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

1ST EDITION | 2022

This guideline was produced by AADPA and endorsed by the following organisations

A digital version of this Guideline, the Technical Report and other resources can be downloaded at:
https://adhdguideline.aadpa.com.au

Authors: Australian ADHD Guideline Development Group

Corresponding Author: Mark Bellgrove, President, Australasian ADHD Professionals Association, guidelines@aadpa.com.au; mark.bellgrove@monash.edu

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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:

Australian Government
National Health and Medical Research Council

The guideline recommendations on pages 12-32 of this document were approved by the Chief Executive Officer of the National Health and Medical Research Council (NHMRC) on 29 July 2022, under Section 14A of the National Health and Medical Research Council Act 1992. In approving the guideline recommendations, NHMRC considers that they meet the NHMRC standard for clinical practice guidelines. This approval is valid for a period of 5 years. NHMRC is satisfied that the guideline recommendations are systematically derived, based on the identification and synthesis of the best available scientific evidence, and developed for health professionals practising in an Australian health care setting. This publication reflects the views of the authors and not necessarily the views of the Australian Government.

Documentation Access: This guideline and related documentation can be found online at: https://www.aadpa.com.au/guideline

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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, AADPA President

The Australasian 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 the around 1 million 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 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 ADHD costs $20.42 billion per year, or $25,071 per individual with ADHD per annum (Sciberras et al., 2022). A further key objective of this grant – and indeed a key motivation for the establishment of AADPA – was the formulation of an Australian an evidence-based 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 evidence-based 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 when possible, or appropriate and relevant 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, Australasian ADHD Professionals Association (AADPA)
Professor in Cognitive Neuroscience,
Turner Institute for Brain and Mental Health, School of Psychological Sciences, Monash University.

FOREWORD

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.

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.

This Australian evidence-based clinical practice guideline is the first produced by the Australasian ADHD Professionals Association (AADPA). The Guideline provides people with ADHD, their families and carers, health practitioners, educators, policy makers, researchers and communities with 132 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.

ADHD Guideline Chairs Professor Katrina Williams and Dr Edward Petch

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 the highest quality scientific evidence available, 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, 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

Abstract

The Australian evidence-based clinical practice guideline for attention deficit hyperactivity disorder (the ADHD guideline) aims to promote accurate and timely diagnosis, and provide guidance on optimal and consistent assessment and treatment of ADHD. The guideline outlines a roadmap for ADHD clinical practice, research and policy, now and in the future, with a focus on everyday functioning and quality of life for care based on age, gender, culture, setting and geography of people who are living with ADHD, and those who support them.

Development of the ADHD guideline integrates the best available evidence with multidisciplinary clinical expertise and the preferences of those with lived experience. All stages of the rigorous development process were underpinned by the Grading of Recommendations, Assessment, Development, and Evaluation (GRADE) framework. This considers the volume and quality evidence informing a recommendation, and the feasibility, acceptability, applicability, cost, and implementation considerations of the recommendation. Where appropriate, evidence reviews in the National Institute for Health and Care Excellence (NICE) 2018 ADHD: diagnosis and management guideline were updated. The World Health Organization's International Classification of Functioning, Disability and Health (ICF) was adopted as a conceptual framework to anchor discussions and deliberations. Fifty prioritised clinical questions were addressed in 14 systematic reviews (new and updated from NICE 2018) and 28 narrative reviews, generating 132 recommendations.

There are several groups at higher risk of having ADHD, such as people with a close relative with ADHD, people with neurodevelopmental and mental health conditions and people in some settings, such as prisons. Routine screening for ADHD at the population level is not recommended.

A thorough assessment is needed to make a diagnosis of ADHD including careful assessment of possible co-occurring or alternative conditions. Upon diagnosis, information and support should be provided to the person, their parents/carers, including explanation of available treatment options and information about how they can minimise symptoms impacting on the enjoyment of their lives and maximise their strengths.

Non-pharmacological interventions can improve broader aspects of functioning for people with ADHD and/or their families. Parent/family training should be offered to parents/carers of children and adolescents with ADHD to support the functioning of the family and child with ADHD. Cognitive-behavioural interventions should be offered to adolescents and adults with ADHD. Making changes in a person's school, university or workplace can help the person with ADHD succeed.

Before prescribing medication to help people treat their ADHD symptoms, clinicians should carefully assess the person's general health and explain all medication options including potential benefits and side effects. Clinicians and people with ADHD (or their parents/carers) should make treatment decisions together. Choice and dosage of medication must be optimised for each person.

For children, adolescents and adults, the first medication should be stimulants (methylphenidate, dexamfetamine or lisdexamfetamine), unless the person is unable to take these medications due to other health problems. If stimulants are not effective for the person, or they are unable to use these medications, other medications (for example, atomoxetine or guanfacine) can be tried. Ongoing monitoring is required to assess whether the medication is effective, and whether there are any unwanted effects. 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 to adult health services.

Through adoption of these recommendations the guideline aims to improve the experience and health outcomes for the estimated more than 1 million Australians with ADHD.

Executive summary

This is a guideline for the identification, diagnosis and treatment of people with ADHD. It is mainly intended for clinicians, including medical and allied health professionals, nurses (including mental health nurses and mental health nurse practitioners), pharmacists, 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, carers and partners.

Attention deficit hyperactivity disorder (ADHD) is classified as a neurodevelopmental disorder with an onset typically before 12 years of age. Symptoms include difficulties with attention and/or hyperactivity and impulsivity, which are incongruent with a person's age and interfere with activities, including a person's family life or participation in their community.

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

Some groups of people are more likely to meet criteria for a diagnosis of ADHD, such as people with a close relative who has ADHD, people with other neurodevelopmental and mental health conditions and people in some settings, such as prisons. Clinicians should consider the possibility of ADHD when providing care to people in these high-risk groups. However, routine screening for ADHD at the population level is not currently recommended. This is because, screening tools are currently not sufficiently accurate and efficient, and the costs and burden to the healthcare system of universal screening are not yet established.

A thorough assessment by an appropriately trained and credentialled clinician is needed to make a diagnosis of ADHD. A person with ADHD may have one or more other neurodevelopmental, mental health, or medical conditions that make diagnosis and treatment more complex. Careful assessment of possible co-occurring or alternative conditions is required.

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 minimise symptoms impacting on the enjoyment of their lives and maximise the person's strengths.

Services for Aboriginal and Torres Strait Islander people should be culturally safe. Where services are not delivered by Aboriginal or Torres Strait Islander providers, non-Indigenous professionals 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 to 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

Non-pharmacological interventions have value beyond improving ADHD symptoms and can improve broader aspects of functioning for individuals and/or their families. Clinicians should offer guidance on lifestyle changes, such as promoting a healthy and active lifestyle, including considering sleep patterns, as these have the potential to improve day-to-day functioning. Parent/family training should be offered to parents/carers of children and adolescents with ADHD to support the functioning of the family and child with ADHD.

Cognitive-behavioural interventions should be offered to adolescents and adults with ADHD. Making changes in a person's school, university or workplace can help the person with ADHD succeed. This can include physical changes or educating other people on how to most helpfully interact with the person with ADHD.

Medication for people with ADHD

Before prescribing medication to help people treat their ADHD symptoms, clinicians should carefully assess the person's general health and should explain all the treatment options including potential benefits and side effects. Clinicians and people with ADHD (or their parents/carers) should make treatment decisions together, after discussing all relevant issues. Choice and dosage of medication must be optimised for each person.

For children aged 6 years and over, adolescents and adults starting treatment for ADHD, the first medication should be stimulants (methylphenidate, dexamfetamine or lisdexamfetamine), unless the person is unable to take these medications due to other health problems. The dose must be carefully adjusted for the person. The decision whether to start with short-acting or long-acting stimulant medication should be based on the individual person 's suitability. If one type of stimulant medication has not improved the person's symptoms enough, or has side effects, the other should be trialled.

If methylphenidate, dexamfetamine and lisdexamfetamine are not effective for the person, or they are unable to use these medications, other medications (for example, atomoxetine or guanfacine) can be tried. For adults, there are other medications that could sometimes be helpful.

Ongoing care for people with ADHD using medications

After someone has started ADHD treatment, their clinician should carefully monitor whether the medication is effective, whether there are any unwanted effects, the person's heart rate, blood pressure, and height and weight in children. Sometimes it is helpful to adjust the timing of medications and meals or snacks, or planning a break in treatment to help a child's growth to catch up.

Parents and carers should oversee ADHD medication for children and adolescents. Adolescents should be encouraged to take responsibility for taking their medications.

Sometimes, a person with ADHD, in discussion with their clinician, will decide to stop a medication for a short time. This needs careful planning. For some medications, the dose must be carefully decreased over time to avoid health harms.

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

Funding should be made available to expand services for people with ADHD, and to deliver timely and accessible assessment, support and intervention, and an ADHD helpline accessible to all Australians.

Laws and regulations for prescribing ADHD stimulant medications, and for shared care, should be uniform between the states and territories in Australia. These regulations should reflect scientific evidence and best practice, and not restrict the availability of medication or treatment where it is required.

Training should be available for all clinicians working with people with ADHD. ADHD research is needed to better understand many aspects of ADHD, with the goal of improving the quality of life for people living with ADHD.

Summary of Recommendations

Summary of recommendations

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 of each recommendation:

- type
- wording
- certainty of evidence (for evidence-based recommendations)
- grade (strength) of recommendation (for evidenced-based recommendations).

Recommendation type is either evidence-based (EBR) or clinical consensus recommendation (CCR). In addition, clinical practice points (CPP) were included for implementation issues such as safety, side effects and risks (Table 1). For CCRs and CCPs certainty/strength and grade ratings are not applicable (NA).

Table 1. Recommendation types

EBR	Evidence-based recommendation: a structured/systematic 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 (GDG) (see Table 5 and Methods for more information about the narrative review approach). 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 GDG prepared a narrative review.
CPP	Clinical practice point: guidance based on expert opinion and clinical experience, provided on important issues arising from discussion of evidence-based or clinical consensus recommendations, outside the scope of the evidence-finding process.

Recommendation wording reflects the guideline development group's (GDG's) overall interpretation of the evidence and other considerations. The word 'should' indicate the GDG'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 Table 2).

Summary of recommendations

Table 2. Certainty of the evidence leading to the recommendation for Evidence Based Recommendations

Certainty	
⊕⊕⊕⊕ **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**	Our confidence in the effect estimate is limited: The true effect may be substantially different from the estimate of the effect.
⊕◯◯◯ **VERY LOW**	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 (strength) of EBRs (strong recommendation or conditional recommendation; Table 3) was determined by the GDG based on comprehensive consideration of all elements of the evidence to decision framework (National Health and Medical Research Council, 2009) including: desirable and undesirable effects, balance of effects, resource requirements, equity, acceptability, and feasibility (see Methods).

Table 3. Strength (grade) of recommendations for Evidence Based Recommendations

Strength (grade)	
****	Strong recommendation for the option
***	Conditional recommendation for the option
**	Conditional recommendation for either the option or the comparator
*	Conditional recommendation against the option

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 Report, along with voting to reflect degree of consensus (voting results available upon request).

Recommendations

The following recommendations should be read in conjunction with the Principles and Assumptions section, which provides information about requirements for clinicians implementing these recommendations.

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 children, adolescents, and adults, have an increased prevalence of ADHD, compared with the general population: **Children:** • in out of home care • diagnosed with oppositional defiant disorder or conduct disorder# **Children and adolescents:** • diagnosed with anxiety disorders • with epilepsy • with a history of substance abuse# **Adults:** • with any mental health disorder (including substance use disorders, borderline personality disorder, intermittent explosive disorder, internet addiction, psychotic disorders, binge eating disorder#, gambling disorder#) • who experience suicidal behaviour or 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# • with anxiety, depressive or bipolar and related disorders# • with sleep disorders# # Indicates a clinician consensus recommendation (CCR)	****	⊕⊕◯◯ 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, such as an anxiety or depressive disorder	Not Applicable (NA)	Not Applicable (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	**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.	NA	NA
1.2.3	**CCR**	Clinicians conducting mental health/psychiatric diagnostic assessments with people from high-risk groups (as identified in high-risk groups recommendations 1.1.1) could screen for ADHD.	NA	NA
1.2.4	**CPP**	Screening for ADHD in high-risk groups should occur when the person: • does not respond to treatment for high-risk condition as expected, or is unable to adhere to their treatment protocol • often has difficulty attending appointments on time or forgets appointments, show signs of ADHD symptoms such as restlessness, difficulty maintaining routines, lack of time awareness, poor working memory, disorganisation, forgetfulness, and distraction that: • are not explained by other psychiatric diagnoses • have resulted in, or are associated with, clinically significant psychological, social and/or educational or occupational impairment.	NA	NA
1.2.5	**CCR**	Individuals who screen positive should undergo further diagnostic assessment for ADHD.	NA	NA
2	**Diagnosis**			
2.1	**Diagnosis**			
2.1.1	**CPP**	Clinicians conducting diagnostic assessments should be: • appropriately registered (such as with Australian Health Practitioner Regulation Agency) (see Principles and Assumptions section) • adequately trained in diagnostic assessment using the Diagnostic and Statistical Manual of Mental Disorders (DSM) and/or International Classification of Diseases (ICD) • experienced with conducting clinical interviews, administering – and interpreting standardised rating scales, and assessment of functional impairment • experienced in ADHD diagnostic assessment or undergoing ADHD-specific supervision with an experienced clinician.	NA	NA

2.1.2	**CCR**	Assessment for diagnosis of ADHD should include all the following: • a full clinical and psychosocial assessment, including discussion about the person's symptoms and strengths and how these present in the different domains and settings of the person's everyday life • a full developmental, mental health and medical history • observer reports and assessment of the person's symptoms and mental state • a medical assessment to exclude other causes of the symptoms and identify any associated disorders that also require investigation, intervention, and support. Medical investigations should only be performed if clinically indicated.	NA	NA
2.1.3	**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 • symptoms cause clinically significant 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) • symptoms are pervasive, occurring in two or more important settings including social, familial, educational and/or occupational settings. • symptoms are assessed in the context of the person's age, developmental level, and intellectual ability • include an assessment of the person's needs, functional impairments, participation, and quality of life • include an assessment of possible differential conditions or co-occurring physical and mental health/neurodevelopmental disorders, social, familial, and educational or occupational circumstances and physical health • include an assessment of the person's strengths, and factors the person may have identified that minimise symptoms or their impact • for children and adolescents, enquire about family functioning and parents' or carers' mental health, to enable provision of support for parents/carers at the time of diagnosis.	NA	NA
2.1.4	**CCR**	A diagnosis of ADHD should not be made solely based on rating scales or observational data. However, rating scales assessing ADHD symptoms (See Box 2 for examples) are valuable adjuncts to the assessment process.	NA	NA
2.1.5	**CCR**	Observations from more than one setting and reporter (e.g. a teacher, in the case of children) should be used to confirm if symptoms, function and participation difficulties occur in more than one setting.	NA	NA
2.1.6	**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

2.1.7	**CPP**	Clinicians should consider the different presentations of ADHD and the fact that many children and adults may not present with the most visible symptoms of hyperactivity/impulsivity. Clinicians should be aware that inattentive symptoms may not be identified until secondary school (or later), following increased demands for organisation and independent study or work. Clinicians should also be aware that people may have developed compensation strategies that may mask symptoms.	NA	NA
2.1.8	**CPP**	The views of people with ADHD, including children and adolescents, should be considered when determining the importance of their symptoms and limitations.	NA	NA
2.2	**Co-occurring conditions and differential diagnosis**			
2.2.1	**CCR**	As ADHD commonly co-occurs with other medical and neurodevelopment/mental health conditions (see recommendations 1.1.1, 1.1.2), the diagnosis of ADHD should prompt consideration of the presence of other conditions, including those noted in high-risk groups recommendation 1.1.1. Clinicians should be aware that some conditions, such as substance use, anxiety and depressive disorders, may be a consequence of undiagnosed and/or untreated ADHD.	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, such as: ◦ hearing or vision impairment ◦ thyroid disease ◦ anaemia ◦ other conditions as noted in recommendation 1.1.1 • 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 for any co-occurring conditions should be offered. Treatment approaches for co-occurring conditions should follow best-practice guidelines for each co-occurring condition, but with treatment delivery methods adjusted to account for ADHD symptoms. For example: • using strategies to increase adherence to medications (see 5. Pharmacological interventions) and non-pharmacological treatment (see 4. Non-pharmacological interventions) • providing information to people with ADHD based on strategies identified in 5.8.2 • being aware of the impacts of attention and hyperactivity/impulsivity symptoms, on the ability to attend and participate in treatment sessions and complete tasks outside of session.	NA	NA

2.3	**Information needs after the diagnosis of ADHD**			
2.3.1	**CCR**	During the diagnostic process and ongoing 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 that may affect ADHD symptoms or result from them, 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, which may vary due to 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 person function to meet their own realistic goals • 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.	NA	NA
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) • up-to-date, reliable, and reputable websites • support for education and employment • eligibility for disability support • eligibility for government benefits and allowances, including Carer Allowance provisions People who have had an assessment, but whose symptoms and impairment do not meet criteria for 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 profile, 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 conditions • 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: • in plain language, clearly presented and free of jargon • culturally appropriate and available in the person's first language • multimodal, taking into consideration different information processing preferences and needs • non-judgemental, inclusive, affirming and focused on personal empowerment. 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 (e.g. copy of the diagnosis report) • verify that the information provided has been understood.	NA	NA
2.3.5	**CPP**	Clinicians should encourage parents/carers/siblings/partners to monitor their own wellbeing, develop a support network, and seek guidance and support if facing challenges.		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 adolescents with ADHD, and does not imply bad parenting.		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, employers, 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 conditions (e.g. learning disorders) that require adjustments in the setting • the treatment plan • identified special needs, including advice for reasonable adjustments and environmental modifications within the setting (e.g. small groups or individualised learning; see 4. Non-pharmacological interventions) • 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 another co-occurring condition that is being treated, 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 multimodal treatment and support. Clinicians should explain to people with ADHD and their families/ parents/carers: • that the components of multimodal treatment for ADHD include non-pharmacological interventions as described in Chapter 4 and pharmacological interventions as described in Chapter 5 • that pharmacological treatment is most effective in reducing core ADHD symptoms and that non-pharmacological treatments provide additional support to minimise the daily impact of ADHD symptoms and associated difficulties • the typical benefits, adverse effects, efficacy, treatment length, and time taken before symptom or functional improvements occur for each mode of treatment. The treatment plan and sequence of treatments should accommodate the person's preferences, unique needs and individual goals, and take into consideration their personal strengths and the impact of any co-occurring conditions.	NA	NA
3.1.2	**CPP**	Clinicians should suggest that people with ADHD use pharmacological and non-pharmacological treatments concurrently, unless: • ADHD symptoms are likely to be adequately supported by only one mode of treatment • the severity of ADHD symptoms necessitates pharmacological treatment as the first-line treatment, to reduce symptoms as quickly as possible, and enable later engagement in non-pharmacological treatment, if needed. • one mode is more accessible than the other, based on cost, location, and service availability including waiting times to access services	NA	NA
3.1.3	**CPP**	When there are multiple clinicians and/or educators involved, clinicians should suggest that a care coordinator is appointed. A person with ADHD or a family member may choose to take on this role. If not, the person with ADHD should be supported to arrange an appropriate care coordinator, who 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 (e.g. at least 12 months before their 18th birthday for those transitioning to adult services), 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, and should be holistic and include education and support.	NA	NA
4	**Non-pharmacological interventions**			
4.1	**Lifestyle changes**			
4.1.1	**CPP**	Clinicians should offer guidance on lifestyle factors to help people with ADHD, including: • asking about sleep and offering strategies and/or a referral to assist with sleep, if needed • asking about diet and physical activity levels, and offering strategies and/or referral to assist with any challenges, if needed.	NA	NA
4.2	**Parent/Family Training**			
	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 to ⊕⊕⊕◯ Moderate
	Children and adolescents (aged 5 to 17 years)			
4.2.2	**EBR**	Parent/family training should be offered to parents/families of children with ADHD.	***	⊕⊕◯◯ LOW
4.2.3	**EBR**	More intensive parent/family training programs should be offered to parents/families of children with ADHD who have co-occurring oppositional defiant disorder or conduct disorder.	****	⊕⊕⊕◯ Moderate

	Considerations for Parent/family training			
4.2.4	**CCR**	Parent/family training should be delivered in individual and/or group format, depending on the availability of services and parent/family preference, and should be delivered to all parents/carers involved in the care of an individual child, where feasible.	NA	NA
4.2.5	**CPP**	Parent/family training should be provided with sensitivity and awareness of the stigma and misunderstandings that parents/carers of children with ADHD may have experienced.	NA	NA
4.2.6	**CPP**	Parent/family training should be specific to the needs of parents/ families with children with ADHD. A focus on individual strengths, values and interests should be balanced with any focus on challenges, for both the parent/carer and child. One or more of the following components should be included: • education and information on the causes of ADHD and impacts on functioning • environmental modifications to promote a positive, predictable and structured environment, and to reduce impacts of ADHD symptoms • behaviour modifications to help minimise the impact of symptoms and impairments associated with ADHD • information on positive parenting approaches. *Further guidance on intervention components for an ADHD-specific intervention can be found in Box 4.*	NA	NA
4.2.7	**CPP**	Clinicians delivering parent/family training should be aware of the capabilities of the parent/carer themself, and ensure the intervention addresses any challenges or barriers the parent/carer may experience. Additional treatment needs of the parent/carer may include: • grief and adjustment to their child's diagnosis • adjustment of interpersonal dynamics within the family • management of multiple family members' needs • emotion-regulation, resilience and self-care • ADHD, mental health conditions, language and learning disorders • skills and confidence for advocating for their child.	NA	NA
	Cognitive-behavioural interventions			
	Children and adolescents aged 5 to 17 years			
4.2.8	**EBR**	Cognitive-behavioural interventions could be offered to children with ADHD.	***	⊕⊕◯◯ LOW
4.2.9	**EBR**	Cognitive-behavioural interventions should be offered to adolescents with ADHD.	***	⊕⊕◯◯ LOW

4.2.10	**CPP**	Clinicians delivering cognitive-beha vioural interventions to children and adolescents should consider the developmental capabilities of the person, including their capacity to self-reflect and their awareness of, and ability to influence, their thinking processes. Younger children may benefit from a foundational focus of emotional literacy, proactive help-seeking, problem-solving and self-esteem growth, whilst children approaching adolescence may benefit from simple behavioural techniques. Through adolescence, increasingly sophisticated behavioural and cognitive restructuring techniques may be of benefit.	NA	NA
	Adults (aged 18 years and above)			
4.2.11	**EBR**	Cognitive-beha vioural interventions should be offered to adults with ADHD.	****	⊕⊕◯◯ LOW
	Considerations – Cognitive-behavioural interventions			
4.2.12	**CCR**	Cognitive-beha vioural interventions could be delivered in an individual or group format, depending on the availability of services and person's/ family'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. If cognitive-beha vioural interventions are accessed by children and adolescents with ADHD, they should be provided alongside parent/ family training. Parents should also be involved in the cognitive-behavioural intervention delivered to a child or adolescent to an extent that allows for support with implementation of the intervention.	NA	NA
4.2.13	**CPP**	Cognitive-beha vioural interventions should be specific to the needs of people with ADHD. A focus on individual strengths, values and interests should be balanced with any focus on challenges. One or more of the following components should be included: • education and information on the causes and impacts of ADHD • environmental modifications to promote a positive, predictable and structured environment, and to reduce negative impacts of ADHD symptoms • behaviour modifications to help minimise the impact of symptoms and impairments associated with ADHD • psychological adjustment and cognitive restructuring *Further guidance on intervention components can be found in Box 4.*	NA	NA
4.6	**ADHD Coaching**			
	Adolescents (aged 13 to 17 years)			
4.3.1	**CCR**	ADHD coaching could be considered as part of a treatment plan for adolescents with ADHD.	NA	NA
	Adults (18 and above)			
4.3.2	**CCR**	ADHD coaching could be considered as part of a treatment plan for adults with ADHD.	NA	NA

	ADHD coaching considerations			
4.3.3	**CPP**	Elements of coaching could be provided by appropriately credentialled* ADHD coaches and allied health professionals for people with ADHD. *Such as membership with the International Coaching Federation	NA	NA
4.8	**Non-pharmacological adherence**			
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: • potential benefits of intervention, including the opportunity to develop lifelong skills in reducing the impact of ADHD symptoms, and the opportunity to improve self-esteem, mental health and broader wellbeing • time required to complete a sufficient duration of intervention to assess the benefits • likely costs involved and funding considerations, such as Medicare rebates • options for changing intervention providers, should the person wish to do so.	NA	NA
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 pr eparations available for ADHD • ensure that treatment is tailored effectively to the individual needs of the child, adolescent or adult • take account of variations in bioavailability or pharmacokinetic profiles of different preparations to avoid reduced effect or excessive adverse effects • take account of pharmacodynamic interactions with other prescribed medications • explain to the person with ADHD or their parents/family/carers that sometimes when a person starts taking ADHD medication that reduces symptoms, they become aware of how severe their untreated symptoms were, and prepare them for this awareness • explain that medication reduces symptoms but rarely reduces them completely, therefore, it is important to have realistic expectations and ensure medication is only one part of a person's treatment and support plan.	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 medications ◦ current medication ◦ height and weight (measured and recorded against the normal range for age and sex) ◦ a cardiovascular assessment, including baseline heart rate and blood pressure (measured with an appropriately sized cuff and compared with centile for age and height). Note: An electrocardiogram (ECG) is not needed before starting stimulants, atomoxetine or guanfacine, unless the person has any of the features listed in recommendation 5.1.3 or a co-occurring condition that is being treated with medications that may pose an increased cardiac risk.	NA	NA
5.1.3	**CCR**	People with ADHD should be referred for a cardiology opinion before commencing stimulant medication 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 • a heart murmur (not including innocent heart murmurs in children) • hypertension.	NA	NA
5.1.4	**CCR**	People with ADHD should be referred to an appropriate physician if blood pressure is consistently above age-based normal values, or for children and adolescents above the 95th centile for age and height.	NA	NA
5.1.5	**CPP**	Before titration, baseline ADHD symptoms and level of functioning should be recorded. During titration, adverse effects should be monitored and recorded at each dose change. The treating clinician should review progress regularly during the dose-titration period.	NA	NA
5.1.6	**CPP**	The dose should be titrated against symptoms, level of functioning 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 conditions such as anxiety disorders, schizophrenia or bipolar disorder, depression, personality disorders, eating disorders, post-traumatic stress disorder, substance misuse • physical health disorders (e.g. cardiac disease, epilepsy or acquired brain injury).	NA	NA
5.2	**Medication choice – young children aged under 5 years**			
5.2.1	**CPP**	If ADHD symptoms cause significant impairment in more than one setting, a specialist with expertise in child development and treatment of ADHD in young children (either a paediatrician or a child psychiatrist) should assess the child to identify suitable treatment options. Medication should be used cautiously, and monitored closely, in this age group.	NA	NA
5.3	**Medication choice – children and adolescents (aged 5 to 17 years)**			
5.3.1	**EBR**	Methylphenidate or dexamfetamine or lisdexamfetamine should be offered as the first-line pharmacological treatment for people with ADHD, where ADHD symptoms are causing significant impairment.	****	⊕⊕◯◯ LOW
5.3.2	**CPP**	The decision to start with a short or long-acting stimulant formulation[a] should be based on clinical decision, together with the wishes of the person with ADHD or their parent/carer/family, by considering the advantages and disadvantages of each. For example: • a short-acting formulation may be preferred when close monitoring is required • a long-acting formulation may be preferred for convenience, or when there is a medical contraindication[b] • consideration of any potential cost implications [a] *Evidence has been assessed for the following stimulants available in Australia:* • *Short-acting: immediate-release methylphenidate or dexamfetamine* • *Long-acting: modified-release methylphenidate or lisdexamfetamine* [b] *For example, some short-acting stimulants contain gluten and/ or lactose; a long-acting preparation free of these should be used in someone with gluten or lactose intolerance.*	NA	NA
5.3.3	**CPP**	If one medication type or duration of action of stimulant medication is not effective or poorly tolerated, then another should be trialled.	NA	NA

5.3.4	**EBR**	Atomoxetine or guanfacine or clonidine should be offered to children and adolescents if any of the following apply: • stimulants are contraindicated • the person cannot tolerate methylphenidate, dexamfetamine or lisdexamfetamine • symptoms have not responded to separate trials of dexamfetamine or lisdexamfetamine, and of methylphenidate, at adequate doses • the clinician considers that the medication may be beneficial as an adjunct to the current regimen Cue consideration of risks and safety is required, especially if medications are used in combination.	****	⊕⊕◯◯ LOW
5.4	**Medication choice – adults (aged 18 years and above)**			
5.4.1	**EBR**	Methylphenidate or dexamfetamine or lisdexamfetamine should be offered as the first-line pharmacological treatment for people with ADHD, where ADHD symptoms are causing significant impairment.	****	⊕⊕◯◯ LOW
5.4.2	**CPP**	The decision to start with a short-acting or long-acting formulation [a] should be based on clinical decision, together with the wishes of the person with ADHD, by considering the advantages and disadvantages of each. For example: • a short-acting formulation may be preferred when close monitoring is required • a long-acting formulation may be preferred for convenience, or when there is a medical contraindication[b] • consideration of any potential cost implications [a] *Evidence has been assessed for the following stimulants available in Australia:* • *Short-acting: immediate-release methylphenidate or dexamfetamine* • *Long-acting: modified-release methylphenidate or lisdexamfetamine* [b] *For example, some short-acting stimulants contain gluten and/or lactose; a long-acting preparation free of these should be used in someone with gluten or lactose intolerance.*	NA	NA
5.4.3	**CPP**	If one medication type or duration of action of stimulant medication is not effective or poorly tolerated, then another should be trialled.	NA	NA
5.4.4	**EBR**	Atomoxetine or guanfacine should be offered to adults with ADHD if any of the following apply: • Stimulants are contraindicated • They cannot tolerate methylphenidate, lisdexamfetamine or dexamfetamine • Their symptoms have not responded to separate trials of dexamfetamine or lisdexamfetamine and of methylphenidate, at adequate doses • The clinician considers that the medications may be beneficial as an adjunct to the current regimen Due consideration of risks and safety is required, especially if medications are used in combination.	****	⊕◯◯◯ VERY LOW
5.4.5	**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	**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
5.5.2	**CPP**	The following could also be offered to adults with ADHD, in no particular order: • lamotrigine • aripiprazole • agomelatine • armodafinil • desvenlafaxine. Careful monitoring of adverse side effects is required.	NA	NA
5.6	**Factors influencing medication choices**			
5.6.1	**CPP**	For people with ADHD who also have co-occurring conditions (e.g. anxiety disorders, mood disorders, tic disorder or autism spectrum disorder), clinicians should offer the medication choices listed in recommendations 5.2–5.5.	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 could do the following: • stop stimulants and review other medication for ADHD • treat the psychotic or manic episode as necessary • consider introduction of a mood stabiliser • consider alternate treatment for ADHD after the episode has resolved • consider costs and benefits of reintroducing stimulant medication. If stimulant medication is to be reintroduced, take extra precautions in monitoring, such as admitting the person to a hospital/clinic for observation.	NA	NA
5.6.3	**CPP**	Clinicians should consider the impact of appetite suppression due to stimulant treatment when people have a co-occurring eating disorder or other medical conditions 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 could 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**	Short-acting and long-acting 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 treatments**			
5.7.1	**CPP**	Clinicians should arrange regular and frequent follow-up until medication is optimised and stabilised. • Once medication is titrated and 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 conditions, 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 condition, 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 • worsening of mood • increased anxiety • the risk of stimulant diversion • other side-effects.	NA	NA

5.7.6	**CCR**	For people taking medication for ADHD, monitoring should include all the following: • For children and adolescents, measure height every 6 months • For children at any age, measure weight 3 and 6 months after starting treatment and 6 months thereafter, or more often if concerns arise • For children and adolescents, plot height and weight on a growth chart • For adults, monitor weight if indicated • 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 adolescent's growth rate measured by height has significantly decreased over time while using stimulant medication, 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
5.7.7	**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 people with ADHD (or parents/carers) may have difficulty adhering to treatment plans (e.g. remembering to organise repeat prescriptions and collect medication) due to the symptoms of ADHD or their effects. 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 adolescents.	NA	NA
5.8.4	**CCR**	To increase medication adherence in children, clinicians could offer parent/family training (see recommendations 4.2.1, 4.2.2) 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, adolescent, 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**	Medications known to have discontinuation symptoms, such as SSRIs, 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 conditions among people entering the criminal justice system.	NA	NA
6.1.2	**CPP**	Custodial staff and those within the criminal justice system (e.g. police, magistrates) should receive ADHD awareness training.	NA	NA

6.1.3	**CPP**	Treatment in custodial settings should include pharmacological and non-pharmacological appr oaches, 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 processes of administering long-acting stimulant medications to those with ADHD (similar to ways of administering other controlled drugs and ensuring the safety of the person in prison receiving stimulant medication). Specific screening for comorbid substance use disorders should be undertaken before administering stimulant medication.	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 conduct a culturally appropriate screening assessment of ADHD in Aboriginal and Torres Strait Islander peoples. A strengths-based focus should be emplo yed wherever possible. 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**	Culturally and psychometrically validated symptom questionnaires should be developed for ADHD presenting in Indigenous children, adolescents, and adults.	NA	NA
6.2.3	**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. A strengths-based focus should be emplo yed wherever possible and the assistance of a cultural interpreter or Aboriginal and Torres Strait Islander health worker should be sought if needed.	NA	NA
6.2.4	**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 cultures. 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

6.2.5	**CPP**	Non-pharmacological inter ventions need to be culturally sensitive and appropriately tailored for Aboriginal and Torres Strait Islander peoples with consideration for the local cultural context.	NA	NA
6.2.6	**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
6.3	**People with substance use disorders**			
6.3.1	**CCR**	Those working in public and mental health settings should be aware of the high co-occurr ence of substance use disorders in those with ADHD. Clinicians treating ADHD in these settings should routinely screen for problematic substance use or substance use disorders using best-practice screening questionnaires for substance use disorders. Formal diagnosis of substance use disorders in an individual with ADHD should follow recommended guidelines for substance use disorders and include a structured diagnostic interview.	NA	NA
6.3.2	**CCR**	Those working in drug and alcohol settings should be aware of the high co-occurr ence of ADHD and substance use disorders. Clinicians treating substance use disorders in these settings should routinely screen for ADHD using appropriate screening questionnaires for ADHD. Formal diagnosis of ADHD in an individual with substance use disorders should follow recommended guidelines (see 2. Diagnosis).	NA	NA
6.3.3	**CCR**	Screening and diagnostic assessment should take place when the person's substance use is sufficiently stabilised. Only in case of acute intoxication or severe withdrawal symptoms should these assessments be postponed.	NA	NA
6.3.4	**CCR**	Treatment for people with ADHD and substance use disorders should focus on both disorders concurrently, should consider their interrelationship, and should follow the guidelines for each separate disorder and the general guidelines about treatment of people with co-occurring disorders.	NA	NA
6.3.5	**CCR**	In most cases of concurrent ADHD and substance use disorders, clinicians should start treatment aimed at abstaining from or reducing/stabilising the use of substances first, since current substance use disorders may complicate diagnosis and treatment of ADHD. However, start of pharmacological or non-pharmacological tr eatment of ADHD should not unnecessarily be delayed.	NA	NA
6.3.6	**CCR**	Treatment of substance use disorders in patients with ADHD should follow a multimodal treatment approach comprising both pharmacological and cognitive behavioural based interventions.	NA	NA
6.3.7	**CCR**	Clinicians treating ADHD with substance use disorders should be aware of, and monitor for, the risk of misuse and diversion of psychostimulant medication. To minimise risk of diversion and misuse, use of long-acting, rather than short-acting, psy chostimulants should be considered.	NA	NA

6.3.8	**CCR**	Before starting stimulant pharmacotherapy in people with concurrent ADHD and substance use disorders, it is important that the person is abstinent or has reduced/stabilised their substance use. If this is not the case, the clinician should consider non-stimulant pharmacotherapy (e.g. atomoxetine, guanfacine, or bupropion)	NA	NA
6.3.8	**CCR**	Pharmacological treatment of ADHD requires careful titration and monitoring of its effect and possible adverse effects. Higher doses of stimulants may be required in people with ADHD and concurrent substance use disorders than in those without substance use disorders to achieve a favourable effect on both the ADHD symptoms and reduction of substance use.	NA	NA

Considerations – Summary of consultations

The following sections are summaries of consultations with the GDG members regarding service, policy and future research opportunities.

