appropriate, seeks additional training and supervision from a clinician with this expertise. Clinician expectations of engagement and efficacy with particular therapeutic techniques should be considered in light of the cognitive strengths and challenges typically associated with ADHD. They should also be aware of broader socio-political factors that may be influential for the individual including stigma, the social model of disability, human rights model of disability, and the emerging neurodiversity movement.

The selection of approaches should consider the child/adolescent's ability to understand their own thought processes (metacognitive ability). Younger children may benefit from a foundational focus on emotional literacy, self-esteem and proactive help-seeking, whilst children approaching adolescence may benefit from simple meta-cognitive techniques. Through adolescence increasingly sophisticated CBT techniques are likely to be of benefit. If appropriate, parents (or carers) should be included in the approach, so that they can fulfill a support role for their child. Impacts of symptoms in all life domains should be considered.

Intervention may target contributing factors that are external to the individual (such as in the environment or in the expectations and actions of others) as well as factors internal to the individual (such as cognitions, coping mechanisms, and self-concept development). A focus on individual strengths, values and interests

should occur in balance with any focus on challenges with treatment areas noted above in the recommendation.

CBT could be delivered in an individual or group format, depending on the availability of services and young person/family preferences. Group sessions may be particularly beneficial due to the opportunity for social support. Individual sessions may be required to address individual needs comprehensively.

The feasibility for people with ADHD to access CBT may be limited by the availability of clinicians/programs, cost and the time commitment required. As children with ADHD are generally not eligible for publicly funded services, CBT approaches may need to be accessed in the private sector. Therefore in recommending CBT as a routine treatment, health inequity may result. CBT can also be accessed through some community organisations (often delivered in a group format). People living in rural/remote areas may have limited access to practitioners, or may need to spend more time travelling to appointments. Workforce development may ensure that health inequity impacts are minimised.

These recommendations should be adjusted for application in Aboriginal and Torres Strait Islander communities. Adjustments could include, but are not limited to, funding training of Aboriginal and Torres Strait Islander allied health professionals, and the incorporation of Aboriginal and Torres Strait Islander cultural practices, refer section 6.2 Additionally the acceptability and feasibility of these recommendations needs to be investigated for culturally and linguistically diverse populations.

See Technical report, section 5.1 for further details.

4.4 Attention/memory/cognitive training

Attention/memory/cognitive training are interventions that aim to improve aspects of cognition such as attention and memory (and ultimately broader aspects of functioning such as ADHD symptom severity) through targeted training of these cognitive functions.

Summary of evidence review

Young children

No evidence was identified to assess effectiveness of attention/memory/cognitive training in this age group.

Children and young people

Cognitive training versus waitlist/usual care

New evidence was identified in one RCT (Bikic, Leckman, Christensen, Bilenberg, & Dalsgaard, 2018) and integrated with the NICE evidence (five studies) resulting in 6 studies with very low- to low-certainty evidence. There were statistically significant benefits of cognitive training over waitlist/usual care for parent-rated ADHD inattention and hyperactivity symptoms. There were no statistically significant benefits of cognitive training for self-rated ADHD total symptoms; teacher rated ADHD inattention and hyperactivity symptoms; parent rated other symptoms, and academic literacy and numeracy outcomes. One RCT (low risk

of bias) reported no statistically significant differences for the Child Behaviour Checklist internalising and externalising subscales, Clinical Global Impression scale, and Children's Global Impression scale.

Cognitive training versus non-specific supportive therapy

New evidence was identified for a new comparison consisting of a single RCT (Bikic, Christensen, Leckman, Bilenberg, & Dalsgaard, 2017) with moderate risk of bias, conducted in adolescents with ADHD, comparing cognitive training and non-specific supportive therapy over 7 weeks. There was insufficient evidence (very low certainty) to decide on the benefit of cognitive training in this group of adolescents for total ADHD symptoms, whether rated by the adolescent, parent, or teacher.

Attention/memory/cognitive training & Behaviour Parent Training versus Attention/memory/ cognitive training

No new evidence was found. NICE previously identified one moderate quality RCT (Steeger, Gondoli, Gibson, & Morrissey, 2016), which compared combined child cognitive (cogmed working memory training) and behaviour parent training with cognitive training alone. There was no clinically important benefit for parent-reported ADHD inattention, parent and teacher reported hyperactivity symptoms and other symptoms. There was a clinically important harm of intervention for teacher-reported ADHD inattention symptoms.

Attention/memory/cognitive training & exercise versus waitlist/usual care

No new evidence was found. NICE previously identified one RCT (Smith et al., 2020) with low to moderate quality evidence. There were no clinically important benefits for parent-reported ADHD total symptoms.

Attention/memory/cognitive training plus CBT versus waitlist/usual care

New evidence was identified for a new comparison consisting of a single RCT (Lan et al., 2020) with high risk of bias conducted in children with ADHD combined, comparing attention/memory/cognitive training plus social skills training and waitlist/usual care over 12 weeks. Raw data from this study were of very low certainty. Analysis showed that there were statistically significant benefits of the intervention for social adjustment (problems with peers), working memory, Conners continuous performance tasks (commission and omissions), and social skills (cooperation and empathy); but not for social adjustment (interaction with peers) or social skills (self-control). There were no statistically significant differences for ADHD symptoms (inattention and hyperactivity) or social skills (responsibility, assertion).

Attention/memory/cognitive training versus non-specific supportive therapy

New evidence was identified for a new comparison consisting of one RCT with moderate risk of bias and moderate certainty (Kollins et al., 2020). The RCT investigated a digital therapeutic designed to target attention and cognitive control delivered through a video game-like interface compared with a control digital device over 4 weeks. No statistically significant differences between the interventions were found for ADHD total, inattention, and hyperactivity symptoms, working memory and inhibition, impairment rating scale, and Clinician Global Impression scale.

Adults

Attention/memory/cognitive training versus waitlist/usual care

No new evidence was found. NICE previously identified one study of very low quality. There was no clinically important benefit for quality of life and Clinical Global Impression scale. There was a clinically important harm for Clinical Global Impression scale.

Attention/memory/cognitive training versus Non-specific supportive therapy

New evidence was identified in one RCT (Dentz, Guay, Parent, & Romo, 2020) but not integrated with the NICE evidence due to the outcome data being of low certainty and insufficiently similar to existing evidence to enable pooling. The new RCT (Dentz et al., 2020), with high risk of bias, was conducted in adults with ADHD, comparing Cogmed training and non-specific supportive therapy over 5 weeks.

There were no statistically significant differences for ADHD symptoms on the Conners Adult ADHD Rating Scale for inattention and hyperactivity, and on the Brown Attention Deficit Disorder working memory, or executive function in daily life subscales; or for the Wechsler Adult Intelligence Scales III Matrix reasoning task. NICE previously identified one RCT of low-to-moderate quality (Mawjee, Woltering, & Tannock, 2015). There was no clinically important benefit for self-rated ADHD total symptoms total, functioning, academic literacy and numeracy outcomes.

Evidence to recommendation statement for memory/attention/cognitive training – Children and young people and adults

For children and young people there was no evidence to support improvements in parent-reported overall ADHD symptom severity through the delivery of attention/memory and cognitive training. Although there was some improvement in parent-reported inattention and hyperactivity symptoms, evidence was from studies of very low and low certainty.

Furthermore, there was no robust evidence to support any improvements in parent-rated broader functioning or improved teacher rated ADHD symptoms.
For adults evidence suggests that there is no benefit of attention/memory/cognitive training with only 2 studies meeting inclusion criteria both with very low to low certainty. The only clinically important findings from the two studies which were low quality were that CBT/DBT is more beneficial in comparison to attention/memory/cognitive training, and attention/memory/cognitive training may be harmful compared to waitlist.

See Technical report, section 5.1 for further details.

Recommendations

Children and young people aged 5-17 years

4.3.9	EBR	Attention/memory/cognitive training could be offered to children and young people with ADHD.	**	⊕◯◯◯ VERY LOW

Adults aged 18 years and above

4.4.4	EBR	Attention/memory/cognitive training could be offered to adults with ADHD.	**	⊕◯◯◯ VERY LOW

Clinical considerations for implementation of the recommendations

The evidence for attention/memory and cognitive training for the treatment of ADHD is currently weak. This is due to a combination of the limited amount of research, methodological issues in research that has been conducted thus far and the low effect size of interventions. Attention/memory and cognitive training can be resource-intensive, time-consuming, and can incur significant out-of-pocket expenses for people with ADHD.

It appears to be somewhat more effective in improving working memory rather than having a direct effect on core ADHD symptoms. Improvement in some cognitive skills could potentially have a positive effect on learning outcomes, however, this has yet to be demonstrated in the research literature. The current evidence therefore suggests that in most cases this treatment modality should not be considered as effective as others, and this is reflected in the recommendations that have been made. Further research may clarify the effectiveness of this treatment option.

4.5 ADHD coaching

Is there a role for ADHD coaches?

Summary of narrative review evidence

Coaching for individuals with ADHD builds on the foundation of life coaching, requiring specialised education and training in specific coaching skills for this population. Varied approaches to coaching are evident in practice, most building on an in-depth understanding of the challenges of ADHD and executive functioning weaknesses. Wright (2014) describes ADHD coaching as: 'A collaborative, supportive, goal-oriented process in which the coach and the client work together to identify the client's goals and then develop the self-awareness, systems, and strategies – skills – necessary for the client to achieve those goals and full potential.' (p 22)

ADHD coaching combines three key coaching skill sets (Wright, 2014, p. 23):

- collaborative, client-centred, client-driven process to support the person's empowerment
- education about ADHD and related topics, as well as tools and resources
- skills coaching to build on the person's strengths and resources, and develop conscious competence of new systems and strategies.

ADHD coaching shares common elements with CBT and other psychosocial treatments. Coaching builds upon theoretical foundations of psychology and psychiatry, education and life coaching. The evidence highlights a range of frameworks applicable to the ADHD context targeting, motivation, implementation, self-regulation and self-actualisation.

The limited evidence suggests possible positive outcomes for people with ADHD. However, high quality evidence is lacking and among studies, there was substantial variation in the coaching factors across the studies including how coaches were trained, how coaching programs were delivered (group vs individual sessions), variation in coaching duration and variation in the outcome domains assessed (Ahmann, Tuttle, Saviet, & Wright, 2018; Evans, Schultz, & DeMars, 2014; Field, Parker, Sawilowsky, & Rolands, 2013). Further robust research is needed to inform the broad application of this approach across populations with ADHD.

Recommendations

Children and young people aged 5-17 years

4.3.10	CCR	ADHD coaches could be considered as part of a treatment plan for adolescents with ADHD.	NA	NA

Adults aged 18 years and above

4.4.5	CCR	ADHD coaches could be considered as part of a treatment plan for adults with ADHD.	NA	NA

Clinical considerations for implementation of the recommendations

The evidence supporting coaching as an intervention for ADHD is currently relatively weak, which may reflect the amount of research undertaken rather than the lack of effectiveness of the intervention. ADHD coaching is generally provided within the private sector, which could impact health equity in terms of access to this approach which will incur out of pocket costs to people with ADHD.

See Technical report, section 5.4 for further details.

Clinical considerations across all non-pharmacological interventions

The interventions recommended in this guideline may currently be difficult to access in Australia, particularly in the public sector. The routine recommendation of these interventions would reduce healthy equity, given that individuals with ADHD are not eligible for publicly funded services in Australia. The out-of-pocket costs associated with accessing these interventions in the private sector are likely to be prohibitive to some individuals/families. However, non-pharmacological interventions may only be required for shorter periods of time compared to medication treatments that are ongoing.

It is anticipated that these recommendations will be acceptable to individuals with ADHD and their families, as well as to clinicians, in situations where the recommended interventions are accessible. Families and individuals with ADHD, (and their supporting clinicians) may question the recommendations if they do not have sufficient financial resources to access the intervention or live in rural/remote areas with limited

access to services, or insufficient time to attend appointments (e.g. in working hours, or requiring childcare). Some parents and individuals with ADHD may also have preference for either individual or group-based supports, which may not be available. Telehealth and online treatments are emerging.

Workforce development is needed to ensure that health inequity impacts are minimised. The recommended interventions are already delivered in private practice by psychologists and other allied health professionals, and through community-based organisations, however most of these interventions will involve out-of-pocket costs.

4.6 Adherence to non-pharmacological interventions

Clinical questions

What are the most effective approaches to increasing treatment adherence in ADHD for non-pharmacological approaches?

Clinical practice gaps, uncertainties and need for guidance

Adherence to non-pharmacological treatments that are effective will result in symptom reduction and improvement in functioning. There are barriers and facilitators to treatment adherence that can be addressed to ensure that treatment is effective in people with ADHD.

Summary of evidence review

There is minimal evidence on adherence to non-pharmacological ADHD interventions, with most studies focusing on medication adherence. The NICE qualitative review on adherence noted a few themes relating to non-pharmacological adherence (NICE, 2018) Some parents were more likely to drop out of parent training if they did not see expected improvement quickly enough. It was noted this could be alleviated by setting realistic expectations and in helping parents to see small improvements.

Several barriers for people to access non-pharmacological treatment were reported. This included psychological barriers such as feelings of shame, embarrassment and fear of being judged. Other barriers included time commitments, inconvenient session times and locations and for parents, childcare barriers. Clinicians reported barriers to non-pharmacological adherence included a lack of education, cultural issues, domestic violence and financial difficulties.

Evidence-to-recommendation statement

There was minimal evidence regarding adherence to non-pharmacological treatment. Clinical practice points were based on the expertise of the GDG and adaptation of the NICE recommendations and evidence to the Australian context.

See Technical report, section 10.8 for further details.

Recommendations

4.4.1	CPP	Clinicians should support adherence to non-pharmacological treatments by discussing the following with the person with ADHD and/or their parents/caregivers or family:
		• the balance of risks and benefits (e.g. how the treatment can have a positive effect on ADHD symptoms, the time and costs of treatments)
		• the potential barriers to continuing treatment, including:
		  ○ not being sure if it is making a difference
		  ○ the time and organisational skills needed to commit to the treatment
		  ○ the time that might be needed outside of the sessions
		• the fact that treatment could result in increased self-awareness, and the potential impact this may have on the person with ADHD
		• the potential need for long-term adherence beyond the duration of any initial program (e.g. by attending follow-up/refresher support to sustain learned strategies).
		
		Clinicians should provide strategies to overcome any barriers to adherence, e.g.:
		• scheduling sessions to minimise inconvenience or seeking courses with childcare provision
		• following recommendations for monitoring progress, such as using standard symptom rating scales.
			NA	NA

Clinical considerations for implementation of the recommendations

The GDG discussed that adherence to non-pharmacological treatment was an important issue that was rarely addressed. They recommended that clinicians discuss the commitment, time and organisational skills needed for successful adherence to non-pharmacological treatment.

Methods used to improve adherence are likely to be similar to any psychological or psychotherapeutic approach. A clear understanding of what the approach entails, likely effects, duration, effort required, costs, benefits and potential harms, likely outcomes, goals and desired effects are important considerations for discussion prior to initiation of any treatment. Engagement with the therapist, perceived progress and benefit is likely to play a significant part in ongoing adherence. Ensuring that a quality therapeutic relationship is rapidly established is a core skill of the clinician. It is important to ensure that these skills are maintained, and that the clinician has the opportunity for regular clinical supervision.

The feasibility for people with ADHD to access clinicians to improve adherence to non-pharmacological treatments may be limited by the availability of clinicians, cost of services and the time commitment required. Workforce development may ensure that health inequity impacts are minimised.

4.7 Other non-pharmacological interventions

4.7.1 Peer support workers

Clinical questions

Is there a role for peer support workers?

