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Perspective Piece

The clinical pathway in ADMiRE, Ireland's first public specialist service for children and adolescents with attention deficit hyperactivity disorder

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Abstract

Attention deficit hyperactivity disorder (ADHD) is a highly prevalent neurodevelopmental disorder occurring in approximately one in twenty young people in Ireland, and in one-third of those attending Irish Child and Adolescent Mental Health Services (CAMHS). It is important to treat ADHD, as un/poorly treated ADHD is associated with a raft of negative health and socio-economic outcomes. Effective interventions for ADHD are available, and the use of standardised, evidence-based pathways for assessment and management of ADHD optimises outcomes. Despite this, there is no national standardised clinical pathway for assessment and treatment of ADHD in Ireland. ADMiRE, the first public healthcare specialist service for children and adolescents in Ireland, has developed a strongly evidence-based, efficient, effective and safe clinical pathway for assessment and management of ADHD. This paper describes the ADMiRE Clinical Pathway and references ADMiRE resources that are available to other services.

Keywords: Attention deficit hyperactivity disorder; adolescent psychiatry; attention deficit hyperactivity disorder; clinical pathway; care pathway; Child and Adolescent Mental Health Services (CAMHS); child psychiatry; Ireland

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Background

Attention deficit hyperactivity disorder (ADHD) is a neurodevelopmental disorder characterised by developmentally inappropriate and impairing inattention, hyperactivity, and impulsivity, with difficulties often continuing into adulthood (Thapar & Cooper 2016). ADHD is highly prevalent, with prevalence estimates of 5.9% in children and adolescents, and 2.5% in adults (Faraone *et al.* 2021).

In Ireland, ADHD is the commonest presentation to Child and Adolescent Mental Health Services (CAMHS); approximately one-third of children in CAMHS have a diagnosis of ADHD (HSE 2013). Despite the high prevalence of this disorder in CAMHS, children referred with symptoms of ADHD are often placed on a routine waitlist because at the time of initial referral, their symptoms are rarely severe enough to warrant an urgent assessment. CAMHS teams, however, are struggling to keep up with the demand for emergency assessments, and therefore children on a routine waitlist often have long delays before assessment and intervention (Longridge *et al.* 2019; Young *et al.* 2021).

It is important to assess and treat ADHD efficiently and effectively, as untreated or poorly treated ADHD is associated with an array of negative outcomes including school drop-out (Fried *et al.* 2016), substance misuse (Langley *et al.* 2010), criminality (Mohr-Jensen & Steinhausen 2016), mental illness and suicidality (Tsai *et al.* 2019), teenage pregnancy (Skoglund *et al.* 2019), sexually transmitted diseases (Chen *et al.* 2018), serious accidents and injuries (Chang *et al.* 2014; Ruiz-Goikoetxea *et al.* 2018), increased mortality (Dalsgaard *et al.* 2015) and poor socio-economic outcomes (Halmøy *et al.* 2009). Economic costs of poorly managed ADHD are substantial, with estimates of societal costs across the lifespan ranging from ~€14,000 to €20,000 per person per year (Daley *et al.* 2019; Sciberras *et al.* 2022). This equates to ~€1.9–€2.6 billion/year in Ireland.

First line interventions for ADHD include psychoeducation, environmental modification and behavioural management programmes. For moderate-severe ADHD, stimulant and non-stimulant medications are highly effective and strongly evidence-based (Cortese *et al.* 2018; Leucht *et al.* 2012). Large pharmaco-epidemiological studies have shown that during times when ADHD medication is being used, there is a significant reduction in the negative outcomes associated with untreated ADHD (Biederman *et al.* 2009; Chang *et al.* 2019; Chen *et al.* 2014; Dalsgaard *et al.* 2015; Ruiz-Goikoetxea *et al.* 2018) and an improvement in academic (Biederman *et al.* 2009) and economic outcomes (Halmøy *et al.* 2009).

Despite the high prevalence of ADHD, the availability of effective treatment, and the knowledge that effective treatment is associated with significant improvements in outcomes, a recent UK consensus statement described ADHD as a condition that is underdiagnosed and often poorly managed (Young *et al.* 2021).