7	Considerations – Service and Policy
7.1	National services
7.1.1	Funding should be made available for an ADHD helpline, accessible to all Australians, consistent with those of other major mental health conditions. This could involve an expansion of the existing unfunded National ADHD Helpline.
7.1.2	Laws and regulations for stimulant prescribing and shared care should be uniform between the states and territories in Australia, and allow for cross-bor der dispensing. They should reflect best practice and evidence of safety and effectiveness.
7.1.3	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.
7.1.4	Eligibility and access to support from the NDIS should be decided based on the functional needs of the person with ADHD, and not based solely on diagnosis.
7.1.5	Primary care and public mental health services should make diagnosis and treatment available to people of all ages with ADHD, as for other mental health conditions.
7.1.6	A system of ADHD-specific peer support should be established to ensure that this support is accessible throughout Australia. Peer-suppor t programs already exist, providing opportunities to explore different models on which to base nationally available ADHD specific peer-suppor t 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.
7.2	Education Settings
7.2.1	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.
7.2.2	Students with ADHD of all ages require reasonable adjustments to be made to maximise their inclusion and learning opportunities. Co-occurring neur odevelopmental disorders including specific learning disorders should be identified and supported. The types and number of adjustments should be decided as part of an individual learning support plan developed with the person with ADHD, their carers, education staff and other relevant clinicians.
7.2.3	Education settings should be supported to implement learning support plans, host inter-agency meetings, and possibly host visiting clinicians to consult and provide intervention recommendations.

7.3	**Service configuration and activities**
7.3.1	Services for people with ADHD should be configured to ensure they are person- and family-centr ed.
7.3.2	Agencies providing services for people with ADHD should collaborate with each other, the care coordinator, and the person with ADHD and/or their family, to provide integrated models of care that encompass recovery principles and with a focus on shared decision-making.
7.3.3	Development of agreed pathways, to simplify navigating the healthcare system for both consumers and clinicians, are needed throughout the lifespan for people with ADHD to ensure seamless transition.
7.3.4	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.
7.3.5	As part of the development of agreed referral and care pathways, all relevant agencies should be consulted and their roles clarified, and where possible, expanded. People with a lived experience of ADHD, including clinicians with ADHD, should be involved to inform the design of services, supports and care pathways.
7.4	**Professional Training**
7.4.1	Information about ADHD and its treatment and support options throughout the lifespan should be included in the curriculums of mental health/developmental disorder training for educators, medical, nursing, pharmacy, and allied health professionals and other relevant professions such as social work, justice system, and child protection.
7.4.2	Organisations that provide services to people with ADHD, including all public health services (child, adolescent, adult), should ensure staff receive appropriate ADHD training including, where appropriate, skills to identify, diagnose, treat and provide ongoing monitoring and support. This includes training and resources for those involved in transitioning people with ADHD from adolescents to adult services.
7.4.3	General practitioners and other specialist medical practitioners, paediatricians, psychiatrists, and geriatricians should be supported to increase their skills in identifying, diagnosing, and treating people with ADHD, including prescribing stimulants.
7.4.4	An ADHD medication prescribing handbook should be developed to provide detailed guidance on treatment choice, initiation, side-effects, dosing, combination therapy and product information, relevant to the Australian context. Training for prescribers should be based on the handbook.
7.4.5	Ongoing professional development for ADHD treatment and care options (both interdisciplinary and discipline-specific) should be made easily available.
8	**Considerations – Research**
8.1.1	A process for setting research priorities should be established, involving all key stakeholders, including people with a lived experience of ADHD, and following established participatory research methods.
8.1.2	Research prioritisation should include individual and health service research and should consider cost-effectiveness and new models of shared care.

Introduction

Introduction

This Australian clinical practice guideline on attention deficit hyperactivity disorder (ADHD) addresses the priorities of people with a lived experience of ADHD, health professionals, educators, and service providers. The guideline integrates the best available evidence with multidisciplinary clinical expertise and consumer preferences to provide clinicians, educators, 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 more than 1 million 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 (NICE) 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.

The accompanying technical report, resources and other relevant documentation can be found at: https://www.aadpa.com.au/guideline/

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 a person's age 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 participation in leisure activities (American Psychiatric Association, 2013).

Inattentive symptoms include difficulty sustaining attention on tasks and directing attention, distractibility and organisational challenges. Hyperactivity refers to excessive motor activity and difficulties being still, particularly in structured situations that require self-control, as well as internal restlessness. 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, adventurousness, and the ability to hyperfocus, which can result in high levels of productivity (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 can result in significant lifelong functional impairment with poor long-term outcomes. The social and economic burden of ADHD in Australia is estimated at $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 is a guideline for the identification, diagnosis and treatment of people with ADHD. 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 identification, 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, nurses (including mental health nurses and mental health nurse practitioners), pharmacists, and for other people involved in the support of people with ADHD, such as educators. It includes guidance for clinicians in education, forensic and addiction service settings. 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 identification, 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 adequate 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), adolescents (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. The guideline does not address drug dosages including maximum daily limits. Before using pharmacological interventions recommended in the guideline, prescribers should consider each 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. Nor does it consider the economic feasibility and cost-effectiveness of recommendations, such as whether medications are on the Australian pharmaceutical benefits scheme (PBS) or the economic impacts of combined medication use. The clinical and organisational impact of cost on recommendations has been considered in GDG meetings using the GRADE approach. The guideline does not cover jurisdictional regulations regarding the prescribing of stimulants.

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 other groups

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

- people who are imprisoned (**section 6.1**)
- Aboriginal and Torres Strait Islander peoples (**section 6.2**)
- people with substance use disorders (**section 6.3**)

Other subgroups that have been considered throughout the guideline include:

- culturally and linguistically diverse communities
- people with co-occurring neurodevelopmental and mental health conditions
- women and girls
- people with low socio-economic status
- children in out of home care
- older adults aged 65 years and above.

Relevant settings

These recommendations are relevant for the identification, diagnosis 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.

The International Classification of Functioning, Disability and Health (ICF) Framework

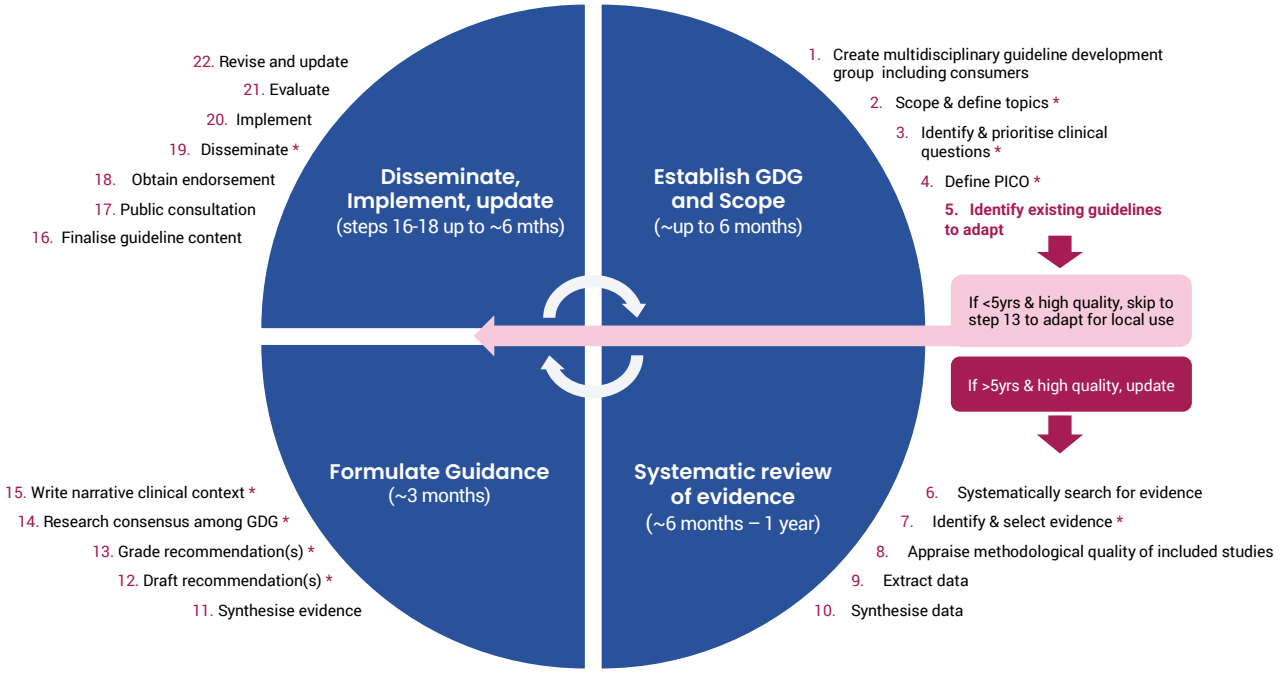
The GDG adopted the World Health Organization's International Classification of Functioning, Disability and Health (ICF) as a conceptual framework to anchor discussions and deliberations. The ICF complements traditional diagnostic systems such as the Diagnostic and Statistical Manual of Mental Disorders – 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.

Guideline development methods overview

The methods used to develop this guideline are aligned with international gold standard Appraisal of Guidelines for Research & Evaluation (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



Identification of clinical priorities in ADHD care

Clinical questions were identified by the Australasian ADHD Professionals Association (AADPA) in consultation with stakeholders. 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 4) and the method for answering each (either a systematic review or narrative review; Table 5)

Table 4. 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 condition/s need to be excluded to make a diagnosis of ADHD?
- Which condition/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 symptom 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 disor ders impact treatment effects?
- Does the optimal treatment approach for ADHD vary when co-occurring disor ders 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 5. 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 ar eas 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, selected based on the expertise within the GDG. Evidence review (selection criteria and systematic evidence search) was not conducted in narrative reviews. • This method applied to questions that were less well suited to a systematic evidence review format (e.g. for questions where the GDG were aware of a paucity of evidence and thus were better suited to a consensus discussion approach). • 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 those areas of greatest controversy • May build upon a NICE evidence review or NICE guideline section • Evidence team completed systematic search. GDG members 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 evidence certainty, 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, using the GRADE framework. The process is described in detail in the **Methods** section.

Guideline Development Group Members

Chairs

- **Professor Katrina Williams**, Head of Department of Paediatrics, 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 Australasian 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**, Australasian ADHD Professionals Association , Victoria
- **Ms Robyn Scarfe**, Australasian 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 - Lived Experience

Appendix 2 lists members' affiliations and representation.

Representation from relevant colleges and societies

Membership included representatives from the following organisations:

- Australasian 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)
- Australian Clinical Psychology Association (ACPA).

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-Stewar t provided perspectives from Aboriginal clinical practice, academic research and advocacy. They co-de veloped Section 6.2 with the GDG. Mr Michael Gathercole, as a member of the GDG, participated in the development of the guideline and all the resulting recommendations.

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 conflicted with, or had the potential to conflict with the duties and responsibilities of membership and the process of guideline development. This included 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** and **Appendix 1** of the Administration report which can be found at: https://www.aadpa.com.au/guideline

Approvals

This guideline has been approved by the NHMRC, APS, RACP, Speech Pathology Australia, Occupational Therarpy Australia, ACPA, AAPI, ADHD WA, ADHD Foundation, RANZCP and ADHD Australia.

There were several organisations that were finalising their endorsement processes at time of print and do not appear here but, the names of those organisations can be found on the website: https://adhdguideline.aadpa.com.au

Methods

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, 2016) 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, education, 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.

Wherever possible AADPA sought to ensure that members of the GDG:

- came from diverse geographical regions, including those in rural settings;
- were diverse in terms of the discipline areas they represented, acknowledging that many different professions are involved in the diagnosis, treatment and support of ADHD;
- were diverse in terms of ethnicity, culture and gender; and
- people with a lived experience of ADHD were involved.

The process for selecting members of the GDG were as follows:

1. expressions of interest were received in response to email call-out by suitably qualified professionals and those with a lived experience of ADHD at the commencement of the guideline development. Many nominations were not endorsed due to conflicts of interest. If conflicts of interest were deemed appropriate and the individual had relevant expertise they were considered for inclusion

2. AADPA President, Professor Mark Bellgrove, requested relevant professional organisations and consumer groups to nominate members for inclusion. Conflict of interests were rigorously assessed. Members representing organisations can be found in section 'Representation from relevant colleges and societies' above

3. where there was a lack of relevant content expertise Professor Bellgrove directly requested the involvement of individuals in the GDG based on their professional expertise and credentials, subject to conflict of interest

4. direct approaches by the guideline project management team to Aboriginal and Torres Strait Islander peoples with relevant expertise were made.

Ethnicity and culture were considered when identifying evidence and when developing all recommendations. Issues related to Aboriginal and Torres Strait Islander peoples were led by an Aboriginal clinical and counselling psychologist, 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. GDG members were informed at this meeting of when input would be requested and the level of input required.

Conflict of interest

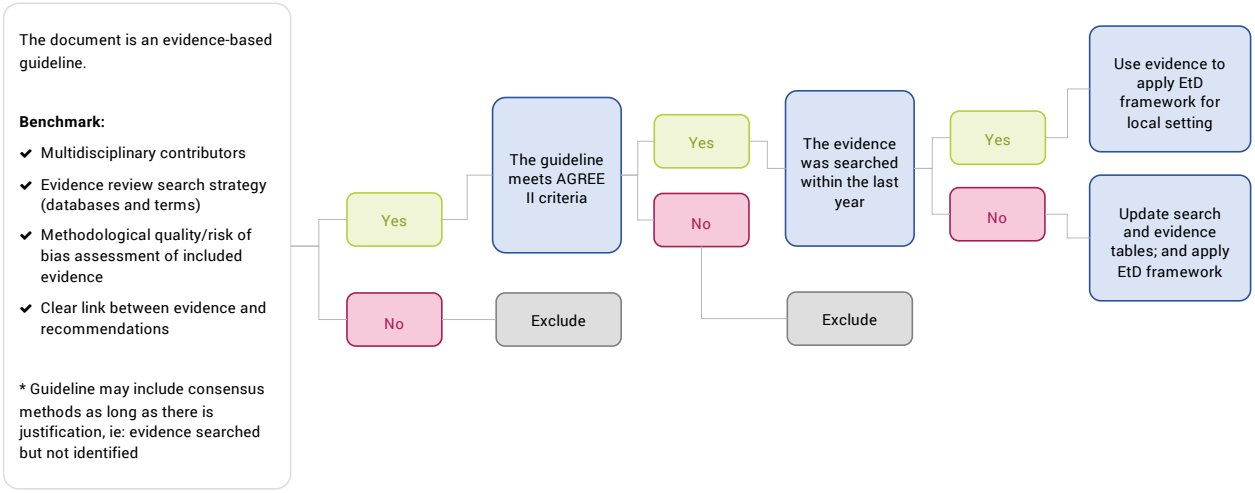
Conflict of interest was managed by the Conflict of Interest Management Group (see Introduction and **Appendix 4**).

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 (prior to 2019) (Figure 2). The objective was to choose an existing evidence-based guideline in which the clinical questions were sufficiently similar to the scope agreed during the stakeholder engagement process led by the Australasian ADHD Professionals Association (AADPA) (Table 4), 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 2. Process for identifying candidate ADHD clinical practice guidelines suitable for adaptation



Notes. EtD, GRADE Evidence to Decision Framework

Search methods

The evidence expert undertook a systematic search for existing guidelines that addressed 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.
- 18 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 and 2018 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 expert 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, AADPA led several rounds of stakeholder engagement, including via face-to-face meetings and email corr espondence. 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 expert 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 6).

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 3). This approach to consensus priority assignment was based on the GRADE approach devised for prioritising clinical questions. The directory of clinical questions (Table 6) lists all questions addressed by this guideline. These questions were rated as 'Important' or 'Critical' and wer e therefore included in the guideline.

Figure 3. 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 (my 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 6. 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? [C]	Chapter 1	-	Section 2.4
Which groups are at high risk of developing ADHD? [A]	Chapter 1	Section 2.2	-
Should screening for ADHD occur in high-risk populations? [C]	Chapter 1	-	Section 2.4
How should ADHD be assessed, diagnosed and monitored, and by whom? [C]	Chapter 2 Principles	-	Section 3.1
Which condition/s need to be excluded to make a diagnosis of ADHD? [C]	Chapter 2	-	Section 3.2
Which condition/s should be considered for a co-occurring diagnosis with ADHD? [C]	Chapter 2	-	Section 3.2
Non-pharmacological interventions			
What is the clinical effectiveness of non-pharmacological interventions for people with ADHD? [A]	Chapter 4	Section 5.1	-
What are the adverse events associated with non-pharmacological treatments for people with ADHD? [A]	Chapter 4	Section 5.1	-
Should treatments be provided individually or in groups? Who should deliver them? [A]	Chapter 4	Section 5.1	-
Is there a role for ADHD coaches? [C]	Chapter 4	-	Section 5.4
Is there a role for peer support workers? [C]	Chapter 4	-	Section 11.2
Is there a role for consumer groups (e.g., online forums)? [C]	Chapter 4	-	Section 11.3
What educational/school/teacher interventions are possible, and are they effective? [A]	Chapter 4	Section 5.1	-

Question	Guideline Section	Evidence Review In Tech Report	Narrative Review In Tech Report
Pharmacological Interventions			
What is the clinical effectiveness of pharmacological treatments for people with ADHD (and what is the optimal sequence?)? [A]	Chapter 5	Section 6.1	-
What are the adverse events associated with pharmacological treatments for people with ADHD? [A]	Chapter 5	Section 6.2	-
How should initial medications be titrated? [C]	Chapter 5		Section 6.3
Which clinicians should initiate pharmacological therapy, and continue it long term? [C]	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? [B]	Chapter 5		Section 6.4
Which factors need to be considered when making initial treatment decisions for ADHD? [B]	Chapter 3		Section 6.4
How should ADHD symptom severity and clinical profile guide treatment decisions? [B]	Chapter 3		Section 6.4
Multimodal treatment			
What is the clinical effectiveness of combined non-pharmacological and pharmacological interventions for people with ADHD? [A]	Chapter 3	Section 7.1	
What are the adverse events associated with combined non-pharmacological and pharmacological treatment for people with ADHD? [A]	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? [B]	Chapter 3 Chapter 5		Section 6.4
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? [B]	Chapter 3 Chapter 5	Section 8.6	
How should treatment effectiveness be monitored and supported? [C]	Chapter 5	-	Section 6.6
How should adequacy of treatment response be assessed? [C]	Chapter 5	-	Section 6.6
What are the indicators of remission and when should treatments be stopped? [B]	Chapter 5	-	Section 6.6
What are the most effective approaches to increasing treatment adherence in ADHD for both non-pharmacological and pharmacological approaches? [A]	Chapter 4 Chapter 5	Section 10.8	
How do co-occurring disorders impact treatment effects? [B]	Chapter 4 & 5	-	Section 6.5

Question	Guideline Section	Evidence Review In Tech Report	Narrative Review In Tech Report
Does the optimal treatment approach for ADHD vary when co-occurring disorders are present? [B]	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? A	Chapter 5	Section 10.5	-
Should 'drug holidays' from pharmacological treatment for ADHD be recommended and if so when? [A]	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? [C]	Chapter 2	-	Section 4.1
At what intervals should clinical care be reviewed for people with ADHD? [C]	Chapter 5	-	Section 6.7
What are shared care models and are they effective? B	Chapter 7	Section 11.5	Section 11.4
What services should prison mental health services provide across life-stages? [C]	Chapter 6	-	Section 11.6
What referral pathways should be established? [C]	Chapter 7	-	Section 12.5
Which agencies should be involved in the treatment and support of ADHD? [C]	Chapter 7	-	Section 11.4
How should services be configured? [C]	Chapter 7	-	Section 11.4
Are health professionals, including psychiatrists, paediatricians, psychologists GPs, nurses, allied health professionals and educators adequately trained to support ADHD? [C]	Chapter 7	-	Section 11.1
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)? [C]	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

A: This question was answered by an evidence review updated from NICE 2018 (Table 5). For detailed methods including selection criteria and search strategy, as well as search results, methodological assessment of included studies and evidence synthesis, please see the technical report.

B: This question was unable to be answered by an evidence review (Table 5), as insufficient evidence was identified. A narrative review was prepared by a GDG member with specific clinical knowledge and experience. For detailed methods including selection criteria and search strategy, as well as search results, please see the technical report.

C: This question was answered by a narrative review (Table 5) prepared by a GDG member with specific clinical knowledge and experience. Evidence review was not conducted and all literature in this section is selected based on the knowledge of the GDG member. This approach was taken as informed by the question prioritisation exercise outlined in the Methods.

Narrative reviews prepared by GDG members

Narrative 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 clinical consensus recommendations (CCR) and/or clinical practice points (CPP) 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 NICE 2018 search date specific for each question (detailed in Technical report).

Additional identified evidence was tabulated, assessed for certainty 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

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.

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 socio-economic 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 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 GDG clinical leads.

In addition to articles of primary studies, systematic reviews that met benchmark criteria (Table 7) and selection criteria (Technical Report) were used if they reported outcomes and data, additional to the highest quality included evidence and/or the search date preceded the highest quality included evidence (see Technical Report for the selection criteria specific to each systematic evidence review).

Where a systematic review met the benchmark criteria but did not meet the selection criteria and contained studies that *did* and *did not* meet the selection criteria, we adopted the systematic review's appraisals of the risk of bias for studies that did meet the selection criteria.

This approach was adopted for efficiency, to optimise the use of resources by avoiding unnecessary duplication of time and work.

For these reasons, we excluded many high-quality systematic reviews of clinical trials evaluating the effectiveness of interventions that had been identified.

Table 7. 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.

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 8).

Table 8. Risk of bias ratings

Rating	Description
Low	All 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.

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 9) adapted from GRADE (The GRADE Working Group, 2009).

Table 9. 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	⊕⊕◯◯	Our confidence in the effect estimate is limited: The true effect may be substantially different from the estimate of the effect.
VERY LOW	⊕◯◯◯	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 certainty of evidence is a continuum; any discrete categorisation involves some degree of arbitrariness. Nevertheless, advantages of simplicity and transparency, outweigh these limitations (The GRADE Working Group, 2009).

Drafting recommendations

Specific, unambiguous, actionable recommendations were drafted by GDG members. For evidence-based recommendations, the GDG members documented their considerations according to the following domains:

- the balance of benefits and harms of the intervention (based on the data reported in the evidence review)
- the certainty of the evidence (based on quality/certainty assessments in the evidence review)
- resource requirements
- equity
- acceptability
- feasibility
- subgroup considerations
- implementation considerations
- monitoring and evaluation
- research priorities using the GRADE evidence-to-r ecommendation framework.

Clinical consensus recommendations were drafted within the narrative review process as described above. Clinical practice points were formulated to address important issues relating to the evidenced-based and clinical consensus recommendations.

Types and wording of recommendations

Recommendation type is either evidence-based (EBR) or clinical consensus (CCR). In addition, clinical practice points (CPP) were included for implementation issues such as safety, side effects and risks (Table 10).

For evidence-based r ecommendations (EBRs) and consensus clinical recommendations (CCRs), and for clinical practice points on some occasions, 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 10: Recommendation types

EBR	Evidence-based recommendation: a structured/systematic 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 (GDG) (see table 4 and Methods for more information about the narrative review approach). 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 GDG prepared a narrative review.
CPP	Clinical practice point: guidance based on expert opinion and clinical experience, provided on important issues arising from discussion of evidence-based or clinical consensus recommendations, outside the scope of the evidence-finding process.

GRADE evidence-to-recommendation framework to achieve consensus

The GRADE evidence-to-recommendation framework drafted by GDG members (described above) was used to document the discussion, judgments and decisions of the GDG including the lived experience and clinical expertise to reach consensus about each evidence-based recommendation.

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 11, was adapted from the GRADE approach (The GRADE Working Group, 2009).

Consensus was achieved through discussion in GDG meetings and surveys to capture final votes. 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, 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 11: 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
Rating	****	***	**	**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.
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 people 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; it is not possible for any recommendation to take into account all of the often-compelling unique features of individual people and clinical circumstances.

Clinical considerations statement

Clinical considerations accompany each set of recommendations. These considerations are documented by the GDG when drafting recommendations and discussing the GRADE evidence-to-r ecommendation framework. Caveats to implementation and considerations, such as barriers to implementation are noted here. The extensive full evidence tables and individual GRADE evidence-to-r ecommendation frameworks supporting each recommendation, can be found in the Technical Report.

Public consultation

Public and targeted consultation of the drafted guideline was open for a period of 35 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 (National Health and Medical Research Council, 2007, 2016). The guideline was changed in response to the public consultation. The full submissions and a public consultation summary report which details the GDG responses to the feedback is available with the accompanying documentation at https://www.aadpa.com.au/guideline.

External review

The guideline was reviewed independently by relevant professional experts, professional colleges and societies and through public consultation. An independent AGREE II assessment was also conducted. The guideline was modified in response to feedback from these reviews.

Scheduled review and update of the guideline

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

- there is a change in the indications registered by regulatory bodies for any medication 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.

Principles and assumptions

Principles and assumptions

Questions about good clinical practice in the care of people with 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, pharmacists, 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 symptom severity and clinical profile guide treatment decisions?

These questions have been addressed in part by the underlying principles described here. 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-disciplinar y framework and often involves multiagency contributions. 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.

Service 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 also be inclusive, provide choice and give control and include other stakeholders. Best practice also requires a trauma-informed approach and enables supported decision making. Best practice should also follow the latest evidence-based guidance wherever this is evidence is available.

Consent

It is clear from following these best practice principles that the person will be fully informed and involved in treatment decisions and will need to consent to whatever is agreed (and this needs to be formally recorded). The professional has a duty to ensure the person has the necessary capacity to consent, and where this might be in doubt, capacity is formally evaluated, and where it is absent (for example, in younger children), consent is obtained from an appropriate substitute decision maker such as a parent/carer.

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 medications, prescribing, off-label 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, and that this is within their area of expertise (for example, paediatricians or child and adolescent psychiatrists for children and adolescents, and adult psychiatrists for adults
- seek peer review, supervision or second opinion when needed.

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

Services

Services, whether they be health, education or justice related, have the responsibility to deliver high-quality care or education to people with ADHD. In order to enable professionals to provide optimal education, 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 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 education or care, will maintain partnerships with people with ADHD and their family and carers, will maintain trust, honesty, and respect, and will act with sound ethical principles.

Services should strive for equitable access to timely, high-quality education or 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 discriminate 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 Professionals, above), which are within their area of expertise.

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 a lived experience of ADHD' are examples of 'person-first language'. In contrast, 'identity-first language' puts the disorder first (for example, 'ADHDer' or '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 Australasian ADHD Professionals Association (AADPA) and endorsed by a range of national and international professional and consumer organisations (Table 13). 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 our 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 13: 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

Background

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 a person's age 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 fifth 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, and often this is not until adulthood or later in adulthood for some.

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 the inattentive type (3.7%) was more common than the combined (1.9%) and hyperactive-impulsive types (1.9%).

The second survey (Young Minds Matter), conducted in 2013/14 through interviews with 6,300 parents/carers, 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 adolescents 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. However, the study did not use clinical diagnoses or clinician assessment of ADHD, drew from a small sample size and used DSM-III and DSM-IV criteria via telephone interviews with researchers (Ebejer et al., 2012).

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 of brain imaging data has revealed that individuals with ADHD show less activation in regions of the brain that are associated with executive functions such as inhibitory control (Hart, Radua, Nakao, Mataix-Cols, & Rubia, 2013). Several 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.

Genetics

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). It has been considered as both a continuous trait that varies in the general population, and as a discrete diagnostic category. Recent genome-wide association meta-analysis identified 12 independent genomic loci that increase susceptibility to ADHD (Demontis et al., 2019).

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 (for example, 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). The non-stimulant medications atomoxetine also raises levels of both noradrenaline and dopamine in the prefrontal cortex (Gamo et al., 2010), whereas other non-stimulants such as clonidine or guanfacine act more specifically to affect 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-P oli, Rubia, Rossi, Sartori, & Balottin, 2012).

Cognitive differences

Neuropsychological studies show that ADHD is associated with difficulties with executive functions such as working memory, planning, sustained attention and inhibitory control, and maintaining consistent performance over time (Faraone et al., 2021). People with ADHD may also show a preference for smaller immediate rewards over larger delayed rewards and may display impulsive decision making.

There is marked heterogeneity among people with ADHD in terms of neuropsychological performance; some people with ADHD may experience few difficulties across these domains whereas others may experience many more (Nigg, Willcutt, Doyle, & Sonuga-Bark e, 2005). This neuropsychological heterogeneity likely reflects multiple pathways in the brain that are relevant to the aetiology of ADHD.

Neuropsychological difficulties may impact people with ADHD across a broad range of settings, including educational and occupational settings, and may impact their ability to engage with treatment.

Brain Imaging

Large-scale brain imaging consor tia, 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 functional MRI 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. T ypically, investigators are interested in patterns of correlated activity across the brain. Such analyses have identified several 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 the 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

Several environmental factors that may contribute towards the risk of developing ADHD have emerged. 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 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 are 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 (for example, death of a close relative during pregnancy), trauma (for example, sexual abuse), 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.

Gene–environment interactions are also important to consider. Relevant parental characteristics 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-y ear follow-up, mean age range 22–41 y ears). 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, & Cor tese, 2018; Faraone et al., 2015; Li, Xie, Lei, Li, & Lei, 2020; Lugo et al., 2020). Health-r elated 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 r eviewed above. One community-based cohor t 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 disor ders, 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-r eported emotional and behavioural functioning) and autism symptom severity (parent-r eported emotional functioning and parent-r eported 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 socio-economic 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 wer e 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-corr ection (OR = 2.48, 95% CI 2.22-2.76) or an incarceration record (OR = 2.63, 95% CI 2.01-3.44) compar ed to boys without ADHD (Silva, Colvin, Glauert, & Bower, 2014). Odds of having a community-corr ection (OR = 2.86, 95% CI 2.03-4.03) or incar ceration record (OR = 7.27, 95% CI 2.29-23.08) wer e 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 that 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 pre-schoolers to be active, impulsive and unable to sit still and concentrate for long periods of time, and therefore educational settings for pre-schoolers 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).

Pre-schoolers who do have ADHD can 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 pre-schoolers (Franke et al., 2018; Halperin & Marks, 2019; Willcutt, 2012), and the DSM-5 items assessing hyperactivity/impulsivity clearly distinguish between pre-schoolers with and without ADHD (Halperin & Marks, 2019).

Co-occurring disorders are common in pre-schoolers 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 pre-schoolers tends to persist into childhood and adolescence (Halperin & Marks, 2019; Wigal et al., 2020).

Children and adolescents

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, common difficulties in peer relationships 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 adolescents 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) affect 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 (American Psychiatric Association, 2013) includes examples alongside each ADHD symptom to enable better identification of symptoms in adults (see Table 12 for examples).

Table 12. DSM-5 ADHD symptoms with examples for adolescents/adults

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	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	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	Starts tasks but quickly loses focus	Unable to play or engage in leisure activities quietly	
Has difficulty organising tasks and activities		'On the go' acting as if 'driven by a motor'	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	Preparing reports, completing forms	Talks excessively	
Loses things necessary for tasks or activities	Wallets, keys, glasses, phone	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	While waiting in line
Is forgetful in daily activities	Chores, running errands, returning call	Interrupts or intrudes on others	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. A review of 7 North American controlled prospective follow-up studies found high rates of symptomatic persistence (60–86%) (Cherkasova et al., 2021). 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, Bijlenga, 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, Bijlenga, et al., 2019).

Mind wandering and mental restlessness may also be present (Kooij, Bijlenga, 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, Bijlenga, 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, Bijlenga, et al., 2019). Impulsivity in adults can manifest in excessive spending, binge eating, interpersonal conflict, risk taking, addictions, and talking excessively or interrupting others (Kooij, Bijlenga, et al., 2019).

Adults with ADHD are equally likely to meet criteria for one or more co-occurring disorder and experience significant impairments in daily life including occupational and relationship functioning, such as 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 conditions or falsely considering ADHD when another condition 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 conditions

What other conditions commonly co-occur with ADHD?

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

This includes other neurodevelopmental disorders: specific learning disorders, intellectual disability, language disorders, tic disorders, autism spectrum disorder, developmental coordination disorder; disruptive, impulse-control

and conduct disorders: oppositional defiant disorder, conduct disorder, intermittent explosive disorder; anxiety disorders; depressive disorders: disruptive mood dysregulation disorder, major depressive disorder, persistent depressive disorder; and substance use disorders in adolescence (American Psychiatric Association, 2013; Gnanavel et al., 2019; Reale et al., 2017).