Summary of narrative review

The use of peer support workers has a long history within the mental health system having been utilised since the 18th Century (Kilpatrick, Keeney, & McCauley, 2017). There has recently been a resurgence of the use of peer support workers in mental health settings generally, and there are an increasing number of studies supporting their role. These have been translated into policies, position statements, such as the position statement by Royal Australian and New Zealand College of Psychiatrists (Royal Australian & New Zealand College of Psychiatrists, 2021) and growth in the number and development of the role of peer support workers throughout the mental health sector . There is, however, little to no information about the effectiveness of peer support workers in the ADHD community.

A peer support worker is an individual who draws on personal and shared experience of mental health challenges to support others with similar challenges (Kilpatrick et al., 2017; Rooney, Miles, & Barker, 2016). Peer support workers have personal experience of recovering from mental health challenges and are trained and employed to support the recovery of others (Bradstreet & Pratt, 2010). The value of peer support work has gained international recognition including within the World Health Organisation's mental health action plan which proposes that peer support work is a 'core service requirement' (Kilpatrick et al., 2017). There are considerable benefits to subgroup populations by including peer support workers in a health system strategy.

Recommendations

Currently there is insufficient research on peer support for people with ADHD to warrant any specific recommendations in this guideline.

See Technical report, section 11.2 for further details.

4.7.2 Organisation/school-based interventions

Clinical questions

What educational/school/teacher interventions are possible, and are they effective?

Summary of evidence review

No evidence was identified from studies in children aged under 5 years. NICE identified very limited evidence in children and young people (5–18 years of age):

Organisation/School-based versus waitlist/usual care

No new evidence was found. NICE previously identified 8 RCTs comparing organisation/school-based interventions to waitlist/usual care ranging from very low to high quality. There were no clinically important benefits for teacher-rated ADHD total symptoms, parent- and teacher-rated inattention symptoms, hyperactivity symptoms, other symptoms and academic literacy, or for numeracy and academic performance outcomes.

Organisation/School-based versus Non-specific supportive therapy

No new evidence was found. NICE previously identified one very low quality RCT (Molina et al., 2008). There was a clinically important benefit for adolescent rated other symptoms but no clinically important benefit for emotional dysregulation.

Evidence to recommendation statement

Currently there is insufficient research on organisation and school-based interventions for people with ADHD to warrant any specific recommendations. It is noted that in the studies included above where the intervention included components of teaching organisational skills, organisational skills were not specifically measured in the studies. It should be noted that elements of cognitive behaviour therapy and ADHD coaching draw on principles that help individuals with organisational skills Organisational skills may potentially be more helpful for adolescents (adults with ADHD) however, this review included children and young people together.

See Technical report, section 5.1 for further details.

4.7.3 Neurofeedback

Summary of evidence review

Young children

No evidence was identified to assess effectiveness of neurofeedback in this age group.

Children and young people

Neurofeedback versus waitlist/usual care

One new RCT was identified (Lim et al., 2019) and integrated into NICE evidence resulting in 3 RCTs with low- to moderate-certainty evidence. One study found a statistically significant benefit of waitlist/usual care over neurofeedback for parent reported total ADHD symptoms (Lim et al., 2019). There were no benefits of neurofeedback over waitlist/usual care for parent- and teacher-rated ADHD inattention (Lim et al., 2019; Steiner, Frenette, Rene, Brennan, & Perrin, 2014; Steiner, Sheldrick, Gotthelf, & Perrin, 2011) and hyperactivity symptoms (Steiner et al., 2011).

Neurofeedback versus non-specific supportive therapy

New evidence was identified for a new comparison consisting of one RCT with high risk of bias and low certainty evidence (Alegria et al., 2017). No statistically significant benefits of neurofeedback over non-

specific supportive therapy were found for ADHD total, inattention, hyperactivity symptoms and other symptoms.

Neurofeedback versus active control

New evidence was identified for a new comparison consisting of one RCT reported in 2 studies with low risk of bias and moderate certainty (Aggensteiner et al., 2019; Strehl et al., 2017). No statistically significant benefits of neurofeedback over active control were found for parent-rated ADHD total, inattention, hyperactivity symptoms.

Neurofeedback versus sham

No new evidence was found. NICE previously identified 2 studies with very low- to low-quality evidence, which found a clinically important benefit for investigator-rated Clinical Global Impression scale, and no clinically important benefits for parent-rated total ADHD symptoms or serious adverse events.

Neurofeedback versus Exercise

No new evidence was found. NICE previously identified one study with low to moderate quality evidence which found no clinically important benefits for parent and teacher-rated ADHD inattention, hyperactivity symptoms and other symptoms.

Neurofeedback versus attention/memory/cognitive training

New evidence was identified in one study (Minder, Zuberer, Brandeis, & Drechsler, 2018) and integrated into the NICE evidence consisting of 3 studies (Gevensleben et al., 2009; Steiner et al., 2014; Steiner et al., 2011) resulting in 4 studies with low- to moderate-certainty evidence. There was a clinically important harm with use of neurofeedback for teacher reported emotional dysregulation (Gevensleben et al., 2009).

There were statistically significant benefits of neurofeedback over attention/memory/cognitive training for parent-rated ADHD total, inattention symptoms and dysregulation symptoms and teacher-rated ADHD inattention symptoms (clinic setting). There were statistically significant benefits of attention/memory/cognitive training over neurofeedback for parent-rated ADHD attention symptoms in the school setting. There were no statistically significant differences between neurofeedback and attention/memory/cognitive training for teacher-rated ADHD total symptoms, ADHD inattention symptoms (school setting); hyperactivity/impulsivity settings (clinic and school setting); parent- and teacher-rated other symptoms.

Neurofeedback versus psychoeducation

No new evidence was found. NICE previously identified one RCT (Christiansen, Reh, Schmidt, & Rief, 2014) with very low quality evidence. There was no clinically important benefit for parent-reported ADHD inattention symptoms.

Neurofeedback versus CBT & parent/family training

New evidence was identified for a new comparison consisting of a single small RCT (Moreno-Garcia, Meneres-Sancho, Camacho-Vara de Rey, & Servera, 2019), with high risk of bias and low certainty evidence, conducted in children with ADHD, comparing neurofeedback and child CBT and parent behaviour training over 20 weeks. There were statistically significant benefits of CBT & parent/family training over neurofeedback for parent rated ADHD hyperactivity/impulsivity symptoms. There were no statistically significant differences between neurofeedback and CBT & parent/family training for parent and teacher rated ADHD total and inattention symptoms and teacher rated hyperactivity/impulsivity symptoms.

Neurofeedback & parent/family training versus waitlist/usual care

New evidence was identified for a new comparison consisting of a single very small RCT (Rajabi, Pakize, & Moradi, 2020) conducted in boys with ADHD, comparing neurofeedback plus cognitive training and waitlist. Given the very low certainty of the outcome data in this study with very serious risk of bias and very serious imprecision, there is insufficient evidence to support or refute the intervention for ADHD inattention and hyperactivity symptoms, whether parent or teacher rated.

Adults

Neurofeedback versus waitlist/usual care

No new evidence was found. NICE previously identified one RCT of low quality (Cowley, Holmstrom, Juurmaa, Kovarskis, & Krause, 2016). There was a clinically important benefit for self-rated ADHD inattention and hyperactivity symptoms.

Neurofeedback versus sham

New evidence was identified for a new comparison consisting of a single RCT (Schonenberg et al., 2017), with low risk of bias and moderate certainty evidence, conducted in adults with ADHD, comparing neurofeedback and neurofeedback sham over 15 weeks. There were no statistically significant differences for ADHD symptoms using the Conners ADHD rating scale.

Neurofeedback versus CBT

New evidence was identified for a new comparison consisting of a single RCT (Schonenberg et al., 2017) with low risk of bias, moderate certainty evidence conducted in adults with ADHD, comparing neurofeedback and CBT over 15 weeks. There were no statistically significant differences for ADHD symptoms using the Conners ADHD rating scale.

Evidence-to-recommendation statement

There was no evidence of benefits of neurofeedback over waitlist/usual care for parent- or teacher-reported ADHD inattention and hyperactivity symptoms and broader functioning in children and young people. In adults, the evidence was inconclusive. There was no new evidence identified that suggested a deviation from the NICE recommendation, where no recommendation regarding neurofeedback was included.

The GDG considered 'should not' and 'could' options for the recommendation of neurofeedback. Neither option reached the required level of agreement. Given a lack of agreement no recommendations regarding the use of neurofeedback were included in the guideline.

Arguments for *not including* any recommendations noted the low-quality evidence, lack of efficacy demonstrated and variability of findings, and concerns around the potential lengthy time commitment and cost of this intervention given unclear benefit. Arguments for *including* conditional recommendations for neurofeedback noted the lack of evidence of ineffectiveness or harm and two systematic reviews and meta-analyses were noted (Garcia Pimenta, Brown, Arns, & Enriquez-Geppert, 2021; Van Doren et al., 2019).

See Technical report, section 5.1 for further details.

Chapter 5. Pharmacological interventions

5.1 Starting and managing pharmacological interventions

Clinical questions

What principles should clinicians follow when discussing decisions to start, adjust, or discontinue pharmacological treatment for people with ADHD?

Which clinicians should initiate pharmacological therapy, and continue it long term?

How should initial medications be titrated?

Clinical practice gaps, uncertainties and need for guidance

While there are universal principles for starting, adjusting and discontinuing pharmacological treatments, guidance specific to people with attention deficit hyperactivity disorder (ADHD) is needed. Anecdotally there are inconsistencies in in approaches to starting, adjusting and discontinuing pharmacological treatments in Australia. There is a need for a clear approach for commencing and managing pharmacological treatment for people with ADHD.

Summary of evidence review - Starting, adjusting, and discontinuing pharmacological treatment

An evidence review (update of NICE 2018) was conducted to explore what principles clinicians should follow when discussing decisions to start, adjust, or discontinue pharmacological treatment for people with ADHD Whilst new evidence was found, it was not integrated because the NICE analysis was already deemed to have reached saturation of thematic data. NICE identified 69 studies and conducted a qualitative review. Saturation in themes was reached after five themes were identified. These themes are important for clinicians to be aware of to improve outcomes for people with ADHD and adequately support them through the pharmacological treatment process.

Theme 1. Starting pharmacological treatment

For children and young people, there was a need for parental acceptance of the ADHD diagnosis and awareness that parental decisions on starting medication treatment were influenced by others. Parental decision making was based on what was 'best for the child'. Some parents decided to use medication as a treatment option for their child's ADHD when symptoms were severe and it was the 'last resort'. Strong relationships and communication by clinicians with people with ADHD and/or their parents, including providing sufficient information could reduce delays the initiation of medication. Some parents expressed concerns about using medication as a treatment for their child's ADHD such as harmful side effects. Delays in accessing services delayed initiating treatment.

Theme 2. Monitoring pharmacological treatment

Parents regularly revisited the decision to use medication as a treatment option for their child's ADHD. Some people with ADHD and parents of children with ADHD were reported to adjust ADHD medications, sometimes without consulting clinicians. This mainly included decreasing dosage due to side effects, experimenting with dosages to find the optimal balance between benefit and side effects, and some used 'drug holidays' without consulting with a clinician, often due to adverse events. General practitioners, in particular, were reluctant to prescribe ADHD medication.

Diversion of medicines to substance misuse was another subtheme Some people reported being approached by others wanting to take their medication and clinicians should provide education regarding this potential occurrence.

Theme 3. Decision-making about pharmacological treatment

People involved in medication treatment decisions often had conflicting opinions about commencing, adjusting and changing medication treatment. This included different opinions between family members and the person with ADHD and clinicians. The sharing of decision making was varied with broad experiences across parents and people with ADHD As young people matured, they became increasingly involved in medication treatment decisions.

Theme 4. Stopping pharmacological treatment

This included people discontinuing medication due to side effects, or when side effects outweighed the benefit of medication. People discontinued pharmacological treatment if they felt it changed their 'sense of self' and caused a loss of identity. Clinicians were not necessarily informed when medication was stopped and people expressed not having adequate support during cessation periods. Negative experiences with the healthcare system also resulted in medication discontinuation. People often wished to experience their life without medication for a period of to decide whether to discontinue.

Theme 5. The experience of medication

People developed individual ways to interpret the balance of benefits of treatment and side effects. A range of benefits and side effects were described, as was a loss of identity for some when taking medication. People expressed worries/concerns regarding the long-term impact of medication and addiction. Stigma

from taking medication was experienced by people with ADHD. Children demonstrated an understanding of why they were taking medication.

Summary of narrative review

In titrating initial medication, different schedules have been used to optimise the dose. For methylphenidate therapy in children, titration to maximum dose (Wang et al., 2007) and a fixed dose regimen (Mohammadi, Hafezi, Galeiha, Hajiaghaee, & Akhondzadeh, 2012) with consideration of body weight (Simonoff et al., 2013) have been used. A similar approach has also been followed in studies involving adult participants, i.e., body weight based maximum dose estimation (Biederman et al., 2006; Kooij et al., 2004) for standard-release and osmotic-release oral preparation (Biederman et al., 2010) and a fixed-dose regimen. Different dosing methods have also been observed in studies on dexamfetamine preparations (Adler et al., 2009; Biederman, Mick, Spencer, Surman, & Faraone, 2012), clonidine (Jain, Segal, Kollins, & Khayrallah, 2011; Nair & Mahadevan, 2009), guanfacine (Scahill et al., 2001; Scahill et al., 2015; Taylor & Russo, 2001) and atomoxetine in children (Takahashi et al., 2009; Wehmeier et al., 2012) and adults (Durell et al., 2013; Wernicke et al., 2004). Studies have varied with respect to the duration of dose titration. All studies used pre-defined clinical outcomes and adverse effects. In a meta-analysis including 11 randomised controlled trials (RCTs) and 38 cohort studies on maximum-dose titration and safety, variations existed in the maximum treatment doses used, with lack of justification for a given dosing approach in some studies (Ching, Eslick, & Poulton, 2019).

According to NICE (2018), during the titration phase, ADHD symptoms, impairment and adverse effects should be recorded at baseline and at each dose change on standard scales by the person with ADHD, and in children their parents and teachers, and progress reviewed regularly (e.g. by weekly telephone contact) with a specialist. NICE recommends titration of the dose against symptoms and adverse effects until dose optimisation is achieved, that is, reduced symptoms, improvements in education, employment and relationships, with tolerable adverse effects. Dose titration should be slower and monitoring more frequent if any of the following are present in people with ADHD – other neurodevelopmental disorders (e.g. autism spectrum disorder, tic disorders, learning disability [intellectual disability]), mental health disorders (e.g. anxiety disorders [including obsessive–compulsive disorder], schizophrenia or bipolar disorder, depression, personality disorder, eating disorder, post-traumatic stress disorder, substance misuse), physical health disorders(e.g. cardiac disease, epilepsy or acquired brain injury).

The Canadian Paediatric Guidelines (CADDRA, 2018) recommend that ADHD medication dose adjustments need to occur while monitoring therapeutic goals and side effects. These treatment goals should be monitored with standardised questionnaires and checklists completed by parents and older children (self-rating) for baseline scores, and teachers for baseline and follow-up scores or self-reported by adults with ADHD. Teacher observations are important for monitoring treatment response. Dosing should be individualised based on response to careful titration to the lowest effective dose, not on severity of presentation or (solely) on the person's age or size. Close monitoring is essential until medication effectiveness and tolerability have been optimised.

When the initial dose is tolerated but not effective, small increments may be made at weekly, biweekly or monthly intervals, until symptoms are improved or adverse effects appear. When dosage response has been

optimised, monitoring every few months helps ensure the dose remains appropriate and can be adjusted as necessary. Dose adjustments must be closely tied to reports of benefits or adverse effects from the person with ADHD and/or their families and teachers.