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The authors suggest that this is in part due to a lack of standardised, evidence-based protocols in clinical services, and stress the need to improve consistency in diagnosis and treatment of ADHD (Young *et al.* 2021). Poor management of ADHD has also been highlighted in a 2022 Irish Health Service Executive (HSE) report that was commissioned following concerns relating to clinical practice in one Irish CAMHS team (Maskey 2022). The report considered issues with regard to prescribing, care planning, diagnostics and clinical supervision between 2016 and 2021, and identified identified serious failings in the monitoring of ADHD treatment (Maskey 2022). Following on from this report, a national review of CAMHS in Ireland was undertaken, which included a national audit of CAMHS prescribing practice (HSE 2023). This prescribing audit reported that the most common disorder reported among the audit sample of medicated children and adolescents was ADHD (56.5%), and that, in relation to ADHD medication, audit standards were not met in relation to physical monitoring of patients prescribed stimulants (HSE 2023). Although there are international guidelines that outline best practice in assessment and treatment of ADHD (e.g. NICE guidelines NG87 (Dalrymple *et al.* 2020)), there is currently no national standardised model of care for the assessment and treatment of children and adolescents with ADHD in Ireland.

International research suggests structured, evidence-based protocols for assessment and treatment of ADHD facilitate optimal clinical management (Coghill & Seth 2015; Longridge *et al.* 2019). Staff in HSE Linn Dara CAMHS in Dublin recognised the urgent need for a standardised approach to assessment and treatment of children with ADHD and in 2019, the first HSE specialist service for assessment and management of childhood ADHD was launched (McGrath 2020). Following consultation with service-users, the service was named 'ADMiRE', a name that outlines the service vision, which is to provide best-practice ADHD Assessment, Diagnosis, Management initiation, Research and Education for young people with ADHD, their families and community services.

Over the past five years, ADMiRE has developed a structured, standardised and evidence-based clinical pathway for the assessment and management of ADHD. This pathway has been adapted from the Dundee Clinical Care Pathway (Coghill & Seth 2015), and tailored for an Irish healthcare service. The overarching aim of the ADMiRE clinical pathway is to guide evidence-based healthcare for ADHD, through translation of international guideline recommendations into a structured clinical protocol for the service (Rotter *et al.* 2019).

This paper provides a step-wise outline of each stage of the ADMiRE Clinical Pathway, describes the resources used in ADMiRE that are available on request, and briefly discusses the effectiveness of the service and future directions.

Roles of ADMiRE

ADMiRE is a tertiary level specialist ADHD pathway in Linn Dara CAMHS that takes referrals directly from three CAMHS teams in South-West Dublin. The clinical governance of ADMiRE involves formal shared care between the referring CAMHS team and ADMiRE. The ADMiRE and CAMHS teams share clinical responsibility for patients attending ADMiRE; all children attending ADMiRE will also remain under the care of their CAMHS team. It is the responsibility of the ADMiRE team to ensure that the standard of ADHD assessment and management that is offered is optimal, and that there is appropriate communication with the CAMHS team in relation to the child's care in ADMiRE. It is the responsibility of the CAMHS team to offer appropriate assessment and intervention for all non-ADHD presenting difficulties. Given the common comorbidity in ADHD (Gillberg *et al.* 2004; Hollingdale *et al.* 2020; Kraut *et al.* 2013), this is to ensure that the child and family get an optimal service, with ease of access to both services. The caseload in ADMiRE is ~ 250, with an annual turnover of 100–120 children.

The roles of ADMiRE were defined based on the vision for the service and the results of detailed capacity evaluations. These capacity evaluations involved in depth analysis of all available resources (i.e. the team-members skill-set and available time per week), and the resources required for services we wished to provide (e.g. the time required for ADHD assessment / psychoeducation / group work / starting medication / optimising medication). Direct clinical interventions offered in ADMiRE include ADHD assessment and diagnosis, psychoeducation for the young person and their parents/guardians, ADHD-specific multidisciplinary group-based/individual interventions, and pharmacotherapy for ADHD. Alongside the direct clinical interventions, it was recognised that in order to build a sustainable service, it is vital to build capacity in relation to the assessment and management of ADHD at all levels – in families, schools and primary and secondary care services. To do this, the ADMiRE team also prioritised a number of indirect roles including educational programmes for schools, GPs, primary care clinicians and psychiatrists, outreach and advocacy work and development of an ADHD research programme in Trinity College Dublin (https://www.tcd.ie/medicine/psychiatry/research/adhd/research/). Families attending ADMiRE are invited to participate in a research database, and eligible participants for future ethically approved studies can be identified from this database. A number of strands of research have emerged with an overarching aim of improving both clinical practice and safety for patients. These have focused on service development and evaluation, clinical practice and treatment optimisation and neuroimaging and precision medicine.