The most common co-occurring conditions in childhood are specific learning disorders, oppositional defiant disorder, language disorders, autism spectrum 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). In addition to those conditions outlined for children and adolescents, adults with ADHD may also experience higher prevalence than the general population of: substance use disorders; bipolar disorders; obsessive compulsive disorder; cluster B and C personality disorders (American Psychiatric Association, 2013; Canadian ADHD Resource Alliance (CADDRA), 2018; Gnanavel et al., 2019; Katzman et al., 2017; Kessler et al., 2006; Reale et al., 2017; Schiweck et al., 2021).

Chapter 01
Identification

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 conditions. Individuals may come to clinical attention for co-occurring conditions and receive treatment for the co-occurring condition, 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 use disorders, 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 order of risk):

- people with autism spectrum disorder
- children in out of home care
- people with epilepsy
- people with intellectual disability
- people with oppositional defiant disorders
- people with anxiety disorders
- people with preterm birth
- people with tic disorders.

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 disorders, 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 (in order of risk):

- people with borderline personality disorder
- people with internet addiction
- people with psychotic disorders
- people with substance use disorder
- people with intermittent explosive disorder
- people with a family history of ADHD
- people with suicidal ideation/behaviour.

Summary of narrative review

For several groups, identified studies did not meet the criteria for inclusion in the systematic review as indicated in recommendations below by the hash symbol (#). However, several systematic reviews or high-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% of adults in prison had ADHD (Young, Moss, Sedgwick, Fridman, & Hodgkins, 2015b), echoed in a more recent review (Baggio et al., 2018). There is a high prevalence of ADHD in children and adolescents 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 foetal 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 weight has also been associated with an increased risk of ADHD (Momany, Kamradt, & Nikolas, 2018). There also may be higher prevalence of ADHD in people with eating disorders such as binge eating disorders than that found in the general population (Wentz et al., 2005; Yates, Lund, Johnson, Mitchell, & McKee, 2009). Similarly, there is an increased risk of ADHD among people with sleep disorders (Cortese, Faraone, Konofal, & Lecendreux, 2009; Sedky, Bennett, & Carvalho, 2014), or problem gambling (Dowling et al., 2015).

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 hyperactivity-impulsivity symptoms in girls, 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). The symptoms of ADHD may also vary during the menstrual cycle, and reproductive stages such as pregnancy and menopause (Haimov-Kochman & Berger, 2014; Roberts, Eisenlohr-Moul, & Martel, 2018), although evidence is currently limited (Camara, Padoin, & Bolea, 2021). This should be considered during the diagnosis and treatment of ADHD in women and girls.

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. Evidence was not identified in the evidence review for the groups indicated in recommendations by the hash symbol (#). However, the experience of the Guideline Development Group (GDG) and emerging research outlined in the narrative review, suggested that these groups experience a high prevalence of ADHD and can frequently be diagnosed late or have a missed diagnosis. These groups include girls and women, and the GDG agreed a specific recommendation is warranted to draw clinical attention to women and girls with ADHD.

Recommendations

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 children, adolescents, and adults, have an increased prevalence of ADHD, compared with the general population: **Children:** • in out of home care • diagnosed with oppositional defiant disorder or conduct disorder# **Children and adolescents:** • diagnosed with anxiety disorders • with epilepsy • with a history of substance abuse# **Adults:** • with any mental health disorder (including substance use disorders, borderline personality disorder, intermittent explosive disorder, internet addiction, psychotic disorders, binge eating disorder#, gambling disorder#) • who experience suicidal behaviour or 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# • with anxiety, depressive or bipolar and related disorders# • with sleep disorders# # Indicates a clinician consensus recommendation (CCR)	****	⊕⊕◯◯ LOW to ⊕⊕⊕⊕ HIGH
1.1.2	**CPP**	Clinicians should be aware that ADHD could be under-r ecognised 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, such as an anxiety or depressive disorder	Not Applicable (NA)	Not Applicable (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 address how to recognise ADHD in its various presentations or in combination with other conditions, particularly in high-risk gr oups.

Professionals to receive training include clinicians (whether general practitioners, paediatricians, child and adolescent psychiatrists, adult psychiatrists and forensic psychiatrists, psychologists, allied health and support worker professionals, nurses, and pharmacists), and educators at all levels of the education system including technical and further education (TAFE) and tertiary settings. Such training is also needed for employees who come into contact with high-risk gr oups, such as prison officers (see section 6.1), people working in addiction settings (see section 6.3) and providers of out-of-home car e.

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 regional and 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, Streatfeild, 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, Streatfeild, et al., 2020). Early identification of people with ADHD is needed to allow for early intervention to occur as early in life as possible, to reduce impacts on functioning and maximise positive outcomes.

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 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

Screening can include population-based screening, where the screening test is offered to all individuals within a target group (such as all children attending primary school), or targeted risk screening performed in high-risk groups. Surveillance involves ongoing gathering of information to identify a condition. A screening test may involve risk scores on a rating scale, observation of signs and symptoms or laboratory tests.

There are various screening tools for ADHD (Box 1). These include clinician observation, self-report, parent-report, teacher-report or other informant-report. For children and adolescents, screening tools include (but are not limited to) the Conners' Rating Scales and Strengths and Difficulties Questionnaires, and for adults the Adult ADHD Self-Report Scale (ASRS). The reliability and validity of such tests needs to be carefully established, to prevent positive screening for individuals who do not have ADHD (false positives), which would increase healthcare costs, while ensuring accurate identification of true cases so individuals with ADHD do not go undetected in the screening process (false negatives).

Sensitivity, or the true positive rate, is the proportion of people with ADHD who are correctly identified. Specificity, or the true negative rate, is the proportion of people without ADHD who are correctly identified as such. Acceptable levels of sensitivity and specificity are usually both set at around 80%, which may depend on the population being screened and associated costs and benefits of different levels. Thus, if sensitivity is 80% this means 20% of true cases of ADHD are missed. A specificity of 80% means that 20% of positive screeners will not actually have ADHD. Often, as the sensitivity of a measure increases the specificity decreases, resulting in a high number of false positives.

Box 1 shows examples of commonly used rating scales used for screening for ADHD. These are provided for illustrative purposes only and are not an exhaustive list. The sensitivity and specificity of each rating scale in the proposed setting should be carefully reviewed by the clinician before use.

Children and Adolescents

A recent systematic review and meta-analysis (Mulraney et al., 2021) explored screening tools for ADHD in children and adolescents. They found none of the screening tools met acceptable levels of sensitivity and specificity (defined as both over 80%). Their meta-analysis comparing high-risk with community-based study populations found no

significant difference in both sensitivity and specificity. Thus, current screening tools for children and adolescents do not meet acceptable sensitivity and specificity rates for universal screening. While ADHD is likely under-diagnosed and under-treated in Australia, there is a lack of accurate ADHD screening tools to enable cost effective population-based screening in children and adolescents.

Box 1 Example ADHD screening rating scales

Young children	Children and adolescents	Adults
• Achenbach System of Empirically Based Assessment - Attention Problems scale • Child Behaviour Checklist DSM Oriented ADHD subscale	• Achenbach System of Empirically Based Assessment - Attention Problems scale • Child Behaviour Checklist - DSM Oriented ADHD subscale • Strengths and Difficulties Questionnaires (Hyperactivity subscale) • Conners' 3 short form • Swanson, Nolan and Pelham (SNAP) scale • ADHD Rating Scale 5 • Vanderbilt ADHD Diagnostic Rating Scale	• WHO Adult ADHD Self Report Scale (ASRS) (Part A) • Conners' Adult ADHD Rating Scale – Short • Wender Utah Rating Scale (WURS) – Short

Adults

In adults, a number of ADHD screening tools exist (Taylor, Deb, & Unwin, 2011) including the World Health Organization-developed Adult ADHD Self-Report Scale (ASRS) and the Wender Utah Rating Scale (WURS). The ASRS was explored in one study with sensitivity and specificity rates below 80% (Kessler et al., 2005) for the general population. One study of individuals with ADHD and randomly selected controls from the population found both sensitivity and specificity levels at 80% and above for both the ASRS and WURS. There was better performance by the longer WURS than the ASRS for specificity at higher sensitivity levels (Brevik, Lundervold, Haavik, & Posserud, 2020). Other studies of the DSM-5 version of the ASRS, the ASRS-5 have found both specificity and sensitivity levels above 80% in non-clinical controls (Baggio et al., 2021; Ustun et al., 2017).

In higher risk groups there have been various studies of ADHD screening tools. In individuals with major depression, the ASRS-v1.1 showed both specificity and sensitivity below the required levels (Dunlop, Wu, & Helms, 2018). There was acceptable sensitivity but not specificity in studies of substance use disorders (Daigre & Ramos-Quiroga, 2009; Van de Glind et al., 2013) and incarcerated women (Konstenius, Larsson, Lundholm, Philips, van de Glind, Jayaram-Lindström, et al., 2015).

A modified version of the Barkley Adult ADHD Rating Scale (BAARS-IV) did have the required sensitivity and specificity levels in adult prison inmates (Young, González, et al., 2016). Studies of the ASRS-5 found acceptable sensitivity but not specificity in individuals with bipolar disorder and/or borderline personality disorder (Baggio et al., 2021) and other clinical groups (Ustun et al., 2017). False negatives may also be an issue in substance abuse disorders such as alcohol abuse (Luderer et al., 2019). Thus, the screening measures may have difficulties differentiating adult ADHD from other psychiatric conditions that have similar or overlapping symptoms.

Population-level screening

It is acknowledged that there may be frequent underdiagnosis of ADHD in a range of education (primary, secondary or tertiary) and health settings. However, based on the levels of screening test accuracy noted above, universal screening for ADHD should not occur at the population level (for example, in preschools, primary, secondary schools and universities/TAFEs).

High-risk group screening

While there is an increased risk of ADHD in certain high-risk groups (see 2.1), accurate screening tools are lacking for some groups. Commonly used ADHD screening measures may result in low specificity (for example, high false positives) in high-risk groups such as those with other mental health conditions with overlapping symptoms. However, 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.

Services and clinicians should be aware of the risk of identifying false positives and the implications for their services, such as additional assessment costs, and the benefits of identifying people with ADHD, should they choose to implement screening. Positive screening should be followed by further assessment for ADHD. Additional research on screening tools needs to be conducted to establish higher levels of sensitivity and specificity. Importantly, 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

No	Type	Recommendation	Strength	Certainty
1.2	**Screening and identification**			
1.2.1	**CCR**	Universal screening for ADHD should not occur at the population level (e.g. in pre-schools, primary and secondary schools).	NA	NA
1.2.2	**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.	NA	NA
1.2.3	**CCR**	Clinicians conducting mental health/psychiatric diagnostic assessments with people from high-risk groups (as identified in high-risk groups recommendations 1.1.1) could screen for ADHD.	NA	NA
1.2.4	**CPP**	Screening for ADHD in high-risk groups should occur when the person: • does not respond to treatment for high-risk condition as expected, or is unable to adhere to their treatment protocol • often has difficulty attending appointments on time or forgets appointments • show signs of ADHD symptoms such as restlessness, difficulty maintaining routines, lack of time awareness, poor working memory, disorganisation, forgetfulness, and distraction that: • are not explained by other psychiatric diagnoses • have resulted in, or are associated with, clinically significant psychological, social and/or educational or occupational impairment.	NA	NA
1.2.5	**CCR**	Individuals who screen positive should undergo further diagnostic 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, '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 socio-economic status may remain under diagnosed.

See **Technical Report, section 2.4** for further details.

Chapter 02
Diagnosis

Chapter 2. Diagnosis

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 diagnostic assessment 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 (DSM-5) (American Psychiatric Association, 2013) and the International Classification of Diseases (ICD) 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 multiple 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. Some general guidance is provided below regarding the diagnostic process for ADHD. However, it is noted that psychometric/neuropsychological evaluation (including IQ/cognitive, and educational assessment) could assist with identifying differential and co-occurring conditions when there is diagnostic uncertainty. For example, it can assist with differentiating between conditions that present with similar symptomology, and for identifying specific language and learning disorders. Psychometric and neuropsychological evaluation can also assist with treatment planning and may help identify and direct which intervention strategies and domains are best to target, given the cognitive strengths and challenges of the person.

Clinical Interview

Clinical interviews are usually carried out by clinicians experienced in the diagnosis of developmental and mental health disorders such as paediatricians, psychiatrists and psychologists. These may be informal or employ a semi-structured approach for the diagnosis of ADHD. For example, the Diagnostic Interview for ADHD in Adults (DIVA) (Kooij, Franken, & Bron, 2019). The selection of these should be based on awareness of sensitivity and specificity metrics and the experience of the clinician in undertaking such an assessment.

The aim of the interview is to detail the full range of symptoms and signs, their history including onset, severity and functional impacts, as well as gathering information about the person's strengths, and helpful coping strategies. Mental health assessment should include mental health/psychiatric history, and assessment for co-occurring

psychiatric conditions. Developmental history, family history, health, social, educational and demographic information, and information about past treatment, should also be gathered. A risk assessment and assessment of current mental state should be conducted as part of the interview. The interview can also highlight any further, more specialist assessments, that might be necessary to facilitate diagnosis and treatment planning.

A detailed clinical interview may take between 2 and 3 hours and may be arranged over several sessions. For children and adolescents, time is usually set aside to see them separately and also their parents/carers. Other informants may provide additional information and perspectives, such as educators, parents, and partners. This includes requesting access to any prior reports from other health professionals, and educational reports (primary, secondary, tertiary) for the clinician to review for identification of symptoms and functional impacts at different developmental stages. This also involves requesting adults provide their educational reports from childhood/adolescence if available.

Standardised rating scales

Rating scales can assist with the evaluation of mental health symptoms in adults and the profile of emotional and behavioural symptoms across domains for children and adolescents. They can provide normative data to enable comparisons with the general population, and/or specific clinical groups. Broad-band rating scales evaluate behavioural and psychosocial functioning. Narrow-band scales assess for the specific symptoms of ADHD, or the presence of other specific conditions, such as depression or anxiety disorders when these are indicated. Consideration regarding the selection of rating scales includes understanding inter-rater reliability, validity, sensitivity and specificity levels. It is noteworthy that many scales that assess developmental appropriateness will rely on the rater to judge according to what is considered normal for the child's age. This may be difficult for non-expert raters and result in errors of interpretation.

Examples of commonly used narrow-band ADHD rating scales are listed in Box 2. These are provided for illustrative purposes only and the sensitivity and specific of each should be understood for the group and setting under consideration, before use. This is not an exhaustive list. For adults, retrospective assessment of childhood/adolescent ADHD symptoms can be conducted by informants completing rating scales used to assess childhood/adolescent symptoms, based on their recollections of the person at this age. Some adult rating scales such as the Wender Utah Rating Scale (Ward, 1993) assess childhood rather than current adulthood symptoms.

Box 2. Example ADHD rating scales to assist in the diagnosis of ADHD

Young children	Children and adolescents	Adults
• Achenbach System of Empirically Based Assessment - Attention Problems scale • Child Behaviour Checklist - DSM Oriented ADHD subscale • Brown Attention Deficit Disorder Symptom Assessment Scale (BADDS)	• Vanderbilt ADHD Diagnostic Rating Scale • Conners' 3 • Swanson, Nolan and Pelham (SNAP) scale • ADHD Rating Scale 5 • Brown Attention Deficit Disorder Symptom Assessment Scale (BADDS)	• WHO Adult ADHD Self Report Scale (ASRS) (Part A + B) • Conners Adult ADHD Rating Scale • Wender Utah Rating Scale (WURS) • Brown Attention Deficit Disorder Symptom Assessment Scale • Barkley Adult ADHD Rating Scale-IV

Educational and occupational functioning

An understanding of the child, adolescent or adult's performance and adjustment in education settings such as school or university, or an adult's functioning in the workplace, is an important component of the assessment process. Educators may provide information through broad or narrow band rating scales, or via interview, including detail on social and academic functioning, or information can be gathered through reviewing school reports. Observation in educational settings may also be performed by the clinician in the classroom or less structured situations such as the school playground.

Medical assessment

Medical assessment is an important part of the assessment. Medical assessment can exclude undiagnosed disorders with symptoms that in rare instances may mimic or cause some aspects of ADHD, for example, hearing impairment or epilepsy. Medical assessment can also assess for co-occurring developmental, physical, neurological and genetic conditions that may have increased risk of ADHD. This includes the possible contribution of prenatal and perinatal factors known to increase the risk of development of ADHD. Health problems which can exacerbate ADHD, such as sleep deprivation and nutritional deficiencies, also need to be considered as part of the medical assessment

Other assessment for co-occurring conditions

Psychometric or neuropsychological assessment can be undertaken if there are suspected learning disorders suggested by poor reading, writing or mathematics skills. These can also be undertaken if there is suspected intellectual disability, or other cognitive or memory difficulties, or dementia. Similarly, speech and language assessment should be undertaken if indicated.

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

No	Type	Recommendation	Strength	Certainty
2	**Diagnosis**			
2.1	Diagnosis			
2.1.1	**CPP**	Clinicians conducting diagnostic assessments should be: • appropriately registered (such as with Australian Health Practitioner Regulation Agency) (see Principles and assumptions section) • adequately trained in diagnostic assessment using the Diagnostic and Statistical Manual of Mental Disorders (DSM) and/or International Classification of Diseases (ICD) • experienced with conducting clinical interviews, administering and interpreting standardised rating scales, and assessment of functional impairment • experienced in ADHD diagnostic assessment or undergoing ADHD-specific supervision with an experienced clinician.	NA	NA
2.1.2	**CCR**	Assessment for diagnosis of ADHD should include all of the following: • a full clinical and psychosocial assessment, including discussion about the person's symptoms and strengths and how these present in the different domains and settings of the person's everyday life • a full developmental, mental health and medical history • observer reports and assessment of the person's symptoms and mental state • a medical assessment to exclude other causes of the symptoms and identify any associated disorders that also require investigation, intervention and support. Medical investigations should only be performed if clinically indicated.	NA	NA

2.1.3	**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 • symptoms cause clinically significant 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) • symptoms are pervasive, occurring in two or more important settings including social, familial, educational and/or occupational settings. • symptoms are assessed in the context of the person's age, developmental level and intellectual ability • include an assessment of the person's needs, functional impairments, participation and quality of life • include an assessment of possible differential conditions or co-occurring physical and mental health/neurodevelopmental disorders, social, familial, and educational or occupational circumstances and physical health • include an assessment of the person's strengths, and factors the person may have identified that minimise symptoms or their impact • for children and adolescents, enquire about family functioning and parents' or carers' mental health, to enable provision of support for parents/carers at the time of diagnosis.	NA	NA
2.1.4	**CCR**	A diagnosis of ADHD should not be made solely based on rating scales or observational data. However, rating scales assessing ADHD symptoms (See Box 2 for examples) are valuable adjuncts to the assessment process.	NA	NA
2.1.5	**CCR**	Observations from more than one setting and reporter (e.g. a teacher, in the case of children) should be used to confirm if symptoms, function and participation difficulties occur in more than one setting.	NA	NA
2.1.6	**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
2.1.7	**CPP**	Clinicians should consider the different presentations of ADHD and the fact that many children and adults may not present with the most visible symptoms of hyperactivity/impulsivity. Clinicians should be aware that inattentive symptoms may not be identified until secondary school (or later), following increased demands for organisation and independent study or work. Clinicians should also be aware that people may have developed compensation strategies that may mask symptoms.	NA	NA
2.1.8	**CPP**	The views of people with ADHD, including children and adolescents, should be considered when determining the importance of their symptoms and limitations.	NA	NA

Clinical considerations for implementation of the recommendations

Current barriers to diagnostic and treatment services for people with ADHD in Australia include insufficient ADHD-specific clinician expertise and limited public, or low-cost diagnostic services with resources to diagnose ADHD, particularly for those with low socio-economic status and those in regional, rural and remote areas of Australia. Implementation of these recommendations may be impacted by time and funding constraints that may prevent clinicians from conducting thorough diagnostic assessments.

See **Technical Report, section 3.1** for further details.

2.2 Co-occurring conditions and differential diagnosis

Clinical questions

Which conditions need to be excluded to make a diagnosis of ADHD?
Which conditions should be considered for a co-occurring diagnosis with ADHD?

Clinical practice gaps, uncertainties and need for guidance

A consistent diagnosis and monitoring process is needed for accurate diagnosis of ADHD and co-occurring diagnoses in the Australian context. It is important that clinicians are aware of which conditions commonly co-occur with ADHD (see section 1.1), as the presence of a co-occurring condition may result in a missed diagnosis of ADHD, or a missed diagnosis of a co-occurring condition when ADHD symptoms are present.

Summary of narrative review

Co-occurring conditions

A high proportion of people with ADHD have co-occurring neurodevelopmental, mental health and medical conditions (**Background section; High risk groups section 1.1**). ADHD can be diagnosed in the presence of other conditions.

In children the most common co-occurring disorders are oppositional defiant disorder, language disorders, autism spectrum disorders and anxiety disorders, with depressive disorders and substance use disorders emerging in adolescence. Specific learning disorders also commonly occur in people with ADHD and involve difficulties in reading, written expression or mathematics (DuPaul, Gormley, & Laracy, 2013). 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). Medical conditions, such as epilepsy, acquired brain injury, and foetal alcohol spectrum disorder can co-occur with ADHD (Ilie et al., 2015; Lange, Rehm, et al., 2018). For people with ADHD and a co-occurring condition, the onset, duration and pattern of functional impact can help differentiate the effects of ADHD from those of the other condition, to help guide the treatment plan.

Differential diagnosis

Differential diagnosis involves differentiating between two conditions which share similar symptoms. Several medical disorders can be present and have symptoms and signs similar to those of ADHD. For example, 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). Clinicians should conduct a comprehensive assessment (including history and examination) to identify any possible differential medical causes for ADHD. The majority of people with ADHD do not need laboratory investigations as part of their differential diagnostic assessment. In some circumstances, specific laboratory tests may be needed to exclude a suspected medical cause of ADHD symptoms.

In addition to medical conditions, neurodevelopmental and mental health conditions should be considered during differential diagnosis. This is due to their high level of co-occurrence and need to be identified and treated, or they may be differential diagnoses potentially misdiagnosed as ADHD (American Psychiatric Association, 2013).

Given the symptoms of ADHD may overlap with symptoms of other related conditions, careful consideration of the onset and course of symptoms is required to make decisions about differential diagnosis. For example, difficulties with concentration and focusing attention that are associated with a major depressive episode are usually limited in duration, whereas attention problems due to ADHD are lifelong. For each condition that may be a differential diagnosis with ADHD, consider the overlapping symptoms and those that are distinct to the differential condition. As noted in section 2.1, use of broad-band rating scales may assist to identify possible differential conditions. Narrow-band rating scales for identified possible differential diagnoses may assist to provide further clarification. Neuropsychological evaluation may also assist with differential and co-occurring condition diagnosis when there is

diagnostic uncertainty, as noted in section 2.1. Best-practice guidelines for the diagnosis of the identified differential or co-occurring conditions should be consulted. There are no specific conditions that must be excluded for a diagnosis of ADHD. DSM-5 provides further specific advice on differential and co-occurring diagnoses (American Psychiatric Association, 2013).

Recommendations

No	Type	Recommendation	Strength	Certainty
2.2	**Co-occurring conditions and differential diagnosis**			
2.2.1	**CCR**	As ADHD commonly co-occurs with other medical and neurodevelopment/mental health conditions (see recommendations 1.1.1, 1.1.2), the diagnosis of ADHD should prompt consideration of the presence of other conditions, including those noted in high-risk groups recommendation 1.1.1. Clinicians should be aware that some conditions, such as substance use, anxiety and depressive disorders, may be a consequence of undiagnosed and/or untreated ADHD.	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, such as: ◦ hearing or vision impairment ◦ thyroid disease ◦ anaemia ◦ other conditions as noted in recommendation 1.1.1 • 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 for any co-occurring conditions should be offered. Treatment approaches for co-occurring conditions should follow best-practice guidelines for each co-occurring condition, but with treatment delivery methods adjusted to account for ADHD symptoms. For example: • using strategies to increase adherence to medications (see 5. Pharmacological interventions) and non-pharmacological treatment (see 4. Non-pharmacological interventions) • providing information to people with ADHD based on strategies identified in 5.8.2 • being aware of the impacts of attention and hyperactivity/impulsivity symptoms, on the ability to attend and participate in treatment sessions and complete tasks outside of session.	NA	NA

Clinical considerations for implementation of the recommendations

These recommendations are consistent with the existing practice of conducting differential diagnostic assessments for other conditions. While training in differential and co-occurring diagnosis is usual practice for those involved in the diagnosis of neurodevelopmental and mental health conditions, specific information on ADHD should be covered by training, as recommended above. It is noted there is a lack of research on co-occurring conditions in particular subgroups, including Aboriginal and Torres Strait Islander peoples, see section 6.2. Feasibility may be impacted by time and funding constraints that may prevent clinicians from conducting thorough diagnostic assessments.

See **Technical Report, section 3.2** for further details.

2.3 Information needs after the diagnosis of ADHD

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 condition.

Summary of narrative review

There is no robust research evidence 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 adequately resourced ADHD-specific helplines to provide services for all Australians with ADHD. The ADHD Foundation runs the National ADHD Helpline, but it relies solely on volunteers, so does not have the capacity to service the whole 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.

The composition of consumer group falls into three broad membership categories:

- national alliance groups, which are 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 having a special interest in a particular health disorder, such as ADHD (Jones, Baggott, & Allsop, 2004).

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

Recommendations

No	Type	Recommendation	Strength	Certainty
2.3	**Information needs after the diagnosis of ADHD**			
2.3.1	**CCR**	During the diagnostic process and ongoing 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 tr eatments, 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 that may affect ADHD symptoms or result from them, 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, which may vary due to 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 person function to meet their own realistic goals • 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.	NA	NA
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) • up-to-date, r eliable and reputable websites • support for education and employment • eligibility for disability support • eligibility for government benefits and allowances, including Carer Allowance provisions People who have had an assessment, but whose symptoms and impairment do not meet criteria for 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 profile, emotional maturity and cognitive capacity, considering any learning disabilities, sight or hearing problems, delays in language development or social communication difficulties • any co-occurring neur odevelopmental and mental health conditions • 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: • in plain language, clearly presented and free of jargon • culturally appropriate and available in the person's first language • multimodal, taking into consideration different information processing preferences and needs • non-judgemental, inclusiv e, affirming and focused on personal empowerment. 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 (e.g. copy of the diagnosis report) • verify that the information provided has been understood.	NA	NA
2.3.5	**CPP**	Clinicians should encourage parents/carers/siblings/partners to monitor their own wellbeing, 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 adolescents 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, employers, 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 conditions (e.g. learning disorders) that require adjustments in the setting the treatment plan identified special needs, including advice for reasonable adjustments and environmental modifications within the setting (e.g. small groups or individualised learning; see 4. Non-pharmacological interventions) 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 another co-occurring condition that is being treated, 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 03

Treatment and support

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 symptom 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 adverse effects 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 5–17 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 non-pharmacological treatment in reducing core 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, see Box 3.

Box 3. Main targets for pharmacological and non-pharmacological treatment

Pharmacological treatment:	Non-Pharmacological treatment:
• Primary outcome: symptom reduction • Secondary outcomes: improved functioning and wellbeing	• Primary outcome: improved functioning and wellbeing • Secondary outcomes: symptom reduction

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 as noted in Box 3. 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 of people with ADHD. Treatment for commonly co-occurring conditions, such as affect dysregulation, anxiety, and low mood should be included as part of a treatment plan and follow best-practice guidelines for each co-occurring condition, as noted in section 2.2.

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 effects. 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 conditions 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 medications may be indicated for a person with co-occurring Tourette syndrome. 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. Treatment decisions should also consider the person's medical conditions (for example, cardiovascular disease) and medication safety during pregnancy and breastfeeding.

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

Care integration and coordination

ADHD treatment and support requires a multimodal, multidisciplinary and multi-agency approach, particularly when there are co-occurring conditions 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 is usually performed by a clinician in the support team. Sometimes this role can be performed by an adult with ADHD themselves or by the carer of a child with ADHD if they prefer.

Ideal models of care are integrated and 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 as noted above. 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 unbiased 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. It is also important to note that ADHD medications will not provide full coverage over the course of a day/evening. Non-pharmacological therapy can assist with the development of strategies and skills to maximise functioning at such times.

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 some considerations provided regarding the order of treatment. We suggest that treatment order and combination is decided individually based on the persons' needs and preferences.

Recommendations

No	Type	Recommendation	Strength	Certainty
3	**Treatment and support**			
3.1	**Multimodal treatment and support**			
3.1.1	**CPP**	Clinicians should offer multimodal treatment and support. Clinicians should explain to people with ADHD and their families/parents/carers: • that the components of multimodal treatment for ADHD include non-pharmacological interventions as described in Chapter 4 and pharmacological interventions as described in Chapter 5 • that pharmacological treatment is most effective in reducing core ADHD symptoms and that non-pharmacological treatments provide additional support to minimise the daily impact of ADHD symptoms and associated difficulties • the typical benefits, adverse effects, efficacy, treatment length, and time taken before symptom or functional improvements occur for each mode of treatment. The treatment plan and sequence of treatments should accommodate the person's preferences, unique needs and individual goals, and take into consideration their personal strengths and the impact of any co-occurring conditions.	NA	NA
3.1.2	**CPP**	Clinicians should suggest that people with ADHD use pharmacological and non-pharmacological treatments concurrently, unless: • ADHD symptoms are likely to be adequately supported by only one mode of treatment • the severity of ADHD symptoms necessitates pharmacological treatment as the first-line treatment, to reduce symptoms as quickly as possible, and enable later engagement in non-pharmacological treatment, if needed. • one mode is more accessible than the other, based on cost, location, and service availability including waiting times to access services		
3.1.3	**CPP**	When there are multiple clinicians and/or educators involved, clinicians should suggest that a care coordinator is appointed. A person with ADHD or a family member may choose to take on this role. If not, the person with ADHD should be supported to arrange an appropriate care coordinator, who could be a clinician from their support team.	NA	NA

Clinical considerations for implementation of the recommendations

The ability to offer non-pharmacological inter ventions 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 (PBS) for some people with ADHD, so cost may reduce accessibility for some people. Non-pharmacological treatments may also vary in regard to optimal timing, frequency and duration of sessions needed, with cost implications.

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

See **Technical Report, sections 6.1 6.4, and 6.5** 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

ADHD is a lifelong condition and treatment and support needs may vary over one's life. Well-managed transitions between services at key developmental stages throughout the lifespan 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, Asherson, 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, Prihodo va, 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 to the barriers listed above. Transitions are particularly important for people in high-risk gr oups. For example, those with severe symptoms or co-occurring symptoms r equire 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 through 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

No	Type	Recommendation	Strength	Certainty
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 (e.g. at least 12 months before their 18th birthday for those transitioning to adult services), 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, and 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 themselves. 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 04

Non-pharmacological interventions

Chapter 4. Non-pharmacological interventions

Clinical questions

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

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?

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 people with attention deficit hyperactivity disorder (ADHD) when choosing appropriate evidence-based intervention options.

For each of the interventions discussed below, the nature of the intervention and outcomes that the intervention aims to address are described. The outcomes examined for each intervention focus on ADHD symptoms and other symptom measures (see Table 14), consistent with the NICE guideline. However, it should be noted that many non-pharmacological interventions have value beyond improving ADHD symptoms. They can improve other important areas of functioning such as quality of life, self-esteem, social, adaptive and family functioning. These outcomes were rarely examined in the included trials.

A note about terminology: Use of the term 'should offer' in the recommendations in this chapter reflects the principle that clinicians should discuss these interventions and present the intervention as an option for individuals or parents/carers/families to consider. It is acknowledged that not all people or parents/carers/families will decide to proceed with the offered interventions, but it is important for individuals or parents/carers/families to be aware of these options to make informed treatment choices.

Avenues for future research related to non-pharmacological treatment of ADHD is noted in Chapter 8.

See **Technical Report, section 5.1** for further details.

Table 14. 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 adolescents) Includes any non-ADHD symptoms or characteristics (e.g. symptoms of other conditions, or characteristics such as a parent report of executive functioning)
Function	Functional measures such as adaptive behaviour
Clinical global impression	Clinician rating of whether the intervention resulted in improvement
Adverse events	Reduction in total adverse events or serious adverse events
Emotional dysregulation	Self-reported or reported by a parent, teacher or clinician

Academic outcomes	Applies to children and adolescents Includes literacy, numeracy and combined academic measures
Self-harm	Self-reported or reported by a parent, teacher or clinician

4.1 Lifestyle changes

Lifestyle changes involve modifying aspects of daily life to improve health and wellbeing. Lifestyle changes have the potential to improve day-to-day functioning for people with ADHD. Lifestyle factors considered in this section include diet, exercise or activity levels, and sleep patterns. Studies of lifestyle interventions which met the guideline inclusion criteria explored sleep and exercise. Substance use is covered in detail in section 6.3.

Summary of evidence review

Sleep intervention versus waitlist/usual care

This comparison was not addressed in NICE. Two new studies (Papadopoulos et al., 2019; Sciberras, Mulraney, et al., 2020) were identified in this evidence review using data from the same RCT testing the efficacy of a brief (2–3 sessions) behavioural sleep intervention in children with ADHD, compared with usual clinical care. These studies have been described narratively here following feedback from public consultation. Sciberras et al., 2020 examined the 12-month outcomes of this intervention relative to usual care and found benefits up to 12 months later in parent-reported child sleep difficulties, ADHD total symptoms, ADHD inattentive symptoms, ADHD hyperactivity/impulsivity symptoms, quality of life, daily functioning, total behavioural difficulties and emotional difficulties. However, there were no benefits in parent-reported child conduct difficulties, parent mental health or any teacher-reported outcomes.

Papadopoulos et al., 2019 examined the outcomes for children with co-occurring ADHD and ASD from the original trial and found some significant benefits in terms of parent-reported sleep but not in other aspects of child or parent functioning. A translational RCT by Hiscock et al., (2019) found that sleep interventions delivered by paediatricians or psychologists in their clinical practice led to improvements in child sleep but not in other domains of functioning.

Exercise

Overall, few RCTs have examined the efficacy of exercise interventions to help to improve health and wellbeing in people with ADHD. No evidence was identified that evaluated the effectiveness of exercise interventions for ADHD in children under the age of 5 years or in adults. NICE identified very limited evidence in children and adolescents (ages 5–18 years) and the updated search identified an additional two randomised controlled trials (RCTs) of low to very low certainty and with very small sample sizes.

Exercise versus waitlist/usual care

No new evidence was found. NICE previously identified one low quality study of moderate intensity physical activity (Ahmed & Mohamed, 2011) which found a benefit for inattention symptoms and academic performance as rated by teachers, but no benefit for behaviour or broader functioning by teacher report.