Evidence-to-recommendation statement

Qualitative evidence highlights the experiences and needs of people with ADHD and their parents when making decisions around treatment and discontinuation decisions. Evidence highlights the need to provide adequate information about the benefits and side effects of medication treatment and address any concerns around long term effects. Careful management of side effects and benefits is needed, particularly as these will impact adherence (see section 5.4). Evidence also highlights the need for joint decision-making for treatment planning, with this principle reflected throughout this guideline. Evidence highlights the difficulty parents may experience with decision making around medication treatment and the need to regularly review their decision. The need to involve children and young people in decision making is also reflected in the evidence reviewed and is another principle of this guideline

See Technical report, sections 6.3 and 6.4 for further details.

Recommendations

5.1.1	CPP	Clinicians initiating medication for ADHD should: • ensure they are familiar with the pharmacokinetic profiles of all the short- and long-acting preparations available for ADHD • ensure that treatment is tailored effectively to the individual needs of the child, young person or adult • take account of variations in bioavailability or pharmacokinetic profiles of different preparations to avoid reduced effect or excessive adverse effects.	NA	NA

5.1.2	CPP	Before starting medication for ADHD, a comprehensive assessment should include:
		• confirmation that ADHD diagnostic criteria are met (see recommendations 2.1.1, 2.1.2)
		• evaluation of current educational or employment circumstances
		• risk assessment for substance misuse and drug diversion
		• assessment of physical health, including:
		  ○ a medical history, considering disorders that may be contraindications for specific medicines
		  ○ current medication
		  ○ height and weight (measured and recorded against the normal range for age, height and sex)
		  ○ a cardiovascular assessment, including baseline pulse and blood pressure (measured with an appropriately sized cuff and compared with the normal range for age).
			NA	NA

		Note: An electrocardiogram (ECG) is not needed before starting stimulants, atomoxetine or guanfacine, unless the person has any of the features in recommendation 5.1.3, or a co-occurring disorder that is being treated with a medicine that may pose an increased cardiac risk.		
5.1.3	CCR	People with ADHD should be referred for a cardiology opinion if any of the following is present: • a history of congenital heart disease or previous cardiac surgery • a 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 • palpitations that are rapid, regular and start and stop suddenly • chest pain suggesting cardiac origin • signs of heart failure • a murmur heard on cardiac examination • hypertension.	NA	NA
5.1.4	CCR	People should be referred to an appropriate physician if blood pressure is consistently above age-based normal values, or for children and young people above the 95th centile for age and height.	NA	NA
5.1.5	CPP	Before titration, baseline ADHD symptoms and functional impairments should be recorded. During titration, adverse effects should be monitored and recorded at each dose change. A treating clinician should review progress regularly during the dose-titration period.	NA	NA
5.1.6	CPP	The dose should be titrated against symptoms, functional impairments and adverse effects until the optimal dose has been identified (i.e. the dose at which symptoms are reduced and functional outcomes are improved, with minimal adverse effects).	NA	NA
5.1.7	CCR	Dose titration should be slower and monitoring more frequent if any of the following are present: • other neurodevelopmental disorders (e.g. autism spectrum disorder, tic disorders, intellectual disability), • other mental health disorders such as anxiety disorders, schizophrenia or bipolar disorder, depression, personality disorder, eating disorder, post-traumatic stress disorder, substance misuse and • physical health disorders (e.g. cardiac disease, epilepsy or acquired brain injury).	NA	NA

Clinical considerations for implementation of the recommendations

State-based regulations will determine who should initiate pharmacological therapy (see also Principles and assumptions). Generally, paediatricians and child psychiatrists may prescribe for persons under 18 years of age. For adults, psychiatrists are primarily authorised to prescribe psychostimulants. In some circumstances, such as in regional/rural settings where there is no access to specialists, a general practitioner with appropriate training and authorisation may be authorised to initiate psychostimulant medication.

Development of a treatment plan, assessment, discussion of options, initiation of treatment, titration and stabilisation are all legitimate and necessary roles for a medical specialist working with individuals with ADHD. Medical practitioners may be assisted by other professionals in monitoring to decrease the frequency needed for medical appointments, without compromising quality of information about improvements and adverse events.

Children and young people with ADHD are the most common presentation seen by Australian paediatricians and more likely to be supported by paediatricians in private settings than public settings (Efron, Davies, & Sciberras, 2013). Adults are most commonly supported by psychiatrists in the private sector. This can result in significant out-of-pocket costs to access medication treatment. There are also significant bottlenecks and delays in accessing experienced adult ADHD psychiatrists due to not enough to meet the number of adults with ADHD in Australia. This results in health inequity for many Australians with ADHD. Workforce development may ensure that health inequity impacts are minimised. The recommendations made here are generally well established in clinical practice, and are therefore likely to be acceptable to stakeholders.

5.2 Medication choice

Clinical questions

What is the clinical effectiveness of pharmacological treatments for people with ADHD?
What are the adverse events associated with pharmacological treatments for people with ADHD?

How do co-occurring disorders impact treatment effects?

Clinical practice gaps, uncertainties and need for guidance

People with ADHD often receive pharmacological treatments. Understanding the evidence regarding the effectiveness and the choice of medications and likely situations where caution might need to be exercised are important considerations for clinicians in the comprehensive treatment and support of people with ADHD.

Summary of evidence review

Young children

Placebo/ADHD medication versus ADHD medication trials:

Methylphenidate versus placebo

No new evidence was found. NICE identified 2 low-quality studies (Ghuman et al., 2009; Greenhill et al., 2006). A clinically important benefit of methylphenidate for parent-teacher composite rated ADHD total symptoms total and other symptoms was found.

Non-ADHD medication versus ADHD medication trials:

Risperidone versus methylphenidate

Risperidone is not recognised as a treatment for ADHD but is included here due to a clinically significant finding. No new evidence was found. NICE identified one study of very low quality (Arabgol, Panaghi, & Nikzad, 2015). There was no clinical difference between risperidone and methylphenidate on parent-rated ADHD total, inattentive and hyperactivity symptoms. The number of children discontinuing their medication due to adverse events was lower for risperidone compared to methylphenidate, and this was clinically important.

Risperidone and methylphenidate versus methylphenidate

As noted above, risperidone is not considered an ADHD treatment but has been included here due to clinically significant adverse events. No new evidence was found. NICE identified one study with low- to very low-quality evidence (Safavi, Dehkordi, & Ghasemi, 2016). There was no clinical difference on parent-reported ADHD total, inattention and hyperactivity symptoms and other symptoms. There was a clinically important benefit of methylphenidate and risperidone combined on Clinical Global Impression scale. There was clinically important harm of risperidone and methylphenidate combined on the outcome measure of discontinuation due to adverse events.

Children and young people

Methylphenidate

Immediate-release methylphenidate versus placebo

New evidence was identified from one RCT of moderate certainty (Solleveld et al., 2020). There were statistically significant benefits of immediate-release methylphenidate over placebo for Clinical Global Impression Scale change score and the Disruptive Behavior Disorder Rating Scale (for attention scores but not hyperactivity scores). NICE evidence previously identified eight studies of low to moderate quality. There was a clinically important benefit of methylphenidate for parent- and teacher-rated ADHD total and inattention symptoms and teacher-reported ADHD hyperactivity symptoms. There was no clinical difference for parent-rated ADHD total symptoms and parent- and teacher-rated hyperactivity symptoms, and discontinuation due to adverse events (4 studies low quality) and serious adverse events (one study moderate quality).

Osmotic-controlled Release Oral System (OROS) methylphenidate versus placebo

New evidence was identified in one RCT of low certainty (Newcorn et al., 2017). There were statistically significant benefits of flexible-dose or fixed-dose OROS methylphenidate over placebo for ADHD total, inattention, hyperactivity symptoms, and Clinical Global Impression scale. NICE previously identified four studies. There was a clinically important benefit of methylphenidate for parent-, teacher- and investigator-

rated ADHD total, inattention, and hyperactivity symptoms (4 studies moderate quality), Clinical Global Impression scale (2 studies moderate quality), other symptoms (one study of low quality), quality of life (one study of low quality) and academic achievement (one study of low quality). There was no clinical difference in the number of children discontinuing their medication due to adverse events (3 studies of low quality).

Immediate-release methylphenidate versus OROS methylphenidate

No new evidence was found. NICE previously identified one study. There was no clinically important difference for ADHD inattention and hyperactivity symptoms (teacher-rated; one study of moderate quality) (parent-rated; one study of moderate quality), Clinical Global Impressions Scale (one study of low quality) and discontinuation due to adverse events (one study of low quality).

OROS methylphenidate versus lisdexamfetamine

New evidence was found in two RCTs in one study (Newcorn et al., 2017). There were statistically significant benefits of fixed-dose lisdexamfetamine over fixed-dose OROS methylphenidate for ADHD total , inattention and hyperactivity symptoms, and on the Clinical Global Impressions Scale (one RCT with low-certainty evidence). There were no statistically significant differences between flexible-dose lisdexamfetamine and OROS methylphenidate for ADHD total, inattention, or hyperactivity symptoms and on the Clinical Global Impressions Scale (one RCT with low-certainty evidence). NICE previously identified one study. There was a clinically important benefit of lisdexamfetamine for investigator rated ADHD total symptoms (one study of moderate quality) and clinical global impressions (one study of low quality). There was no clinical difference for discontinuation due to adverse events, academic achievement and other symptoms (one study of low quality).

Methylphenidate versus methylphenidate plus dextromethorphan

Dextromethorphan is a cough suppressant and not indicated for the treatment of ADHD. New evidence was identified for a new comparison consisting of a single RCT of moderate certainty (Chuang et al., 2019). There were no statistically significant benefits of either intervention for all outcomes reported: Child Behaviour Checklist (CBCL – Chinese version) – anxiety/depression, withdrawn/depression, body complaints, social problems, thought problems, attention problems, delinquent behaviour, aggressive behaviour, other problems; and Swanson, Nolan, and Pelham–IV Questionnaire (SNAP-IV) inattention, hyperactivity and oppositional defiant symptoms.

Methylphenidate plus placebo versus methylphenidate plus piracetam

Piracetam is a cognitive enhancer and not indicated for the treatment of ADHD. New evidence was identified for a new comparison consisting of a single RCT of low certainty (Alavi et al., 2021). There were statistically significant benefits of methylphenidate+piracetam over methylphenidate+placebo for parent-rated ADHD symptoms on the Conners Parents Rating Scale (CPRS-R) or clinician-rated Child Symptom Inventory-DSM-IV (CSI-4). There were no statistically significant benefits of either intervention for the Children's Global Assessment Scale.

Dexamfetamine

Lisdexamfetamine versus placebo

New evidence was identified in two RCTs in one study (Newcorn et al., 2017). There were statistically significant benefits of lisdexamfetamine 30 mg, 50 mg and 70 mg for ADHD total, inattention and hyperactivity symptoms (investigator-rated; 1 RCT, very low-certainty evidence), and Clinical Global Impression Improvement scale (investigator rated; 1 RCT, very low certainty) compared with placebo. There were statistically significant benefits of flexible dose and fixed dose lisdexamfetamine over placebo for ADHD total, inattention, hyperactivity symptoms and on the Clinical Global Impressions scale (one RCT with low-certainty evidence). NICE previously identified one RCT. There was a clinically important benefit of lisdexamfetamine for ADHD total symptoms (investigator rated; one study of moderate quality), Clinical Global Impression scale, academic achievement and other symptoms (one study of moderate quality). There was no clinical difference for discontinuation due to adverse events (2 studies of very low quality).

Atomoxetine

Atomoxetine versus placebo

No new evidence was found. NICE previously identified 26 studies. There was a clinically important benefit of atomoxetine for: quality of life (2 studies of moderate quality, one study of low quality), treatment response (2 studies of low quality), ADHD total symptoms (investigator rated; 3 studies of low quality and six studies of moderate quality) (teacher rated; 5 studies of moderate quality, one study of low quality) (parent rated; 9 studies of high quality, 2 studies of low quality, 3 studies of moderate quality), ADHD inattention symptoms (investigator rated; 5 studies of low quality) (teacher rated; 5 studies of low quality) (parent rated; 9 studies of low quality at four to12 weeks; 2 studies low quality at four weeks; 3 studies moderate quality), ADHD hyperactivity symptoms (investigator rated; five studies of moderate quality) (teacher rated; 4 studies of moderate quality, one study of low quality) (parent rated; 12 studies of moderate quality, 2 studies of very low quality), Clinical Global Impression (5 studies of moderate quality) and other outcomes (2 studies low quality).

There was no clinical difference for other symptoms (3 studies of moderate quality), academic achievement (one study of low quality), discontinuation due to adverse events (16 studies of moderate quality and 2 studies of low quality), or serious adverse events (3 studies of low quality).

Atomoxetine versus methylphenidate

New evidence was found from one study (Zhu, Sun, Zhang, Liu, & Zhao, 2017). NICE previously identified 3 RCTs. Integrated evidence showed there were statistically significant benefits of methylphenidate over atomoxetine for ADHD total and inattention symptoms (3 RCTs with moderate-certainty evidence), hyperactivity symptoms (one RCT with low-certainty evidence) and Clinical Global Impression scale (one RCT with low-certainty evidence). There were no clinical differences for quality of life (one study of moderate quality), hyperactivity symptoms (parent-rated; 3 RCTs of moderate quality), other symptoms (one study of moderate quality) or the Conners scale measures of learning problems, confrontation, and ADHD index (one RCT with low-certainty evidence). More children in atomoxetine treatment groups discontinued due to

adverse events, compared with methylphenidate treatment groups (2 RCTs of moderate quality). There were no statistically significant differences between methylphenidate over atomoxetine for ADHD total, inattention, or hyperactivity symptoms, or on the Clinical Global Impression scale (one RCT with low-certainty evidence).

Atomoxetine versus guanfacine extended release

No new evidence was found. NICE previously identified one low-quality study. There was a clinically important benefit of guanfacine for investigator-rated ADHD total symptoms and Clinical Global Impression scale. There was no clinically important difference in the number of children discontinuing due to adverse events.

Guanfacine

Guanfacine versus placebo

No new evidence was found. NICE previously identified one RCT. There was a clinically important benefit of guanfacine for ADHD total and hyperactivity symptoms (investigator-rated; one study of moderate quality) and the Clinical Global Impression scale (one study of high quality). There was no clinically important difference for ADHD inattention symptoms (investigator-rated; one study of moderate quality).

Extended-release guanfacine versus placebo

No new evidence was found. NICE previously identified 8 RCTs. There was a clinically important benefit of extended release guanfacine for ADHD total symptoms (investigator-rated; 7 studies of low quality), ADHD inattention symptoms (investigator-rated; 4 studies of low quality), ADHD hyperactivity symptoms (investigator-rated; 5 studies of high to moderate quality) and Clinical Global Impression scale (5 studies of moderate quality).

There was clinically important harm of extended release guanfacine for serious adverse events (one study of very low quality): one participant in the guanfacine arm had a serious adverse event, compared with zero in the placebo arm. There was no clinically important difference for academic outcomes (one study of high quality) and discontinuation due to adverse events (8 studies of high quality).

Clonidine

Clonidine versus placebo

No new evidence was found. NICE previously identified 4 RCTs. There was a clinically important benefit of clonidine for the following outcome measures: ADHD total symptoms – parent-rated (2 studies of low quality), teacher-rated (2 studies of low quality), and investigator-rated (one study of low quality) ADHD inattention symptoms – investigator-rated (one study of low quality); hyperactivity symptoms – investigator-rated (one study of low quality) and parent-/teacher-rated (one study high quality)]; other symptoms (2 studies of very low quality).

There was no clinical difference for discontinuation due to adverse events (2 studies of moderate quality) or serious adverse events (one study of high quality).

Clonidine versus methylphenidate

No new evidence was found. NICE previously identified one RCT. The only evidence identified was for ADHD total symptoms, discontinuation due to adverse events and other symptoms, as measured by the Children's Global Assessment Scale. There was a clinically important benefit of methylphenidate for ADHD total symptoms: teacher-rated (one study of very low quality and parent-rated (one study of very low quality). There was no clinical difference for other symptoms (one study low quality) or in discontinuation rates due to adverse events (one study of very low quality).