Initially the team was comprised of members from Nursing, Social Care Work, Social Work and Psychiatry backgrounds. In 2021, development posts were approved in Speech and Language Therapy (SLT), Occupational Therapy (OT) and Psychology. These posts were filled in late 2022/early 2023. All clinician roles are ADHD-specific; some are generic (e.g., assessment / feedback), others are more discipline-specific (e.g., groups / individual work). Clinicians screen for co-occurring difficulties and offer discipline-specific consultation sessions to determine the best pathway to manage the young person's needs. Individual work is offered where required. Clinicians also develop and run ADHD-specific groups including an ADHD-specific parent programme, an ADHD psychoeducation group for adolescents, an ADHD-specific transition programme from primary to secondary school and an ADHD-specific study skills group. A number of other more discipline-specific ADHD-focused groups are under development. In terms of training, ADMiRE run a rolling four-session ADHD induction training programme every six months for all new prescribing clinicians starting in Linn Dara CAMHS, and all clinicians starting in ADMiRE receive training about the clinical pathway. Formal documentation is provided in which the service framework and protocol, clinical pathway, team objectives, team operating principles and team member roles/expectations are outlined. ADMiRE clinicians also receive formal training in certain areas if this is important for further development (or continuation) of their ADHD-specific roles.

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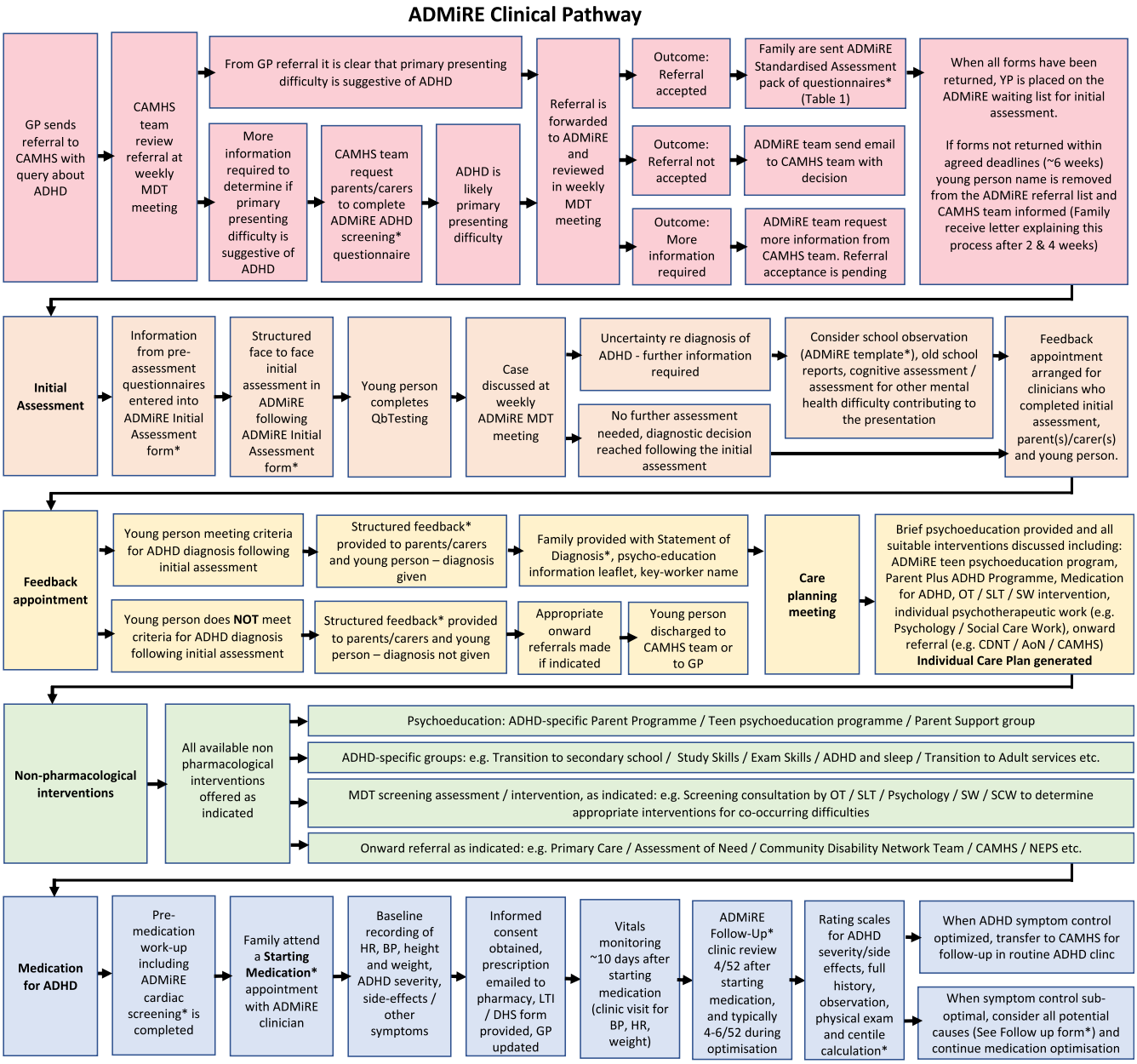
Process map for the ADMiRE clinical pathway



*indicates that there are ADMiRE template documents that are available for clinicians on request.