Exercise (exergaming) versus waitlist

New evidence was identified for a new comparison consisting of one new RCT with moderate risk of bias comparing cognitively and physically demanding exergaming to a waitlist (Benzing & Schmidt, 2017). There was a statistically significant benefit of exergaming over waitlist for global ADHD index scores as rated parents, and no statistically significant differences for ADHD symptoms (total, inattention and hyperactive impulsive) by parent report.

Relaxation versus usual care

There were no clinically important benefits for ADHD total symptoms (parent rated; 1 study very low quality; teacher rated; 1 study very low quality).

Lifestyle changes: Evidence-to-recommendation statement

Overall, very few studies have examined the potential benefits of lifestyle changes for people with ADHD. No studies meeting the guideline criteria were identified for adults and children under 5 years. The NICE 2018 guideline recommended the following about lifestyle: 'Healthcare professionals should stress the value of a balanced diet, good nutrition and regular exercise for children, adolescents and adults with ADHD'. This updated review continues to support this recommendation but suggests that it is important to include sleep when considering lifestyle changes.

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 evidence-based recommendations about these lifestyle interventions were made, but several clinical practice points have been suggested to guide practice

Recommendations

No	Type	Recommendation	Strength	Certainty
4	**Non-pharmacological interventions**			
4.1	**Lifestyle changes**			
4.1.1	**CPP**	Clinicians should offer guidance on lifestyle factors to help people with ADHD, including: • asking about sleep and offering strategies and/or a referral to assist with sleep, if needed • asking about diet and physical activity levels, and offering strategies and/or referral to assist with any challenges, if needed.	NA	NA

See **Technical Report, section 5.1** for further details.

4.2 Cognitive-behavioural intervention approaches

The term 'cognitive-behavioural interventions' is used to refer to a broad range of approaches that use cognitive and/or behavioural interventions to minimise the day-to-day impact on functioning from ADHD symptoms. While a reduction in ADHD symptom severity may occur as an indirect result of these interventions, the greatest impacts are likely in broader functioning and wellbeing. It is also noted that cognitive-behavioural interventions play an important role in addressing co-occurring conditions for people with ADHD (see Chapter 2, section 2.2).

- The studies identified from evidence reviews and summarised below include one or more components of:
- education and information on the causes of ADHD and impacts on functioning
- environmental modifications to promote a positive, predictable and structured environment
- behavioural modification approaches to help minimise the functional impact of ADHD
- psychological adjustment and cognitive restructuring.

The components of these interventions relevant for ADHD are summarised in Box 4.

The studies identified involved intervention components delivered directly to the person with ADHD, and/or delivered as 'Parent/family training' to parents or primary carers who are supporting a child or adolescent with ADHD. For children under 5 years and children aged 5–17 years, many of the interventions identified have been placed under the subcategory of 'Parent/family training' and include guidance on positive parenting approaches. Some of the 'Parent/family training' interventions also include direct interventions for children and adolescents with ADHD. For adults, some studies identified in the review included specific intervention techniques such as mindfulness based cognitive therapy and dialectical behaviour therapy, whilst others included a broader set of cognitive behaviour therapy techniques. These have been noted where appropriate.

It is also noted that other types of cognitive-behavioural intervention approaches are sometimes used with people with ADHD. However, only RCTs that met the inclusion criteria for the guideline were included.

4.2.1 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 adolescents with ADHD, through parent 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, as well as ADHD-specific guidance.

Importantly, parent/family training does not imply that parenting skills are in any way deficient, but rather that specific skill development relating to supporting children with ADHD is important.

The evidence-based review below focuses on the outcomes of ADHD symptoms and broader functioning and other symptoms as per the NICE 2018 guideline. A narrative review is included to cover the effects of parent/family training on domains such as parenting and parent mental health. The narrative review involves summarising the parent and family outcomes for the studies included in the evidence review.

Young children

Summary of evidence review

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 symptoms (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. It compared two parent/family training programs: the New Forest Parenting Programme (an ADHD specific parenting intervention) 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 the New Forest Parenting Programme when calculated in the UK setting was significantly lower than that of Incredible Years (£1591 versus £2103).

Summary of narrative review evidence

For young children (under 5), all studies examining parent/family training compared to waitlist/usual care (1 new, 4 from NICE) found benefits for one or more areas of parenting or family functioning measured. For example, all three studies examining self-reported positive parenting behaviours as an outcome (Abikoff et al., 2015; Bor, Sanders, & Markie-Dadds, 2002; Matos, Bauermeister, & Bernal, 2009) reported improvements. Both studies examining self-reported parenting stress as an outcome (Abikoff et al., 2015; Matos et al., 2009) reported benefits, although in Abikoff et al (2015) the benefit was only associated with one of the interventions assessed.

Single studies examined family stress/strain (Lange et al., 2018) and parental conflict (Bor et al., 2002), and these studies reported positive outcomes in these domains for parent/family training interventions.

Benefits were less reliable in terms of observer-rated parenting behaviour across the four studies examining this outcome, with Lange 2018 and Bor et al. (2002) reporting no benefits. Abikoff et al. (2015) found improved observed

parent–child interactions for one of the two parenting interventions evaluated. Thompson et al. (2009) examined a number of observer-rated parenting behaviours and largely found no benefits with the exception of improved family expressed emotion (fewer observer-assessed negative comments in a parent speech sample). None of the three studies examining improvements in terms of parent mental health (Bor et al., 2002; Matos et al., 2009; Thompson et al., 2009) reported benefits associated with parent/family training.

Children and adolescents

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. In the updated evidence review there were statistically significant benefits of parent/family training over waitlist/usual care for parent-rated ADHD inattention (7 studies included) and hyperactivity (6 studies included). In the original NICE 2018 review there were some statistically significant benefits in parent-reported total ADHD symptoms and broader functioning/behaviour, and teacher-reported inattention.

There were also statistically significant benefits for academic literacy and numeracy outcomes but this outcome was only assessed in one study characterised by high risk of bias (Merrill et al., 2017). No statistically significant benefits were found for most teacher-rated ADHD symptom outcomes, teacher-reported functioning/behaviour, and investigator rated Clinical Global Impression. NICE 2018 noted that in a follow up study (low quality), there was a clinically important harm for ADHD hyperactivity symptoms, however, in this small study adolescents with ADHD also reported greater self-reported improvements in functioning/behaviour compared to waitlist/usual care (Sibley et al., 2018).

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 benefit for teacher reported ADHD hyperactivity symptoms, and no 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 (Power et al., 2012). There was no 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 benefit for teacher-reported ADHD hyperactivity symptoms and other symptoms, and no 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 were benefits in terms of directly assessed numeracy. There were no benefits for teacher- and parent-reported ADHD hyperactivity symptoms, other functioning/behaviour, or directly assessed literacy outcomes.

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 (Evans, Schultz, & DeMars, 2014; Jensen et al., 2007 / Anon, 1999). There were no 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. There was a clinically important harm of ADHD hyperactivity symptoms based on classroom observer report but evidence was very low quality.

Summary of narrative review

For children aged 5–17 years, potential benefits of parent/family training on parent/family functioning domains for the studies included in the evidence-based review above comparing parent/family training to waitlist/usual care were explored. Of the studies comparing parent/family training to waitlist/usual care, 11 included 1 or more outcome measures assessing parent/family functioning (Au et al., 2014; Chacko et al., 2009; Daley & O'Brien, 2013; Daley et al., 2021; Fabiano et al., 2012; Hoath & Sanders, 2002; Merrill et al., 2017; Sibley et al., 2016; Sibley et al., 2013; Van Den Hoofdakker et al., 2007; Webster-Stratton, Reid, & Beauchaine, 2011) and across these studies at least one parent/family outcome was improved in the parent/family training group relative to waitlist/usual care, except for Merrill et al., 2017 and van den Hoofdakker et al., 2007.

All four studies assessing parenting self-efficacy found benefits associated with parent/family training (Au et al., 2014; Daley et al., 2013; Daley et al., 2020; Hoath et al., 2002). Three studies found evidence of improved positive parenting by observer report (Chacko et al., 2009; Fabiano et al., 2012; Webster-Stratton et al., 2011), while another study did not (Daley et al., 2013). There was some inconsistency in whether parent/family training was associated with parent/family impairment or strain with one study finding benefits (Chacko et al., 2009) and others finding no benefits (Daley et al., 2020; Sibley et al., 2013). Two studies found improvements associated with parent/family training in terms of parenting stress (Chacko et al., 2009; Sibley et al., 2016), whereas two did not (Au et al., 2014; van den Hoofdakker et al., 2007). A single study examining observer-rated expressed emotion (Daley et al., 2020), reported benefits in this domain for parent/family training interventions compared to waitlist/usual care.

Three studies examined outcomes in one or more domains of self-reported parenting (Hoath et al., 2002; Merrill et al, 2007; Webster-Stratton et al., 2011). Hoath et al., 2002 found benefits in one domain (verbosity) but not in other domains such as laxness or overactivity (Hoath et al., 2002), while Merrill et al., 2007 did not report any benefits in self-reported parenting. Webster-Stratton et al., 2011 found benefits in 4 out of 5 self-reported parenting behaviours by maternal report, while fathers did not report benefits in self-reported parenting associated with parent/family training. Two studies found no benefit in terms of parent-reported parent–child relationships (Daley et al., 2020; Sibley et al., 2013). One study found improved adolescent reported parent–child conflict associated with parent/family training (Sibley et al., 2013), while another did not (Sibley et al., 2016).

None of the studies examining improvements in terms of parent mental health (Chacko et al., 2009; Daley et al., 2013; Daley et al., 2020; Hoath et al., 2012) reported benefits associated with parent/family training. Single studies examined parental conflict (Hoath et al., 2002) and relationships with siblings (Daley et al., 2020) as outcomes, and found no benefits associated with parent/family training.

Evidence to recommendation statement - parent/family training

Young children

The updated evidence and narrative review supported the recommendation to offer an ADHD-focused group parent-training programme to parents or carers of children under 5 years with ADHD.

The effectiveness of parent/family training varied according to raters (parents, clinicians or teachers), with more benefits evident by parent report. There is limited evidence to suggest improvements in child symptoms and/or functioning by teacher report, which is not surprising given the focus of parent/family training is on the home context. 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.

In terms of what areas parent/family training can be helpful for in children under 5, the evidence review suggested improvements associated with parent/family training for ADHD symptoms and other domains based on parent-report. Importantly, the narrative review demonstrates benefits of parent/family training in one or more domains of parent/family functioning for each study examined in the narrative review.

Only one study in the reviewed period compared two different types of parent/family training programs (one ADHD specific and delivered individually at home and the other group based and not ADHD specific) 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, clinical practice points were provided about how parent/family training should be delivered.

It is therefore recommended that parent/family training should be offered to the families of 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.

Children and adolescents

Consideration of the updated evidence review and the impact of parent/family training on parent and family outcomes, resulted in the recommendation of offering parent/family training to parents/carers/families of children and adolescents with ADHD. Recommendations about the duration of training have not been made because no studies were identified that evaluated brief parenting approaches, however, this is an important direction for future research, as noted in Chapter 8. NICE recommended more intensive parent/family support for children with ADHD and co-occurring oppositional defiant disorder or conduct disorder, and the GDG agreed with providing the same recommendation. Very few studies have examined whether parent/family training in the context of ADHD should be provided individually or in groups thus rather than evidence-based recommendations, clinical practice points are provided to guide practice.

The evidence review found the effectiveness of parent/family training varied according to rater (parents, clinicians or teachers). Evidence suggests small-to-moderate improvements in ADHD symptoms and functioning based on parent report, although most studies had high levels of bias. There is limited evidence to suggest improvements by teacher report, which is not surprising given the focus of parent/family training is on the home context. The added narrative review demonstrates that parent/family training is associated with a number of benefits in terms of parent/family functioning. It is noted that there is much variation in the studies included in this section. For example, some interventions specifically focus on single-parent families (Chacko et al., 2009), one focused on a self-help version of parent/family training (Daley et al., 2021), one specifically focused on fathers (Fabiano et al., 2012) and some include multi-component interventions also including children and teachers. Any parent/family training interventions should be specific to the needs of the person with ADHD and their parents/carers/families, be strengths-based, and foster hope and personal empowerment.

See **Technical Report, section 5.1** for further details.

Recommendations

No	Type	Recommendation	Strength	Certainty
4.2	**Parent/Family Training**			
	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 TO ⊕⊕⊕◯ Moderate
	Children and adolescents (aged 5 to 17 years)			
4.2.2	**EBR**	Parent/family training should be offered to parents/families of children with ADHD.	***	LOW

4.2.3	**EBR**	More intensive parent/family training programs should be offered to parents/families of children with ADHD who have co-occurring oppositional defiant disorder or conduct disorder.	****	⊕⊕⊕○ Moderate
	Considerations for Parent/family training			
4.2.4	**CCR**	NANAParent/family training should be delivered in individual and/or group format, depending on the availability of services and parent/family preference, and should be delivered to all parents/carers involved in the care of an individual child, where feasible.	NA	NA
4.2.5	**CPP**	NANAParent/family training should be provided with sensitivity and awareness of the stigma and misunderstandings that parents/carers of children with ADHD may have experienced.	NA	NA
4.2.6	**CPP**	NANAParent/family training should be specific to the needs of parents/families with children with ADHD. A focus on individual strengths, values and interests should be balanced with any focus on challenges, for both the parent/carer and child. One or more of the following components should be included: • education and information on the causes of ADHD and impacts on functioning • environmental modifications to promote a positive, predictable and structured environment, and to reduce impacts of ADHD symptoms • behaviour modifications to help minimise the impact of symptoms and impairments associated with ADHD • information on positive parenting approaches. *Further guidance on intervention components for an ADHD-specific intervention can be found in Box 4.*	NA	NA
4.2.7	**CPP**	Clinicians delivering parent/family training should be aware of the capabilities of the parent/carer themself, and ensure the intervention addresses any challenges or barriers the parent/carer may experience. Additional treatment needs of the parent/carer may include: • grief and adjustment to their child's diagnosis • adjustment of interpersonal dynamics within the family • management of multiple family members' needs • emotion-regulation, resilience and self-care • ADHD, mental health conditions, language and learning disorders • skills and confidence for advocating for their child.		

Clinical considerations for implementation

Parent and family support may be needed when parents undertake parent/family training, as families may already be 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 (for example, improvements in symptom severity, child/family functioning, and parent mental health) and any adverse effects should be monitored.

Parent/family training may be accessed through public or private settings, delivered by individual clinicians in individual or group or format. Parent/family training could be accessed through some community organisations (often delivered in a group format) but may not be ADHD-focused. People living in regional/rural/remote areas may have limited access to clinicians 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.

4.2.2 Cognitive-behavioural interventions

Children and adolescents

This section summarises the evidence examining cognitive-behavioural interventions directly delivered to children aged 5–17 years with ADHD. As noted above, the phrase *cognitive-behavioural interventions* is used to refer to a broad range of approaches that use cognitive and/or behavioural interventions to minimise the day-to-day impacts of ADHD symptoms. Overall, there are few studies evaluating these interventions in children and adolescents with ADHD. Cognitive-behavioural interventions also play an important role in addressing co-occurring conditions, such as anxiety or depressive disorders in children and adolescents with ADHD, refer section 2.2.

Structured dyadic behaviour therapy versus non-specific supportive therapy

No evidence for this comparison was identified in NICE and one new RCT was identified in the updated search involving children aged 8–12 years with ADHD-Combined type (Curtis, Heath, & Hogan, 2021). This study in children with ADHD had moderate risk of bias and very low-certainty evidence, and compared structured dyadic behaviour therapy focused on improving behavioural self-regulation with child-centred dyadic therapy. There were statistically significant benefits of structured dyadic behaviour therapy, relative to child-centred dyadic therapy, for parent-reported 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 RCT of CBT with a parent/family training component compared to non-specific supportive therapy (Fehlings, Roberts, Humphries, & Dawe, 1991). This was a small study including 25 boys with ADHD. There were benefits for parent- and teacher-reported ADHD inattention and hyperactivity symptoms.

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

No evidence for this comparison was identified in NICE, and a single new pilot RCT (Sciberras et al., 2018) was identified in the updated review. This study conducted in children with ADHD and anxiety, compared CBT (Cool Kids program) and usual care over 12 weeks with assessments taken at 5 months (approximately 6 weeks post intervention). The intervention was delivered to child-parent dyads. 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

No evidence for this comparison was identified in NICE and one new small RCT was identified (Ahmadi et al., 2020). This RCT conducted in children with ADHD and co-occurring PTSD, compared reminder-focused positive psychiatry and trauma-focused CBT, both involving components with children and parents. 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 + 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 RCT (Sibley et al., 2018) with a high risk of bias, conducted in adolescents 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.

Other interventions drawing on cognitive-behavioural approaches

Play-based executive functioning skills plus parent/family training versus waitlist/usual care

No evidence for this comparison was identified in NICE. Two new RCTs were identified in the updated search (Hahn-Markowitz, Berger, Manor, & Maeir, 2017; Qian et al., 2017). These studies had a high risk of bias and very low- to moderate-certainty evidence. Hann-Markowitz et al. 2017 tested the Cog-Fun intervention which uses a play-based approach to teach executive functioning skills and environmental modifications to parent-child dyads. Cog-Fun helps parents to put in place supports such as checklists, timers and daily planners and is 'designed to compensate for the neurocognitive barriers to participation rather than to remediate them in a cognitive training model' (Hann-Markowitz et al. 2017, p659). Qian et al. (2017) examined executive skills training with children with ADHD and their parents in a group setting compared to waitlist/usual care. Although these interventions both have elements that also fit within the category of 'Cognitive' training' they are reported here given the elements focused on behavioural support and environmental modifications.

Across these studies, assessed outcomes varied. There were statistically significant benefits of the interventions over waitlist/usual care for parent-reported ADHD inattention, hyperactivity, and total symptoms, and executive functioning assessed using the Behaviour Rating Inventory of Executive Function scale (BRIEF), and parent-rated child psychosocial 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 functional impairment (only assessed in Qian et al., 2017) including family, learning and school, social activities, life skills, self-concept, and risky activities.

Play-based executive functioning skills plus parent/family training versus parent/family training plus non-specific supportive therapy

No evidence for this comparison was identified in NICE. New evidence was identified for this comparison consisting of 2 RCTs in young children (Halperin et al., 2020; Vibholm et al., 2018) with very low- to low-certainty evidence. Halperin et al. (2020) compared a multicomponent intervention including TEAMS (Training Executive, Attention and Motor Skills), and parent education and support to an active control condition of a child play group and parent education/support. Vibholm et al. (2018) also compared TEAMS to an active control (psychoeducation, social skills, building cooperation skills). TEAMS also includes other intervention components such as aerobic exercise and relaxation. Again, although these interventions have many elements that fit within the category of cognitive training, they are reported here because of their elements focused on behavioural support and problem-solving.

Across both studies, there was a statistically significant benefit of the multi-component TEAMS intervention compared to the active control 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.

Adults

This section summarises the evidence from studies examining cognitive-behavioural interventions delivered to adults with ADHD. The below studies evaluate interventions such as mindfulness-based cognitive therapy (MBCT,4 studies), dialectical behaviour therapy (DBT, 2 studies), and broader cognitive behaviour therapy techniques (CBT, 7 studies). Two studies focused predominantly on mindfulness/meditation training were also identified and are described below.

CBT/MBCT/DBT 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. These studies examined CBT (4 studies, Dittner et al., 2018; Pettersson et al., 2017; Anastopoulos et al., 2021; and Virta et al., 2010), mindfulness based cognitive therapy (MBCT) (Gu et al., 2017; Hepark et al., 2015; Hepark et al., 2019; Janssen et al., 2019) and DBT (Fleming, McMahon, Moran, Peterson, & Dreessen, 2015).

There were statistically significant benefits of CBT/MBCT/DBT 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 for functioning, behaviour regulation, and metacognition measured by BRIEF.

CBT/DBT/Meta-cognitive therapy 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), 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.

Mindfulness versus Psychoeducation

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 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 – cognitive behavioural interventions

As previously noted, cognitive-behavioural interventions play an important role in addressing co-occurring conditions for people with ADHD (see Chapter 2, section 2.2 on co-occurring conditions). The evidence to recommendation

statement below focuses on the identified studies that examine cognitive-behavioural interventions for individuals with ADHD specifically.

Children and adolescents

Given the growing evidence examining cognitive-behavioural interventions in adults with ADHD, the GDG decided that cognitive-behavioural interventions 'should' be offered to support adolescents with ADHD. The added benefits of directly delivered cognitive-behavioural interventions for children with ADHD in addition to environmental modifications and parent/family training is unclear, as very few studies have examined directly delivered cognitive-behavioural interventions for children. Given the small number of studies examining cognitive-behavioural approaches in children with ADHD, it was recommended that these 'could' be offered given that the studies identified examining cognitive-behavioural interventions in this age group, were characterised by low certainty and a moderate to high bias.

The decision of 'should' and 'could' for adolescents and children, respectively, also considers that many of the parent/family training studies reviewed in section 4.2.1 included interventions directly delivered to children and adolescents with cognitive and/or behavioural intervention elements (for example, Pfiffner et al., 2014; Sibley et al., 2013; Sibley et al., 2016; Webster-Stratton et al., 2011). For children, these studies included intervention elements focused on skill development in key areas such as problem solving, emotional literacy (Pfiffner et al., 2014; Webster-Stratton et al., 2011). It is also noted in Chapter 8 that further research is needed to better understand the efficacy of cognitive-behavioural interventions approaches for children and adolescents.

Adults

In adults, evidence suggests benefits of CBT/MBCT/DBT over waitlist/usual care (and no harm). Self-rated benefits of CBT/MBCT/DBT over waitlist/usual care were moderate to large in multiple studies of moderate certainty. There is likely to have been a dilution of effects of cognitive-behavioural interventions in several of the included studies due to:

- intervention accessed by waitlist/usual care groups
- nonspecific supportive therapy comprising similar components of intervention to CBT/MCT/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 important potential benefits, such as self-esteem, or self-empowerment, 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 clinical practice points are provided.

NICE 2018 recommended that non-pharmacological treatment for adults with ADHD should be considered for adults with ADHD who have made an informed choice not to have medication, have difficulty adhering to medication and who have found medication to be ineffective or have tolerance issues. NICE 2018 recommended that if non-pharmacological treatment is indicated that 'treatment may involve elements of, or a full course of, CBT'. Based on the updated review of the evidence, cognitive-behavioural interventions should be offered to adults. These should be offered by clinicians who should discuss these interventions and present the intervention as an option for people to consider, as described in Chapter 3. Any cognitive-behavioural interventions should be specific to the needs of adults with ADHD, be strengths based, and foster hope and personal empowerment.

Recommendations

No	Type	Recommendation	Strength	Certainty
	Cognitive-behavioural interventions			
	Children and adolescents aged 5 to 17 years			
4.2.8	**EBR**	Cognitive-beha vioural interventions could be offered to children with ADHD.	***	⊕⊕◯◯ LOW
4.2.9	**EBR**	Cognitive-beha vioural interventions should be offered to adolescents with ADHD.	***	⊕⊕◯◯ LOW
4.2.10	**CPP**	Clinicians delivering cognitive-beha vioural interventions to children and adolescents should consider the developmental capabilities of the person, including their capacity to self-r eflect and their awareness of, and ability to influence, their thinking processes. Younger children may benefit from a foundational focus of emotional literacy, proactive help-seeking, problem-solving and self-esteem growth, whilst children approaching adolescence may benefit from simple behavioural techniques. Through adolescence, increasingly sophisticated behavioural and cognitive restructuring techniques may be of benefit.	NA	NA
	Adults (aged 18 years and above)			
4.2.11	**EBR**	Cognitive-beha vioural interventions should be offered to adults with ADHD.	****	⊕⊕◯◯ LOW
	Considerations – Cognitive-behavioural interventions			
4.2.12	**CCR**	Cognitive-beha vioural interventions could be delivered in an individual or group format, depending on the availability of services and person's/ family'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. If cognitive-beha vioural interventions are accessed by children and adolescents with ADHD, they should be provided alongside parent/family training. Parents should also be involved in the cognitive-beha vioural intervention delivered to a child or adolescent to an extent that allows for support with implementation of the intervention.	NA	NA

4.2.13	**CPP**	Cognitive-beha vioural interventions should be specific to the needs of people with ADHD. A focus on individual strengths, values and interests should be balanced with any focus on challenges. One or more of the following components should be included: • education and information on the causes and impacts of ADHD • environmental modifications to promote a positive, predictable and structured environment, and to reduce negative impacts of ADHD symptoms • behaviour modifications to help minimise the impact of symptoms and impairments associated with ADHD • psychological adjustment and cognitive restructuring *Further guidance on intervention components can be found in Box 4.*	NA	NA

Clinical considerations for implementation

It is important that clinicians delivering cognitive-beha vioural interventions for people with ADHD have ADHD-specific expertise, and where appropriate, seek 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. Clinicians should also be aware of broader socio-political factors that may be influential for the person including stigma, the social model of disability, human rights model of disability, and the emerging neurodiversity movement.

In general, cognitive-beha vioural interventions for ADHD do not target ADHD symptomology. Rather, they target functional/behavioural change, psychological distress, and other mental health factors. Intervention may target contributing factors that are external to the person (such as the environment or the expectations and actions of others) as well as factors internal to the person (such as cognitions, coping mechanisms, and self-concept development). When providing cognitive-beha vioural interventions for ADHD the impacts of symptoms in all life domains should be considered. 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.

For children and adolescents, the selection of intervention 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, pr oactive help-seeking, and pr oblem solving, whilst children approaching adolescence may benefit from simple meta-cognitiv e techniques. Through adolescence increasingly sophisticated CBT techniques may be of benefit. If appropriate, parents/carers should be included in the approach, so that they can fulfil a support role for their child. If cognitive-beha vioural interventions are accessed by children and adolescents with ADHD they should be provided alongside parent/family support/training.

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.

See **Technical Report, section 5.1** for further details.

Box 4. Example components of cognitive-behavioural interventions

Education and information on the cause and impact of ADHD	Environmental modifications
Involves quality psychoeducation as outlined in section 2.3. It also involves assisting the person to understand and recognise how ADHD symptoms contribute to their day-to-da y lives and experiences (both positive and negative) including: • cognitive processes that may be implicated in the experience of symptoms • fluctuation of symptoms and difficulties due to the influence of factors like stress, sleep, exercise and hormones (for women) • environment factors present during particular types of experiences, such as stressors, elements of personal interest or novelty, and interpersonal dynamics • the positive and negative impacts of any compensatory measures and coping strategies the person has developed over time.	Involves adjusting the environment (home, school and/ or work, social settings) to maximise the chances of success for the person with ADHD. This could include preventing or removing challenges likely to result from ADHD symptoms, or enabling increased used of personal strengths and interests. • Modifications can be designed and/or implemented by the person with ADHD themselves, or by others who are in a supportive role, and can involve modifying: • expected tasks and routines • the surrounding physical space, including its sensory elements • how others communicate and engage with the person with ADHD.
Behaviour modifications to help minimise the impact of symptoms and maximise functioning	**Psychological adjustment and cognitive restructuring**
This may include: • introducing strategies to help compensate for cognitive difficulties • optimising use of cognitive strengths • managing and supporting emotion regulation • improving social communication, problem-solving and self-adv ocacy.	Involves adjustment of cognitive and emotional processes that are less conscious and less intentional. The targets of intervention are often the secondary impacts of ADHD symptoms that can develop over time, and treatment needs may include: • grief processing and adjustment to diagnosis • skills development for stress management and adaptive coping • communication, problem-solving and self-adv ocacy skills • support with addressing interpersonal and relationship difficulties • development of self-concept, including self-efficacy, self-esteem and identity • support for situational anxiety and depression symptoms • support for any co-occurring mental health or neurodevelopmental disorders.

4.3 Cognitive training

Based on the evidence reviewed in developing this guideline, *cognitive training* for ADHD refers largely to the use of computerised training programs to improve aspects of cognition such as attention and memory (and ultimately broader aspects of functioning as well as ADHD symptom severity).

Summary of evidence review

Young children

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

Children and adolescents

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 (5 studies) resulting in 6 studies with very low- to low-cer tainty evidence. Findings of the pooled data across studies showed there were statistically significant benefits of cognitive training over waitlist/usual care for parent-rated ADHD inattention and hyperactivity symptoms (6 studies). There were no statistically significant benefits of cognitive training for ADHD total symptoms (self-rated, one RCT, very low certainty; parent rated, 3 RCTs, very low certainty; and teacher rated, 2 RCTs, moderate certainty); teacher rated ADHD inattention (6 studies) and hyperactivity symptoms (4 studies); parent rated other symptoms (5 studies), and academic literacy (one study) and numeracy outcomes (one study). 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 (Scientific Brain Training; SBT) and non-specific supportive therapy (the puzzle video game Tetris) 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.

Cognitive training & behaviour parent training versus 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-r eported ADHD inattention, parent and teacher reported hyperactivity symptoms and other symptoms. There was a clinically important harm of intervention for teacher-r eported ADHD inattention symptoms.

Cognitive training & exercise versus usual care

No new evidence was found. NICE previously identified one RCT (Smith et al., 2016) with low to moderate quality evidence. The intervention group received computerised cognitive training, exercise and a social skills game. There were no clinically important benefits for parent-r eported ADHD total symptoms.

Cognitive training plus social skills versus waitlist care

New evidence was identified for a new comparison consisting of a single RCT (Lan, Liu, & Fang, 2020) with high risk of bias conducted in children with ADHD combined, comparing cognitive training plus social skills training and waitlist 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).

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-lik e 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

Cognitive training versus waitlist care

No new evidence was found. NICE previously identified one study of very low quality (Virta et al., 2010). There was no clinically important benefit for quality of life, Clinical Global Impression scale or self-reported ADHD symptoms.

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 a low-intensity version of Cogmed over 5 weeks.

There were no statistically significant differences for self-reported 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. There were also no statistically significant differences for the Wechsler Adult Intelligence Scales III Matrix reasoning task.

NICE previously identified one RCT of low-to-moderate quality (Mawjee, Woltering, & Tannock, 2015) exploring standard Cogmed training versus a shortened version. There was no clinically important benefit for self-rated ADHD total symptoms total, functioning, academic literacy and numeracy outcomes.

Evidence to recommendation statement for cognitive training

For children and adolescents there was no evidence to support improvements in parent-reported overall ADHD symptom severity through the delivery of 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.

Evidence for adults suggests that there is no clear benefit of 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 is more beneficial in comparison to cognitive training, and cognitive training may be harmful compared to waitlist.

The GDG debated whether to include a recommendation regarding cognitive training. The GDG noted the review did not identify sufficient evidence to support a recommendation of cognitive training, and there was not a body of evidence showing no effect of these interventions. The GDG agreed that further research may provide greater clarity and allow for recommendations in the future. Based on the evidence reviewed, the GDG decided to make no recommendations for cognitive training.

See **Technical Report, section 5.1** for further details

4.4 Neurofeedback

Neurofeedback (NF), also known as EEG (electroencephalography) Biofeedback, applies principles of operant conditioning to teach self-modification of cortical electrical activity. Neurofeedback requires EEG electrodes to be placed on the scalp to detect neural activity which is transferred through to a computer. The software converts the EEG patterns into visual and auditory rewards, which are 'fed back' to the participant to learn to inhibit or increase specific EEG frequencies of neural firing. There are several different types of neurofeedback and various treatment regimes.

Neurofeedback treatment technologies has given rise to two principal intervention approaches for ADHD: Sensori-Motor Rhythm or Beta-Wave (SMR) NF and Slow Cortical Potentials (SCP) NF. While the term neurofeedback has been used below please refer to the Technical Report for more detail on the neurofeedback approach used in each study.

Summary of evidence review

Young children

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

Children and adolescents

Neurofeedback versus waitlist/usual care

One new RCT of low certainty was identified (Lim et al., 2019). NICE reported a statistically significant benefit of neurofeedback over waitlist/usual care for ADHD inattention symptoms by parent rating (2 RCTs, moderate certainty) (Steiner, Frenette, Rene, Brennan, & Perrin, 2014; Steiner, Sheldrick, Gotthelf, & Perrin, 2011). There were no statistically significant benefits of neurofeedback over waitlist/usual care for: ADHD inattention symptoms by teacher rating (2 RCTs, moderate certainty: Steiner 2011, Steiner 2014) or clinician rating (one RCT, moderate certainty: Lim 2019).

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 parent-rated ADHD total, inattention, hyperactivity symptoms or 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 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 were statistically significant benefits of neurofeedback over cognitive training for ADHD symptoms total (parent-rated, one RCT, low certainty: Gevensleben 2009 (NICE)); ADHD symptoms inattention – clinic setting (parent-rated, 2 RCTs, low certainty: Gevensleben 2009 (NICE), Minder 2018); ADHD symptoms inattention – clinic setting (teacher-rated, 2 RCTs, moderate certainty: Gevensleben 2009 (NICE), Minder 2018).

There were statistically significant benefits of cognitive training over neurofeedback for ADHD symptoms inattention – school setting (parent-rated, 3 RCTs, moderate certainty: Minder 2018, Steiner 2011 (NICE), Steiner 2014 (NICE)).

There were no statistically significant differences between neurofeedback and cognitive training for: ADHD total symptoms (teacher-rated, one RCT, moderate certainty: Gevensleben 2009 (NICE)); ADHD inattention symptoms – school setting (teacher-rated, 3 RCTs, moderate certainty: Minder 2018, Steiner 2011 (NICE), Steiner 2014 (NICE)); ADHD hyperactivity/impulsivity symptoms - clinic setting (parent-rated, 2 RCTs, moderate certainty: Gevensleben 2009 (NICE), Minder 2018); ADHD hyperactivity/impulsivity symptoms- clinic setting (teacher-rated, 2 RCTs, moderate certainty: Gevensleben 2009 (NICE), Minder 2018); ADHD hyperactivity/impulsivity symptoms – school setting

(parent-rated, 3 RCTs, moderate certainty: Minder 2018, Steiner 2011 (NICE), Steiner 2014 (NICE); ADHD hyperactivity/impulsivity symptoms – school setting (teacher-rated, 2 RCTs, low certainty: Minder 2018, Steiner 2011 (NICE)); Functional outcomes – clinic setting and school setting (parent-rated, 2 RCTs, moderate certainty; teacher-rated, 2 RCTs, moderate certainty); functional outcomes (metacognition) – both school setting and clinic setting (parent-rated, one RCT of low certainty; teacher-rated, one RCT of low certainty Minder 2018); Functional outcomes (Behavioral Observation of Students in Schools (BOSS) engagement and off-task) – both school setting and clinic setting (investigator-rated, one RCT, low certainty: Minder 2018).

Neurofeedback versus Behaviour therapy

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 of neurofeedback compared with behaviour therapy.