Clonidine versus desipramine

No new evidence was found. NICE previously identified one RCT. The only evidence identified was for ADHD hyperactivity symptoms. There was a clinically important benefit of desipramine for ADHD hyperactivity symptoms (parent-/teacher-rated; one study of high quality).

Clonidine versus carbamazepine

No new evidence was found. NICE previously identified one RCT. The only evidence identified was for ADHD symptoms. There was a clinically important benefit of clonidine for ADHD inattention symptoms (investigator-rated; one study of very low quality), ADHD hyperactivity symptoms (investigator-rated; one study of low quality) and ADHD impulsivity symptoms (investigator-rated; one study of low quality).

Adults

Methylphenidate

Immediate-release methylphenidate versus placebo

No new evidence was found. NICE previously identified 8 RCTs. There was no evidence identified for quality of life or serious adverse events. There was a clinically important benefit of methylphenidate for ADHD total symptoms (investigator-rated; 3 studies of very low to moderate quality), treatment response (2 studies of low quality) and Clinical Global Impression scale (2 studies of moderate quality). There was clinically important harm of methylphenidate for discontinuation due to adverse events (2 studies of high quality). There was no clinical difference for other symptoms (2 studies of moderate quality).

Osmotic-controlled Release Oral System (OROS) methylphenidate versus placebo

No new evidence was found. NICE previously identified 12 RCTs. There was no evidence for serious adverse events. There was a clinically important benefit of methylphenidate for the following outcome measures: treatment response (3 studies of moderate quality); ADHD total symptoms – investigator-rated (4 studies of low quality; 2 studies of moderate quality), and self-rated (2 studies of moderate quality, 2 studies of low quality); ADHD inattention symptoms – investigator-rated (2 studies of low quality, 2 of moderate quality) and self-rated (one study of moderate quality); ADHD hyperactivity symptoms (investigator rated; 2 studies of low quality) ; Clinical Global Impression scale (3 studies of moderate quality) ; other symptoms (one study of high quality) ; emotional dysregulation (one study of moderate quality).

There was no clinical difference for ADHD inattention symptoms (investigator-rated; 2 studies of moderate quality), ADHD hyperactivity symptoms (investigator-rated; 2 studies low quality and self-rated; one study of moderate quality), and emotional dysregulation (one study of very low quality). There was a clinically important harm of methylphenidate for discontinuation due to adverse events (9 studies of high quality) or quality of life (one study of high quality).

Dexamfetamine

Dexamfetamine versus placebo

No new evidence was found. NICE previously identified 3 RCTs. There was a clinically important benefit of dexamfetamine for ADHD total, inattention and hyperactivity symptoms (investigator-rated; 2 studies of moderate quality) and for Clinical Global Impression (one study of moderate quality).

Lisdexamfetamine versus placebo

New evidence was found in one RCT (Weisler et al., 2017) which was a post hoc analysis from the Adler et al. (2013) study, reporting outcomes as least squares mean difference. There were statistically significant benefits of lisdexamfetamine dimesylate over placebo for all outcomes reported: BRIEF-A global executive composite, behavioural regulation index, and metacognition index, and Conners adult rating scale ADHD index, hyperactivity, inattention, impulsivity, and problems with self-concept; all investigator-rated; one RCT with moderate-certainty evidence.

NICE previously identified 3 RCTs. No evidence was identified for serious adverse events. There was a clinically important benefit of lisdexamfetamine for ADHD total symptoms (investigator-rated; 3 studies of moderate quality), ADHD inattention symptoms (investigator-rated; one study of low quality), ADHD hyperactivity symptoms (investigator-rated; one study of low quality), Clinical Global Impression (one study of moderate quality) and other symptoms (one study of low quality). There was no clinical difference for quality of life (one study of very low quality) or discontinuation due to adverse events (3 studies of very low quality).

Atomoxetine

Atomoxetine versus placebo

No new evidence was found. NICE previously identified 10 RCTs. There was a clinically important benefit of atomoxetine for the following outcome measures: quality of life (5 studies of low to moderate quality); ADHD total symptoms – investigator-rated (10 studies of low to very low quality) and self-rated (2 studies of low quality); ADHD inattention symptoms – self-rated (2 studies of low quality) and investigator-rated (9 studies of low to very low quality); ADHD hyperactivity symptoms – investigator-rated (9 studies of very low quality) and self-rated (2 studies of moderate quality).

There was a clinically important harm of atomoxetine for discontinuation due to adverse events at 24 weeks (one study moderate quality). There was no clinical difference for other symptoms (2 studies of low quality) or discontinuation due to adverse events up to 14 weeks (7 studies of moderate quality).

Guanfacine

Guanfacine versus placebo

New evidence was found in one RCT (Iwanami, Saito, Fujiwara, Okutsu, & Ichikawa, 2020) which reported outcomes as least squares mean difference. There were statistically significant benefits of extended release guanfacine over placebo for ADHD total, inattention and hyperactivity symptoms; executive functioning (BREIF) for inhibit, initiate, and plan/organise, and Global Executive Composite index (investigator-rated; one RCT with moderate-certainty evidence). There was a statistically significant benefit of placebo over extended release guanfacine for quality of life (productivity).

There were no statistically significant differences between extended-release guanfacine and placebo for quality of life total, psychological health, life outlook and relationships (one RCT of low certainty); executive function (BRIEF-A) for shift, emotional control, self-monitor, behavioural regulation, working memory, task monitor, and organisation of materials; metacognition index or adverse events (one RCT with low- to moderate-certainty evidence).

NICE previously identified one RCT (Taylor & Russo, 2001) of moderate quality. There was a clinically important benefit of guanfacine for investigator rated ADHD total, inattention and hyperactivity symptoms.

Guanfacine versus dexamfetamine

No new evidence was found. NICE previously identified one RCT. There was no clinical difference of ADHD total, inattention or hyperactivity symptoms (investigator-rated; one study of low to moderate quality).

Evidence-to-recommendation statement

No medicines are approved by the Australian Therapeutic Goods Administration for the treatment of ADHD in children aged under 6 years, and there is a paucity of evidence for the effectiveness of medications in this age group. As such, no recommendation about medication use is made. Instead, we recommend that an expert in child development and managing ADHD in young children be involved in assessment and treatment decisions.

The evidence showed that:

- in adults, monotherapy with methylphenidate, lisdexamfetamine or dexamfetamine is associated with a clinically important benefit, compared with placebo or other agents
- in children and young people, monotherapy with either methylphenidate or lisdexamfetamine is associated with a clinically important benefit, compared with placebo or other agents.

This was supported by the GDG's experience that stimulants have a more rapid onset of therapeutic effect than non-stimulant agents such as atomoxetine and guanfacine. The GDG considered the evidence, their experience and Australian prescribing regulations to recommend methylphenidate or dexamphetamine as a treatment for children aged 6 years and over, young people and adults. The GDG discussed the preference to initiate treatment with short acting stimulant medication. After 6 weeks, if one is not as effective as required, the alternate should be tried. If short-acting stimulants are effective and well tolerated but a longer acting

preparation is more convenient or is preferred, lisdexamfetamine or long-acting methylphenidate could be offered.

The GDG agreed that, if stimulants cannot be tolerated or are ineffective, atomoxetine or guanfacine should be offered. If these are not tolerated or effective, other medications could then be trialled. Atomoxetine and guanfacine were the non-stimulant drugs with the most convincing evidence. The GDG noted that atomoxetine is more widely used and that there was stronger evidence for a benefit of atomoxetine compared with placebo than guanfacine compared with placebo. However, one trial directly comparing atomoxetine with guanfacine generally showed a clinically important benefit of guanfacine.

The GDG acknowledged that there was very little evidence on medication choice for people with ADHD and most co-occurring disorders. The GDG agreed that neither the available evidence nor their experience justified a different choice of ADHD medication for people with ADHD and coexisting disorders, but there should be careful baseline assessments and consideration of drug interactions, slower titration and more careful monitoring of adverse effects, and regular contact. The GDG noted that stimulant medications can rarely induce psychosis and recommended that ADHD medication should be stopped in people experiencing a psychotic episode.

Recommendations

5.2	**Medication choice – young children aged under 6 years**			
5.2.1	CPP	For children under 6 years: If ADHD symptoms cause significant impairment in more than one setting, a specialist with expertise in child development and managing ADHD in young children (either a paediatrician or a child psychiatrist) should assess the child to identify suitable treatment options. Medication should not be given to young children without an opinion from a specialist with expertise in child development and managing ADHD in young children (either a paediatrician or a child psychiatrist). The younger the child, the more caution should be exercised.[1] [1] No medicine is approved by the Therapeutic Goods Administration for the treatment of ADHD in children aged younger than 6 years. Therefore, the use of medicines is off-label in children aged under 6 years.	NA	NA
5.3	**Medication choice – children and young people (aged 6 to 17 years)**			
5.3.1	EBR	Immediate-release methylphenidate or dexamfetamine (short acting) should be offered as the first-line pharmacological treatment for children and young people with ADHD, where ADHD symptoms are causing significant impairment*. If one is not effective, the other should be trialled. *An alternative first-line agent may be indicated where medical contraindications apply (e.g. a medication containing gluten in a person with coeliac disease).	****	⊕⊕◯ ◯ LOW

5.3.2	EBR	Lisdexamfetamine or modified-release methylphenidate could be offered to children and young people when both the following conditions are met: • The person has achieved a clinically significant reduction in ADHD symptoms after a trial of at least 6 weeks of methylphenidate and/or dexamfetamine at an adequate dose. • A longer-acting agent may be more convenient for the person (see recommendation 5.5.6).	****	⊕⊕◯◯ LOW
5.3.3	EBR	Atomoxetine or guanfacine or clonidine should be offered to children and young people if any of the following apply: • the person cannot tolerate methylphenidate or dexamfetamine • symptoms have not responded to separate 6-week trials of dexamfetamine and methylphenidate • the clinician considers that the medicine may be beneficial as an adjunct to the current regimen. Due consideration of risks and safety considerations, especially if medications are used in combination, are required.	****	⊕⊕◯◯ LOW
5.4	**Medication choice – adults (aged 18 years and above)**			
5.4.1	EBR	Immediate-release methylphenidate or dexamfetamine (short acting) should be offered as the first line pharmacological treatment for adults with ADHD*. If one is not effective the other type should be trialled. *An alternative first-line agent may be indicated where medical contraindications apply (e.g. a medication containing gluten in a person with coeliac disease)	****	⊕⊕⊕◯ MODERATE
5.4.2	EBR	Lisdexamfetamine or modified-release methylphenidate could be offered to adults when both the following conditions are met: • The person has achieved a clinically significant reduction in ADHD symptoms after a trial of at least 6 weeks of methylphenidate and/or dexamfetamine at an adequate dose. • A longer-acting agent may be more convenient for the person (see recommendation 5.5.6).	****	⊕⊕⊕◯ MODERATE
5.4.3	EBR	Atomoxetine or guanfacine should be offered to adults with ADHD if: • they cannot tolerate methylphenidate or dexamfetamine or • their symptoms have not responded to separate 6-week trials of dexamfetamine and / or methylphenidate or • as an adjunct Due consideration of risks and safety considerations, especially if medications are used in combination, are required.	****	⊕◯◯◯ VERY LOW

5.4.4	CPP	Clinicians should apply the same recommendations and principles of prescribing for adults aged over 65 years as for adults below 65 years, with careful monitoring of side effects.	NA	NA
5.5	**Further medication choices**			
5.5.1	CPP	A second opinion or peer review should be obtained if ADHD symptoms are unresponsive to stimulants and one non-stimulant.	NA	NA
5.5.2	EBR	The following could be offered to adults with ADHD, in no particular order: • bupropion • clonidine • modafinil • reboxetine • venlafaxine. Careful monitoring of adverse side effects is required	***	⊕◯◯◯ VERY LOW
5.6	**Factors influencing medication choices**			
5.6.1	CPP	For people with ADHD who also have co-occurring disorders(e.g. anxiety disorders, mood disorders, tic disorder or autism spectrum disorder), clinicians should offer the medication choices listed in recommendations 5.1–5.5.	NA	NA
5.6.2	CPP	If a person with ADHD experiences an acute psychotic or manic episode during treatment with stimulant medication, the clinician should do all the following: • stop stimulants and review other medication for ADHD • treat the psychotic or manic episode as necessary • consider alternate treatment for ADHD after the episode has resolved.	NA	NA
5.6.3	CPP	Clinicians should consider the impact of appetite suppression from stimulant treatment when people have a co-occurring eating disorder or other medical disorders contributing to weight loss.	NA	NA
5.6.4	CPP	Clinicians should exercise caution when prescribing stimulants if there is a risk of diversion for cognitive enhancement.	NA	NA
5.6.5	CPP	Clinicians should not offer immediate-release stimulants or modified-release stimulants that can be easily injected or inhaled if there is a risk of stimulant misuse or diversion.	NA	NA
5.6.6	CPP	Modified-release once-daily preparations can be offered for any of the following reasons: • convenience • improving adherence • reducing stigma by removing the need to take medication at school or in the workplace	NA	NA

		• reducing problems of storing and administering controlled drugs at school or work • if there is a risk of stimulant misuse and diversion with immediate-release preparations • if their pharmacokinetic profile offers an advantage for symptom improvement.		
5.6.7	CCR	Immediate- and modified-release preparations of stimulants could be offered together to optimise effect (e.g. a modified-release preparation of methylphenidate in the morning and an immediate-release preparation of methylphenidate at another time of the day to extend the duration of effect).	NA	NA

Clinical considerations for implementation of the recommendations

Of the new identified studies, several evaluated medications not available in Australia. These included clinical trials of mixed amphetamine salts, methylphenidate plus dextromethorphan, methylphenidate plus piracetam, dasotraline, and viloxazine. These were not included in recommendations.

Pharmaceutical Benefits Scheme (PBS) restrictions for subsidisation of ADHD treatments differ according to the age at which the person received the diagnosis. Guanfacine and atomoxetine is subsidised only for those with a diagnosis between the ages of 6 and 17 years, while subsidy for methylphenidate modified-release, lisdexamfetamine and atomoxetine is restricted to those with a diagnosis between the ages of 6 and 18 years (retrospective diagnosis permitted for lisdexamfetamine). Age restrictions do not apply to PBS listings for dexamfetamine and for methylphenidate immediate-release formulations.

These restrictions may result in increased costs to people in whom ADHD was not diagnosed before age 18 years. The GDG noted that prescribing laws in Australia differ between jurisdictions (AADPA, 2022). It is hoped that, over time, all jurisdictions reach greater uniformity in prescribing laws reflecting best practice. Adults will generally need to access a private psychiatrist as there are not publicly funded services for adults with ADHD. This can result in significant out-of-pocket costs and also significant delays, due to limited access to specialist adult ADHD psychiatrists. Children and adolescents there may also face significant delays in accessing publicly funded paediatricians and child/adolescent psychiatrists, and may instead access clinicians in the private sector, resulting in significant out-of-pocket costs. Workforce development would ensure that health inequity impacts are minimised.

The recommendations made here are generally well established in clinical practice, and are therefore likely to be acceptable to stakeholders.

See Technical report, sections 6.1, 6.2 and 6.5 for further details.

5.3 Monitoring treatments

Clinical questions

How should treatment effectiveness be monitored and supported?

How should adequacy of treatment response be assessed?

What are the indicators of remission and when should treatments be stopped?

Should 'drug holidays' from pharmacological treatment for ADHD be recommended and if so when?

What is the most clinically effective subsequent sequence of pharmacological/non-pharmacological treatment for people with ADHD when the initial treatment is ineffective, inadequate or treatment is not tolerated?