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 and parent/family training for parent and teacher-rated ADHD total and inattention symptoms and teacher-rated hyperactivity/impulsivity symptoms.

Neurofeedback plus cognitive 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 of neurofeedback 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 of evidence, conducted in adults with ADHD, comparing neurofeedback and neurofeedback sham over 15 weeks. There were no statistically significant differences for self-reported 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 of evidence conducted in adults with ADHD, comparing neurofeedback and CBT over 15 weeks. There were no statistically significant differences between neurofeedback and CBT for self-reported ADHD symptoms using the Conners' ADHD rating scale.

Evidence-to-recommendation statement

Additional evidence was suggested during the public consultation process and is briefly summarised here. One study explored additive effects on neurofeedback in addition to methylphenidate in children and found no additional benefits of neurofeedback for ADHD symptoms and cognitive functioning (Lee & Jung, 2017) (included in NICE combined

evidence review). A very small study (n=7 per group) compared yoga, neurofeedback and a control group, finding yoga and neurofeedback resulted in similar improvements in sustained attention and memory (Rezaei, Salarpor Kamarzard, & Najafian Razavi, 2018) (not identified by our search; does not meet inclusion criteria). Sudnawa and colleagues (2018) (identified by our search but did not meet inclusion criteria) compared neurofeedback to methylphenidate in children, finding larger effects in the methylphenidate groups.

A recent study (Hasslinger, Bölte, & Jonsson, 2021), published after search completed, in children and adolescents, compared standard and non-standar d neurofeedback to working memory training and waitlist control. They reported standard and non-standar d neurofeedback were not superior to working memory training. They noted 'Overall, the results from this pragmatic trial do not provide convincing support for broad implementation of [neurofeedback] in child and adolescent psychiatric services.'

Finally, in children, The Neurofeedback Collaborative Group (Arnold et al., 2021), published after the search was completed, compared theta/beta-ratio (TBR) electr oencephalographic biofeedback (neurofeedback) to a control of equal duration, intensity, and appearance, in children. There were similar improvements in parent and teacher reported inattention in both groups. The authors concluded the findings did not support a specific effect of deliberate neurofeedback at either treatment end or 13-month follow-up.

In adults Barth and colleagues (2021) (published after the search was completed) explored slow cortical potential (SCP)- and functional near-infrar ed spectroscopy (fNIRS) neurofeedback compared with a semi-activ e electromyography biofeedback (EMG-BF) contr ol condition. The authors reported: 'All three groups showed equally significant symptom improvements suggesting placebo- or non-specific eff ects on the primary outcome measure'.

Two systematic reviews and meta-analyses wer e also noted during public consultation (Garcia Pimenta, Brown, Arns, & Enriquez-Gepper t, 2021; Van Doren et al., 2019). Van Doren et al., (2019) was excluded because risk bias of the included studies was not reported and the diagnostic method of included studies was unclear or not reported. Discussion regarding the validity of the Schonenberg et al study (2017) was also highlighted. This included responses from Pigott (2017; 2021) and the authors response to Pigott and colleagues (Thibault, Veissière, Olson, & Raz, 2018).

Based on the evidence review, the evidence of benefits of neurofeedback over waitlist/usual care for parent- or teacher-r eported ADHD was inconsistent in children and adolescents. There were benefits for ADHD inattention symptoms based on parent-r eport but not teacher or clinician report; and no benefits for parent or teacher-r eported ADHD hyperactivity/impulsivity symptoms. In adults, the evidence was inconclusive.

The GDG debated whether to include a recommendation regarding neurofeedback. There was no new evidence identified that suggested a deviation from the NICE recommendation, where no recommendation regarding neurofeedback was included. This review did not identify sufficient evidence to support a recommendation of neurofeedback, and there was not a body of evidence showing no effect of these interventions. The GDG agreed not to include a recommendation regarding neurofeedback. The GDG agreed that further research may provide greater clarity and allow for recommendations in the future.

See **Technical Report, section 5.1** for further details.

4.5 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 adolescents (5–18 years of age) and no new studies were identified in the updated review. Please see earlier sections for details of studies that include organisation/school-based components in conjunction with other intervention approaches.

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 benefits in inattention symptoms by parent but not teacher report. There were no benefits in parent or teacher-rated ADHD total symptoms, hyperactivity symptoms, and broader functioning/behaviour. There was limited evidence of improvements in terms of academic literacy/numeracy or 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 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. There was some evidence of improved parent-reported inattention symptoms associated with organisational/school-based interventions. It should be noted that elements of cognitive behavioural interventions and ADHD coaching draw on principles that help people with organisational skills. Organisational skills may potentially be more helpful for adolescents (and adults with ADHD) however, this review included children and adolescents together.

See **Technical Report, section 5.1** for further details.

4.6 ADHD Coaching

Is there a role for ADHD coaches?

Summary of narrative review evidence

ADHD coaching shares common elements with cognitive behavioural interventions, particularly with environmental modification and behavioural modification components as outlined in Box 4. The evidence highlights a range of frameworks applicable to the ADHD context targeting, motivation, implementation, self-regulation and self-actualisation. Varied approaches to coaching are evident in practice, most building on an in-depth or lived experience understanding of ADHD.

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.

Ahmann et al (2018) provided a descriptive review of research in the area of ADHD Coaching. Of 22 studies identified on coaching for ADHD, 19 examined outcomes. Included research studies (N=19) varied in design, ranging from case studies to randomized controlled trials (RCTs). Others were qualitative studies and quantitative treatment studies with pre-test and post-test components.

Studies examined coaching for elementary (primary school), high school, and college students, as well as adults. Three of the studies examined coaching in groups and the other 16 studies examined outcomes of individual coaching. Of the 19 outcome studies, 18 studies found that ADHD coaching supported improvements in ADHD and executive functioning symptoms; 6 found improved well-being; 3 studies demonstrated maintenance of gains; and 6 showed high satisfaction with coaching; 4 studies examined factors associated with coaching success. Of note, two RCTs were identified with both reporting positive outcomes for participants.

Field et al., (2013) conducted a RCT of coaching with college students. This trial comprised 88 participants in the treatment group and 39 participants in the control group. The coaching group had a statistically significant higher total score on the Learning and Study Strategies Inventory (LASSI) including all three LASSI subscales measuring Skill, Will, and Self-Regulation than the comparison group. The second RCT was conducted by Evans et al (2014) with teenagers. This pilot RCT comprised 24 participants with ADHD receiving dyadic coaching and 12 community controls. Overall, there was little evidence to suggest that the coaching group outperformed the control group with the exception of improved parent-rated family functioning relative to the control group. However, given the pilot nature of this study and the small sample size, additional research is clearly needed.

In summary, the review of the evidence from Ahmann et al (2018) reflected potential positive outcomes for people with ADHD in supporting their executive functioning, ADHD symptoms, self-esteem, wellbeing, and quality of life. Further evidence supported satisfaction with coaching and maintenance of gains.

The limited evidence suggests possible positive outcomes for people with ADHD. However, high-quality evidence is lacking and there was substantial variation in the coaching factors across the studies including how coaches were trained, how coaching programs were delivered (group versus individual sessions), variation in coaching duration and variation in the outcome domains assessed. Further robust research is needed to inform the broad application of this approach across populations with ADHD. The GDG debated whether to include a recommendation regarding ADHD coaches. The GDG noted that some components of ADHD coaching include environmental and behaviour modifications as described in Box 4. They also noted these components were frequently provided by allied health professionals, particularly, occupational therapists and psychologists. As such, a recommendation regarding ADHD coaching was deemed more appropriate and consistent with the focus on therapeutic approaches rather than specific professions.

Recommendations

No	Type	Recommendation	Strength	Certainty
	ADHD Coaching			
	Adolescents (aged 13 to 17 years)			
4.3.1	**CCR**	ADHD coaching could be considered as part of a treatment plan for adolescents with ADHD.	NA	NA
	Adults (18 and above)			
4.3.2	**CCR**	ADHD coaching could be considered as part of a treatment plan for adults with ADHD.	NA	NA
	ADHD Coaching considerations			
4.3.3	**CPP**	Elements of coaching could be provided by appropriately credentialled* ADHD coaches and allied health professionals for people with ADHD. *Such as membership with the International Coaching Federation	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. It was noted above that the intervention utilises environmental and behavioural modifications commonly employed by allied health professionals who have higher levels of training and education than ADHD coaches. ADHD coaching is generally provided within the private sector. Out-of-pock et costs could impact health equity in terms of access to coaching.

It is also noted that ADHD coaching, as delivered by an ADHD coach, is not regulated by a government body such as AHPRA and there is no oversight to ensure protection of the public, protection of privacy, or maintenance of health records. However, ADHD coaches are governed by the International Coaching Federation (ICF), a global organisation providing competencies, standards and ethics for their members. ICF coaches are trained to refer clients to therapists if appropriate, and also work collaboratively with clinicians. The ICF Code of Ethics provides appropriate guidelines, accountability and enforceable standards of conduct for all ICF members, and there is a formal ethical conduct review process for alleged breaches of ethics. It was noted by the GDG that not all ADHD coaches are members of the ICF and therefore consumer caution is required. Refer to Principles and Assumptions section for further information regarding clinician competency and credentials.

See **Technical Report, section 5.4** for further details.

4.7 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 in 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 peer support worker roles throughout the mental health sector. There is, however, little to no information about the effectiveness of peer support workers for people with ADHD.

A peer support worker is a person 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.

4.8 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

Helping people with ADHD (or their parents) to adhere to evidence-based non-pharmacological tr eatments will likely maximise the benefit of the intervention in terms of symptom reduction and improved functioning. There are barriers and facilitators to treatment adherence that can be addressed to ensure maximal effectiveness of non-pharmacological interventions in people with ADHD.

Summary of evidence review

There is minimal evidence on adherence to non-pharmacological ADHD inter ventions, 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.

Recommendations

No	Type	Recommendation	Strength	Certainty
	Nonpharmacological adherence			
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: • potential benefits of intervention, including the opportunity to develop lifelong skills in reducing the impact of ADHD symptoms, and the opportunity to improve self-esteem, mental health and broader wellbeing • time required to complete a sufficient duration of intervention to assess the benefits • likely costs involved and funding considerations, such as Medicare rebates • options for changing intervention providers, should the person wish to do so.	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 clinician, 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 any health inequity impacts are minimised (see Chapter 7).

See **Technical Report, section 10.8** for further details.

Chapter 05

Pharmacological interventions

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 ADHD is needed. Anecdotally there are inconsistencies 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 – people with ADHD and their family's views on 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 on the views of people with a lived experience of ADHD and their families. Saturation in themes was reached after five themes were identified. Clinicians should be aware of these themes in order to improve outcomes for people with ADHD and adequately support them through the pharmacological treatment process (see below).

Theme 1. Starting pharmacological treatment

For children and adolescents, 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 resulted in delayed initiation of 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 had periods of stopping medication used without consulting with a clinician, often due to adverse events.

This theme also identified a reluctance of some healthcare professionals regarding prescribing medication. For example, general practitioners were sometimes reluctant to prescribe ADHD medication for children. Diversion of medications 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 adolescents 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 time 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 on research evidence relating to starting, adjusting, and discontinuing pharmacological treatment

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 (bodyweight-based maximum dose estimation) has also been followed in studies involving adult participants (Biederman et al., 2006; Kooij et al., 2004) for standard-release and osmotic-release oral preparations (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 rated 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 (for example, by 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 (for example, autism spectrum disorder, tic disorders, learning disability [intellectual disability]), mental health disorders (for example, anxiety disorders [including obsessive–compulsive disorder], schizophrenia or bipolar disorder, depression, personality disorder, eating disorder, post-traumatic stress disorder, substance misuse), physical health disorders (for example, 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 identify the optimum 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, children 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 adolescents in decision making is also reflected in the evidence reviewed and is another principle of this guideline.

Recommendations

No	Type	Recommendation	Strength	Certainty
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 pr eparations available for ADHD • ensure that treatment is tailored effectively to the individual needs of the child, adolescent or adult • take account of variations in bioavailability or pharmacokinetic profiles of different preparations to avoid reduced effect or excessive adverse effects • take account of pharmacodynamic interactions with other prescribed medications • explain to the person with ADHD or their parents/family/carers that sometimes when a person starts taking ADHD medication that reduces symptoms, they become aware of how severe their untreated symptoms were, and prepare them for this awareness • explain that medication reduces symptoms but rarely reduces them completely, therefore, it is important to have realistic expectations and ensure medication is only one part of a person's treatment and support plan.	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 medications ◦ current medication ◦ height and weight (measured and recorded against the normal range for age and sex) ◦ a cardiovascular assessment, including baseline heart rate and blood pressure (measured with an appropriately sized cuff and compared with centile for age and height). Note: An electrocardiogram (ECG) is not needed before starting stimulants, atomoxetine or guanfacine, unless the person has any of the features listed in recommendation 5.1.3 or a co-occurring condition that is being treated with medications that may pose an increased cardiac risk.	NA	NA

5.1.3	**CCR**	People with ADHD should be referred for a cardiology opinion before commencing stimulant medication 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 • a heart murmur (not including innocent heart murmurs in children) • hypertension.	NA	NA
5.1.4	**CCR**	People with ADHD should be referred to an appropriate physician if blood pressure is consistently above age-based normal values, or for children and adolescents above the 95th centile for age and height.	NA	NA
5.1.5	**CPP**	Before titration, baseline ADHD symptoms and level of functioning should be recorded. During titration, adverse effects should be monitored and recorded at each dose change. The treating clinician should review progress regularly during the dose-titration period.	NA	NA
5.1.6	**CPP**	The dose should be titrated against symptoms, level of functioning 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 conditions such as anxiety disorders, schizophrenia or bipolar disorder, depression, personality disorders, eating disorders, post-traumatic stress disorder, substance misuse • 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. It is noted that specialists with the appropriate expertise are best placed to determine the dosing requirement for their individual clients and as such no dosing recommendations have been included.

Assessment, discussion of options, development of a treatment plan, 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.

Australian paediatricians see more children and adolescents with ADHD than those with any other condition. Children and adolescents with ADHD are more likely to be treated 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-pock et costs to access medication treatment. There are also significant bottlenecks and delays in accessing experienced adult ADHD psychiatrists due to few being specialised in adult ADHD diagnosis and treatment in Australia. This results in health inequity for many Australians with ADHD. Workforce development may ensure that health inequity impacts are minimised.

See **Technical Report, sections 6.3 and 6.4** for further details.

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 generally used to treat ADHD symptoms, 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 adolescents

Methylphenidate

Immediate-release methylphenidate versus placebo

New evidence was identified from one RCT of moderate certainty (Solleveld et al., 2020). This study found statistically significant benefits of immediate-release methylphenidate over placebo for Clinical Global Impression Scale change score and the Disruptive Behaviour 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 over placebo for total ADHD symptoms (parent rated; 2 studies low quality) (teacher rated; 2 studies low quality; 3 studies moderate quality) (teacher rated; 1 study moderate quality), inattention symptoms (parent rated; 1 study moderate quality) (teacher rated; 1 study moderate quality), hyperactivity symptoms (teacher rated, 2 studies low to moderate quality; parent rated 2 studies), clinical global impression (3 studies moderate quality), and other symptoms (2 studies low quality).

There was no clinical difference for ADHD hyperactivity symptoms (parent rated at 16 weeks; 1 study low quality), discontinuation due to adverse events (4 studies low quality) and serious adverse events (1 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).

In addition to the comparisons above, there were also comparisons between methylphenidate and dextromethorphan and piracetam which were not considered to be clinically relevant for the treatment of ADHD (see Technical Report).

Dexamfetamine

Lisdexamfetamine versus placebo

New evidence was identified in 2 RCTs, reported in one article (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; one RCT, very low-certainty evidence), and Clinical Global Impression Improvement scale (investigator rated; one 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 6 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 were clinically important harms 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 in ADHD total, inattention or hyperactivity symptoms (investigator-rated; one study of low to moderate quality).

Evidence-to-recommendation statement

There is a paucity of evidence for the effectiveness of medications in children under 5 years of age. As such, no recommendation about medication use is made. Instead, we recommend that an expert in child development and treating ADHD in young children be involved in assessment and treatment decisions.

The evidence showed that:

- in children and adolescents, monotherapy with methylphenidate, lisdexamfetamine or dexamfetamine is associated with a clinically important benefit, compared with placebo or other agents.
- in adults, monotherapy with methylphenidate, lisdexamfetamine or dexamfetamine 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 dexamfetamine/ lisdexamfetamine as a treatment for children aged 5 years and over, adolescents and adults, given the minimal difference in efficacy and tolerability in these agents. The GDG debated whether to recommend methylphenidate for children and adolescents and dexamfetamine or lisdexamfetamine for adults, as the first line treatment. The GDG concluded that the evidence was not certain enough to support this more restrictive recommendation, The GDG discussed the clinical reasons for starting either short- or long-acting medications and provided clinical guidance on this via a practice point. 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. It was noted that some people have intolerances such as to gluten, which might influence first-line medication choice, given some short-acting stimulant preparations contain gluten.

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 acknowledged that there was very little evidence on medication choice for people with ADHD and most co-occurring conditions. The GDG agreed that neither the available evidence nor their experience justified a different choice of ADHD medication for people with ADHD and coexisting conditions, 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, rarely, stimulant medications can induce psychosis and recommended that ADHD medication should be stopped in people experiencing a psychotic episode.

Recommendations

No	Type	Recommendation	Strength	Certainty
5.2	**Medication choice – young children aged under 5years**			
5.2.1	**CPP**	If ADHD symptoms cause significant impairment in more than one setting, a specialist with expertise in child development and treatment of ADHD in young children (either a paediatrician or a child psychiatrist) should assess the child to identify suitable treatment options. Medication should be used cautiously, and monitored closely, in this age group.	NA	NA
5.3	**Medication choice – children and adolescents (aged 5 to 17 years)**			
5.3.1	**EBR**	Methylphenidate or dexamfetamine or lisdexamfetamine should be offered as the first-line pharmacological treatment for people with ADHD, where ADHD symptoms are causing significant impairment.	****	⊕⊕◯◯ LOW
5.3.2	**CPP**	The decision to start with a short or long-acting stimulant formulation[a] should be based on clinical decision, together with the wishes of the person with ADHD or their parent/carer/family, by considering the advantages and disadvantages of each. For example: • A short-acting formulation may be preferred when close monitoring is required • A long-acting formulation may be preferred for convenience, or when there is a medical contraindication[b] • consideration of any potential cost implications [a]Evidence has been assessed for the following stimulants available in Australia: Short-acting: immediate-release methylphenidate or dexamfetamine Long-acting: modified-release methylphenidate or lisdexamfetamine [b]For example, some short-acting stimulants contain gluten and/or lactose; a long-acting preparation free of these should be used in someone with gluten or lactose intolerance.	NA	NA
5.3.3	**CPP**	If one medication type or duration of action of stimulant medication is not effective or poorly tolerated then another should be trialled.	NA	NA

5.3.4	**EBR**	Atomoxetine or guanfacine or clonidine should be offered to children and adolescents if any of the following apply: • Stimulants are contraindicated • The person cannot tolerate methylphenidate, dexamfetamine or lisdexamfetamine • Symptoms have not responded to separate trials of dexamfetamine or lisdexamfetamine, and of methylphenidate, at adequate doses • The clinician considers that the medication may be beneficial as an adjunct to the current regimen Due consideration of risks and safety is required, especially if medications are used in combination.	****	⊕⊕◯◯ LOW
5.4	**Medication choice – adults (aged 18 years and above)**			
5.4.1	**EBR**	Methylphenidate or dexamfetamine or lisdexamfetamine should be offered as the first-line pharmacological treatment for people with ADHD, where ADHD symptoms are causing significant impairment.	****	⊕⊕◯◯ LOW
5.4.2	**CPP**	The decision to start with a short-acting or long-acting formulation [a] should be based on clinical decision, together with the wishes of the person with ADHD, by considering the advantages and disadvantages of each. For example: • A short-acting formulation may be preferred when close monitoring is required • long-acting formulation may be preferred for convenience, or when there is a medical contraindication.[b] • consideration of any potential cost implications [a]Evidence has been assessed for the following stimulants available in Australia: Short-acting: immediate-release methylphenidate or dexamfetamine Long-acting: modified-release methylphenidate or lisdexamfetamine [b]For example, some short-acting stimulants contain gluten and/or lactose; a long-acting preparation free of these should be used in someone with gluten or lactose intolerance.	NA	NA
5.4.3	**CPP**	If one medication type or duration of action of stimulant medication is not effective or poorly tolerated then another should be trialled.	NA	NA

5.4.4	**EBR**	Atomoxetine or guanfacine should be offered to adults with ADHD if any of the following apply: • Stimulants are contraindicated • They cannot tolerate methylphenidate, lisdexamfetamine or dexamfetamine • Their symptoms have not responded to separate trials of dexamfetamine or lisdexamfetamine and of methylphenidate, at adequate doses • The clinician considers that the medications may be beneficial as an adjunct to the current regimen Due consideration of risks and safety is required, especially if medications are used in combination.	****	⊕OOO VERY LOW
5.4.5	**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	**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.	****	⊕OOO VERY LOW
5.5.2	**CPP**	The following could also be offered to adults with ADHD, in no particular order: • lamotrigine • aripiprazole • agomelatine • armodafinil • desvenlafaxine. Careful monitoring of adverse side effects is required.	NA	NA
5.6	**Factors influencing medication choices**			
5.6.1	**CPP**	For people with ADHD who also have co-occurring conditions (e.g. anxiety disorders, mood disorders, tic disorder or autism spectrum disorder), clinicians should offer the medication choices listed in recommendations 5.2–5.5.	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 could do the following: • Stop stimulants and review other medication for ADHD • Treat the psychotic or manic episode as necessary • Consider introduction of a mood stabiliser • Consider alternate treatment for ADHD after the episode has resolved • Consider costs and benefits of reintroducing stimulant medication. If stimulant medication is to be reintroduced, take extra precautions in monitoring, such as admitting the person to a hospital/clinic for observation.	NA	NA
5.6.3	**CPP**	Clinicians should consider the impact of appetite suppression due to stimulant treatment when people have a co-occurring eating disorder or other medical conditions 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 could 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**	Short-acting and long-acting 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

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 recommendations were also informed by a systematic review that met the selection criteria and provided data from network meta-analyses (Cortese et al., 2018), allowing us to more definitively comment on medication choice and sequence across age groups.

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 long-acting methylphenidate, 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 short-acting 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 states and territories as noted by AADPA at **https://aadpa.com.au/adhd-stimulant-prescribing-regulations-australia-new-zealand/** (AADPA, 2022). It is hoped that, over time, all jurisdictions will reach greater uniformity in prescribing laws that reflect best practice.

The current recommendations are based on the evidence reviews and clinical consensus. It is noted that some current PBS restrictions may not fully align with the current recommendations. For example, PBS subsidy for long-acting methylphenidate is restricted to people who have already used short-acting methylphenidate. Clinicians need to be aware of any cost implications of current PBS restrictions before selecting a stimulant type and duration of action and discuss these with the person with ADHD and their carers/parents/families. As noted in the principles section, prescribers need to be aware of any regulatory requirements when prescribing stimulants.

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, or people not receiving treatment. Children and adolescents 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.

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. While an individual, person centred approach is needed when prescribing and monitoring medication, consistent parameters are needed.

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 adolescents. 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 adolescents; 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 adolescents

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 adolescents 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 adolescents 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

No	Type	Recommendation	Strength	Certainty
5.7	**Monitoring treatments**			
5.7.1	**CPP**	Clinicians should arrange regular and frequent follow-up until medication is optimised and stabilised. • Once medication is titrated and 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 conditions, 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 condition, 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 • worsening of mood • increased anxiety • the risk of stimulant diversion • other side-effects.		

5.7.6	**CCR**	For people taking medication for ADHD, monitoring should include all the following: • For children and adolescents, measure height every 6 months • For children at any age, measure weight 3 and 6 months after starting treatment and 6 months thereafter, or more often if concerns arise • For children and adolescents, plot height and weight on a growth chart • For adults, monitor weight if indicated • 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 adolescent's growth rate measured by height has significantly decreased over time while using stimulant medication, 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
5.7.7	**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 (for example, a community nurse or primary care 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 shortfall 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 medication treatment

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, 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 recommended 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 although it was important that children and adolescents should be encouraged to take responsibility for their own health (including taking medication), parents and carers should oversee them.

Recommendations

No	Type	Recommendation	Strength	Certainty
5.8	**Adherence to medication treatment**			
5.8.1	**CPP**	Clinicians should be aware that people with ADHD (or parents/carers) may have difficulty adhering to treatment plans (e.g. remembering to organise repeat prescriptions and collect medication) due to the symptoms of ADHD or their effects. 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 adolescents.	NA	NA
5.8.4	**CCR**	To increase medication adherence in children, clinicians could offer parent/family training (see recommendations 4.2.1, 4.2.2) 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 review and 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. ADHD is a lifelong condition and treatment is likely to be beneficial and needed throughout one's life. In some individual circumstances or during particular periods, consideration of discontinuation may be necessary.

Summary of evidence review

Children and adolescents

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 adolescents (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 experience of the GDG. 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

No	Type	Recommendation	Strength	Certainty
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, adolescent 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**	Medications known to have discontinuation symptoms, such as SSRIs, 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 06
Considerations - Subgroups

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 conditions, 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, Larsson, Lundholm, Philips, van de Glind, Jayaram-Lindstr om, et al., 2015; Moore, Sunjic, Kaye, Archer, & Indig, 2016b; 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., 2016b). Many prisoners positively screened for ADHD were never previously diagnosed (Moore et al., 2016b). Although many established ADHD screening tools may not reach required levels of sensitivity and specificity that warrant screening of all people in prisons (Moore et al., 2016b), some studies have suggested modified tools that do meet sensitivity and specificity levels of over 80% (Young, Gonzalez, et al., 2016).

Among people in prison, ADHD is often complicated by substance misuse and co-occurring mental health disor ders including trauma histories (Konstenius, Larsson, Lundholm, Philips, van de Glind, Jayaram-Lindstr om, et al., 2015; Rosler, Retz, Yaqoobi, Burg, & Retz-Junginger, 2009; Westmoreland et al., 2010; Young, Sedgwick, et al., 2015).

The link with offending potentially 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), r ecidivism and violence (Lichtenstein et al., 2012; Moore et al., 2016b; 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 disadv antages 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). However, managing ADHD in custodial settings 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 (for example, 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 conditions (particularly substance use disorders), 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 potential 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 use 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 condition, ADHD occurs at a greater rate in custodial settings than in the community, and is often complicated by co-occurring conditions. 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 on the acutely unwell or the suicidal. There are also challenges in identification and provision of assessment and treatment (for example, 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

No	Type	Recommendation	Strength	Certainty
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 conditions among people entering the criminal justice system.	NA	NA
6.1.2	**CPP**	Custodial staff and those within the criminal justice system (e.g. police, magistrates) 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 processes of administering long-acting stimulant medication to those with ADHD (similar to ways of administering other controlled drugs and ensuring the safety of the person in prison receiving stimulant medication). Specific screening for comorbid substance use disorders should be undertaken before administering stimulant medication.	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. 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 conditions 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 envir onments.

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 conditions in women (particularly anxiety, depression, PTSD, substance use disorders, self-harm and bor derline personality disorder) which may mask the presence of ADHD (Young, Sedgwick, et al., 2015) in those 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 that 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. This includes keeping the person receiving stimulant medication safe from other people in prison seeking their medication. 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 peoples

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 condition 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.

This ADHD guideline 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.

10. 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, 2016a). 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. Notably, the rate of ADHD identified for non-Aboriginal adults was much lower than that reported in international studies of ADHD in prisoners (Young, Moss, Sedgwick, Fridman, & Hodgkins, 2015a), suggesting that the rate of identification of ADHD in Moore et al. may be somewhat lower than in other studies.

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. We note the Westerman Aboriginal Symptom Checklist for Youth (WASC-Y) (13–17 years) is a culturally validated checklist for the mental health of Aboriginal youths (covering the domains of depression, suicidal behaviours, drug and alcohol use, impulsivity, anxiety and cultural resilience as a moderator of risk). Although some items from the WASC-Y may have utility as proxies for ADHD symptoms (for example, impulsivity, hyperactivity and agitation) (Little, 2007) we are not aware of any validation in samples of youths with ADHD. 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 Diagnostic and Statistical Manual of Mental Disorders Fifth edition (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 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 (Loh et al., 2017). 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 some Aboriginal and Torres Strait Islander communities. 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 influence 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).

Assessment should include consideration of whether the person's presentation is worsened due to discrimination based on race/ethnicity or sexual orientation. 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 pr ograms that have been culturally tailored to Aboriginal and Torres Strait Islander communities (for example, 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, & Pr een, 2015). People with both Aboriginal parents were two-thir ds less likely to have received stimulants compared to those with non-Aboriginal parents. Those with only an Aboriginal mother were one-thir d less likely to have received stimulants compared to those with non-Aboriginal parents. Stimulant use was lower in non-urban ar eas (Ghosh et al., 2015). This suggests that Aboriginal children and adolescents with ADHD may be under-tr eated, 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 inter ventions should occur (Dudgeon et al., 2014). The wishes of parents, families and people with ADHD regarding treatment options (for example, cultural, pharmacological versus non-pharmacological tr eatments and their combination) should be prioritised (Loh et al., 2017). Non-pharmacological inter ventions 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

No	Type	Recommendation	Strength	Certainty
6.2	**Aboriginal and Torres Strait Islander Peoples**			
6.2.1	**CPP**	Clinicians should conduct a culturally appropriate screening assessment of ADHD in Aboriginal and Torres Strait Islander peoples. A strengths-based focus should be employed wherever possible. 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**	Culturally and psychometrically validated symptom questionnaires should be developed for ADHD presenting in Indigenous children, adolescents and adults.		
6.2.3	**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. A strengths-based focus should be employed wherever possible. The assistance of a cultural interpreter or Aboriginal and Torres Strait Islander health worker should be sought if needed.	NA	NA
6.2.4	**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 cultures. 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
6.2.5	**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
6.2.6	**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

Limited 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.

6.3 ADHD in people with co-occurring substance use disorders

Clinical questions

Although a specific question was not developed during consumer consultation, the importance of diagnosis and treatment of ADHD in people with co-occurring substance use disorder was raised during the public consultation process and was deemed by the GDG to be important for inclusion in this guideline.

Clinical practice gaps, uncertainties and need for guidance

People with ADHD who have co-occurring substance use disorders are an important subgroup that requires individual consideration. It is well established that ADHD is a risk factor for the development of substance use disorders and, conversely, that people presenting with substance use disorders have increased risk of having ADHD as noted in section 1.2 of the guideline (Groenman et al., 2013; van Emmerik-van Oortmerssen et al., 2012)(see also (Faraone et al., 2021; Ozgen et al., 2020). Considerable debate exists internationally regarding the diagnosis and treatment of substance use disorders in individuals with ADHD and *vice versa* (Ozgen et al., 2020; Young, Bellgrove, & Arunogiri, 2021). Legitimate concerns exist regarding the diversion or misuse potential of stimulant medications in those with ADHD and substance use disorders. Although the GDG acknowledged that available evidence is insufficient to permit robust treatment recommendations in this group, it also recognised that guidance is warranted given the significant morbidity associated with people with substance use disorders. Given the lack of strong empirical evidence, the International Collaboration on ADHD and Substance Abuse (ICASA) developed a consensus statement for the screening, diagnosis and treatment of ADHD and SUD (Ozgen et al., 2020). This statement comprised 37 statements with consensus reached for 36 of these. This narrative review and the accompanying recommendations refer closely to this consensus statement, in combination with other available evidence.

Summary of narrative review

Prevalence

A childhood diagnosis of ADHD is an established risk factor for the development of substance use disorders in adolescents and adults (Groenman et al., 2013). Meta-analysis by Lee et al of over 5400 people showed that those with ADHD were almost three times more likely to be nicotine-dependent and 50% more likely to develop a drug or alcohol disorder than individuals without ADHD (Lee, Humphreys, Flory, Liu, & Glass, 2011). Meta-analysis by Groenman et al reported twofold greater odds of alcohol and nicotine related disorders (Groenman, Janssen, & Oosterlaan, 2017) in people with ADHD. Sundquist et al reported a more than threefold (Hazard Ratio of 3.34) increased risk of drug use disorders in children diagnosed with ADHD before 15 years of age, using data from a Swedish population-based cohort (Sundquist, Ohlsson, Sundquist, & Kendler, 2015). Conversely, evidence also suggests that there is an increased prevalence of ADHD in those presenting with primary SUD compared with the prevalence of ADHD in the population. For instance, meta-analysis by van Emmerik-van Oortmerssen reported that 23.1% of all individuals with substance use disorders met DSM-criteria for co-occurring ADHD (van Emmerik-van Oortmerssen et al., 2012).

Presentation and identification

Early detection of ADHD in drug and alcohol settings and, conversely, substance use disorders within mental health settings is critical to avoid the morbidity associated with coexisting ADHD and substance use disorders. For instance, it is established that ADHD has a negative influence on the course of substance use disorders, being associated with an earlier age of addiction, increased use of substances and higher rates of hospitalisation and higher relapse rates from addiction treatment (van Emmerik-van Oortmerssen et al., 2012). Despite the negative consequences of having both conditions, there is a lack of systematic screening of substance use disorders in mental health services and ADHD in drug and alcohol services, resulting in poor detection and treatment of people in this subgroup (Ozgen et al., 2020; Young, Bellgrove, et al., 2021). As noted in section 2.2, ADHD screening measures explored in substance

use disorders groups include the 6 item Adult ADHD Rating Scale (ASRS) which has acceptable sensitivity but not specificity (Kessler et al., 2005; Van de Glind et al., 2013). For the detection of problematic drug and alcohol use in people with ADHD, two generally accepted screening instruments include the DAST (Drug Abuse Screening Test) and AUDIT (Alcohol Use Disorders Identification Test). Both were investigated for their construct validity and reliability in a population of adults with ADHD symptoms (n = 139). Results showed both the DAST and the AUDIT are acceptable screening instruments, respectively, for drug and alcohol use problems in adults with ADHD (McCann, Simpson, Ries, & Roy-Byrne, 2000).

ICASA's international consensus statement for the screening and diagnosis and treatment of ADHD and substance use disorders recommends early detection, routine screening for at risk-use of substances and substance use disorders in adolescents with ADHD in primary care and mental health treatment settings, and screening for ADHD in adolescents entering substance use disorders treatment settings. Screening should follow best practice protocols for each disorder.