Clinical practice gaps, uncertainties and need for guidance

There are currently inconsistencies in the timing and approach to monitoring treatment response and adverse effects of medications for ADHD, and in approaches to decision-making about stopping treatment, according to anecdotal reports. Consistent guidance is required

A 'drug holiday' is an agreed cessation of medication for a period of time and is occasionally used to 'catch-up' on growth in children and young people. Guidance is needed on whether a drug holiday is helpful and safety issues to consider when starting and stopping medication.

Summary of evidence review – Subsequent sequence of pharmacological/non-pharmacological treatment when the initial treatment is ineffective, inadequate or treatment is not tolerated

No new evidence was identified. NICE identified 6 RCTs in 9 publications to address this question in children and young people; and one RCT in adults; and none were identified for children under 5 years of age. Some comparison trials that were reported by NICE were deemed not clinically relevant (methylphenidate versus placebo to augment atomoxetine treatment).

Factors to be considered when monitoring treatment, assessing treatment response, indications of remission and stopping treatment were addressed qualitatively by (NICE, 2018) (see section 5.1).
Children and young people

Lisdexamfetamine dimesylate versus placebo where previous methylphenidate treatment was stopped

No new evidence was found. NICE identified one very low-quality study which found a clinical benefit of lisdexamfetamine dimesylate, compared with placebo, for combined ADHD total, inattention and hyperactivity symptoms and Clinical Global Impression scale. No clinical difference was found for adverse events leading to hospitalisation/death/disability.

Lisdexamfetamine dimesylate versus atomoxetine where previous methylphenidate treatment was stopped

No new evidence was found. NICE identified one low-quality study which found a clinical benefit of lisdexamfetamine, compared with atomoxetine, for investigator rated ADHD total, hyperactivity and inattention symptoms. No clinical difference for discontinuation of treatment due to adverse events or adverse events leading to hospitalisation/death/disability was found in one low quality study, and other symptoms, and severity on the Clinical Global Impression scale.

Guanfacine in the morning or evening versus placebo augmented on top of previous stimulant treatment

No new evidence was found. NICE identified one low quality study which found a clinical benefit of guanfacine, compared with placebo, for Clinical Global Impression scale. There was a clinical harm of methylphenidate in adverse events leading to hospitalisation/death/disability in one very low-quality study, and no clinical difference for discontinuation due to adverse events.

Clonidine versus placebo where previous stimulant treatment continued

No new evidence was found. NICE identified no clinical difference in investigator rated ADHD total, inattention and hyperactivity symptoms and no clinical difference in discontinuing treatment due to adverse events in one very low-quality study.

Risperidone and parent training versus placebo where previous methylphenidate treatment was continued

No new evidence was found. NICE found in children and young people a clinical benefit of risperidone for parent rated and teacher rated ADHD total symptoms (one study of moderate to low quality), parent- and teacher-rated ADHD inattention symptoms (one study of moderate quality), oppositional defiant disorder (parent-rated, one study of low quality). In children and young people there was clinical harm of risperidone for teacher- and parent-rated ADHD hyperactivity symptoms (one study low to moderate quality). There was no clinical difference for ADHD inattention symptoms (one study of low quality) and teacher-rated and parent-rated other symptoms (2 studies of moderate to very low quality).

Adults

Guanfacine in the morning or evening versus placebo augmented on top of previous stimulant treatment

No new evidence was found. NICE identified one study of very low to low quality found no clinical difference for ADHD total, inattention and hyperactivity symptoms, Clinical Global Impression scale, and adverse events leading to hospitalisation/death/disabilities.

Summary of evidence review – drug holidays

An updated evidence review was conducted with no evidence found. NICE identified one study (Martins et al., 2004), a blinded RCT conducted with children that compared the clinical effects of stopping pharmacological treatment at weekends over a 4-week period. The study was rated as high risk of bias and very low-certainty evidence. The study reported only parent-reported benefits for weekend breaks from methylphenidate use. No difference in ADHD symptoms was found between the treatment (drug holidays)

and control group (continuous treatment) based on parent and teacher ratings. Reduced insomnia was found in the drug holiday group with a trend toward less interference on appetite.

Evidence to recommendation statement

Monitoring side effects and drug holidays

Evidence shows the clinically important differences in sleep disturbance, decreased appetite and weight changes in people taking ADHD medication (summarised in section 5.2). Due to concerns about decreased appetite and weight change, the GDG advised that weight should be checked every 3 months initially in children and 6 months thereafter and in children and adults. Young children should be monitored more frequently. There is a lack of research on the impacts of drug holidays. Evidence from the included study indicated no significant difference in symptoms and improvements in sleep and appetite. The NICE 2018 recommendations were therefore adapted to the Australian context, including the option of considering a planned break in treatment if growth concerns were indicated.

Sequencing of treatments

For sequencing of medication treatments, most outcomes were graded as low or very low quality and risk of bias was high to very high, and serious imprecision for 90% of the outcomes. The evidence for sequencing was of lower quality than the effectiveness trials and sequencing trails predominantly compared adding/substituting with a new medication and not adding/substituting with placebo. Therefore, the GDG broadly based their recommendations around the sequence of medication (see section 5.2) on the body of efficacy evidence in the general pharmacological efficacy review.

Recommendations

5.7.1	CPP	Clinicians should arrange regular and frequent follow-up until medication is stabilised. Once medication is stabilised, clinicians should proactively arrange individualised monitoring based on a chronic disease management model The optimal frequency of follow-up depends on individual factors such as co-occurring disorders, medical complications, compliance, response to treatment, social supports and lifestyle factors. Monitoring may be conducted by a range of different clinicians, depending on these factors.	NA	NA
5.7.2	CPP	People taking medication for ADHD should be encouraged to monitor and record their adverse effects.	NA	NA
5.7.3	CPP	Standard symptom and adverse effect rating scales should be used for clinical assessment and throughout the course of treatment.	NA	NA
5.7.4	CPP	People receiving treatment for ADHD should have regular review and follow-up according to the severity of their disorder, regardless of whether or not they are taking medication.	NA	NA
5.7.5	CPP	When monitoring medication use, effects on all the following areas should be considered: • height and weight		

		• cardiovascular function • tics • sexual function • seizures • sleep quality • worsening symptoms • the risk of stimulant diversion.		
5.7.6	CCR	For people taking medication for ADHD: • measure height every 6 months in children and young people • measure weight at 3 and 6 months after starting treatment in children at any age, and 6 months thereafter, or more often if concerns arise • plot height and weight of children and adolescents on a growth chart • measure weight every 6 months in adults. If weight loss/insufficient weight gain in children is a clinical concern, consider the following strategies: • taking medication either with or after food, rather than before meals • taking additional meals or snacks early in the morning or late in the evening when stimulant effects have worn off • obtaining dietary advice • consuming high-calorie foods of good nutritional value • taking a planned break from treatment • changing or stopping medication. If a child or young person's height over time is significantly affected by medication (that is, their rate of growth has decreased), consider a planned break in treatment over school holidays to allow 'catch-up' growth, or an alternate medication. Also consider non-medication causes.	NA	NA
5.7.8	CCR	Monitor heart rate and blood pressure and compare with the normal range for age before and after each dose change and every 6 months. Seek appropriate specialist support if indicated.	NA	NA

Clinical considerations for implementation of the recommendations

Availability of appointments for adequate follow-up with medical practitioners should ideally not be a barrier to monitoring if other clinicians are available to assist with providing relevant information (e.g. community or practice nurse), and if the person with ADHD or their caregivers are also engaged in structured monitoring. Additional medical appointments will need to be available for individuals who require medical monitoring. There is currently a lack of clinicians to provide some of these services. Workforce development

is required to increase the number of clinicians with expertise in ADHD and ensure that health inequity impacts are minimised by providing access through public services. The recommendations made here are generally well established in clinical practice, and are therefore likely to be acceptable to stakeholders.

See Technical report, sections 6.5, 6.6, 10.7 and 8.6 for further details.

5.4 Adherence to pharmacological interventions

Clinical questions

What are the most effective approaches to increasing treatment adherence in ADHD for pharmacological approaches?

Clinical practice gaps, uncertainties and need for guidance

Adherence to pharmacological treatments that are effective will result in symptom reduction and improvement in functioning and participation. There are barriers and facilitators to treatment adherence that should be addressed to ensure that treatment is effective in people with ADHD.

Summary of evidence review

NICE conducted a qualitative evidence review which included several important themes linked to adherence to pharmacological approaches (NICE, 2018). The review found that, as young people became older, some noted an increasing realisation that medication was effective, resulting in increased adherence with age. Adherence was increased when people with ADHD or their parents perceived it to be improving their symptoms. Adherence to medication is impacted by the level of side effects experienced by people with ADHD. Some young people with ADHD experienced a loss of 'sense of self' from medication resulting in reduced adherence. Adherence to medication treatment can be negatively impacted by forgetting to take medication and difficulties with time management regarding keeping appointments for medication reviews. Adults noted difficulties accessing medication related to pharmacists being unwilling to dispense repeat prescriptions and finding GPs willing to prescribe ADHD medication. The transition from child to adult services could also result in reduced adherence due to delays in accessing adult services resulting in periods of treatment cessation (NICE, 2018).

In addition to the NICE evidence review, 4 new studies were identified which reviewed qualitative evidence about the factors that people with ADHD believe affect their adherence. The 4 studies reported here reviewed parent training programs and the use of technology to support medication adherence with positive findings. However, the studies did not have sufficiently similar outcome measures for adherence or ADHD symptoms to warrant pooling of data.

A cluster RCT (Bai, Wang, Yang, & Niu, 2015) with low risk of bias, despite a small sample size, compared parent training with waitlist over 3 months. It reported statistically significant benefits of parent training for measures of adherence to medication and ADHD symptoms. Another cluster RCT (Zheng et al., 2020) comparing parent and teacher training with control (no further information) for 4 weeks (high risk of bias due to many instances of reporting bias) reported statistically significant benefits of parent and teacher training for medication adherence, based on parent report and medical records. An observational study with a high risk of bias (Fried et al., 2020), which used electronic medical record data to compare a text messaging

intervention with treatment as usual, study reported a statistically significant higher medication adherence rate in the intervention group of unclear duration.

An RCT (Weisman et al., 2018) with high risk of bias and small sample size compared an interactive, information and medication reminder app intervention with treatment as usual over 8 weeks. The study reported statistically significant benefits of the app over treatment as usual for adherence measured by pill counts and ADHD symptoms by the Clinician Rating Scale. There were no statistically significant differences for ADHD-RS (rater unclear) and for Clinical Global Impression scale – Severity and Improvement.

Evidence to recommendation statement

Clinical practice points and consensus recommendations were based on the evidence review, the GDG's expertise and clinical experience, and adaptation of the NICE recommendations to the Australian context. The evidence identified several factors that affect adherence to treatment and these were supported by the GDG's own experience.

The evidence highlighted time management and forgetfulness as common barriers to adherence. The GDG therefore made a recommendation that clinicians were aware that the symptoms of ADHD will affect people's adherence and remembering to collect medication and organise review appointments to ensure continuous supply of prescriptions. The GDG provided examples of how clinicians might encourage people to follow strategies that support adherence. The GDG noted from the qualitative evidence the worry that taking medication might impact on the sense of identity of the person and that the attitudes of people close to a person with ADHD can influence adherence. The GDG agreed that it was important that although children and young people should be encouraged to take responsibility for their own health (including taking medication), parents and carers should oversee them

Recommendations

5.8.1	CPP	Clinicians should be aware that the symptoms of ADHD (in the person with ADHD and/or their parent) may lead to people having difficulty adhering to treatment plans (e.g. remembering to organise repeat prescriptions and collect medication). Ensure that people are fully informed of the balance of risks and benefits of any medication for ADHD. Check that problems with adherence are not due to misconceptions.	NA	NA

5.8.2	CCR	To optimise adherence to medication, clinicians should encourage people with ADHD to use the following strategies: • being responsible for their own health, including taking their medication as needed • following clear instructions about how to take the medication in picture or written format, which may include information on dose, dosage schedule, adverse effects. The instructions should stay with the medication (e.g. a sticker on the side of the packet) • using visual reminders to take medication regularly (e.g. apps, alarms, clocks, pill dispensers, or notes on calendars or fridges) • taking medication as part of their daily routine (e.g. with/after meals or after brushing teeth) • attending peer support groups (for both the person with ADHD and for the families and carers). • making regular appointments with their prescribing clinicians to ensure timely reviews and prescriptions • considering the use of electronic medical records and apps to remind and track medication usage	NA	NA
5.8.3	CCR	Clinicians should encourage parents and carers to oversee ADHD medication for children and young people	NA	NA
5.8.4	CCR	To increase medication adherence in children clinicians could offer parent/family training (see recommendations 4.2.1, 4.3.1) to help them better understand the benefits of medication.	NA	NA

Clinical considerations for implementation of the recommendations

These recommendations will require clinicians to allocate more time discussing treatment adherence with people with ADHD. However this investment is likely to improve current and ongoing treatment/support, provide a more accurate understanding of the efficacy and adverse events of any treatment tried, and lead to a higher chance of positive outcomes. The recommendations made here are generally well established in clinical practice, and are therefore likely to be acceptable to stakeholders.

See Technical report, section 10.8 for further details.

5.5 Medication discontinuation

Clinical questions

Are there specific clinical effects of discontinuing from pharmacological treatment and if so, how should these be supported?

Clinical practice gaps, uncertainties and need for guidance

There are inconsistencies in practice with respect to the consideration and management of medication discontinuation. The effects of withdrawing treatment need to be considered for the person with ADHD and their families and carers.

Summary of evidence review

Children and young people

Evidence for stopping methylphenidate vs. continuing methylphenidate

An evidence review was completed with new evidence found in one study. A single RCT, with low risk of bias and moderate certainty for all outcomes, was conducted in children and young people (aged 8–18 years) with ADHD over 7 weeks (Matthijssen et al., 2019, 2020). The study compared discontinuation (defined as gradual withdrawal of extended-release methylphenidate to placebo over a 3-week period, followed by 4 weeks of complete placebo), with continued active medication (extended-release methylphenidate).

There was a statistically significant harm of discontinuation based on the investigator rated Clinical Global Impression scale in terms of the number of participants with worsened ADHD symptoms; however, there were no statistically significant differences for ADHD total, inattention, and hyperactive symptoms, and for other symptoms (ADHD index, cognitive/ inattention and hyperactivity) based on clinician and teacher report.

NICE identified a clinically important harm of withdrawal for ADHD for total symptoms (self-rated; one study of moderate quality and parent-rated; one study of moderate quality) and for Clinical Global Impression scale (one study of moderate quality) at 2 weeks.

Evidence for stopping methylphenidate vs. continuing methylphenidate in participants who may not have all experienced a positive response to methylphenidate

No new evidence was found. There was a clinically important harm of withdrawal for the following outcomes at 4 weeks: ADHD inattention/over activity symptoms – parent-rated (one study of low quality) and teacher-rated (one study of low quality); other symptoms – parent-rated (one study of low quality) and teacher-rated (one study of low quality); and Clinical Global Impression (one study of low quality).

Evidence for stopping atomoxetine vs. continuing atomoxetine

No new evidence was found. There was a clinically important benefit of withdrawal for adverse events (one study of low quality). Clinically important harms of withdrawal were seen on the following outcome measures: ADHD symptoms total among children who had been receiving treatment for 3 months (investigator-rated; one study of moderate quality); ADHD symptoms total among children who had been receiving treatment for 12 months (investigator-rated; one study of moderate quality); relapse at 9 months among children receiving treatment for 3 months (one study of moderate quality); and relapse at 6 months among children receiving treatment for 12 months (one study of low quality).

Evidence for stopping lisdexamfetamine vs continuing lisdexamfetamine

No new evidence was found. There were no clinically important benefits of withdrawal for other outcomes (parent-rated; one study of low quality) at 6 weeks. There was a clinically important harm of withdrawal for ADHD symptoms (investigator-rated; one study of very low quality) at 6 weeks.