Assessment

For the diagnosis of ADHD in substance use disorders and vice versa, ICASA's international consensus statement for the screening and diagnosis and treatment of ADHD and substance use disorders recommends that diagnosis for each should follow best practice protocols for each disorder separately, and that diagnosis of co-occurring ADHD and substance use disorders should be performed by appropriately qualified health care specialists (see Principles), preferably using standardised structured diagnostic instruments (Ozgen et al., 2020).

Treatment

There is a lack of high-quality evidence (for example, RCTs and meta-analyses) regarding the pharmacological and non-pharmacological treatment of ADHD in people with substance use disorders (see Chapter 4 and 5). Nevertheless, the ICASA expert consensus statement recommends a multi-modal approach combining medication (particularly stimulants) and cognitive-behavioural therapy approaches. Where misuse or diversion is suspected, ICASA recommends consideration of non-stimulant treatment. Further, to minimise the risk of misuse and diversion, use of long-acting, rather than short-acting, stimulants, is recommended (Ozgen et al., 2020). One RCT of 119 participants with ADHD and substance use disorders studied the impact of an integrated cognitive-behavioural therapy (CBT) intervention targeting both ADHD and substance use disorders, compared with CBT for substance use disorders alone (van Emmerik-van Oortmerssen et al., 2019). The integrated CBT intervention improved ADHD but not substance use disorder symptoms, suggesting potential effectiveness of this integrated CBT for treating ADHD in this subgroup with concurrent CBT targeting substance use disorders symptoms (van Emmerik-van Oortmerssen et al., 2019) .

Myths around stimulant use and substance use disorders in ADHD

There are a number of myths regarding ADHD, substance use disorders and stimulant medication. One is that use of stimulant medication to treat ADHD causes or increases the risk of later developing substance use disorders. There is robust evidence that providing stimulant treatment for ADHD does not increase the risk of substance use disorders, compared with people with ADHD who do not access stimulant medication (Boland et al., 2020; Humphreys, Eng, & Lee, 2013). Stimulant treatment in people with ADHD can result in positive outcomes for those with co-occurring substance use disorders including reduced substance use (Boland et al., 2020; Fluyau, Revadigar, & Pierre, 2021).

It is critical that these myths about ADHD and stimulant use are addressed by clinicians through accurate education, as they cause stigma which can negatively impact on the self-esteem and self-worth of people with ADHD. Further, some state-wide regulations regarding the prescription of controlled drugs (which include stimulants) preclude or limit their use in people with ADHD and substance use disorders, and may not reflect the evidence above. These myths and regulations can result in people with ADHD and their families not accessing the first line and most effective treatment for ADHD.

Recommendations

No	Type	Recommendation	Strength	Certainty
6.3	**People with substance use disorders**			
6.3.1	**CCR**	Those working in public and mental health settings should be aware of the high co-occu rrence of substance use disorders in those with ADHD. Clinicians treating ADHD in these settings should routinely screen for problematic substance use or substance use disorders using best-practice screening questionnaires for substance use disorders. Formal diagnosis of substance use disorders in an individual with ADHD should follow recommended guidelines for substance use disorders and include a structured diagnostic interview.	NA	NA
6.3.2	**CCR**	Those working in drug and alcohol settings should be aware of the high co-occurr ence of ADHD and substance use disorders. Clinicians treating substance use disorders in these settings should routinely screen for ADHD using appropriate screening questionnaires for ADHD. Formal diagnosis of ADHD in an individual with substance use disorders should follow recommended guidelines (see 2. Diagnosis).	NA	NA
6.3.3	**CCR**	Screening and diagnostic assessment should take place when the person's substance use is sufficiently stabilised. Only in case of acute intoxication or severe withdrawal symptoms should these assessments be postponed.	NA	NA
6.3.4	**CCR**	Treatment for people with ADHD and substance use disorders should focus on both disorders concurrently, should consider their interrelationship, and should follow the guidelines for each separate disorder and the general guidelines about treatment of people with co-occurring disorders.	NA	NA
6.3.5	**CCR**	In most cases of concurrent ADHD and substance use disorders, clinicians should start treatment aimed at abstaining from or reducing/stabilising the use of substances first, since current substance use disorders may complicate diagnosis and treatment of ADHD. However, start of pharmacological or non-pharmacological tr eatment of ADHD should not unnecessarily be delayed.	NA	NA
6.3.6	**CCR**	Treatment of substance use disorders in patients with ADHD should follow a multimodal treatment approach comprising both pharmacological and cognitive behavioural based interventions.	NA	NA
6.3.7	**CCR**	Clinicians treating ADHD with substance use disorders should be aware of, and monitor for, the risk of misuse and diversion of psychostimulant medication. To minimise risk of diversion and misuse, use of long-acting, rather than shor t-acting, psy chostimulants should be considered.	NA	NA

6.3.8	**CCR**	Before starting stimulant pharmacotherapy in people with concurrent ADHD and substance use disorders, it is important that the person is abstinent or has reduced/stabilised their substance use. If this is not the case, the clinician should consider non-stimulant pharmacotherapy (e.g. atomoxetine, guanfacine, or bupropion)	NA	NA
6.3.9	**CCR**	Pharmacological treatment of ADHD requires careful titration and monitoring of its effect and possible adverse effects. Higher doses of stimulants may be required in people with ADHD and concurrent substance use disorders than in those without substance use disorders to achieve a favourable effect on both the ADHD symptoms and reduction of substance use.	NA	NA

Clinical considerations for implementation of the recommendations

Given the high co-occurrence of substance use disorders and ADHD, clinicians working in addiction settings require expertise and training in ADHD. Those in mental health settings or settings including people with high risk of ADHD, need to have experience in the identification of people with ADHD who have substance use disorders. Legitimate concerns exist regarding the diversion or misuse potential of stimulant medications in those with ADHD and substance use disorders. If urine screening for illicit substances is used, clinicians should be aware of the limits of such screening tests and the potential for false positives/negatives and interactions with other medications. They should contextualise the interpretation of results with detailed patient histories. Greater awareness that stimulant medications are rigorously controlled, safe medications and that long-acting formulations, in particular, are associated with no increased risk of future substance use disorders should help to reduce any fear or stigma around their use in alcohol and drug services, and will ensure those with ADHD receive access to vital treatment. Greater interaction between addiction specialists and ADHD-specialists is urgently needed.

Chapter 07

Considerations – Service and Policy

Chapter 7. Considerations – Service and Policy

7.1 Services and configuration

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 conditions with significant impacts on a person's functioning and quality of life. However, in reality this 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 (for example, 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 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, adolescents 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.

Equity in the delivery of services for people with ADHD remains a major issue in Australia, with the majority of public health services electing not to diagnose and treat ADHD, especially in adults. This leads to the majority of people on low incomes, adults especially, not being able to access essential services. Improvements are being made to the equitable provision of medications for ADHD, but some medications are still not available on the PBS for adults who have not been diagnosed in childhood. ADHD is not on the list of eligible conditions for entry to the NDIS. Although this does not exclude those with significant impairment from accessing the scheme, it has meant that no meaningful communication has been possible to educate the NDIS in the needs of those who are disabled by ADHD.

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 directory of information regarding ADHD services. There is a need for models of care within the Australian context, particularly shared care.

Recommendations

7	Considerations – Service and Policy
7.1	**National services**
7.1.1	Funding should be made available for an ADHD helpline, accessible to all Australians, consistent with those of other major mental health conditions. This could involve an expansion of the existing unfunded National ADHD Helpline.
7.1.2	Laws and regulations for stimulant prescribing and shared care should be uniform between the states and territories in Australia, and allow for cross-bor der dispensing. They should reflect best practice and evidence of safety and effectiveness.
7.1.3	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.
7.1.4	Eligibility and access to support from the NDIS should be decided based on the functional needs of the person with ADHD, and not based solely on diagnosis.
7.1.5	Primary care and public mental health services should make diagnosis and treatment available to people of all ages with ADHD, as for other mental health conditions.
7.1.6	A system of ADHD-specific peer support should be established to ensure that this support is accessible throughout Australia. Peer-suppor t programs already exist, providing opportunities to explore different models on which to base nationally available ADHD specific peer-suppor t 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.
7.2	**Education Settings**
7.2.1	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.
7.2.2	Students with ADHD of all ages require reasonable adjustments to be made to maximise their inclusion and learning opportunities. Co-occurring neur odevelopmental disorders including specific learning disorders should be identified and supported. The types and number of adjustments should be decided as part of an individual learning support plan developed with the person with ADHD, their carers, education staff and other relevant clinicians.

7.2.3	Education settings should be supported to implement learning support plans, host inter-agency meetings, and possibly host visiting clinicians to consult and provide intervention recommendations.
7.3	**Service configuration and activities**
7.3.1	Services for people with ADHD should be configured to ensure they are person- and family-centr ed.
7.3.2	Agencies providing services for people with ADHD should collaborate with each other, the care coordinator, and the person with ADHD and/or their family, to provide integrated models of care that encompass recovery principles and with a focus on shared decision-making.
7.3.3	Development of agreed pathways, to simplify navigating the healthcare system for both consumers and clinicians, are needed throughout the lifespan for people with ADHD to ensure seamless transition.
7.3.4	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.
7.3.5	As part of the development of agreed referral and care pathways, all relevant agencies should be consulted and their roles clarified, and where possible, expanded. People with a lived experience of ADHD, including clinicians with ADHD, should be involved to inform the design of services, supports and care pathways.

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.

7.2 Professional Training

Clinical questions

Are health professionals including psychiatrists, paediatricians, GPs, 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 appr oach, 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 it 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-r ecognition 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 (for example, difficulties taking medication regularly, and co-occurring medical and health conditions). GPs also manage chr onic disease, making them uniquely placed to support individuals with long-term lif elong disorders, such as ADHD, with specialist care as needed. Accessing healthcare from GPs will also be more affordable, especially for those on low incomes.

In Australia the services for people with substance use disorders are primarily assessed and treated by publicly funded Drug and Alcohol services, through a variety of government and non-go vernment agencies. The majority of these services are independent of mental health services, and staffed by workers specialising in addiction medicine, without training in identifying and treating ADHD. Thus, there is a service divide for those with co-occurring conditions such as ADHD. Clinicians in these settings need training to increase awareness of ADHD as per recommendations in section 6.3.

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 r esources or the RANZCP Adult ADHD Network model.

Recommendations

7.4	Professional Training
7.4.1	Information about ADHD and its treatment and support options throughout the lifespan should be included in the curriculums of mental health/developmental disorder training for educators, medical, nursing, pharmacy, and allied health professionals and other relevant professions such as social work, justice system, and child protection.
7.4.2	Organisations that provide services to people with ADHD, including all public health services (child, adolescent, adult), should ensure staff receive appropriate ADHD training including, where appropriate, skills to identify, diagnose, treat and provide ongoing monitoring and support. This includes training and resources for those involved in transitioning people with ADHD from adolescents to adult services.
7.4.3	General practitioners and other specialist medical practitioners, paediatricians, psychiatrists, and geriatricians should be supported to increase their skills in identifying, diagnosing, and treating people with ADHD, including prescribing stimulants.
7.4.4	An ADHD medication prescribing handbook should be developed to provide detailed guidance on treatment choice, initiation, side-effects, dosing, combination therapy and product information, relevant to the Australian context. Training for prescribers should be based on the handbook.
7.4.5	Ongoing professional development for ADHD treatment and care options (both interdisciplinary and discipline-specific) should be made easily available.

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 08

Considerations - Research

Chapter 8. Considerations – Research

The GDG identified numerous areas for research, including evidence gaps relevant to the care of people with ADHD. This included gaps in the areas of screening, co-occurring disorders, pharmacological and non-pharmacological interventions, and emerging approaches such as ADHD coaches and peer support. A lack of research in subgroups was also noted including adults, older adults, girls and women, Aboriginal and Torres Strait Islander peoples, people from different cultural and ethnic backgrounds, migrants, people with co-occurring substance use disorders and imprisoned people. There is also a lack of research regarding models of care within the Australian context, and in particular shared care models between primary and secondary care. There is a lack of research on how to best support children and adolescents with ADHD in Australian schools.

Understanding evidence gaps and identifying research priorities will require significant future research using a structured approach. The involvement of people with a lived experience of ADHD in all aspects of the research process is essential.

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

Further investigation of non-pharmacological treatments

Future research examining the efficacy of non-pharmacological supports for individuals with ADHD should examine outcomes beyond ADHD symptom severity including health related quality of life, self-esteem, and positive coping strategies. Evaluation of interventions needs to include appropriate time points to measure outcomes, so that magnitude, interactions and timing of benefits are ascertained.

Research gaps include:

- a better understanding of the numerous disorders that co-occur at high levels with ADHD, their prevalence and impact on optimal treatment and support, as well as training and awareness for those involved in their care
- cost-effectiveness comparisons of lengthier versus shorter parent/family training protocols and other treatments
- effectiveness of novel interventions to support pre-schoolers with ADHD in early childhood settings
- efficacy of different types of parent/family training (there are a 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 cognitive-behavioural interventions relative to diagnosis and other pharmacological and non-pharmacological interventions
- whether there are benefits of directly delivered cognitive-behavioural interventions for children and adolescents, in addition to parent/family training
- acceptability and adherence of mindfulness components of some cognitive behavioural interventions, along with whether these change effect sizes found in adult studies utilising mindfulness based cognitive therapy
- further study into the effectiveness of cognitive training and neurofeedback for treating symptoms and functional outcomes in ADHD.

Further investigation of pharmacological treatment options

Research gaps include:

- the optimal combinations of treatments in adults
- optimal treatment when co-occurring substance use disorders (and other common conditions) are present in adults
- whether the doses currently subsidised by the Australian Pharmaceutical Benefits Scheme (PBS) are appropriate
- understanding what proportion of people achieve optional ADHD symptom remission with medication doses equal to, or below, the manufacturer maximum dose recommendations

- understanding what minimal side effect medication doses are required to achieve optimal symptom remission and what proportion of people do not achieve remission with this dosage
- understanding the potential benefits of stimulant medication in adults over 65 who have ADHD; and whether anticholinergics prescribed for dementia help with ADHD symptom reduction in older people with ADHD
- exploration of children and adolescents taking more than two different medications to treat ADHD and/or co-occurring conditions
- long-term studies of the efficacy of stimulant treatment in children and adolescents
- further investigation into loss of efficacy of stimulant medication over time in people with ADHD
- development of national system to unify prescribing of stimulant medications, rather the current state-based system.

Longitudinal and strengths-based research

Research gaps include:

- prospective and longitudinal studies of ADHD patients as they transition through adolescence and into adulthood
- research using a strengths-based appr oach to support individuals with ADHD and their families
- evaluation of optimal care pathway models for improving outcomes for ADHD across the lifespan.

Further exploration of subgroups

Research gaps include:

- development of culturally and psychometrically valid assessment instruments for Aboriginal and Torres Strait Islander peoples and those from culturally and linguistically diverse groups
- an understanding of the impacts of the menstrual cycle, pregnancy, birth, breast feeding and menopause on girls and women with ADHD including optimal treatment.

Further investigation of shared care models and economic factors:

Research gaps include:

- further research into models of care within the Australian context, particularly shared care between primary and secondary care, for the assessment and treatment of ADHD
- evaluation of the clinical effectiveness of models of care which emphasise regular assessment of symptom change/improvement over time (for example, measurement-based car e approaches)
- assessing the human and economic cost of failure to support and treat people with ADHD.

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. Prioritisation of research activities should include all relevant stakeholders, including those with a lived experience of ADHD. Ensuring evaluation of the potential research impact should be included in this process.

Recommendations

8	Considerations – Research
8.1.1	A process for setting research priorities should be established, involving all key stakeholders, including people with a lived experience of ADHD, and following established participatory research methods.
8.1.2	Research prioritisation should include individual and health service research and should consider cost-effectiveness and new models of shared care.

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 r ecommendations 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 should be inter-disciplinar y, cross sectoral (involving 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.

References

References

AADPA. (2022). ADHD stimulant prescribing regulations & authorities in Australia & New Zealand

Abikoff, H. B., Thompson, M., Laver Bradbury, C., Long, N., Forehand, R. L., Miller Brotman, L., . . . Sonuga Barke, E. (2015). Parent training for preschool ADHD: a randomized controlled trial of specialized and generic programs. *Journal of Child Psychology and Psychiatry, 56*(6), 618-631.

ABS. (2017). 2071.0 - Census of Population and Housing: Reflecting Australia - Stories from the Census, 2016 *Aboriginal and Torres Strait Islander Population.*

ADAPTE Collaboration. (2009). The ADAPTE Process. Resource Toolkit for Guideline Adaptation Version 2.0. In: ADAPTE Collaboration.

Adler, L. A., Dirks, B., Deas, P. F., Raychaudhuri, A., Dauphin, M. R., Lasser, R. A., & Weisler, R. H. (2013). Lisdexamfetamine dimesylate in adults with attention-deficit/ hyperactivity disorder who report clinically significant impairment in executive function: results from a randomized, double-blind, placebo-controlled study. *J Clin Psychiatry, 74*(7), 694-702.

Adler, L. A., Zimmerman, B., Starr, H. L., Silber, S., Palumbo, J., Orman, C., & Spencer, T. (2009). Efficacy and safety of OROS methylphenidate in adults with attention-deficit/hyperactivity disorder: a randomized, placebo-controlled, double-blind, parallel group, dose-escalation study. *J Clin Psychopharmacol, 29*(3), 239-247.

Aggensteiner, P. M., Brandeis, D., Millenet, S., Hohmann, S., Ruckes, C., Beuth, S., . . . Holtmann, M. (2019). Slow cortical potentials neurofeedback in children with ADHD: comorbidity, self-regulation and clinical outcomes 6 months after treatment in a multicenter randomized controlled trial. *Eur Child Adolesc Psychiatry, 28*(8), 1087-1095.

Ahmadi, N., Chaudhry, S., Salam, T., Rodriguez, J., Kase, M., Olango, G., . . . Pynoos, R. (2020). A Randomized Controlled Feasibility Trial of Reminder-Focused Positive Psychiatry in Adolescents With Comorbid Attention-Deficit/Hyperactivity Disorder and Posttraumatic Stress Disorder. *Prim Care Companion CNS Disord, 22*(5).

Ahmann, E., Tuttle, L. J., Saviet, M., & Wright, S. D. (2018). A descriptive review of ADHD coaching research: Implicatinos for college students. . *Journal of Postsecondary Education and Disability, 31*, 17-39.

Ahmed, G. M., & Mohamed, S. (2011). Effect of regular aerobic exercises on behavioral, cognitive and psychological response in patients with attention deficit-hyperactivity disorder. *Life Sci J, 8*(2), 366-371.

Ahmed, R., Borst, J. M., Yong, C. W., & Aslani, P. (2014). Do parents of children with attention-deficit/hyperactivity disorder (ADHD) receive adequate information about the disorder and its treatments? A qualitative investigation. *Patient Prefer Adherence, 8*, 661-670.

Alegria, A. A., Wulff, M., Brinson, H., Barker, G. J., Norman, L. J., Brandeis, D., . . . Rubia, K. (2017). Real-time fMRI neurofeedback in adolescents with attention deficit hyperactivity disorder. *Hum Brain Mapp, 38*(6), 3190-3209.

Allsop, J., Jones, K., & Baggott, R. (2004). Health consumer groups in the UK: a new social movement? *Sociol Health Illn, 26*(6), 737-756.

American Psychiatric Association. (2013). *Diagnostic and Statistical Manual of Mental Disorders - Fifth Edition*. Washington DC: American Psychiatric Association.

Anastopoulos, A. D., Langberg, J. M., Eddy, L. D., Silvia, P. J., & Labban, J. D. (2021). A randomized controlled trial examining CBT for college students with ADHD. *J Consult Clin Psychol, 89*(1), 21-33.

Andersson, E., McIlduff, C., Turner, K., Thomas, S., Davies, J., Elliott, E. J., & Einfeld, S. (2019). Jandu Yani U 'For All Families' Triple P—positive parenting program in remote Australian Aboriginal communities: a study protocol for a community intervention trial. *BMJ open, 9*(10), e032559.

Appleton, R., Elahi, F., Tuomainen, H., Canaway, A., & Singh, S. P. (2021). "I'm just a long history of people rejecting referrals" experiences of young people who fell through the gap between child and adult mental health services. *Eur Child Adolesc Psychiatry, 30*(3), 401-413.

Arabgol, F., Panaghi, L., & Nikzad, V. (2015). Risperidone Versus Methylphenidate in Treatment of Preschool Children With Attention-Deficit Hyperactivity Disorder. *Iran J Pediatr, 25*(1), e265.

Arnold, L. E., Arns, M., Barterian, J., Bergman, R., Black, S., Conners, C. K., . . . Higgins, T. (2021). Double-blind placebo-controlled randomized clinical trial of neurofeedback for attention-deficit/hyperactivity disorder with 13-month follow-up. *Journal of the American Academy of Child & Adolescent Psychiatry, 60*(7), 841-855.

Arnsten, A. F., & Pliszka, S. R. (2011). Catecholamine influences on prefrontal cortical function: relevance to treatment of attention deficit/hyperactivity disorder and related disorders. *Pharmacology, biochemistry, and behavior, 99*(2), 211-216.

Asherson, P., Akehurst, R., Kooij, J. S., Huss, M., Beusterien, K., Sasané, R., . . . Hodgkins, P. (2012). Under diagnosis of adult ADHD: cultural influences and societal burden. *Journal of Attention Disorders, 16*(5_suppl), 20S-38S.

Au, A., Lau, K. M., Wong, A. H. C., Lam, C., Leung, C., Lau, J., & Lee, Y. K. (2014). The efficacy of a Group Triple P (Positive Parenting Program) for Chinese parents with a child diagnosed with ADHD in Hong Kong: A pilot randomised controlled study. *Australian Psychologist, 49*(3), 151-162.

Azzopardi, P. S., Sawyer, S. M., Carlin, J. B., Degenhardt, L., Brown, N., Brown, A. D., & Patton, G. C. (2018). Health and wellbeing of Indigenous adolescents in Australia: a systematic synthesis of population data. *The Lancet, 391*(10122), 766-782.

Bachmann, K., Lam, A. P., Soros, P., Kanat, M., Hoxhaj, E., Matthies, S., . . . Philipsen, A. (2018). Effects of mindfulness and psychoeducation on working memory in adult ADHD: A randomised, controlled fMRI study. *Behav Res Ther, 106*, 47-56.

Baddam, S. K. R., Canapari, C. A., Van de Grift, J., McGirr, C., Nasser, A. Y., & Crowley, M. J. (2021). Screening and Evaluation of Sleep Disturbances and Sleep Disorders in Children and Adolescents. *Child Adolesc Psychiatr Clin N Am, 30*(1), 65-84.

Baggio, S., Bayard, S., Cabelguen, C., Desseilles, M., Gachet, M., Kraemer, C., . . . Sauvaget, A. (2021). Diagnostic Accuracy of the French Version of the Adult Attention Deficit/Hyperactivity Disorder Self-Report Screening Scale for DSM-5 (ASRS-5). *Journal of Psychopathology and Behavioral Assessment, 43*(2), 367-375.

Baggio, S., Fructuoso, A., Guimaraes, M., Fois, E., Golay, D., Heller, P., . . . Delessert, D. (2018). Prevalence of attention deficit hyperactivity disorder in detention settings: a systematic review and meta-analysis. *Frontiers in psychiatry, 9*, 331.

Bai, G. N., Wang, Y. F., Yang, L., & Niu, W. Y. (2015). Effectiveness of a focused, brief psychoeducation program for parents of ADHD children: improvement of medication adherence and symptoms. *Neuropsychiatr Dis Treat, 11*, 2721-2735.

Barth, B., Mayer-Carius, K., Strehl, U., Wyckoff, S. N., Haeussinger, F. B., Fallgatter, A. J., & Ehlis, A.-C. (2021). A randomized-controlled neurofeedback trial in adult attention-deficit/hyperactivity disorder. *Scientific Reports, 11*(1), 1-17.

Beheshti, A., Chavanon, M.-L., & Christiansen, H. (2020). Emotion dysregulation in adults with attention deficit hyperactivity disorder: a meta-analysis. *Bmc Psychiatry, 20*(1).

Bell, A., Corfield, M., Davies, J., & Richardson, N. (2010). Collaborative transdisciplinary intervention in early years–putting theory into practice. *Child: care, health and development, 36*(1), 142-148.

Benzing, V., & Schmidt, M. (2017). Cognitively and physically demanding exergaming to improve executive functions of children with attention deficit hyperactivity disorder: a randomised clinical trial. *BMC Pediatr, 17*(1), 8.

Biederman, J., Mick, E., Spencer, T., Surman, C., & Faraone, S. V. (2012). Is response to OROS-methylphenidate treatment moderated by treatment with antidepressants or psychiatric comorbidity? A secondary analysis from a large randomized double blind study of adults with ADHD. *CNS Neurosci Ther, 18*(2), 126-132.

Biederman, J., Mick, E., Surman, C., Doyle, R., Hammerness, P., Harpold, T., . . . Spencer, T. (2006). A randomized, placebo-controlled trial of OROS methylphenidate in adults with attention-deficit/hyperactivity disorder. *Biol Psychiatry, 59*(9), 829-835.

Biederman, J., Mick, E., Surman, C., Doyle, R., Hammerness, P., Kotarski, M., & Spencer, T. (2010). A randomized, 3-phase, 34-week, double-blind, long-term efficacy study of osmotic-release oral system-methylphenidate in adults with attention-deficit/hyperactivity disorder. *J Clin Psychopharmacol, 30*(5), 549-553.

Bikic, A., Christensen, T. O., Leckman, J. F., Bilenberg, N., & Dalsgaard, S. (2017). A double-blind randomized pilot trial comparing computerized cognitive exercises to Tetris in adolescents with attention-deficit/hyperactivity disorder. *Nord J Psychiatry, 71*(6), 455-464.

Bikic, A., Leckman, J. F., Christensen, T. O., Bilenberg, N., & Dalsgaard, S. (2018). Attention and executive functions computer training for attention-deficit/hyperactivity disorder (ADHD): results from a randomized, controlled trial. *Eur Child Adolesc Psychiatry, 27*(12), 1563-1574.

Boada, R., Willcutt, E. G., & Pennington, B. F. (2012). Understanding the comorbidity between dyslexia and attention-deficit/hyperactivity disorder. *Topics in Language Disorders, 32*(3), 264-284.

Bogle, A., Rhodes, P., & Hunt, C. (2021). Cultural humility and decolonial practice: narratives of therapists' lives. *Clinical Psychologist*, 1-8.

Boland, H., DiSalvo, M., Fried, R., Woodworth, K. Y., Wilens, T., Faraone, S. V., & Biederman, J. (2020). A literature review and meta-analysis on the effects of ADHD medications on functional outcomes. *J Psychiatr Res, 123*, 21-30.

Bor, W., Sanders, M. R., & Markie-Dadds, C. (2002). The effects of the Triple P-Positive Parenting Program on preschool children with co-occurring disruptive behavior and attentional/hyperactive difficulties. *Journal of abnormal child psychology, 30*(6), 571-587.

Bradstreet, S., & Pratt, R. (2010). Developing peer support worker roles: Reflecting on experiences in Scotland. . *Mental Health and Social Inclusion, 14*(3), 36-41.

Brevik, E. J., Lundervold, A. J., Haavik, J., & Posserud, M. B. (2020). Validity and accuracy of the Adult Attention Deficit/Hyperactivity Disorder (ADHD) Self Report Scale (ASRS) and the Wender Utah Rating Scale (WURS) symptom checklists in discriminating between adults with and without ADHD. *Brain and behavior, 10*(6), e01605.

CADDRA. (2018). *Canadian ADHD Practice Guidelines*. Toronto ON: Canadian ADHD Resource Alliance

Camara, B., Padoin, C., & Bolea, B. (2021). Relationship between sex hormones, reproductive stages and ADHD: a systematic review. *Archives of Women's Mental Health*, 1-8.

Canadian ADHD Resource Alliance (CADDRA). (2018). *Canadian ADHD Practice Guidelines, Fourth Edition*. Toronto ON: CADDRA.

Chacko, A., Wymbs, B. T., Wymbs, F. A., Pelham, W. E., Swanger-Gagne, M. S., Girio, E., . . . Phillips, C. (2009). Enhancing traditional behavioral parent training for single mothers of children with ADHD. *Journal of Clinical Child & Adolescent Psychology, 38*(2), 206-218.

Chang, Z., Lichtenstein, P., Langstrom, N., Larsson, H., & Fazel, S. (2016). Association Between Prescription of Major Psychotropic Medications and Violent Reoffending After Prison Release. *JAMA, 316*(17), 1798-1807.

Cherkasova, M. V., Roy, A., Molina, B. S. G., Scott, G., Weiss, G., Barkley, R. A., . . . Hechtman, L. (2021). Review: Adult Outcome as Seen Through Controlled Prospective Follow-up Studies of Children With Attention-Deficit/Hyperactivity Disorder Followed Into Adulthood. *Journal of the American Academy of Child and Adolescent Psychiatry*.

Ching, C., Eslick, G. D., & Poulton, A. S. (2019). Evaluation of Methylphenidate Safety and Maximum-Dose Titration Rationale in Attention-Deficit/Hyperactivity Disorder: A Meta-analysis. *JAMA Pediatr, 173*(7), 630-639.

Christiansen, H., Reh, V., Schmidt, M. H., & Rief, W. (2014). Slow cortical potential neurofeedback and self-management training in outpatient care for children with ADHD: study protocol and first preliminary results of a randomized controlled trial. *Front Hum Neurosci, 8*, 943.

Christiansen, M. S., Labriola, M., Kirkeskov, L., & Lund, T. (2021). The impact of childhood diagnosed ADHD versus controls without ADHD diagnoses on later labour market attachment-a systematic review of longitudinal studies. *Child and Adolescent Psychiatry and Mental Health, 15*(1).

Climie, E. A., & Mastoras, S. M. (2015). ADHD in schools: Adopting a strengths-based perspective. . *Canadian Psychology/Psychologie Canadienne, 56*(3), 295.

Coghill, D. R. (2017). Organisation of services for managing ADHD. *Epidemiol Psychiatr Sci, 26*(5), 453-458.

Cortese, S. (2020). Pharmacologic Treatment of Attention Deficit-Hyperactivity Disorder. *New England Journal of Medicine, 383*(11), 1050-1056.

Cortese, S., Adamo, N., Del Giovane, C., Mohr-Jensen, C., Hayes, A. J., Carucci, S., . . . Coghill, D. (2018). Comparative efficacy and tolerability of medications for attention-deficit hyperactivity disorder in children, adolescents, and adults: a systematic review and network meta-analysis. *The Lancet Psychiatry, 5*(9), 727-738.

Cortese, S., Aoki, Y. Y., Itahashi, T., Castellanos, F. X., & Eickhoff, S. B. (2021). Systematic Review and Meta-analysis: Resting-State Functional Magnetic Resonance Imaging Studies of Attention-Deficit/Hyperactivity Disorder. *J Am Acad Child Adolesc Psychiatry, 60*(1), 61-75.

Cortese, S., Faraone, S. V., Konofal, E., & Lecendreux, M. (2009). Sleep in children with attention-deficit/hyperactivity disorder: meta-analysis of subjective and objective studies. *Journal of the American Academy of Child & Adolescent Psychiatry, 48*(9), 894-908.

Cortese, S., Moreira-Maia, C. R., St Fleur, D., Morcillo-Penalver, C., Rohde, L. A., & Faraone, S. V. (2016). Association Between ADHD and Obesity: A Systematic Review and Meta-Analysis. *American journal of psychiatry, 173*(1), 34-43.

Cowley, B., Holmstrom, E., Juurmaa, K., Kovarskis, L., & Krause, C. M. (2016). Computer Enabled Neuroplasticity Treatment: A Clinical Trial of a Novel Design for Neurofeedback Therapy in Adult ADHD. *Front Hum Neurosci, 10*, 205.

Curtis, D. F., Heath, C. L., & Hogan, W. J. (2021). Child skills training for attention-deficit/hyperactivity disorder (ADHD): A randomized controlled trial of structured dyadic behavior therapy (SDBT). *Psychotherapy (Chic), 58*(1), 68-80.

Daigre, C., & Ramos-Quiroga, J. A. (2009). Adult ADHD Self-Report Scale (ASRS-v1. 1) symptom checklist in patients with substance use disorders. *Actas Esp Psiquiatr, 37*(6), 299-305.

Daley, D., & O'Brien, M. (2013). A small-scale randomized controlled trial of the self-help version of the New Forest Parent Training Programme for children with ADHD symptoms. *European Child & Adolescent Psychiatry, 22*(9), 543-552.

Daley, D., Tarver, J., & Sayal, K. (2021). Efficacy of a self help parenting intervention for parents of children with attention deficit hyperactivity disorder in adjunct to usual treatment—Small scale randomized controlled trial. *Child: care, health and development, 47*(2), 269-280.

Dalsgaard, S., Østergaard, S. D., Leckman, J. F., Mortensen, P. B., & Pedersen, M. G. (2015). Mortality in children, adolescents, and adults with attention deficit hyperactivity disorder: a nationwide cohort study. *Lancet, 385*(9983), 2190-2196.

Danckaerts, M., Sonuga-Barke, E. J., Banaschewski, T., Buitelaar, J., Dopfner, M., Hollis, C., . . . Coghill, D. (2010). The quality of life of children with attention deficit/hyperactivity disorder: a systematic review. *Eur Child Adolesc Psychiatry, 19*(2), 83-105.

Davis, C. C., Claudius, M., Palinkas, L. A., Wong, J. B., & Leslie, L. K. (2012). Putting families in the center: Family perspectives on decision making and ADHD and implications for ADHD care. *Journal of Attention Disorders, 16*(8), 675-684.

Deloitte Access Economics. (2019). *The social and economic costs of ADHD in Australia*. Retrieved from Canberra:

Demontis, D., Walters, R. K., Martin, J., Mattheisen, M., Als, T. D., Agerbo, E., . . . Neale, B. M. (2019). Discovery of the first genome-wide significant risk loci for attention deficit/hyperactivity disorder. *Nat Genet, 51*(1), 63-75.

Dentz, A., Guay, M. C., Parent, V., & Romo, L. (2020). Working Memory Training for Adults With ADHD. *J Atten Disord, 24*(6), 918-927.

Di Lorenzo, R., Balducci, J., Poppi, C., Arcolin, E., Cutino, A., Ferri, P., . . . Filippini, T. (2021). Children and adolescents with ADHD followed up to adulthood: a systematic review of long-term outcomes. *Acta neuropsychiatrica*, 1-42.

Diaz-Roman, A., Mitchell, R., & Cortese, S. (2018). Sleep in adults with ADHD: Systematic review and meta-analysis of subjective and objective studies. *Neuroscience and Biobehavioral Reviews, 89*, 61-71.

DiGiacomo, M., Davidson, P. M., Abbott, P., Delaney, P., Dharmendra, T., McGrath, S. J., . . . Vincent, F. (2013). Childhood disability in Aboriginal and Torres Strait Islander peoples: a literature review. *International journal for equity in health, 12*(1), 7.

Dittner, A. J., Hodsoll, J., Rimes, K. A., Russell, A. J., & Chalder, T. (2018). Cognitive-behavioural therapy for adult attention-deficit hyperactivity disorder: a proof of concept randomised controlled trial. *Acta Psychiatr Scand, 137*(2), 125-137.

Dowling, N. A., Cowlishaw, S., Jackson, A. C., Merkouris, S. S., Francis, K. L., & Christensen, D. R. (2015). Prevalence

of psychiatric co-morbidity in tr eatment-seeking pr oblem gamblers: A systematic review and meta-analysis. *Australian & New Zealand Journal of Psychiatry, 49*(6), 519-539.

Dudgeon, P., Milroy, H., & Walker, R. (2014). *Working together: Aboriginal and Torres Strait Islander mental health and wellbeing principles and practice 2nd Edition*. ACT: Commonwealth of Australia.

Dunlop, B. W., Wu, R., & Helms, K. (2018). Performance of the adult ADHD Self-Report Scale-v1. 1 in adults with major depressive disorder. *Behavioral Sciences, 8*(4), 37.

DuPaul, G. J., Gormley, M. J., & Laracy, S. D. (2013). Comorbidity of LD and ADHD: Implications of DSM-5 for assessment and treatment. *Journal of learning disabilities, 46*(1), 43-51.

Durell, T. M., Adler, L. A., Williams, D. W., Deldar, A., McGough, J. J., Glaser, P. E., . . . Fox, B. K. (2013). Atomoxetine treatment of attention-deficit/hyperactivity disorder in young adults with assessment of functional outcomes: a randomized, double-blind, placebo-contr olled clinical trial. *J Clin Psychopharmacol, 33*(1), 45-54.

Dvorsky, M. R., & Langberg, J. M. (2016). A Review of Factors that Promote Resilience in Youth with ADHD and ADHD Symptoms. *Clinical Child and Family Psychology Review, 19*(4), 368-391.

Ebejer, J. L., Medland, S. E., Van Der Werf, J., Gondro, C., Henders, A. K., Lynskey, M., . . . Duffy, D. L. (2012). Attention deficit hyperactivity disorder in Australian adults: prevalence, persistence, conduct problems and disadvantage. *PLoS One, 7*(10), e47404.

Efron, D., Davies, S., & Sciberras, E. (2013). Current Australian pediatric practice in the assessment and treatment of ADHD. *Acad Pediatr, 13*(4), 328-333.

Efron, D., Nicholson, J. M., Anderson, V., Silk, T., Ukoumunne, O. C., Gulenc, A., . . . Sciberras, E. (2020). ADHD at Age 7 and Functional Impairments at Age 10. *Pediatrics, 146*(5).

Erskine, H. E., Norman, R. E., Ferrari, A. J., Chan, G. C. K., Copeland, W. E., Whiteford, H. A., & Scott, J. G. (2016). Long-Term Outcomes of Attention-Deficit/Hyperactivity Disor der and Conduct Disorder: A Systematic Review and Meta-Analysis. *Journal of the American Academy of Child and Adolescent Psychiatry, 55*(10), 841-850.

Evans, S. W., Schultz, B. K., & DeMars, C. E. (2014). High School—Based Treatment for Adolescents With Attention-Deficit/Hyperactivity Disorder: Results From a Pilot Study Examining Outcomes and Dosage. *School Psychology Review, 43*(2), 185-202.

Fabiano, G. A., Pelham, W. E., Cunningham, C. E., Yu, J., Gangloff, B., Buck, M., . . . Gera, S. (2012). A waitlist-controlled trial of behavioral parent training for fathers of children with ADHD. *Journal of Clinical Child & Adolescent Psychology, 41*(3), 337-345.

Faraone, S. V., Asherson, P., Banaschewski, T., Biederman, J., Buitelaar, J. K., Ramos-Quir oga, J. A., . . . Franke, B. (2015). Attention-deficit/hyperactivity disor der. *Nature Reviews. Disease Primers, 1*, 1-23.

Faraone, S. V., Banaschewski, T., Coghill, D., Zheng, Y., Biederman, J., Bellgrove, M. A., . . . Wang, Y. (2021). The World Federation of ADHD International Consensus Statement: 208 Evidence-based conclusions about the disor der. *Neurosci Biobehav Rev, 128*, 789-818.

Faraone, S. V., & Larsson, H. (2019). Genetics of attention deficit hyperactivity disorder. *Mol Psychiatry, 24*(4), 562-575.

Faraone, S. V., Rostain, A. L., Blader, J., Busch, B., Childress, A. C., Connor, D. F., & Newcorn, J. H. (2019). Practitioner Review: Emotional dysregulation in attention-deficit/hyperactivity disorder - implications for clinical recognition and intervention. *Journal of Child Psychology and Psychiatry, 60*(2), 133-150.

Fehlings, D. L., Roberts, W., Humphries, T., & Dawe, G. (1991). Attention deficit hyperactivity disorder: does cognitive behavioral therapy improve home behavior? *J Dev Behav Pediatr, 12*(4), 223-228.

Field, S., Parker, D. R., Sawilowsky, S., & Rolands, L. (2013). Assessing the impact of ADHD coaching services on university students' learning skills, self-r egulation, and well-being. . *Journal of Postsecondary Education and Disability, 26*, 67-81.

Fleming, A. P., McMahon, R. J., Moran, L. R., Peterson, A. P., & Dreessen, A. (2015). Pilot randomized controlled trial of dialectical behavior therapy group skills training for ADHD among college students. *Journal of Attention Disorders, 19*(3), 260-271.

Fluyau, D., Revadigar, N., & Pierre, C. G. (2021). Systematic Review and Meta-Analysis: Treatment of Substance Use Disorder in Attention Deficit Hyperactivity Disorder. *Am J Addict, 30*(2), 110-121.

Ford, T. (2020). Transitional care for young adults with ADHD: transforming potential upheaval into smooth progression. *Epidemiol Psychiatr Sci, 29*, e87.

Franke, B., Michelini, G., Asherson, P., Banaschewski, T., Bilbow, A., Buitelaar, J. K., . . . Reif, A. (2018). Live fast, die young? A review on the developmental trajectories of ADHD across the lifespan. *European Neuropsychopharmacology, 28*(10), 1059-1088.

Fried, R., DiSalvo, M., Kelberman, C., Adler, A., McCafferty, D., Woodworth, K. Y., . . . Biederman, J. (2020). An innovative SMS intervention to improve adherence to stimulants in children with ADHD: Preliminary findings. *J Psychopharmacol, 34*(8), 883-890.

Fusar-Poli, P., Rubia, K., Rossi, G., Sartori, G., & Balottin, U. (2012). Striatal dopamine transporter alterations in ADHD: pathophysiology or adaptation to psychostimulants? A meta-analysis. *Am J Psychiatry, 169*(3), 264-272.

Gainetdinov, R. R., Wetsel, W. C., Jones, S. R., Levin, E. D., Jaber, M., & Caron, M. G. (1999). Role of serotonin in the paradoxical calming effect of psychostimulants on hyperactivity. *Science, 283*(5400), 397-401.

Gamo, N. J., Wang, M., & Arnsten, A. F. (2010). Methylphenidate and atomoxetine enhance prefrontal function through alpha2-adrenergic and dopamine D1 receptors. *J Am Acad Child Adolesc Psychiatry, 49*(10), 1011-1023.

Garcia Pimenta, M., Brown, T., Arns, M., & Enriquez-Geppert, S. (2021). Treatment Efficacy and Clinical Effectiveness of EEG Neurofeedback as a Personalized and Multimodal Treatment in ADHD: A Critical Review. *Neuropsychiatr Dis Treat, 17*, 637-648.

German Association of the Scientific Medical Societies (AWMF), S. G. C. (2017). ADHD in children, adolescents and adults. English version. In.

Gevensleben, H., Holl, B., Albrecht, B., Vogel, C., Schlamp, D., Kratz, O., . . . Heinrich, H. (2009). Is neurofeedback an efficacious treatment for ADHD? A randomised controlled clinical trial. *J Child Psychol Psychiatry, 50*(7), 780-789.

Ghosh, M., Holman, C. A. J., & Preen, D. B. (2015). Use of prescription stimulant for Attention Deficit Hyperactivity Disorder in Aboriginal children and adolescents: a linked data cohort study. *BMC Pharmacology and Toxicology, 16*(1), 1-8.

Ghuman, J. K., Aman, M. G., Lecavalier, L., Riddle, M. A., Gelenberg, A., Wright, R., . . . Fort, C. (2009). Randomized, placebo-controlled, crossover study of methylphenidate for attention-deficit/hyperactivity disorder symptoms in preschoolers with developmental disorders. *J Child Adolesc Psychopharmacol, 19*(4), 329-339.

Ginsberg, Y., & Lindefors, N. (2012). Methylphenidate treatment of adult male prison inmates with attention-deficit hyperactivity disorder: randomised double-blind placebo-controlled trial with open-label extension. *Br J Psychiatry, 200*(1), 68-73.

Ginsberg, Y., Quintero, J., Anand, E., Casillas, M., & Upadhyaya, H. P. (2014). Underdiagnosis of attention-deficit/hyperactivity disorder in adult patients: a review of the literature. *The primary care companion for CNS disorders, 16*(3).

Giros, B., Jaber, M., Jones, S. R., Wightman, R. M., & Caron, M. G. (1996). Hyperlocomotion nad indifference to cocaine and amphetamine in mice lacking the dopamine transporter. *Nature, 379*, 606-612.

Gnanavel, S., Sharma, P., Kaushal, P., & Hussain, S. (2019). Attention deficit hyperactivity disorder and comorbidity: A review of literature. *World journal of clinical cases, 7*(17), 2420.

Graetz, B. W., Sawyer, M. G., Hazell, P. L., Arney, F., & Baghurst, P. (2001). Validity of DSM-IV ADHD subtypes in a nationally representative sample of Australian children and adolescents. *Journal of the American Academy of Child & Adolescent Psychiatry, 40*(12), 1410-1417.

Greenhill, L., Kollins, S., Abikoff, H., McCracken, J., Riddle, M., Swanson, J., . . . Cooper, T. (2006). Efficacy and safety of immediate-release methylphenidate treatment for preschoolers with ADHD. *J Am Acad Child Adolesc Psychiatry, 45*(11), 1284-1293.

Groenman, A. P., Janssen, T. W. P., & Oosterlaan, J. (2017). Childhood Psychiatric Disorders as Risk Factor for Subsequent Substance Abuse: A Meta-Analysis. *J Am Acad Child Adolesc Psychiatry, 56*(7), 556-569.

Groenman, A. P., Oosterlaan, J., Rommelse, N., Franke, B., Roeyers, H., Oades, R. D., . . . Faraone, S. V. (2013). Substance use disorders in adolescents with attention deficit hyperactivity disorder: a 4-year follow-up study. *Addiction, 108*(8), 1503-1511.

Gudjonsson, G. H., Wells, J., & Young, S. (2012). Personality disorders and clinical syndromes in ADHD prisoners. *J Atten Disord, 16*(4), 304-313.

Hahn-Markowitz, J., Berger, I., Manor, I., & Maeir, A. (2017). Impact of the Cognitive-Functional (Cog-Fun) Intervention on Executive Functions and Participation Among Children With Attention Deficit Hyperactivity Disorder: A Randomized Controlled Trial. *Am J Occup Ther, 71*(5), 7105220010p7105220011-7105220010p7105220019.

Haimov-Kochman, R., & Berger, I. (2014). Cognitive functions of regularly cycling women may differ throughout the month, depending on sex hormone status; a possible explanation to conflicting results of studies of ADHD in females. *Frontiers in Human Neuroscience, 8*, 191.

Hall, C. L., Newell, K., Taylor, J., Sayal, K., Swift, K. D., & Hollis, C. (2013). 'Mind the gap'--mapping services for young people with ADHD transitioning from child to adult mental health services. *Bmc Psychiatry, 13*, 186.

Halperin, J. M., & Marks, D. J. (2019). Practitioner Review: Assessment and treatment of preschool children with attention-deficit/hyperactivity disorder. *Journal of Child Psychology and Psychiatry, 60*(9), 930-943.

Halperin, J. M., Marks, D. J., Chacko, A., Bedard, A. C., O'Neill, S., Curchack-Lichtin, J., . . . Berwid, O. G. (2020). Training Executive, Attention, and Motor Skills (TEAMS): a Preliminary Randomized Clinical Trial of Preschool Youth with ADHD. *J Abnorm Child Psychol, 48*(3), 375-389.

Hart, H., Radua, J., Nakao, T., Mataix-Cols, D., & Rubia, K. (2013). Meta-analysis of functional magnetic resonance imaging studies of inhibition and attention in attention-deficit/hyperactivity disorder: exploring task-specific, stimulant medication, and age effects. *JAMA Psychiatry, 70*(2), 185-198.

Hasslinger, J., Bölte, S., & Jonsson, U. (2021). Slow cortical potential versus live Z-score neurofeedback in children and adolescents with ADHD: A multi-arm pragmatic randomized controlled trial with active and passive comparators. *Research on child and adolescent psychopathology*, 1-16.

Health, A. I. o., & Welfare. (2013). *Towards Better Indigenous Health Data*: Australian Institute of Health and Welfare.

Hepark, S., Janssen, L., de Vries, A., Schoenberg, P. L. A., Donders, R., Kan, C. C., & Speckens, A. E. M. (2019). The Efficacy of Adapted MBCT on Core Symptoms and Executive Functioning in Adults With ADHD: A Preliminary Randomized Controlled Trial. *J Atten Disord, 23*(4), 351-362.

Hinshaw, S. P., Nguyen, P. T., O'Grady, S. M., & Rosenthal, E. A. (2021). Annual Research Review: Attention-deficit/hyperactivity disorder in girls and women: underrepresentation, longitudinal processes, and key directions. *J Child Psychol Psychiatry*.

Hirvikoski, T., Waaler, E., Alfredsson, J., Pihlgren, C., Holmstrom, A., Johnson, A., . . . Nordstrom, A. L. (2011). Reduced ADHD symptoms in adults with ADHD after structured skills training group: results from a randomized controlled trial. *Behav Res Ther, 49*(3), 175-185.

Hiscock, H., Mulraney, M., Heussler, H., Rinehart, N., Schuster, T., Grobler, A. C., . . . Sciberras, E. (2019). Impact of a behavioral intervention, delivered by pediatricians or psychologists, on sleep problems in children with ADHD: a cluster randomized, translational trial. *Journal of Child Psychology and Psychiatry, 60*(11), 1230-1241.

Hoath, F. E., & Sanders, M. R. (2002). A feasibility study of Enhanced Group Triple P—positive parenting program for parents of children with attention-deficit/hyperactivity disorder. *Behaviour Change, 19*(4), 191-206.

Hoogman, M., Bralten, J., Hibar, D. P., Mennes, M., Zwiers, M. P., Schweren, L. S. J., . . . Franke, B. (2017). Subcortical brain volume differences in participants with attention deficit hyperactivity disorder in children and adults: a cross-sectional mega-analysis. *Lancet Psychiatry, 4*(4), 310-319.

Hoogman, M., Muetzel, R., Guimaraes, J. P., Shumskaya, E., Mennes, M., Zwiers, M. P., . . . Franke, B. (2019). Brain Imaging of the Cortex in ADHD: A Coordinated Analysis of Large-Scale Clinical and Population-Based Samples. *Am J Psychiatry, 176*(7), 531-542.

Horn, W. F., Ialongo, N., Greenberg, G., Packard, T., & Smith-Winberry, C. (1990). Additive effects of behavioral parent training and self-control therapy with attention deficit hyperactivity disordered children. *Journal of Clinical Child Psychology, 19*(2), 98-110.

Hoxhaj, E., Sadohara, C., Borel, P., D'Amelio, R., Sobanski, E., Muller, H., . . . Philipsen, A. (2018). Mindfulness vs psychoeducation in adult ADHD: a randomized controlled trial. *Eur Arch Psychiatry Clin Neurosci, 268*(4), 321-335.

Humphreys, K. L., Eng, T., & Lee, S. S. (2013). Stimulant medication and substance use outcomes: a meta-analysis.

JAMA Psychiatry, 70(7), 740-749.

Ilie, G., Vingilis, E. R., Mann, R. E., Hamilton, H., Toplak, M., Adlaf, E. M., . . . Asbridge, M. (2015). The association between traumatic brain injury and ADHD in a Canadian adult sample. *Journal of psychiatric research, 69*, 174-179.

Iwanami, A., Saito, K., Fujiwara, M., Okutsu, D., & Ichikawa, H. (2020). Efficacy and Safety of Guanfacine Extended-Release in the Treatment of Attention-Deficit/Hyperactivity Disorder in Adults: Results of a Randomized, Double-Blind, Placebo-Controlled Study. *J Clin Psychiatry, 81*(3).

Jain, R., Segal, S., Kollins, S. H., & Khayrallah, M. (2011). Clonidine extended-release tablets for pediatric patients with attention-deficit/hyperactivity disorder. *J Am Acad Child Adolesc Psychiatry, 50*(2), 171-179.

Janssen, L., Kan, C. C., Carpentier, P. J., Sizoo, B., Hepark, S., Schellekens, M. P. J., . . . Speckens, A. E. M. (2019). Mindfulness-based cognitive therapy v. treatment as usual in adults with ADHD: a multicentre, single-blind, randomised controlled trial. *Psychol Med, 49*(1), 55-65.

Jensen, P. S., Arnold, L. E., Swanson, J. M., Vitiello, B., Abikoff, H. B., Greenhill, L. L., . . . Wells, K. C. (2007). 3-year follow-up of the NIMH MTA study. *Journal of the American Academy of Child & Adolescent Psychiatry, 46*(8), 989-1002.

Jones, K. (2008). In whose interest? Relationships between health consumer groups and the pharmaceutical industry in the UK. *Sociology of Health & Illness, 30*(6), 929-943.

Jones, K., Baggott, R., & Allsop, J. (2004). Influencing the national policy process: the role of health consumer groups. *Health Expect, 7*(1), 18-28.

Katzman, M. A., Bilkey, T. S., Chokka, P. R., Fallu, A., & Klassen, L. J. (2017). Adult ADHD and comorbid disorders: clinical implications of a dimensional approach. *Bmc Psychiatry, 17*(1), 1-15.

Kelly, A. M., Uddin, L. Q., Biswal, B. B., Castellanos, F. X., & Milham, M. P. (2008). Competition between functional brain networks mediates behavioral variability. *Neuroimage, 39*(1), 527-537.

Kemper, A. R., Maslow, G. R., Hill, S., Namdari, B., LaPointe, N. M. A., Goode, A. P., . . . Bowen, S. E. (2018). Attention deficit hyperactivity disorder: Diagnosis and treatment in children and adolescents.

Kessler, R. C., Adler, L., Ames, M., Demler, O., Faraone, S., Hiripi, E., . . . Spencer, T. (2005). The World Health Organization Adult ADHD Self-Report Scale (ASRS): a short screening scale for use in the general population. *Psychological medicine, 35*(2), 245.

Kessler, R. C., Adler, L., Barkley, R., Biederman, J., Conners, C. K., Demler, O., . . . Secnik, K. (2006). The prevalence and correlates of adult ADHD in the United States: results from the National Comorbidity Survey Replication. *American journal of psychiatry, 163*(4), 716-723.

Kilpatrick, E., Keeney, S., & McCauley, C. O. (2017). Tokenistic or genuinely effective? Exploring the views of voluntary sector staff regarding the emerging peer support worker role in mental health. *J Psychiatr Ment Health Nurs, 24*(7), 503-512.

Kollins, S. H., DeLoss, D. J., Canadas, E., Lutz, J., Findling, R. L., Keefe, R. S. E., . . . Faraone, S. V. (2020). A novel digital intervention for actively reducing severity of paediatric ADHD (STARS-ADHD): a randomised controlled trial. *Lancet Digit Health, 2*(4), e168-e178.

Konofal, E., Lecendreux, M., Arnulf, I., & Mouren, M. C. (2004). Iron deficiency in children with attention-deficit/hyperactivity disorder. *Arch Pediatr Adolesc Med, 158*(12), 1113-1115.

Konstenius, M., Larsson, H., Lundholm, L., Philips, B., van de Glind, G., Jayaram-Lindstrom, N., & Franck, J. (2015). An epidemiological study of ADHD, substance use, and comorbid problems in incarcerated women in Sweden. *J Atten Disord, 19*(1), 44-52.

Konstenius, M., Larsson, H., Lundholm, L., Philips, B., van de Glind, G., Jayaram-Lindström, N., & Franck, J. (2015). An epidemiological study of ADHD, substance use, and comorbid problems in incarcerated women in Sweden. *Journal of Attention Disorders, 19*(1), 44-52.

Kooij, J. J., Burger, H., Boonstra, A. M., Van der Linden, P. D., Kalma, L. E., & Buitelaar, J. K. (2004). Efficacy and safety of methylphenidate in 45 adults with attention-deficit/hyperactivity disorder. A randomized placebo-controlled double-blind cross-over trial. *Psychol Med, 34*(6), 973-982.

Kooij, J. J., Franken, M. H., & Bron, T. I. (2019). *DIVA-5 Diagnostic Interview for ADHD in Adults (3rd Edition; DIVA-5)*.

Netherlands: DIVA Foundation

Kooij, J. J. S., Bijlenga, D., Salerno, L., Jaeschke, R., Bitter, I., Balazs, J., . . . Asherson, P. (2019). Updated European Consensus Statement on diagnosis and treatment of adult ADHD. *European Psychiatry, 56*, 14-34.

Korrel, H., Mueller, K. L., Silk, T., Anderson, V., & Sciberras, E. (2017). Research Review: Language problems in children with Attention-Deficit Hyperactivity Disorder - a systematic meta-analytic review. *J Child Psychol Psychiatry, 58*(6), 640-654.

Lan, Y. T., Liu, X. P., & Fang, H. S. (2020). Randomized control study of the effects of executive function training on peer difficulties of children with attention-deficit/hyperactivity disorder C subtype. *Appl Neuropsychol Child, 9*(1), 41-55.

Lange, A. M., Daley, D., Frydenberg, M., Houmann, T., Kristensen, L. J., Rask, C., . . . Thomsen, P. H. (2018). Parent Training for Preschool ADHD in Routine, Specialist Care: A Randomized Controlled Trial. *J Am Acad Child Adolesc Psychiatry, 57*(8), 593-602.

Lange, S., Rehm, J., Anagnostou, E., & Popova, S. (2018). Prevalence of externalizing disorders and Autism Spectrum Disorders among children with Fetal Alcohol Spectrum Disorder: systematic review and meta-analysis. *Biochemistry and cell biology, 96*(2), 241-251.

Larsen, L. B., Daley, D., Lange, A. M., Sonuga-Barke, E., Thomsen, P. H., & Rask, C. U. (2021). Effect of Parent Training on Health-Related Quality of Life in Preschool Children With Attention-Deficit/Hyperactivity Disorder: A Secondary Analysis of Data From a Randomized Controlled Trial. *J Am Acad Child Adolesc Psychiatry, 60*(6), 734-744 e733.

Larsson, H., Chang, Z., D'Onofrio, B. M., & Lichtenstein, P. (2014). The heritability of clinically diagnosed attention deficit hyperactivity disorder across the lifespan. *Psychol Med, 44*(10), 2223-2229.

Lawrence, D., Johnson, S., Hafekost, J., Boterhoven De Haan, K., Sawyer, M., Ainley, J., & Zubrick, S. (2015). *The Mental Health of Children and Adolescents. Report on the second Australian Child and Adolescent Survey of Mental Health and Wellbeing*. Canberra: Department of Health

Lee, E.-J., & Jung, C.-H. (2017). Additive effects of neurofeedback on the treatment of ADHD: A randomized controlled study. *Asian journal of psychiatry, 25*, 16-21.

Lee, S. S., Humphreys, K. L., Flory, K., Liu, R., & Glass, K. (2011). Prospective association of childhood attention-deficit/hyperactivity disorder (ADHD) and substance use and abuse/dependence: a meta-analytic review. *Clin Psychol Rev, 31*(3), 328-341.

Lee, Y. C., Yang, H. J., Chen, V. C., Lee, W. T., Teng, M. J., Lin, C. H., & Gossop, M. (2016). Meta-analysis of quality of life in children and adolescents with ADHD: By both parent proxy-report and child self-report using PedsQL. *Res Dev Disabil, 51-52*, 160-172.

Levy, F. (1991). The dopamine theory of attention deficit hyperactivity disorder (ADHD). *Aust N Z J Psychiatry, 25*(2), 277-283.

Levy, F., Hay, D., McStephen, M., Wood, C., & Waldman, I. (1997). Attention-deficit hyperactivity disorder: a category or a continuum? Genetic analysis of a large-scale twin study. *Journal of the American Academcy of Child and Adolescent Psychiatry, 36*, 737-744.

Li, Y.-J., Xie, X.-N., Lei, X., Li, Y .-M., & Lei, X. (2020). Global prevalence of obesity, overweight and underweight in children, adolescents and adults with autism spectrum disorder, attention-deficit hyperactivity disorder: A systematic review and meta-analysis. *Obesity Reviews, 21*(12).

Lichtenstein, P., Halldner, L., Zetterqvist, J., Sjolander, A., Serlachius, E., Fazel, S., . . . Larsson, H. (2012). Medication for attention deficit-hyperactivity disorder and criminality. *N Engl J Med, 367*(21), 2006-2014.

Lim, C. G., Poh, X. W. W., Fung, S. S. D., Guan, C., Bautista, D., Cheung, Y. B., . . . Lee, T. S. (2019). A randomized controlled trial of a brain-computer interface based attention training program for ADHD. *PLoS One, 14*(5), e0216225.

Little, J. (2007). Confirmatory Factor Analysis of the Westerman Aboriginal Symptom Checklist, Youth (aged 13 – 17 years). The WASC-Y manual (2nd edition). In T. G. Westerman (Ed.), *The cultural and clinical validation guidelines for the administration of the WASCY*. Perth, WA: IPS.

Loh, P.-R., Hayden, G., Vicary, D., Mancini, V., Martin, N., & Piek, J. P. (2017). Attention Deficit Hyperactivity Disorder: an

Aboriginal perspective on diagnosis and intervention. *Journal of Tropical Psychology, 7*.

Loh, P., Hayden, G., Vicary, D., Mancini, V., Martin, N., & Piek, J. (2016). Australian Aboriginal perspectives of attention deficit hyperactivity disorder. *Australian & New Zealand Journal of Psychiatry, 50*(4), 309-310.

Luderer, M., Kaplan-Wickel, N., Richter, A., Reinhard, I., Kiefer, F., & Weber, T. (2019). Screening for adult attention-deficit/hyperactivity disorder in alcohol dependent patients: Underreporting of ADHD symptoms in self-report scales. *Drug and alcohol dependence, 195*, 52-58.

Lugo, J., Fadeuilhe, C., Gisbert, L., Setien, I., Delgado, M., Corrales, M., . . . Ramos-Quiroga, J. A. (2020). Sleep in adults with autism spectrum disorder and attention deficit/hyperactivity disorder: A systematic review and meta-analysis. *European Neuropsychopharmacology, 38*, 1-24.

Mahdi, S., Viljoen, M., Massuti, R., Selb, M., Almodayfer, O., Karande, S., . . . Bolte, S. (2017). An international qualitative study of ability and disability in ADHD using the WHO-ICF framework. *Eur Child Adolesc Psychiatry, 26*(10), 1219-1231.

Marcer, H., Finlay, F., & Baverstock, A. (2008). ADHD and transition to adult services--the experience of community paediatricians. *Child Care Health Dev, 34*(5), 564-566.

Martins, S., Tramontina, S., Polanczyk, G., Eizirik, M., Swanson, J. M., & Rohde, L. A. (2004). Weekend holidays during methylphenidate use in ADHD children: a randomized clinical trial. *J Child Adolesc Psychopharmacol, 14*(2), 195-206.

Matheson, L., Asherson, P., Wong, I. C., Hodgkins, P., Setyawan, J., Sasane, R., & Clifford, S. (2013). Adult ADHD patient experiences of impairment, service provision and clinical management in England: a qualitative study. *BMC Health Serv Res, 13*, 184.

Matos, M., Bauermeister, J. J., & Bernal, G. (2009). Parent child interaction therapy for Puerto Rican preschool children with ADHD and behavior problems: A pilot efficacy study. *Family process, 48*(2), 232-252.

Matthijssen, A. M., Dietrich, A., Bierens, M., Kleine Deters, R., van de Loo-Neus, G. H. H., van den Hoofdakker, B. J., . . . Hoekstra, P. J. (2019). Continued Benefits of Methylphenidate in ADHD After 2 Years in Clinical Practice: A Randomized Placebo-Controlled Discontinuation Study. *Am J Psychiatry, 176*(9), 754-762.

Matthijssen, A. M., Dietrich, A., Bierens, M., Kleine Deters, R., van de Loo-Neus, G. H. H., van den Hoofdakker, B. J., . . . Hoekstra, P. J. (2020). Effects of Discontinuing Methylphenidate on Strengths and Difficulties, Quality of Life and Parenting Stress. *J Child Adolesc Psychopharmacol, 30*(3), 159-165.

Mawjee, K., Woltering, S., & Tannock, R. (2015). Working Memory Training in Post-Secondary Students with ADHD: A Randomized Controlled Study. *PLoS One, 10*(9), e0137173.

May, T., Aizenstros, A., & Aizenstros, J. (2021). Characteristics of adults with attention deficit hyperactivity disorder consecutively referred to an Australian private psychiatric clinic. . *Australian Psychologist*, 1-11.

McCann, B. S., Simpson, T. L., Ries, R., & Roy-Byrne, P. (2000). Reliability and validity of screening instruments for drug and alcohol abuse in adults seeking evaluation for attention-deficit/hyperactivity disorder. *American Journal on Addictions, 9*(1), 1-9.

Merrill, B. M., Morrow, A. S., Altszuler, A. R., Macphee, F. L., Gnagy, E. M., Greiner, A. R., . . . Pelham, W. E. (2017). Improving homework performance among children with ADHD: A randomized clinical trial. *Journal of consulting and clinical psychology, 85*(2), 111.

Miller, E., & Eastwood, J. (2016). Healthy Homes and Neighbourhoods Integrated Care Initiative.

Minder, F., Zuberer, A., Brandeis, D., & Drechsler, R. (2018). Informant-related effects of neurofeedback and cognitive training in children with ADHD including a waiting control phase: a randomized-controlled trial. *Eur Child Adolesc Psychiatry, 27*(8), 1055-1066.

Mohammadi, M. R., Hafezi, P., Galeiha, A., Hajiaghaee, R., & Akhondzadeh, S. (2012). Buspirone versus methylphenidate in the treatment of children with attention- deficit/ hyperactivity disorder: randomized double-blind study. *Acta Med Iran, 50*(11), 723-728.

Mohr-Jensen, C., & Steinhausen, H. C. (2016). A meta-analysis and systematic review of the risks associated with childhood attention-deficit hyperactivity disorder on long-term outcome of arrests, convictions, and incarcerations. *Clin Psychol Rev, 48*, 32-42.

Molina, B. S., Flory, K., Bukstein, O. G., Greiner, A. R., Baker, J. L., Krug, V., & Evans, S. W. (2008). Feasibility and

preliminary efficacy of an after-school program for middle schoolers with ADHD: a randomized trial in a large public middle school. *J Atten Disord, 12*(3), 207-217.

Momany, A. M., Kamradt, J. M., & Nikolas, M. A. (2018). A Meta-Analysis of the Association Between Birth Weight and Attention Deficit Hyperactivity Disorder. *J Abnorm Child Psychol, 46*(7), 1409-1426.

Montano, C. B., & Young, J. (2012). Discontinuity in the transition from pediatric to adult health care for patients with attention-deficit/hyperactivity disorder. *Postgrad Med, 124*(5), 23-32.

Moore, E., Sunjic, S., Kaye, S., Archer, V., & Indig, D. (2016a). Adult ADHD among NSW prisoners: prevalence and psychiatric comorbidity. *Journal of Attention Disorders, 20*(11), 958-967.

Moore, E., Sunjic, S., Kaye, S., Archer, V., & Indig, D. (2016b). Adult ADHD Among NSW Prisoners: Prevalence and Psychiatric Comorbidity. *J Atten Disord, 20*(11), 958-967.

Moreno-Gar cia, I., Meneres-Sancho, S., Camacho-V ara de Rey, C., & Servera, M. (2019). A Randomized Controlled Trial to Examine the Posttreatment Efficacy of Neurofeedback, Behavior Therapy, and Pharmacology on ADHD Measures. *J Atten Disord, 23*(4), 374-383.

Morsanyi, K., van Bers, B. M., McCormack, T., & McGourty, J. (2018). The prevalence of specific learning disorder in mathematics and comorbidity with other developmental disorders in primary school age children. *British Journal of Psychology, 109*(4), 917-940.

Mowlem, F., Agnew-Blais, J., T aylor, E., & Asherson, P. (2019). Do different factors influence whether girls versus boys meet ADHD diagnostic criteria? Sex differences among children with high ADHD symptoms. . *Psychiatry Research, 272*, 765-773.

Mulraney, M., Arrondo, G., Musullulu, H., Iturmendi-Sabater, I., Cortese, S., Westwood, S. J., . . . Zuddas, A. (2021). Systematic Review and Meta-analysis: Scr eening Tools for Attention-Deficit/Hyperactivity Disor der in Children and Adolescents. *Journal of the American Academy of Child & Adolescent Psychiatry*.

Murrup-Stewar t, C., Whyman, T., Jobson, L., & Adams, K. (2021). "Connection to Culture Is Like a Massive Lifeline": Yarning With Aboriginal Young People About Culture and Social and Emotional Wellbeing. *Qualitative Health Research*, 10497323211009475.

Murrup Stewart, C., Searle, A. K., Jobson, L., & Adams, K. (2019). Aboriginal perceptions of social and emotional wellbeing programs: A systematic review of literature assessing social and emotional wellbeing programs for Aboriginal and Torres Strait Islander Australians perspectives. *Australian Psychologist, 54*(3), 171-186.

Nair, V., & Mahadevan, S. (2009). Randomised controlled study-efficacy of clonidine versus carbamazepine in children with ADHD. *J Trop Pediatr, 55*(2), 116-121.