Adults

Evidence for stopping methylphenidate vs. continuing methylphenidate

No new evidence was found. There was a clinically important benefit of withdrawal for adverse outcomes post treatment (self-rated one study of low quality). There were no clinically important benefits of withdrawal for quality of life (one study of very low quality), ADHD total symptoms (self-rated; one study low quality) or other symptoms (one study very low quality) at 4 weeks. There was a clinically important harm of withdrawal for ADHD symptoms total on those who relapsed at 4 weeks (2 studies of very low quality), and at 6 months (one study moderate quality)

Evidence for stopping Atomoxetine vs. continuing Atomoxetine

No new evidence was found. There was a clinically important benefit of withdrawal for adverse events (one study low quality) after 25 weeks. There were no clinically important benefits of withdrawal at >25 weeks for quality of life (one study of high quality), ADHD total symptoms (self-rated; one study of moderate quality and carer-rated; one study of moderate quality), and self-harm (one study of low quality).

Evidence for stopping lisdexamfetamine vs continuing lisdexamfetamine

No new evidence was found. There was a clinically important harm of withdrawal at >4 weeks for ADHD total symptoms (one study of moderate quality) and Clinical Global Impression scale (one study of very low quality).

Evidence to recommendation statement

Evidence identified concerns around lack of follow-up and the opportunity to review medication choices and this was supported by the committee's experience. The GDG agreed that a yearly review with an ADHD specialist should be a comprehensive assessment that revisits the areas discussed when starting treatment and also the effect of current treatment. This would ensure that decisions around continuing or stopping treatment are fully informed.

Limited evidence showed possible worsening of ADHD symptoms on stopping medication but supported a reduction in adverse effects after withdrawal. The GDG used their experience to make a recommendation on emphasising the importance of assessing the overall benefits and harms of medication as part of a review. The GDG agreed that it was important to highlight the elements of a medication review that are important for someone with ADHD; they based the elements on evidence on adverse effects of medication, adherence and information and support.

Recommendations

5.9.1	CPP	ADHD medication should be reviewed and discussed with the person with ADHD (and their families and carers as appropriate) at least once a year. At each review the following should be comprehensively assessed: • the preferences of the child, young person or adult with ADHD (and their family or carers as appropriate) • benefits, including how well the current treatment is working throughout the day • adverse effects • the clinical need and whether medication has been optimised • impact on education, employment and participation • effects of missed doses, planned dose reductions and periods of no treatment • effect of medication on existing or new mental health, physical health or neurodevelopmental disorders • need for support and type of support (e.g. psychological, educational, social) if medication has been optimised but ADHD symptoms continue to cause a significant impairment.	NA	NA
5.9.2	CPP	People with ADHD should be encouraged to discuss their preferences for continuing, stopping or changing medication, and to be actively involved in any decisions about their treatment.	NA	NA
5.9.3	CCR	Trial periods of stopping medication or reducing the dose should be considered when assessment of the overall balance of benefits and harms suggests this may be appropriate. If the decision is made to continue medication, the reasons for this should be documented.	NA	NA
5.9.4	CCR	If a medication is known to have discontinuation symptoms, it should be gradually reduced then discontinued, to minimise these symptoms.	NA	NA

Clinical considerations for implementation of the recommendations

These recommendations will likely reinforce current best practice. Clinicians should ensure they also follow local prescribing laws regarding review and renewal permits for stimulant medication. Consideration of discontinuation should be addressed with the person with ADHD or their caregivers at least annually and can be incorporated into ongoing care, in line with other relevant recommendations (see section 5.1 and 5.3). The recommendations made here are generally well established in clinical practice, and are therefore likely to be acceptable to stakeholders.

See Technical report, section 10.5 for further details.

Chapter 6. Considerations – Subgroups

6.1 People in the correctional system

Clinical questions

What services should prison mental health services provide across life-stages?

Clinical practice gaps, uncertainties and need for guidance

As for many other chronic disorders, attention deficit hyperactivity disorder (ADHD) rates are higher in custodial settings than in the general population, estimated to be 5 times higher among youth prisoners and 10 times higher among adult prisoners (Konstenius et al., 2015; Moore, Sunjic, Kaye, Archer, & Indig, 2016a; Westmoreland et al., 2010; Young, Sedgwick, et al., 2015; Young & Thome, 2011).

Reported ADHD rates depend largely on the age and gender of prisoners (higher in men and younger offenders) participating in studies, the methodology and definitions used. There may also be higher rates among Aboriginal prisoners (Moore et al., 2016a). Many prisoners positively screened for ADHD were never previously diagnosed (Moore et al., 2016a).

Among people in prison, ADHD is often complicated by substance misuse and co-occurring mental health disorders including trauma histories (Konstenius et al , 2015; Rosler, Retz, Yaqoobi, Burg, & Retz-Junginger, 2009; Westmoreland et al., 2010; Young, Sedgwick, et al , 2015).

The link with offending arises from the major symptoms of ADHD (hyperactivity, inattention and impulsivity) (American Psychiatric Association, 2013) all of which increase the likelihood of being arrested (Kramer et al 2014), being incarcerated (especially at a young age) (Mohr-Jensen & Steinhausen, 2016), recidivism and violence (Lichtenstein et al., 2012; Moore et al., 2016a; Rosler et al., 2009).

ADHD symptoms also increase the risk of institutional aggressive disturbances/critical incidents in prison (Young, Wells, & Gudjonsson, 2011). ADHD is also associated with conduct disorder in children and later anti-social behaviour, and multiple socio-economic disadvantages and other criminogenic factors (Mohr-Jensen & Steinhausen, 2016).

If left untreated, symptoms create unnecessary challenges in our jails and juvenile facilities. There are therefore advantages in managing ADHD in custodial settings (Young et al., 2011) (see below), but this is difficult because many prison health systems are already overstretched and tend to focus their resources on acute mental illness and suicidal ideation. Many prisons are unable to offer mental health services to community standards (e.g. regarding continuity of care). This is particularly problematic within criminal justice systems that have many points of transition for offenders between different parts of the service and different agencies, and particularly between juvenile to adult systems. Further, many people in prison experience socio-economic disadvantage, and co-occurring disorders (particularly substance misuse), meaning that complexity is the norm. However, in prison there may an opportunity to provide interventions which may be lacking or not be readily accessed in community settings.

There are benefits of addressing ADHD in prison. Treatment may:

- reduce symptoms (Ginsberg & Lindefors, 2012)
- reduce the rate of critical incidents in prison and make them safer places
- reduce the rate of recidivism after release (Chang, Lichtenstein, Langstrom, Larsson, & Fazel, 2016; Lichtenstein et al., 2012; Young et al., 2011)
- assist in the treatment of other disorders (such as personality disorders, substance misuse disorders, anxiety disorders).

Specific ADHD symptoms likely to be associated with difficulties in prison include:

- impulsivity (lack of planning)
- mood instability
- difficulties with emotional control
- low frustration tolerance
- hyperactivity
- restlessness
- lack of organisation (Gudjonsson, Wells, & Young, 2012).

Many of these are effectively reduced with treatment.

Summary of narrative review

By virtue of the population at risk and the nature of the major symptoms of the disorder, ADHD occurs at a greater rate in custodial settings than in the community, and is often complicated by co-occurring disorders. Unidentified and untreated ADHD increases the likelihood of offending, being arrested and incarcerated, being involved with prison incidents and recidivism.

However, many prison health systems are overstretched and tend to focus their resources of the acutely unwell or the suicidal. There are also challenges in identification and provision of assessment and treatment (e.g. screening, provision of psychological approaches, and some types of medication, particularly stimulants). If these challenges can be overcome, there are many benefits to active diagnosis and treatment of ADHD in prisons, including for prisoners, and their families, the prison itself, the criminal justice system and the community. Recommendations therefore include the provision of screening and treatment opportunities, including coordination and integration of care with community services.

Recommendations

6.1.1	CPP	Screening and assessment processes should be established to identify the presence of ADHD and co-occurring disorders among people entering the criminal justice system.	NA	NA
6.1.2	CPP	Custodial staff should receive ADHD awareness training.	NA	NA
6.1.3	CPP	Treatment in custodial settings should include pharmacological and non-pharmacological approaches, equivalent to the treatment available in the community.	NA	NA

6.1.4	CPP	Prisons should include ADHD tailored educational and occupational programs to increase engagement and skills development.	NA	NA
6.1.5	CPP	Prisons should establish safe ways of administering stimulant medication to those with ADHD (similar to ways of administering other controlled drugs).	NA	NA
6.1.6	CPP	Prisoners with ADHD should have a comprehensive multi-agency integrated and coordinated care plan, with particularly close coordination between criminal justice, mental health agencies and disability services, and at all transition points, with appropriate identified care pathways into the community.	NA	NA
6.1.7	CPP	Prisons should be resourced to enable identification and treatment of offenders with ADHD to improve clinical and criminal justice outcomes.	NA	NA

Clinical considerations for implementation of the recommendations

The costs of providing care to those in custody with ADHD will be borne largely by medical services (Young et al., 2018), and will depend on the capacity of existing medical teams and services and the configuration of these. If the recommendations are accepted, including ADHD warranting identification and treatment to an equivalent standard as provided in the community, the resources required would be significant and beyond the capacity of most prison health services, because the rate of ADHD greatly exceeds that found in the community. The potential benefits of treating these people would however, likely offset these costs to a significant extent, in the form of improved quality of life (Young et al., 2018), reduced incidents in custody, and reduced recidivism and violence in the community after release (Lichtenstein et al., 2012).

Many health providers within justice systems aim to provide care and treatment to standards equivalent to those in the community, but there are many barriers to achieving this. People entering the justice systems have rates of co-occurring mental health disorders exceeding the prevalence and complexity of those seen in the community. Often services provided are inadequate to meet the need and are provided in counter-therapeutic environments.

As with many other areas in mental health, the care of women and younger prisoners and of juveniles presents specific issues to the justice system. Women with ADHD are less likely to be identified in prison (Young, Sedgwick, et al., 2015) and therefore may not receive effective support. There is a high frequency of co-occurring disorders in women (particularly anxiety, depression, PTSD, substance misuse, self-harm and borderline personality disorder) and men (and anti-social personality disorder) may mask the presence of ADHD (Young, Sedgwick, et al., 2015) who are imprisoned. Therefore, training in awareness and identification of ADHD would be important for clinicians in the justice system.

In youth offenders, it is particularly important that any primary and secondary screening processes focus on ADHD symptoms, followed by comprehensive assessments where necessary as per this guideline. Carers and parents need to be involved where possible, particularly to organise post release support and optimise engagement with treatment. If aged below 18, parental consent for treatment may be needed, but this may be problematic, particularly if the family is somehow involved in the offending or if the family has been

victimised. Most juvenile justice services have a greater rehabilitative function when compared to adult services (Young et al., 2018).

Potential outcome measures include incident rates in prison, treatment engagement, transfers to lower level of security, and recidivism. An economic analysis to assess the cost-benefit for prison health systems to provide sufficient resources to allow for identification and treatment of all with ADHD would assist the development of service scopes which include ADHD.

Some aspects of treatment, such as the use of stimulants, may require particular attention to be delivered safely to people in custody. The treatment of ADHD within prison by the use of stimulants has attracted considerable debate. The introduction of stimulants would lead to greater challenges in the safe management and administration of medication, and lead to greater attempts at subversion of prescribed medication. Careful consideration needs to be given about how safe and secure dispensing and administration practices can be ensured. It is vital for the credibility of prison ADHD services that the right dose gets to the right prisoner at the right time without subversion, abuse, diversion or standover bullying tactics on their return to the wing. The justification of treatment with stimulants in custody needs to be fully understood and accepted by the prison authorities.

It is imperative that stimulants only be prescribed in accordance with state rules and regulations, and with the full understanding, knowledge, cooperation and monitoring of custodial services. The risks of such subversion would need to be fully considered and carefully managed.

See Technical report, section 11.6 for further details.

6.2 Aboriginal and Torres Strait Islander people

Clinical questions

Although a specific question was not developed during consumer consultation, the importance of culturally sensitive identification, diagnosis and treatment of ADHD in Aboriginal and Torres Strait Islander peoples was recognised by the GDG to be of critical importance.

Clinical practice gaps, uncertainties and need for guidance

ADHD is present in almost all regions of the world (Polanczyk et al., 2007), indicating that it is not a culturally specific phenomenon. ADHD is a neurodevelopmental disorder diagnosed based on observable symptoms. However, different cultures may view symptoms differently. Some cultures view mental health as a holistic concept beyond notion of symptoms and functional impairment. This is the case for Aboriginal and Torres Strait Islander peoples, for whom mental health interconnects with numerous domains including spiritual, environment, country, community, cultural, political, social emotional and physical health (Dudgeon et al., 2014; Loh et al., 2017).

Currently there is a lack of research on understanding, identifying, assessing and treating ADHD in Aboriginal and Torres Strait Islander peoples (Loh et al., 2016). This lack of knowledge may result in over-diagnosis or under-diagnosis and cause harm to Aboriginal and Torres Strait Islander peoples through stigma or a lack of treatment. For example, there could be misidentification of symptoms that could be

otherwise considered as culturally appropriate behaviours and beliefs. There is a need to provide culturally appropriate and competent care to all.

The ADHD guidelines has been informed by the report *Working Together: Aboriginal and Torres Strait Islander Mental Health and Wellbeing Principles and Practice* (Dudgeon et al., 2014) and follows the nine principles identified by this report:

1. **A holistic framework** – viewing Aboriginal and Torres Strait Islander health in a holistic framework that considers aspects of mental health and physical, cultural, community, environmental and spiritual health and connection both inwards and outwards. This approach is aligned with the approach of this guideline which take into consideration a person's broad context, their physical and mental health, lifestyles, cultural identity and relationships.
2. **Self-determination** – this principle is aligned with the person-centred and family-centred care approach contained within this guideline, which focuses on personal choice based on individual preferences, needs and goals. Within the context of Aboriginal and Torres Strait Islander mental health, self-determination must be considered in light of alignment with a human-rights approach to healthcare. This means taking diagnostic, treatment and policy leadership from Aboriginal and Torres Strait Islander professionals about community beliefs, decisions and opinions of people about their own health and wellbeing. Consistent with this principle, this section and specific recommendations were co-written by Aboriginal experts
3. **Culturally valid understandings of mental health** – the need for culturally valid understandings of mental health problems to shape diagnosis and treatment is the key driver of this section.
4. **Human rights** – the human rights of Aboriginal and Torres Strait Islander peoples are at the forefront of this notion, specifically the right to mental health and strong social and emotional wellbeing.
5. **Acknowledging trauma** – the ongoing impacts of trauma and loss since the European invasion and settler colonisation, including continuing intergenerational effects, have resulted in disruption to cultural wellbeing. These effects are far reaching and can impact broadly on mental health. Specific social, emotional and cultural impacts can include disconnection from Country, destruction of cultural practices and language, removal of traditional coping mechanisms, ongoing discrimination and substantial socio-economic disadvantage. These all have a significant negative influence on mental health and access to appropriate and culturally safe mental health treatment.
6. **Acknowledging systemic disadvantage and injustice** – the ongoing impacts of genocide, racism, stigma, environmental adversity and social disadvantage are stressors that can contribute negatively to mental and emotional wellbeing. Racism can result in reduced help-seeking behaviour, impacting the identification, assessment and treatment of ADHD. Mental illness has long been associated with stigma and may result in a double impact perpetuating negative mental health and wellbeing.
7. **Acknowledging the importance of Aboriginal and Torres Strait Islander family and kinship** – this principle is aligned with this guideline which considers the family context and relationships and inclusion of family, partners and extended kinship in the assessment and treatment of people with ADHD.
8. **Acknowledging diversity** – while there are some commonalities across the different Aboriginal and Torres Strait Islander cultures, such as concepts of the Dreamtime, Songlines and certain

philosophies of living, there are numerous groupings and there is no single Aboriginal or Torres Strait Islander culture or group. These peoples live in diverse settings including urban, rural or remote, or traditional lifestyles. The degree of cultural connection is also extremely varied, being highly influenced by historical and current discrimination, with connectedness (and disconnectedness) holding high levels of influence over social and emotional wellbeing (Murrup-Stewart, Whyman, Jobson, & Adams, 2021). This has implications for the valid development and use of tools for identifying and assessing ADHD and has significant implications for service provision.