National Health and Medical Research Council. (2007). *NHMRC standards and procedures for externally developed guidelines*. Australia

National Health and Medical Research Council. (2009). *NHMRC levels of evidence and grades for recommendations for developers of guidelines*. Australia

National Health and Medical Research Council. (2011). *Procedures and requirements for meeting the 2011 NHMRC standard for clinical practice guidelines* Australia

National Health and Medical Research Council. (2012). *ADHD practice points on the diagnosis, assessment and management of attention deficit hyperactivity disorder in children and adolescents*. Australia: Australian Government, NHMRC

National Health and Medical Research Council. (2016). *2016 NHMRC Standards for Guidelines*. Australia Retrieved from **https://www.nhmrc.gov.au/guidelinesforguidelines/standards**

Newcorn, J. H., Nagy, P., Childress, A. C., Frick, G., Yan, B., & Pliszka, S. (2017). Randomized, Double-Blind, Placebo-Controlled Acute Comparator Trials of Lisdexamfetamine and Extended-Release Methylphenidate in Adolescents With Attention-Deficit/Hyperactivity Disor der. *CNS Drugs, 31*(11), 999-1014.

NICE. (2018). *Attention deficit hyperactivity disorder: diagnosis and management.* . London, UK

Nigg, J. T. (2018). Toward an Emerging Paradigm for Understanding Attention-Deficit/Hyperactivity Disor der and Other Neurodevelopmental, Mental, and Behavioral Disorders: Environmental Risks and Epigenetic Associations. *JAMA Pediatr, 172*(7), 619-621.

Nigg, J. T., Willcutt, E. G., Doyle, A. E., & Sonuga-Barke, E. J. (2005). Causal heterogeneity in attention-deficit/hyperactivity disorder: do we need neuropsychologically impaired subtypes? *Biological psychiatry, 57*(11), 1224-1230.

Ozgen, H., Spijkerman, R., Noack, M., Holtmann, M., Schellekens, A. S. A., van de Glind, G., . . . Hendriks, V. (2020). International Consensus Statement for the Screening, Diagnosis, and Treatment of Adolescents with Concurrent Attention-Deficit/Hyperactivity Disorder and Substance Use Disorder. *Eur Addict Res, 26*(4-5), 223-232.

Papadopoulos, N., Sciberras, E., Hiscock, H., Mulraney, M., McGillivray, J., & Rinehart, N. (2019). The efficacy of a brief behavioral sleep intervention in school-aged children with ADHD and comorbid autism spectrum disorder. *Journal of Attention Disorders, 23*(4), 341-350.

Paul, M., Ford, T., Kramer, T., Islam, Z., Harley, K., & Singh, S. P. (2013). Transfers and transitions between child and adult mental health services. *Br J Psychiatry Suppl, 54*, s36-40.

Philipp-Wiegmann, F., Retz-Junginger, P., Retz, W., & Roesler, M. (2016). The intraindividual impact of ADHD on the transition of adulthood to old age. *European Archives of Psychiatry and Clinical Neuroscience, 266*(4), 367-371.

Philipsen, A., Jans, T., Graf, E., Matthies, S., Borel, P., Colla, M., . . . Psychotherapy in Adult, A. S. C. (2015). Effects of Group Psychotherapy, Individual Counseling, Methylphenidate, and Placebo in the Treatment of Adult Attention-Deficit/Hyperactivity Disorder: A Randomized Clinical Trial. *JAMA Psychiatry, 72*(12), 1199-1210.

Pliszka, S. R., McCracken, J. T., & Maas, J. W. (1996). Catecholamines in attention-deficit hyperactivity disorder: current perspectives. *J Am Acad Child Adolesc Psychiatry, 35*(3), 264-272.

Polanczyk, G., De Lima, M. S., Horta, B. L., Biederman, J., & Rohde, L. A. (2007). The worldwide prevalence of ADHD: a systematic review and metaregression analysis. *American journal of psychiatry, 164*(6), 942-948.

Power, T. J., Mautone, J. A., Soffer, S. L., Clarke, A. T., Marshall, S. A., Sharman, J., . . . Jawad, A. F. (2012). A family–school intervention for children with ADHD: Results of a randomized clinical trial. *Journal of consulting and clinical psychology, 80*(4), 611.

Qian, Y., Chen, M., Shuai, L., Cao, Q. J., Yang, L., & Wang, Y. F. (2017). Effect of an Ecological Executive Skill Training Program for School-aged Children with Attention Deficit Hyperactivity Disorder: A Randomized Controlled Clinical Trial. *Chin Med J (Engl), 130*(13), 1513-1520.

Quinn, P. O., & Madhoo, M. (2014). A review of attention-deficit/hyperactivity disorder in women and girls: uncovering this hidden diagnosis. *Prim Care Companion CNS Disord, 16*(3).

Rahi, V., & Kumar, P. (2021). Animal models of attention-deficit hyperactivity disorder (ADHD). *Int J Dev Neurosci, 81*(2), 107-124.

Rajabi, S., Pakize, A., & Moradi, N. (2020). Effect of combined neurofeedback and game-based cognitive training on the treatment of ADHD: A randomized controlled study. *Appl Neuropsychol Child, 9*(3), 193-205.

Razzak, H. A., Ghader, N., Qureshi, A. A., Zafar, M., Shaijan, J. F., & Al Kuwari, M. (2021). Clinical Practice Guidelines for the Evaluation and Diagnosis of Attention-Deficit/Hyperactivity Disorder in Children and Adolescents: A systematic review of the literature. *Sultan Qaboos University Medical Journal, 21*(1), e12.

Reale, L., Bartoli, B., Cartabia, M., Zanetti, M., Costantino, M. A., Canevini, M. P., . . . Bonati, M. (2017). Comorbidity prevalence and treatment outcome in children and adolescents with ADHD. *European Child & Adolescent Psychiatry, 26*(12), 1443-1457.

Rezaei, M., Salarpor Kamarzard, T., & Najafian Razavi, M. (2018). The effects of neurofeedback, yoga interventions on memory and cognitive activity in children with attention deficit/hyperactivity disorder: A randomized controlled trial. *Annals of Applied Sport Science, 6*(4), 17-27.

Roberts, B., Eisenlohr-Moul, T., & Martel, M. M. (2018). Reproductive steroids and ADHD symptoms across the menstrual cycle. *Psychoneuroendocrinology, 88*, 105-114.

Rooney, J. M., Miles, N., & Barker, T. (2016). Patients' views: Peer support worker on inpatient wards. . *Mental Health and Social Inclusion, 20*(3), 160-166.

Rosler, M., Retz, W., Yaqoobi, K., Burg, E., & Retz-Junginger, P. (2009). Attention deficit/hyperactivity disorder in female offenders: prevalence, psychiatric comorbidity and psychosocial implications. *Eur Arch Psychiatry Clin*

Neurosci, 259(2), 98-105.

Royal Australasian College of Physicians. (2009). Australian guidelines on attention deficit hyperactivity disorder. In: RACP.

Royal Australia and New Zealand College of Psychiatrists. (2013). *The role of a psychiatrist in Australia and New Zealand: Position Statement 80*. RANZCP

Royal Australian & New Zealand College of Psychiatrists. (2021). Position statement 62: Partnering with people with a lived experience. In: RANZCP.

Russell, V., Allie, S., & Wiggins, T. (2000). Increased noradrenergic activity in prefrontal cortex slices of an animal model for attention-deficit hyperactivity disorder--the spontaneously hyper tensive rat. *Behav Brain Res, 117*(1-2), 69-74.

Rutter, M. (2005). *Genes and behaviour. Nature-nurture interplay explained*. Oxford, UK: Wiley-Blackwell.

Safavi, P., Dehkordi, A. H., & Ghasemi, N. (2016). Comparison of the effects of methylphenidate and the combination of methylphenidate and risperidone in preschool children with attention-deficit hyperactivity disorder. *J Adv Pharm Technol Res, 7*(4), 144-148.

Sandstrom, A., Perroud, N., Alda, M., Uher, R., & Pavlova, B. (2021). Prevalence of attention deficit/hyperactivity disorder in people with mood disorders: A systematic review and meta analysis. *Acta Psychiatrica Scandinavica, 143*(5), 380-391.

Sawyer, M. G., Reece, C. E., Sawyer, A. C., Johnson, S. E., & Lawrence, D. (2018). Has the prevalence of child and adolescent mental disorders in Australia changed between 1998 and 2013 to 2014? *Journal of the American Academy of Child & Adolescent Psychiatry, 57*(5), 343-350. e345.

Scahill, L., Chappell, P. B., Kim, Y. S., Schultz, R. T., Katsovich, L., Shepherd, E., . . . Leckman, J. F. (2001). A placebo-contr olled study of guanfacine in the treatment of children with tic disorders and attention deficit hyperactivity disorder. *Am J Psychiatry, 158*(7), 1067-1074.

Scahill, L., McCracken, J. T., King, B. H., Rockhill, C., Shah, B., Politte, L., . . . Research Units on Pediatric Psychopharmacology Autism, N. (2015). Extended-Release Guanfacine for Hyperactivity in Children With Autism Spectrum Disorder. *Am J Psychiatry, 172*(12), 1197-1206.

Schiweck, C., Arteaga-Henriquez, G., Aichholz er, M., Thanarajah, S. E., Vargas-Cácer es, S., Matura, S., . . . Ramos-Quiroga, J. A. (2021). Comorbidity of ADHD and adult bipolar disorder: A systematic review and meta-analysis. *Neuroscience & Biobehavioral Reviews*.

Schonenberg, M., Wiedemann, E., Schneidt, A., Scheeff, J., Logemann, A., Keune, P. M., & Hautzinger, M. (2017). Neurofeedback, sham neurofeedback, and cognitive-beha vioural group therapy in adults with attention-deficit hyperactivity disorder: a triple-blind, randomised, contr olled trial. *Lancet Psychiatry, 4*(9), 673-684.

Sciberras, E., Mulraney, M., Anderson, V., Rapee, R. M., Nicholson, J. M., Efron, D., . . . Hiscock, H. (2018). Managing Anxiety in Children With ADHD Using Cognitive-Beha vioral Therapy: A Pilot Randomized Controlled Trial. *J Atten Disord, 22*(5), 515-520.

Sciberras, E., Mulraney, M., Mensah, F., Oberklaid, F., Efron, D., & Hiscock, H. (2020). Sustained impact of a sleep intervention and moderators of treatment outcome for children with ADHD: a randomised controlled trial. *Psychological medicine, 50*(2), 210-219.

Sciberras, E., Streatfeild, J., Ceccato, T., Pezzullo, L., Scott, J. G., Middeldorp, C. M., . . . Coghill, D. (2020). Social and economic costs of attention-deficit/hyperactivity disorder across the lifespan. *Journal of Attention Disorders*, 1087054720961828.

Sciberras, E., Streatfeild, J., Ceccato, T., Pezzullo, L., Scott, J. G., Middeldorp, C. M., . . . Coghill, D. (2022). Social and Economic Costs of Attention-Deficit/Hyperactivity Disor der Across the Lifespan. *J Atten Disord, 26*(1), 72-87.

Sedgwick, J. A., Merwood, A., & Asherson, P. (2019). The positive aspects of attention deficit hyperactivity disorder: a qualitative investigation of successful adults with ADHD. *Atten Defic Hyperact Disord, 11*(3), 241-253.

Sedky, K., Bennett, D. S., & Carvalho, K. S. (2014). Attention deficit hyperactivity disorder and sleep disordered breathing in pediatric populations: a meta-analysis. *Sleep medicine reviews, 18*(4), 349-356.

Shanahan, P., Ollis, L., Balla, K., Patel, R., & Long, K. (2020). Experiences of transition from children's to adult's healthcare services for young people with a neurodevelopmental condition. *Health Soc Care Community*.

Shaw, P., Eckstrand, K., Sharp, W., Blumenthal, J., Lerch, J. P., Greenstein, D., . . . Rapoport, J. L. (2007). Attention-deficit/hyperactivity disorder is characterized by a delay in cortical maturation. *Proc Natl Acad Sci U S A, 104*(49), 19649-19654.

Shaw, P., Stringaris, A., Nigg, J., & Leibenluft, E. (2014). Emotion Dysregulation in Attention Deficit Hyperactivity Disorder. *American journal of psychiatry, 171*(3), 276-293.

Sibley, M. H., Coxe, S. J., Campez, M., Morley, C., Olson, S., Hidalgo-Gato, N., . . . Pelham, W. E. (2018). High versus Low Intensity Summer Treatment for ADHD Delivered at Secondary School Transitions. *J Clin Child Adolesc Psychol, 47*(2), 248-265.

Sibley, M. H., Graziano, P. A., Kuriyan, A. B., Coxe, S., Pelham, W. E., Rodriguez, L., . . . Ward, A. (2016). Parent–teen behavior therapy+ motivational interviewing for adolescents with ADHD. *Journal of consulting and clinical psychology, 84*(8), 699.

Sibley, M. H., Pelham, W. E., Derefinko, K. J., Kuriyan, A. B., Sanchez, F., & Graziano, P. A. (2013). A pilot trial of Supporting Teens' Academic Needs Daily (STAND): A parent-adolescent collaborative intervention for ADHD. *Journal of Psychopathology and Behavioral Assessment, 35*(4), 436-449.

Silva, D., Colvin, L., Glauert, R., & Bower, C. (2014). Contact with the juvenile justice system in children treated with stimulant medication for attention deficit hyperactivity disorder: a population study. *Lancet Psychiatry, 1*(4), 278-285.

Silva, D., Colvin, L., Glauert, R., Stanley, F., Jois, R. S., & Bower, C. (2020). Literacy and Numeracy Underachievement in Boys and Girls With ADHD. *Journal of Attention Disorders, 24*(10), 1392-1402.

Silva, D., Colvin, L., Hagemann, E., Stanley, F., & Bower, C. (2014). Children diagnosed with attention deficit disorder and their hospitalisations: population data linkage study. *European Child & Adolescent Psychiatry, 23*(11), 1043-1050.

Simon, V., Czobor, P., Bálint, S., Mészáros, A., & Bitter, I. (2009). Prevalence and correlates of adult attention-deficit hyperactivity disorder: meta-analysis. *The British Journal of Psychiatry, 194*(3), 204-211.

Simonoff, E., Taylor, E., Baird, G., Bernard, S., Chadwick, O., Liang, H., . . . Jichi, F. (2013). Randomized controlled double-blind trial of optimal dose methylphenidate in children and adolescents with severe attention deficit hyperactivity disorder and intellectual disability. *J Child Psychol Psychiatry, 54*(5), 527-535.

Smith, S. D., Vitulano, L. A., Katsovich, L., Li, S., Moore, C., Li, F., . . . Leckman, J. F. (2016). A Randomized Controlled Trial of an Integrated Brain, Body, and Social Intervention for Children With ADHD. *J Atten Disord, 24*(5), 780-794.

Solanto, M. V., Marks, D. J., Wasserstein, J., Mitchell, K., Abikoff, H., Alvir, J. M., & Kofman, M. D. (2010). Efficacy of meta-cognitive therapy for adult ADHD. *Am J Psychiatry, 167*(8), 958-968.

Solleveld, M. M., Schrantee, A., Baek, H. K., Bottelier, M. A., Tamminga, H. G., Bouziane, C., . . . Rijsman, R. M. (2020). Effects of 16 weeks of methylphenidate treatment on actigraph-assessed sleep measures in medication-naive children with ADHD. *Frontiers in psychiatry, 11*, 82.

Song, P., Zha, M., Yang, Q., Zhang, Y., Li, X., & Rudan, I. (2021). The prevalence of adult attention-deficit hyperactivity disorder: A global systematic review and meta-analysis. *J Glob Health, 11*, 04009.

Sonuga-Barke, E. J. S., Barton, J., Daley, D., Hutchings, J., Maishman, T., Raftery, J., . . . Thompson, M. J. J. (2018). A comparison of the clinical effectiveness and cost of specialised individually delivered parent training for preschool attention-deficit/hyperactivity disorder and a generic, group-based programme: a multi-centre, randomised controlled trial of the New Forest Parenting Programme versus Incredible Years. *Eur Child Adolesc Psychiatry, 27*(6), 797-809.

Steeger, C. M., Gondoli, D. M., Gibson, B. S., & Morrissey, R. A. (2016). Combined cognitive and parent training interventions for adolescents with ADHD and their mothers: A randomized controlled trial. *Child Neuropsychol, 22*(4), 394-419.

Steiner, N. J., Frenette, E. C., Rene, K. M., Brennan, R. T., & Perrin, E. C. (2014). In-school neurofeedback training for ADHD: sustained improvements from a randomized control trial. *Pediatrics, 133*(3), 483-492.

Steiner, N. J., Sheldrick, R. C., Gotthelf, D., & Perrin, E. C. (2011). Computer-based attention training in the schools for children with attention deficit/hyperactivity disorder: a preliminary trial. *Clin Pediatr (Phila), 50*(7), 615-622.

Strehl, U., Aggensteiner, P., Wachtlin, D., Brandeis, D., Albrecht, B., Arana, M., . . . Holtmann, M. (2017). Neurofeedback of Slow Cortical Potentials in Children with Attention-Deficit/Hyperactivity Disorder: A Multicenter Randomized Trial Controlling for Unspecific Effects. *Front Hum Neurosci, 11*, 135.

Sudnawa, K. K., Chirdkiatgumchai, V., Ruangdaraganon, N., Khongkhatithum, C., Udomsubpayakul, U., Jirayucharoensak, S., & Israsena, P. (2018). Effectiveness of neurofeedback versus medication for attention deficit/hyperactivity disorder. *Pediatrics International, 60*(9), 828-834.

Sundquist, J., Ohlsson, H., Sundquist, K., & Kendler, K. S. (2015). Attention-deficit/hyperactivity disorder and risk for drug use disorder: a population-based follow-up and co-r elative study. *Psychol Med, 45*(5), 977-983.

Sutcubasi, B., Metin, B., Kurban, M. K., Metin, Z. E., Beser, B., & Sonuga-Bark e, E. (2020). Resting-state network dysconnectivity in ADHD: A system-neur oscience-based meta-analysis. *World J Biol Psychiatry, 21*(9), 662-672.

Takahashi, M., Takita, Y., Yamazaki, K., Hayashi, T., Ichikawa, H., Kambayashi, Y., . . . Allen, A. J. (2009). A randomized, double-blind, placebo-contr olled study of atomoxetine in Japanese children and adolescents with attention-deficit/hyperactivity disorder. *J Child Adolesc Psychopharmacol, 19*(4), 341-350.

Tatlow-Golden, M., Prihodo va, L., Gavin, B., Cullen, W., & McNicholas, F. (2016). What do general practitioners know about ADHD? Attitudes and knowledge among first-contact gatekeepers: systematic narrative review. *BMC Fam Pract, 17*(1), 129.

Taylor, A., Deb, S., & Unwin, G. (2011). Scales for the identification of adults with attention deficit hyperactivity disorder (ADHD): A systematic review. *Research in Developmental Disabilities, 32*(3), 924-938.

Taylor, F. B., & Russo, J. (2001). Comparing guanfacine and dextroamphetamine for the treatment of adult attention-deficit/hyperactivity disorder. *J Clin Psychopharmacol, 21*(2), 223-228.

Taylor, L. E., Kaplan-Kahn, E. A., Lighthall, R. A., & Antshel, K. M. (2021). Adult-Onset ADHD : A Critical Analysis and Alternative Explanations. *Child Psychiatry & Human Development*.

The GRADE Working Group. (2009). *GRADE handbook for grading quality of evidence and strength of recommendation.* (Schünemann H, Brozek J, & Oxman A Eds. Vol. Version 3.2 [updated March 2009]).

The Royal Australian College of General Practitioners. (2009). *Clinical guideline for the diagnosis and management of early rheumatoid arthritis*. Australia

Thibault, R. T., Veissière, S., Olson, J. A., & Raz, A. (2018). EEG-Neurofeedback and the Correction of Misleading Information: A Reply to Pigott and Colleagues. *Journal of Attention Disorders, 25*(3), 458-459.

Thomas, R., Sanders, S., Doust, J., Beller, E., & Glasziou, P. (2015). Prevalence of attention-deficit/hyperactivity disorder: a systematic review and meta-analysis. *Pediatrics, 135*(4), e994-1001.

Thompson, M. J., Laver-Bradbur y, C., Ayres, M., Le Poidevin, E., Mead, S., Dodds, C., . . . Weeks, A. (2009). A small-scale randomized controlled trial of the revised new forest parenting programme for preschoolers with attention deficit hyperactivity disorder. *European Child & Adolescent Psychiatry, 18*(10), 605-616.

Ustun, B., Adler, L. A., Rudin, C., Faraone, S. V., Spencer, T. J., Berglund, P., . . . Kessler, R. C. (2017). The World Health Organization adult attention-deficit/hyperactivity disorder self-r eport screening scale for DSM-5. *JAMA Psychiatry, 74*(5), 520-527.

Van de Glind, G., van den Brink, W., Koeter, M. W., Carpentier, P.-J., v an Emmerik-v an Oortmerssen, K., Kaye, S., . . . Konstenius, M. (2013). Validity of the Adult ADHD Self-Report Scale (ASRS) as a screener for adult ADHD in treatment seeking substance use disorder patients. *Drug and alcohol dependence, 132*(3), 587-596.

Van Den Hoofdakker, B. J., Van der Veen-Mulders, L., Sytema, S., Emmelkamp, P. M., Minderaa, R. B., & Nauta, M. H. (2007). Effectiveness of behavioral parent training for children with ADHD in routine clinical practice: a randomized controlled study. *Journal of the American Academy of Child & Adolescent Psychiatry, 46*(10), 1263-1271.

Van Doren, J., Arns, M., Heinrich, H., Vollebregt, M. A., Strehl, U., & S, K. L. (2019). Sustained effects of neurofeedback in ADHD: a systematic review and meta-analysis. *Eur Child Adolesc Psychiatry, 28*(3), 293-305.

van Emmerik-v an Oortmerssen, K., van de Glind, G., van den Brink, W., Smit, F., Crunelle, C. L., Swets, M., & Schoevers, R. A. (2012). Prevalence of attention-deficit hyperactivity disorder in substance use disorder patients: a meta-analysis and meta-r egression analysis. *Drug Alcohol Depend, 122*(1-2), 11-19.

van Emmerik-van Oortmerssen, K., Vedel, E., Kramer, F. J., Blankers, M., Dekker, J. J. M., van den Brink, W., & Schoevers, R. A. (2019). Integrated cognitive behavioral therapy for ADHD in adult substance use disorder patients: Results of a randomized clinical trial. *Drug Alcohol Depend, 197*, 28-36.

Vibholm, H. A., Pedersen, J., Faltinsen, E., Marcussen, M. H., Gluud, C., & Storebo, O. J. (2018). Training, executive, attention and motor skills (TEAMS) training versus standard treatment for preschool children with attention deficit hyperactivity disorder: a randomised clinical trial. *BMC Res Notes, 11*(1), 366.

Vidal, R., Bosch, R., Nogueira, M., Gomez-Barros, N., Valero, S., Palomar, G., . . . Ramos-Quiroga, J. A. (2013). Psychoeducation for adults with attention deficit hyperactivity disorder vs. cognitive behavioral group therapy: a randomized controlled pilot study. *J Nerv Ment Dis, 201*(10), 894-900.

Virta, M., Salakari, A., Antila, M., Chydenius, E., Partinen, M., Kaski, M., . . . Iivanainen, M. (2010). Short cognitive behavioral therapy and cognitive training for adults with ADHD - a randomized controlled pilot study. *Neuropsychiatr Dis Treat, 6*, 443-453.

Vos, T., Barker, B., Begg, S., Stanley, L., & Lopez, A. D. (2009). Burden of disease and injury in Aboriginal and Torres Strait Islander Peoples: the Indigenous health gap. *International journal of epidemiology, 38*(2), 470-477.

Wang, Y., Zheng, Y., Du, Y., Song, D. H., Shin, Y. J., Cho, S. C., . . . Levine, L. R. (2007). Atomoxetine versus methylphenidate in paediatric outpatients with attention deficit hyperactivity disorder: a randomized, double-blind comparison trial. *Aust N Z J Psychiatry, 41*(3), 222-230.

Ward, M. F. (1993). The Wender Utah Rating Scale: an aid in the retrospective diagnosis of childhood attention deficit hyperactivity disorder. *American journal of psychiatry, 150*, 885-885.

Watego, C., Singh, D., & Macoun, A. (2021). Partnership for Justice in Health: Scoping Paper on Race, Racism and the Australian Health System.

Webster-Stratton, C. H., Reid, M. J., & Beauchaine, T. (2011). Combining parent and child training for young children with ADHD. *Journal of Clinical Child & Adolescent Psychology, 40*(2), 191-203.

Wehmeier, P. M., Schacht, A., Ulberstad, F., Lehmann, M., Schneider-Fresenius, C., Lehmkuhl, G., . . . Banaschewski, T. (2012). Does atomoxetine improve executive function, inhibitory control, and hyperactivity? Results from a placebo-controlled trial using quantitative measurement technology. *J Clin Psychopharmacol, 32*(5), 653-660.

Weisler, R., Ginsberg, L., Dirks, B., Deas, P., Adeyi, B., & Adler, L. A. (2017). Treatment With Lisdexamfetamine Dimesylate Improves Self- and Informant-Rated Executive Function Behaviors and Clinician- and Informant-Rated ADHD Symptoms in Adults: Data From a Randomized, Double-Blind, Placebo-Controlled Study. *J Atten Disord, 21*(14), 1198-1207.

Weisman, O., Schonherz, Y., Harel, T., Efron, M., Elazar, M., & Gothelf, D. (2018). Testing the Efficacy of a Smartphone Application in Improving Medication Adherence, Among Children with ADHD. *Isr J Psychiatry, 55*(2), 59-63.

Wentz, E., Lacey, J. H., Waller, G., Råstam, M., Turk, J., & Gillberg, C. (2005). Childhood onset neuropsychiatric disorders in adult eating disorder patients. *European Child & Adolescent Psychiatry, 14*(8), 431-437.

Wernicke, J. F., Adler, L., Spencer, T., West, S. A., Allen, A. J., Heiligenstein, J., . . . Michelson, D. (2004). Changes in symptoms and adverse events after discontinuation of atomoxetine in children and adults with attention deficit/hyperactivity disorder: a prospective, placebo-controlled assessment. *J Clin Psychopharmacol, 24*(1), 30-35.

Westmoreland, P., Gunter, T., Loveless, P., Allen, J., Sieleni, B., & Black, D. W. (2010). Attention deficit hyperactivity disorder in men and women newly committed to prison: clinical characteristics, psychiatric comorbidity, and quality of life. *Int J Offender Ther Comp Criminol, 54*(3), 361-377.

Wigal, S., Chappell, P., Palumbo, D., Lubaczewski, S., Ramaker, S., & Abbas, R. (2020). Diagnosis and Treatment Options for Preschoolers with Attention-Deficit/Hyperactivity Disorder. *Journal of Child and Adolescent Psychopharmacology, 30*(2), 104-118.

Willcutt, E. G. (2012). The Prevalence of DSM-IV Attention-Deficit/Hyperactivity Disorder: A Meta-Analytic Review. *Neurotherapeutics, 9*(3), 490-499.

Williamson, A., McElduff, P., Dadds, M., D'Este, C., Redman, S., Raphael, B., . . . Eades, S. (2014). The Construct Validity of the Strengths and Difficulties Questionnaire for Aboriginal Children Living in Urban New South Wales, Australia. *Australian Psychologist, 49*(3), 163-170.

Williamson, A., Redman, S., Dadds, M., Daniels, J., D'Este, C., Raphael, B., . . . Skinner, T. (2010). Acceptability of an emotional and behavioural screening tool for children in Aboriginal Community Controlled Health Services in urban NSW. *Australian & New Zealand Journal of Psychiatry, 44*(10), 894-900.

World Health Organization. (2018). *ICD-11 for mortality and morbidity statistics (2018)*: WHO.

Wright, S. D. (2014). *ADHD coaching matters: The definitive guide.* College Station, Texas: ACO Books.

Yates, W. R., Lund, B. C., Johnson, C., Mitchell, J., & McKee, P. (2009). Attention deficit hyperactivity symptoms and disorder in eating disorder inpatients. *International Journal of Eating Disorders, 42*(4), 375-378.

Young, J. T., Bellgrove, M. A., & Arunogiri, S. (2021). Assessment of attention-deficit hyperactivity disorder in people with substance use disorder: Another case of what gets measured gets done. *Aust N Z J Psychiatry, 55*(8), 744-746.

Young, S., Adamo, N., Asgeirsdottir, B. B., Branney, P., Beckett, M., Colley, W., . . . Woodhouse, E. (2020). Females with ADHD: An expert consensus statement taking a lifespan approach providing guidance for the identification and treatment of attention-deficit/ hyperactivity disorder in girls and women. *Bmc Psychiatry, 20*(1).

Young, S., Asherson, P., Lloyd, T., Absoud, M., Arif, M., Colley, W. A., . . . Skirrow, C. (2021). Failure of Healthcare Provision for Attention-Deficit/Hyperactivity Disorder in the United Kingdom: A Consensus Statement. *Front Psychiatry, 12*, 649399.

Young, S., Gonzalez, R. A., Fridman, M., Hodgkins, P., Kim, K., & Gudjonsson, G. H. (2018). The economic consequences of attention-deficit hyperactivity disorder in the Scottish prison system. *Bmc Psychiatry, 18*(1), 210.

Young, S., Gonzalez, R. A., Mutch, L., Mallet-Lambert, I., O'Rourke, L., Hickey, N., . . . Gudjonsson, G. H. (2016). Diagnostic accuracy of a brief screening tool for attention deficit hyperactivity disorder in UK prison inmates. *Psychol Med, 46*(7), 1449-1458.

Young, S., González, R. A., Mutch, L., Mallet-Lambert, I., O'rourke, L., Hickey, N., . . . Gudjonsson, G. H. (2016). Diagnostic accuracy of a brief screening tool for attention deficit hyperactivity disorder in UK prison inmates. *Psychological medicine, 46*(7), 1449.

Young, S., Moss, D., Sedgwick, O., Fridman, M., & Hodgkins, P. (2015a). A meta-analysis of the prevalence of attention deficit hyperactivity disorder in incarcerated populations. *Psychological Medicine, 45*(2), 247-258.

Young, S., Moss, D., Sedgwick, O., Fridman, M., & Hodgkins, P. (2015b). A meta-analysis of the prevalence of attention deficit hyperactivity disorder in incarcerated populations. *Psychological medicine, 45*(2), 247-258.

Young, S., Sedgwick, O., Fridman, M., Gudjonsson, G., Hodgkins, P., Lantigua, M., & Gonzalez, R. A. (2015). Co-morbid psychiatric disorders among incarcerated ADHD populations: a meta-analysis. *Psychol Med, 45*(12), 2499-2510.

Young, S., & Thome, J. (2011). ADHD and offenders. *World J Biol Psychiatry, 12 Suppl 1*, 124-128.

Young, S., Wells, J., & Gudjonsson, G. H. (2011). Predictors of offending among prisoners: the role of attention-deficit hyperactivity disorder and substance use. *J Psychopharmacol, 25*(11), 1524-1532.

Zendarski, N., Guo, S., Sciberras, E., Efron, D., Quach, J., Winter, L., . . . Coghill, D. (2022). Examining the Educational Gap for Children with ADHD and Subthreshold ADHD. *J Atten Disord, 26*(2), 282-295.

Zendarski, N., Sciberras, E., Mensah, F., & Hiscock, H. (2017a). Academic Achievement and Risk Factors for Adolescents with Attention-Deficit Hyperactivity Disorder in Middle School and Early High School. *Journal of Developmental and Behavioral Pediatrics, 38*(6), 358-368.

Zendarski, N., Sciberras, E., Mensah, F., & Hiscock, H. (2017b). Early high school engagement in students with attention/deficit hyperactivity disorder. *British Journal of Educational Psychology, 87*(2), 127-145.

Zheng, X., Shen, L., Jiang, L., Shen, X., Xu, Y., Yu, G., & Wang, Y. (2020). Parent and Teacher Training Increases Medication Adherence for Primary School Children With Attention-Deficit/Hyperactivity Disorder. *Front Pediatr, 8*, 486353.

Zhu, X., Sun, X., Zhang, Y., Liu, K., & Zhao, L. (2017). A randomized parallel-controlled study of curative effect and safety of atomoxetine and methylphenidate in treatment of ADHD in children. *International Journal of Clinical and Experimental Medicine, 10*(6), 9576-9582.

Zubrick, S., Lawrence, D., Silburn, S., Blair, E., Milroy, H., Wilkes, E., . . . Ishiguchi, P. (2004). *The Western Australian Aboriginal child health survey: The health of Aboriginal children and young people*: Telethon Institute for Child Health Research.

Appendices

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 (mental health nurse, nurse practitioner), allied health professional (psychologist, occupational therapist, speech pathologist), pharmacist.
Educator	Teacher, early childhood educator, lecturer
Young children	Children aged below 5 years
Children	Children aged 5 to 12 years
Adolescents	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 condition/ disorder	A disorder that is diagnosed in an individual alongside another disorder
Condition	This is the preferred term for a medical, mental health or developmental disorder.
Cognitive-behavioural interventions	The term “cognitive-beha vioural interventions” is used to refer to a broad range of approaches that use cognitive and/or behavioural interventions to minimise the day-to-day impact on functioning from ADHD symptoms.
Cognitive training	Interventions intending to improve aspects of cognition such as attention and memory (and ultimately broader aspects of functioning such as ADHD symptom severity) via the use of computerised training programs.
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 adolescents with ADHD, through cognitive-beha vioural parent training delivered directly to parents (or primary carers).

Environmental modifications	Changes that are made to the environment to support a person with ADHD in their day-to-day life and maximise their activities, participation and quality of life.
Mental health conditions	Conditions that affect mood, thinking and behaviour. These include anxiety, depressive disorders and others.
Neurofeedback	A form of biofeedback that applies principles of operant conditioning to brain electrical activity to teach self-regulation of brain function.
Neurodevelopmental disorder	Conditions that occur in the developmental period where there are differences in the achievement of developmental milestones. Includes ADHD, autism, intellectual disability, specific learning disorders, communication disorders and tic disorders.
Specific learning disorders	Learning and academic skill challenges in specific areas including reading, spelling, written expression and mathematics.
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.

Please note designations of individuals representing organisations were current at the time of appointment to the GDG.

Title	Name	Discipline Area, Relevant Role	Representing an Organisation
Professor	**Mark Bellgrove**	Academic Psychology, President AADPA	Australasian 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 Australia (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, Lived Experience	
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	Australasian ADHD Professionals Association Cognitive–
CBT	behavioural therapy
DBT	Dialectical behavioural therapy
NDIS	National Disability Insurance Scheme
NHMRC	National Health and Medical Research Council
OROS	Osmotic-contr olled oral release system
PBS	Pharmaceutical Benefits Scheme
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**

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