9. **A focus on strengths** – the final principle notes the strengths of Aboriginal and Torres Strait Islander peoples including creativity, resilience, endurance, and the deep connection with the environment. These are reflected in the strengths-based approach of the guideline. Where possible, guideline recommendations have aimed to instil hope and motivation and focus on the positive aspects of ADHD.

When working with Aboriginal and Torres Strait Islander peoples clinicians should consider how mental illness is framed, and how treatment (clinical and cultural) can be articulated as building on the already existing strengths, beliefs and practices held within Aboriginal and Torres Strait Islander cultures.

Summary Of Narrative Review

Prevalence

As noted above, Aboriginal and Torres Strait Islander peoples have faced considerable adversities that stem from the legacies of colonisation. Aboriginal and Torres Strait Islander peoples currently experience higher rates of physical health issues and social and emotional wellbeing concerns than non-indigenous Australians (ABS, 2017). Aboriginal children are around 30% more likely than non-Indigenous children to have a disability (DiGiacomo et al., 2013). There has been limited research on ADHD in Aboriginal and Torres Strait Islander peoples including epidemiological studies of prevalence. The WA Aboriginal Child Health Survey reported that Aboriginal children had a higher risk of clinically significant hyperactivity problems (15.8%) compared with 9.7% for non-Aboriginal children, with ADHD more common in boys than girls (Zubrick et al., 2004). This study used the Strengths and Difficulties Questionnaire (SDQ) which broadly measures emotional and behavioural problems and has a hyperactivity subscale commonly used to screen for ADHD.

The validity of using the SDQ in Aboriginal and Torres Strait Islander people has been explored in urban New South Wales. They found many questions were appropriate, but some were considered inappropriate, and some important areas of emotional and behavioural problems were not necessarily captured by the SDQ (Williamson et al., 2014; Williamson et al., 2010). Construct validity only reached 'acceptable' levels (Williamson et al., 2014). Given there is no single Aboriginal or Torres Strait Islander 'group' the generalisability of the SDQ beyond urban NSW is unclear, and potentially may be different in rural and remote areas.

A study of a population of NSW imprisoned people identified that a higher proportion of Aboriginal prisoners were identified as having adult ADHD (31%) than non-Aboriginal adults (10%) (Moore, Sunjic, Kaye, Archer, & Indig, 2016b). Screening was conducted using the Adult ADHD Self-rating Scale (ASRS) and assessment using the Mini-International Neuropsychiatric Interview. The study authors proposed that the study findings

may be invalid due to inappropriate screening and assessment measures adapted from Western Methods, and they noted the considerable lack of research in ADHD in this population.

There is a lack of norms for ADHD symptom questionnaires and other tools commonly used for screening and assessment within most Aboriginal and Torres Strait Islander groups. We are not aware of any other psychometric studies of ADHD specific questionnaires in Aboriginal and Torres Strait Islander peoples. Therefore, the prevalence of ADHD in different Aboriginal and Torres Strait Islander communities remains unclear. There is a considerable lack of research in this area to understand the true prevalence of ADHD in Aboriginal and Torres Strait Islander peoples. Specifically targeted screening and assessment measures for ADHD in Aboriginal and Torres Strait Islander peoples need to be developed.

Presentation and identification

Some symptoms of ADHD, as defined by the DSM-5, may not be considered problematic by Aboriginal and Torres Strait Islander peoples, as these may be viewed as usual and appropriate responses to the environmental context. A qualitative study from Perth, which explored Aboriginal and Torres Strait Islander perspectives on ADHD (Loh et al., 2017),found that hyperactivity symptoms were considered problematic and could negatively impact on community participation and everyday activities, such as shopping, and also on children's ability to learn at school. The study found that high levels of activity may be appropriate or viewed positively in some settings, such as in the playground, but not in other settings, such as when learning in class where they are expected to sit still, focus and pay attention to instructions. Difficulties with modifying characteristics for different situations may indicate assessment and treatment is required.

However, Aboriginal culture is very inclusive with a high tolerance of individual difference and a dislike of labelling. When a young person has difficulties there may be reluctance to seek help unless the difficulties are extreme. This can be associated with concerns about accessing healthcare and feelings of shame that can be associated with diagnostic labels. On the other hand, there is a cultural belief in helping people reach their full potential and so people may be open to treatments that can help young people achieve this. Much of the success of this can be attributed to how assessment and treatment is framed, with cultural safety paramount.

The identification of ADHD in Aboriginal and Torres Strait Islander peoples may be difficult due to the lack of screening tools as noted above. Aboriginal and Torres Strait Islander adolescents and adults may have high levels of co-occurring problems often found people with ADHD, such as substance use disorders, trauma disorders and high levels of suicidal behaviour(Azzopardi et al., 2018). Due to the link between these issues and the widespread violent and ongoing influence of settler-colonisation, delineation between the cause of these impacts can be complex. ADHD may not be recognised or considered even when assessment and treatment is sought. There is a lack of research in this area but it is likely that ADHD is commonly overlooked in Aboriginal and Torres Strait Islander peoples when presenting for other problems. Furthermore, the process of identification of people as Aboriginal and/or Torres Strait Islander has severe challenges resulting in under-identification of Aboriginal and Torres Strait Islander peoples in health settings (Health & Welfare, 2013).

There may be little knowledge of ADHD in Aboriginal and Torres Strait Islander groups. More education about ADHD symptoms and impacts is needed in Aboriginal and Torres Strait Islander communities (Loh et al., 2017).

Assessment

Some Aboriginal and Torres Strait Islander people may fear and/or be reluctant to access services for assessment and treatment as a consequence of the practices of eugenics and the Stolen Generations where children were removed from families and institutionalised (Loh et al., 2017). This occurred into the 1980s and is in living memory and may result in people with ADHD not accessing assessment and treatment. Discrimination, racism and ignorance likewise colour the experiences of Aboriginal and Torres Strait Islander people when accessing mental health supports (Murrup-Stewart, Searle, Jobson, & Adams, 2019). There is a lack of research on culturally sensitive assessment for Aboriginal and Torres Strait Islander people. More broadly, assessment needs to be systemic and consider the impact of individual, family and community factors to avoid inadequate or incorrect diagnosis. Access to culturally sensitive assessment and treatment services is required (Loh et al., 2017). As noted above, the validity of screening/assessment tools needs careful consideration, and moves to simply 'adapt' current tools are likely to be insufficient. The development of a specific cultural test for ADHD for Aboriginal and Torres Strait Islander people should be considered.

The following general principles of assessment could be considered (Dudgeon et al., 2014). Assessment needs to be holistic considering physical, mental, emotional, social, cultural, family and Country connections (Dudgeon et al., 2014). Assessment should consider cultural identity, cultural explanations of ADHD symptoms, cultural factors associated with psychosocial and environmental functioning, cultural elements and power differentials in the relationship between the person and the practitioner, and an overall cultural assessment(American Psychiatric Association, 2013; Dudgeon et al., 2014). A cultural understanding of the problem should consider psychosocial stressors, religion, spirituality, age groups and gender(Dudgeon et al., 2014).

Consideration of whether the persons presentation is worsened due to discrimination based on race/ethnicity or sexual orientation should occur. A careful assessment of physical health is also required given high levels of physical health issues in some Aboriginal and Torres Strait Islander peoples including hearing problems which may present similarly to ADHD inattentive symptoms (Vos, Barker, Begg, Stanley, & Lopez, 2009). Each of these assessments needs to take place in the context of practitioner cultural humility (Watego, Singh, & Macoun, 2021), moving beyond the current model of cultural competency (Bogle, Rhodes, & Hunt, 2021), which requires practitioners to reflect on their own cultural identities, privileges and biases. Further helpful information can be found in the report *Working Together: Aboriginal and Torres Strait Islander Mental Health and Wellbeing Principles and Practice*(Dudgeon et al., 2014).

Treatment

There is a lack of evidence for psychosocial interventions for ADHD in Aboriginal and Torres Strait Islander communities. Related research on parent-training programs that have been culturally tailored to Aboriginal and Torres Strait Islander communities (e.g. a variation of the Group Triple P) suggests that they can be culturally acceptable and have positive outcomes in terms of reducing children's symptoms (Andersson et al., 2019).

One study found that Aboriginal children and adolescents in Western Australia were less likely to receive stimulant medication than their non-Indigenous peers (Ghosh, Holman, & Preen, 2015). People with both Aboriginal parents were two-thirds less likely to have received stimulants compared to those with non-Aboriginal parents. Those with only an Aboriginal mother were one-third less likely to have received stimulants compared to those with non-Aboriginal parents. Stimulant use was lower in non-urban areas (Ghosh et al., 2015). This suggests that Aboriginal children and adolescents with ADHD may be under-treated which likely relates to numerous factors including cultural beliefs about the use of medication for symptoms and other systemic barriers. No research on medication treatment for Aboriginal and Torres Strait Islander adults was identified.

Consideration of cultural, pharmacological and non-pharmacological interventions should occur (Dudgeon et al., 2014). The wishes of parents, families and people with ADHD regarding treatment options (e.g. cultural, pharmacological versus non-pharmacological treatments and their combination) should be prioritised (Loh et al., 2017). Non-pharmacological interventions need to be culturally sensitive and appropriately tailored and localised for Aboriginal and Torres Strait Islander people, families and communities being treated (Loh et al., 2017). Interventions should include parents/families, Elders and kinship networks where appropriate to maximise treatment effectiveness given strong family values in Aboriginal and Torres Strait Islander culture (Loh et al., 2017). Clinicians should ensure they apply this ADHD guideline in a culturally sensitive way, which may include linking with Aboriginal Health Services (AHS), Aboriginal workforces or organisations. This should include seeking supervision and collaborating with Aboriginal and Torres Strait Islander mental health clinicians. Furthermore, research shows that Aboriginal and Torres Strait Islander people point to the most effective social and emotional wellbeing programs and services being those that provide a wide and holistic spectrum of supports, including creative practices, advocacy, practical socio-economic supports (Murrup-Stewart et al., 2019).

Recommendations

6.2.1	CPP	Clinicians should be aware that ADHD symptom questionnaires and other tools used for screening and assessing ADHD may not be valid in Aboriginal and Torres Strait Islander peoples and should be used with caution. Clinicians should seek the assistance of a cultural interpreter or Aboriginal and Torres Strait Islander health worker.	NA	NA
6.2.2	CPP	Clinicians should conduct a culturally appropriate assessment of ADHD in Aboriginal and Torres Strait Islander peoples. This should include a cultural and social assessment of the meaning and significance of symptoms. The assistance of a cultural interpreter or Aboriginal and Torres Strait Islander health worker should be sought if needed.	NA	NA

6.2.3	CPP	Interventions should include input from parents, families, community, and Elders, as appropriate, to maximise treatment effectiveness given strong family values in Aboriginal and Torres Strait Islander culture. The wishes of parents, families and individuals with ADHD regarding treatment options (e.g. cultural, pharmacological versus non-pharmacological treatments and their combination) should be prioritised.	NA	NA
6.2.4	CPP	Non-pharmacological interventions need to be culturally sensitive and appropriately tailored for Aboriginal and Torres Strait Islander peoples with consideration for the local cultural context.	NA	NA
6.2.5	CPP	Pharmacological interventions should be explained carefully with an awareness of potential cultural issues. Pharmacological options may be more acceptable if offered as part of a broad package aimed at helping a person reach their potential.	NA	NA

Clinical considerations for implementation of the recommendations

Access to culturally competent and safe services and/or Aboriginal and Torres Strait Islander clinicians may limit the ability to implement these recommendations in some areas. Health equity for Aboriginal and Torres Strait Islander peoples may be impacted by a lack of understanding, bias, screening, assessment and treatment of ADHD resulting in poor outcomes. A lack of research negatively impacts on the ability to identify, assess and treat ADHD in Aboriginal and Torres Strait Islander peoples.

Chapter 7 Considerations – Service and Policy

Clinical Questions

What referral pathways should be established?

Which agencies should be involved in the support of ADHD?

How should services be configured? What should services provide and to whom? How should services for those with ADHD in Australia be funded?

What are shared care models and are they effective?

Clinical practice gaps, uncertainties and need for guidance

Existing care for people with attention deficit hyperactivity disorder (ADHD) is fragmented. A multimodal, multi-professional and multi-agency approach is recognised as optimal care, particularly when there are co-occurring disorders with significant impacts on a person's functioning and quality of life. However is rarely available.

Most public sector mental health services do not provide ADHD services, resulting in an over-reliance on private sector care and services. Existing services are often difficult to access due to long waiting lists and

out-of-pocket costs. To improve care, clearer referral pathways (e.g. from GPs to other specialists and back again) and increased service capacity are needed. Guidance is needed as to which agencies should be involved to provide holistic treatment and support of ADHD, and the configuration of these services, including shared care.

Summary of narrative review

The UK National Institute for Health and Care Excellence (NICE) ADHD guideline recommends that health professionals, with training and expertise in ADHD, should be involved in the diagnosis, assessment and ongoing treatment and support of children and adults with ADHD as well as overseeing continuity of care (NICE, 2018). Communication and ongoing feedback between health professionals and education and social care providers is also highlighted. The importance of psychological services for people with ADHD as well as programs that provide group and individual parenting interventions as well as support groups for people with ADHD and websites are also noted.

Service configuration recommendations within the NICE guideline (NICE, 2018) highlight the importance of giving the person with ADHD and/or their carer the option of being involved in treatment decisions and planning. Shared care protocols for medication monitoring between primary and secondary health care professionals are also recommended. Integration and better organisation between child health services and mental health services with formation of multidisciplinary specialist ADHD teams is a further recommendation. In addition, local multi-agency teams with representatives from paediatrics, mental health, education, social, forensic services and parent groups are needed as well as provide training and a directorate of information regarding ADHD services. There is a need for models of care within the Australian context, particularly shared care.

Recommendations

7.1	National services			
7.1.1	CCR	Funding should be made available to deliver an ADHD helpline accessible to all Australians consistent with those of other major mental health disorders.	NA	NA
7.1.2	CCR	Laws and regulations for stimulant prescribing and shared care should be uniform between the states and territories in Australia.	NA	NA
7.1.3	CCR	People with ADHD should have the same rights of access to the National Disability Insurance Scheme (NDIS) as those with a disability who do not have ADHD. To ensure optimisation of necessary and reasonable NDIS interventions and supports for people with ADHD, a shared understanding of the following are needed: • appropriate accommodations • value of suitably qualified ADHD coaches • the importance of a specialist in ADHD as a lead member of the care team.	NA	NA

7.1.4	CCR	Eligibility and access to support from the NDIS should be decided on the functional needs of the person with ADHD and not based solely on diagnosis.	NA	NA
7.1.5	CCR	Primary care and public mental health services should be accessible to people with ADHD.	NA	NA
7.1.6	CCR	A system of ADHD-specific peer support should be established to ensure that this support is accessible throughout Australia. Peer-support programs already exist, providing opportunities to explore different models on which to base nationally available ADHD specific peer support development. National ADHD-specific peer support should ensure the peer support worker is embedded as part of a multidisciplinary team and works with clinicians to provide training, monitoring and support.	NA	NA
7.2	**Education Settings**			
7.2.1 G8_12	CCR	All education settings should identify a learning support coordinator with appropriate training to be the key point of contact for people with ADHD and their clinicians and parents/carers.	NA	NA
7.2.2	CCR	Students with ADHD of all ages require reasonable adjustments to be made to maximise their inclusion and learning opportunities. The types and number of adjustments should be decided as part of an individual learning plan developed with the person with ADHD, their caregivers, education staff and other relevant clinicians.	NA	NA
7.2.3	CCR	Education settings should be supported to implement treatment plans, host inter-agency meetings and could provide space for visiting clinicians to consult and provide intervention.	NA	NA
7.4	**Service configuration and activities**			
7.4.1	CCR	ADHD services should be configured to ensure they are person- and family-centred	NA	NA
7.4.2	CCR	Agencies should collaborate with each other, the care coordinator, and the person with ADHD and/or their family, to provide integrated models of care with a focus on shared decision making.	NA	NA
7.4.3	CCR	Development of agreed pathways to simplify navigating the health care system for both consumers and clinicians are needed.	NA	NA
7.4.4	CCR	A readily available source of information for GPs about the referral pathways in their region is needed. For example, Primary Care Networks should identify ADHD specific local referral pathways and provide a directory of these to the general practices they serve.	NA	NA
7.4.5	CCR	As part of the development of agreed referral and care pathways, all relevant organisations should be consulted and their roles clarified, and where possible, expanded.	NA	NA

Clinical considerations for implementation of the recommendations

The implementation of these recommendations will have implications at the policy level regarding funding of ADHD treatment in Australia, through to how services are configured. An economic evaluation will be required to fully understand the implications of these recommendations which is beyond the scope of this guideline development which has a clinical focus. Further work relating to service and policy development for people with ADHD is warranted.

See Technical report, sections 11.4, and 12.5 for further details.

Professional Training

Clinical questions

Are health professionals including psychiatrists, paediatricians, GP's, nurses and allied health professionals adequately trained to support ADHD?

Clinical practice gaps, uncertainties and need for guidance

This guideline highlights a number of practice gaps. A key gap is the lack of ADHD trained staff, resulting in bottlenecks in the diagnosis and support of people with ADHD. Training of clinicians is highly variable and this section outlines what is currently known about ADHD training for clinicians and what needs to be developed to reduce bottlenecks for diagnosis and treatment of people with ADHD.

Summary of narrative review evidence

Given that ADHD requires a multimodal and multi-disciplined approach, training curriculums across disciplines need to provide adequate exposure training and experience so they can provide comprehensive care to people with ADHD (Coghill, 2016) Whilst ADHD is typically on the curriculum for the training of psychiatrists, paediatricians, and psychologists, adult clinicians and psychiatrists in particular are unlikely to have practical training in diagnosis and treatment. The majority of training for psychiatrists is conducted in public mental health settings and is widely known that, with a few exceptions, the public health systems do not diagnose and treat adult ADHD.

There is an increasing move to train GPs to diagnose and treat ADHD due to the shortage of medical specialists. Whilst diagnosis and treatment of ADHD is currently the province of both adult and child and adolescent psychiatrists, paediatricians, and psychologists, there is an under-recognition of ADHD in those groups as well as GPs who are usually the first line of referral. This leads to significant under-diagnosis. GP training is particularly important because ADHD has implications for poor physical health outcomes (e.g. difficulties taking medication regularly, and co-occurring medical and health disorders). GPs also manage chronic disease, making them uniquely placed to support individuals with long-term lifelong disorders, such as ADHD, with specialist care as needed.

There are no current Australian standards for the training of health professionals in the diagnosis and treatment of ADHD. There are considerable advances in the treatment and understanding of ADHD which will require ongoing learning, which may be done via web-based resources or the RANZCP Adult ADHD Network model.

Recommendations

7.3.1	CCR	Information about ADHD and its treatment should be included in the curriculums of mental health/developmental disorder training for educators, medical and allied health professionals.	NA	NA
7.3.2	CCR	Organisations that provide services to people with ADHD, including all public health services (child, adolescent, adult), should ensure staff are appropriately trained to identify, diagnose and treat ADHD, and provide ongoing monitoring and support.	NA	NA
7.3.3	CCR	Specialist medical practitioners (such as GPs, paediatricians, psychiatrists, and geriatricians) should be supported to increase their skills in identifying, diagnosing and treating people with ADHD, including prescribing stimulants.	NA	NA
7.3.4	CCR	Ongoing professional development in the treatment of ADHD should be made easily available, both interdisciplinary and profession-specific.	NA	NA

Clinical considerations for implementation of the recommendations

Time for training is needed for all clinicians working with people with ADHD. This needs to be incorporated into organisation training plans and staffing levels adjusted accordingly.

See Technical report, section 11.1 for further details.

Chapter 8. Considerations – Research

The Guideline Development Group (GDG) identified numerous areas for research including evidence gaps relevant to the care of people with attention deficit hyperactivity disorder (ADHD), including in the areas of screening, co-occurring disorders, pharmacological and non-pharmacological interventions, emerging approaches such as ADHD coaches and peer support, subgroups including girls and women, Aboriginal and Torres Strait Islander peoples, imprisoned people, and models of care within the Australian context. Understanding evidence gaps and identifying research priorities will require significant future research using a structured approach.

The following selected examples of required research topics illustrate the depth and breadth of research that is needed in Australia to allow us to reach the goal of providing evidence-based care for individuals with ADHD:

- better understanding of the numerous disorders that co-occur at high levels with ADHD, their prevalence and impact on optimal treatment and support
- cost-effectiveness comparisons of lengthier versus shorter parent/family training protocols and other treatments
- effectiveness of novel interventions to support preschoolers with ADHD in early childhood settings
- efficacy of different types of parent/family training (there is a confusing number of different approaches) to ensure that parents are provided with the best method for the shortest investment time
- identification of optimal timing of parenting/family training and/or CBT relative to diagnosis and other pharmacological and non-pharmacological interventions
- acceptability and adherence of mindfulness meditation components of some CBT interventions, along with whether they change effect sizes found in adult studies utilising mindfulness based cognitive therapy
- creation of a suite of valid outcomes for non-pharmacological interventions, and appropriate time points to measure outcomes, so that magnitude, interactions and timing of benefits are ascertained
- development of culturally valid assessment instruments for Aboriginal and Torres Strait Islander peoples and those from culturally and linguistically diverse groups.
- evaluation of the clinical effectiveness of models of care which emphasise regular assessment of symptom change/improvement over time (e.g., measurement-based care approaches)
- evaluation of optimal care pathway models for improving outcomes for ADHD across the lifespan
- development of national system to unify prescribing of stimulant medications, rather the current state-based system.

Without a formal process it will not be possible to prioritise these possible research activities in a way that is of greatest relevance and benefit to the ADHD community.

Recommendations

8.1.1	CCR	A process for setting research priorities should be established, involving all key stakeholders and following established methods (such as those of the James Lind Alliance).	NA	NA
8.1.2	CCR	Research prioritisation should include individual and health service research, and should consider cost-effectiveness and new models of shared care.	NA	NA

Clinical considerations for implementation of the recommendations

This ADHD guideline has identified multiple areas of unmet need or areas where the research base does not permit evidence-based recommendations to be made. Future research into the causes, treatments and ways to support individuals with ADHD should employ participatory research principles to ensure that those with a lived experience of ADHD are engaged in the research process at each step

Establishing research priorities will require dedicated funding and input from multiple stakeholders, particularly those representing identified high-risk populations and those with a lived experience of ADHD. Research conducted subsequent to the prioritisation exercise will require dedicated investment. Wherever possible, ADHD research be inter-disciplinary, cross sectoral (involve representatives from private and public health systems) and include Aboriginal and Torres Strait Islander peoples, and employ quantifiable outcome measures of ADHD symptoms alongside those of general functioning, disability, quality of life, and participation.

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Appendices

Appendix 1. Definitions of terms as used in this guideline

Term	Definition
Clinician	Health professional, such as medical doctor (general practitioner, psychiatrist, paediatrician), nurse, allied health professional (psychologist, occupational therapist, speech pathologist)
Educator	Teacher, early childhood educator, lecturer
Young children	Children aged below 5 years
Children	Children aged 5 to 12 years
Adolescents	Young people aged 13 to 17 years
Children and adolescents	Children and adolescents aged 5 to 17 years
Adults	People aged 18 years and above
Diversion	The illegal distribution or abuse of prescription drugs or their use for purposes not intended by the prescriber
Co-occurring disorder	A disorder that is diagnosed in an individual alongside another (usually primary) disorder
Disorder	This is the preferred term for a medical, mental health or developmental disorder. The term 'disorder' is preferable to the word 'condition'
Cognitive behavioural therapy	A psychological therapy that primarily aims to reduce or prevent the negative effects of ADHD symptomology via targeted adjustment of cognitions, emotions and/or behaviours.
Parent/family training	Refers to interventions aiming to help parents to optimise parenting skills to meet the additional parenting needs of children and young people with ADHD, through training delivered directly to parents (or primary carers). The intervention may be targeting impacts on the child or may also include impacts within the family unit more broadly. Components may include general parenting guidance, ADHD-specific guidance, or a mix of both.
Environmental modifications	Changes that are made to the environment to support an individual with ADHD in their day-to-day life and maximise their activities, participation and quality of life.
Attention/Memory/ cognitive training	Interventions that aim to improve aspects of cognition such as attention and memory (and ultimately broader aspects of functioning such as ADHD symptom severity) through targeted training of these cognitive functions
Neurofeedback	A form of biofeedback that applies principles of operant conditioning to brain electrical activity to teach self-regulation of brain function. It is typically used as part of a suite of treatment approaches, which may include psychotherapy, coaching or sleep hygiene.
Transition	The transfer of the care of a person with ADHD from one service to another
Follow-up	Follow up of a trial efficacy 3, 6 or 12 months after the end of treatment
Post treatment	Immediately after the conclusion of treatment in a trial

Supported decision making	Involves supporting a person to make their own decisions by giving them the tools they need to do so, to safeguard their autonomy.

Appendix 2. Guideline development group members

Title	Name	Discipline Area, Relevant Role	Representing an Organisation
Professor	Mark Bellgrove	Academic Psychology, President AADPA	Australian ADHD Professionals Association (AADPA)
Ms	Edwina Birch	Clinical Psychologist	ADHD Foundation
Associate Professor	Noel Cranswick	Paediatrician & Clinical Pharmacologist	
Ms	Evelyn Culnane	Transition Manager	
Ms	Jane Delaney	Speech Pathologist, Senior Advisor for Early Childhood and Education	Speech Pathology Australia
Dr	Maddi Derrick	Clinical Psychologist, Consumer, Parent	
Professor	Valsamma Eapen	Child and Adolescent Psychiatrist	
Associate Professor	Daryl Efron	Paediatrician	Royal Australian College of Paediatricians (RACP)
Dr	Tatjana Ewais	Child, Youth and adult Psychiatrist	Royal Australian and New Zealand College of Psychiatrists (RANZCP)
Ms	Ingrid Garner	Parent, Nurse, Lawyer	
Mr	Michael Gathercole	Clinical and Counselling Psychologist and Aboriginal man	
Ms	Martha Mack	Psychologist, President ANSA	APPLIED NEUROSCIENCE SOCIETY OF AUSTRALASIA (ANSA)
Dr	John Kramer	General Practitioner	Royal Australian College of General Practitioners (RACGP)
Dr	Tamara May	Psychologist, Senior Research Fellow	
Mr	Evan Savage	School Principal	
Ms	Lisa Vale	Occupational Therapist	Occupational Therapy Australia (OTA)
Dr	Karina Chaves	Paediatrician	NBPSA
Ms	Chantele Edlington	Speech Pathologist, Senior Advisor Justice and Mental Health	

Ms	Alyssa Weirman	Parent, Board Member National ADHD Forum	National ADHD Forum (NAF)
Emeritus Professor	Bruce Singh	Adult Psychiatrist	
Associate Professor	Emma Sciberras	Clinical Psychologist, Academic researcher	
Dr	Karuppiah Jagadheesan	Adult Psychiatrist	
Dr	Renee Testa	Neuropsychologist	Australian Psychological Society (APS)

Appendix 3 Abbreviations

ADHD	Attention deficit hyperactivity disorder
AADPA	Australian ADHD Professionals Association
CBT	Cognitive–behavioural therapy
DBT	Dialectical behavioural therapy
NDIS	National Disability Insurance scheme
NHMRC	National Health and Medical Research Council
OROS	Osmotic-controlled oral release system
RCT	Randomised controlled trial

Appendix 4 Conflict of Interest

It is recognised that during the process of any guideline development, considerations other than the evidence itself can influence decision making, have the potential to bias recommendations in sometimes unexpected ways, and thereby erode the impartiality, integrity and reputation of the guideline. These biases might, for example, disproportionately favour one treatment or medical product over another, or one treatment modality over another or even ultimately lead to over diagnosis or treatment. It is therefore well-established as important to anticipate, recognise and manage any potential source of bias that might be introduced into the process of guideline development, and allow scrutiny and management of any declared interests which have the potential to introduce such biases. Scrutiny assists in the elimination of any potential bias or the introduction of any improper motivations and allows transparency of potential conscious or unconscious influences in decision making.

For this guideline a Conflict of Interest (COI) was defined as an interest of a member of the GDG that conflicts with or has the potential to conflict with the duties and responsibilities of membership and the process of guideline development. This includes any outside interest which could be perceived to introduce any bias into the decision making of committee members.

Potential members were asked to declare any financial interests or personal relationships over the three years preceding the formation of the group and any arising during guideline development. COIs that were scrutinised included renumeration, academic, personal or political relationships, employment, consultancies or honoraria, grants, gifts, gratuities or any other form of remuneration, and financial connections, whether that be to funders or stock ownership.

Each potential member was asked to report all financial interests when any benefits or losses either in money or in kind have occurred or may occur, and other relationships when a strong position, prejudice, familial connection or other relationship held by a person could reasonably (or be perceived to) affect a person's judgement in relation to fair decisions about evidence, and their participation in group decision making. Individuals were asked to declare any such relationships or interests whether or not they thought they might provoke a conflict. Potential participants were informed that such disclosures would be viewed by others to ensure that the process of guideline development was a transparent and prudent process.
These conflicts or potential conflicts were managed by a Conflict of Interest Management Group, which consisted of the two Guideline Chairs and an independent observer, ethicist Professor Lynn Gillam, who did not otherwise participate in the guideline development process. This group operated within the AADPA policy for the Identification and Management of Potential Conflict of Interests, which was developed to align with standard A6 of the NHMRC Procedures and requirements for meeting the 2011 NHMRC standard for clinical practice guideline (Appendix document). The conflicts of interests of the Chairs were scrutinised by the independent ethics expert of the COI Management Group and the President of AADPA.
The COI Management Group scrutinised the written disclosures made by all potential GDG members and determined whether there were any conflicts or potential conflicts of interest, and whether the nature or financial elements of these constituted a low, medium or high COI or potential COI. Any disclosure that could be perceived to affect the person's judgement, decision making about evidence, affect the person's participation in group decision making, or erode the integrity of the group decision was classed as a conflict or potential COI.
Where a COI or potential COI was identified, the Conflict of Interest Management Group considered whether it could be managed, for example by exclusion from certain discussions or decisions, divestment of financial interests, resignation from other entities likely to be affected by any recommendations, peer review or public consultation, or by any other measure. On the basis of the declaration of interests made, appointments to the GDG were either not approved, approved unconditionally, or were approved with constraints, such as formulation of a management plan to mitigate the conflict or potential conflict. A register of disclosures and management plans was maintained throughout the life of the committee.
At the first and all subsequent meetings members of the committee were reminded about the need to provide updates to COI disclosures and were given then opportunity to raise any concerns about interest of other committee members.
The Conflict of Interest declarations for the GDG is available via request: guidelines@aadpa.com.au