Step 1: Referral process

GP referrals are received by the CAMHS team, who review the referral to determine if there is sufficient information to determine whether the primary presenting symptoms and reason for referral are suggestive of ADHD, and if there is sufficient information about mental health comorbidity. If there is not sufficient information in the referral, the CAMHS team request further information from parents/guardians via a screening questionnaire. This questionnaire has been developed in ADMiRE and includes a focused screen for ADHD as well as a screen for ASD and other mental health difficulties This screening is important to ensure that tertiary level ADHD assessment is clinically indicated, and to avoid delay in assessment/management of other mental health difficulties. If a young person is already attending CAMHS for assessment/intervention for other mental health difficulties when concerns about a possible ADHD diagnosis emerge, the CAMHS team refer directly to ADMiRE.

Step 2: Pre-assessment questionnaires

Referrals from CAMHS are reviewed weekly by the ADMiRE team. For all accepted referrals, a series of questionnaires are sent for completion by parents/guardians and school (Table 1). Parents/guardians have one month to return this information, with a reminder sent after the first two weeks. More time is granted for return of school information during holiday periods and support is offered if literacy difficulties are identified. When questionnaires are returned to ADMiRE, they are scored and reviewed. If any risk issues are identified based on the critical items in the Conners report, an

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Table 1. Pre-assessment questionnaires/documentation

Questionnaire	Purpose
Conners questionnaire (Parent, Teacher and Self Report if > 12 years)	Assesses symptoms of ADHD
School report form	This is a structured narrative school report that includes screens for ADHD and co-occurring difficulties.
Social Responsiveness Scale (Parent and Teacher report)	Screens for social-communication difficulties
Social Communication Questionnaire (Parent report)	Screens for social-communication difficulties
Child Sleep Habits Questionnaire (Parent report)	Screening questionnaire for sleep disorders
Weiss Functional Impairment Rating Scale (Parent report)	Quality of Life rating scale
Speech and Language Therapy Screening Questionnaire	To screen for speech and language disorders
Occupational Therapy Screening Questionnaire	To screen for occupational/functional difficulties
Consent for assessment and contact with other services	Requires parent/guardians to confirm consent to assessment / contact with other services
Copies of existing reports	Old reports (e.g. school reports / SLT / OT / cognitive assessment / Assessment of Need / primary care assessment) are requested

ADMiRE team member contacts the family to follow up. If it is clear from the questionnaires that ADHD is not likely to be the primary presenting difficulty, the ADMiRE team with follow up with the CAMHS team and the family and advise on appropriate next steps. When ADHD assessment is indicated following review of questionnaires – this is for the majority of cases - the child is waitlisted for initial assessment.

Step 3: Initial assessment

Prior to initial assessment an ADMiRE clinician (all disciplines) reviews and electronically enters a summary of the pre-assessment rating-scale scores and any relevant information from correspondence/old reports in the 'ADMiRE initial assessment form', an electronic template used to collate data for new assessments. Parents/guardians and the young person are then invited to the first appointment and a full history is taken. The initial assessment form has been adapted from a similar form originally developed by the Dundee clinical care pathway (Coghill & Seth 2015), but has been expanded to include additional relevant information. The template includes a series of specific prompts for ADHD, taken from the Schedule for Affective Disorders and Schizophrenia for School-Age Children-Present and Lifetime version (KSADS-PL-DSM-5 Supplement #4 ADHD section, November 2016) (Kaufman *et al.* 1997), as well as a screen for Autism Spectrum Disorder (ASD). The form guides clinicians through a detailed, evidence-based assessment for ADHD, as well as a screen for co-occurring difficulties and a routine psychiatric history.

After the initial appointment, the parent/guardian is invited in with their child for a QbTest (https://www.qbtech.com/), a computer-based test that combines a measure of sustained attention and response inhibition with activity measurement collected by an infra-red camera.

Following initial assessment and QbTest, the clinician completes their report and a background summary of the assessment. The background summary is a short (two-page) document which is created automatically from the initial assessment form, and details key aspects of the case including demographics, axial diagnosis, current and past medication, other services involved, and rating-scale scores.

The case is then brought for discussion at the next weekly multidisciplinary team (MDT) meeting. In general, information provided in the school report form will provide sufficient information from the school but if the team feel that there is uncertainty about the diagnostic formulation, a school observation may be arranged. These are resource intensive, however they may be helpful in complex cases, for example if there is a suspected ASD or anxiety disorder, or if there is significant discrepancy between school and parent reports. In these cases, the observation will not only be of the child but also of the classroom environment and supports that are in place. A structured 'School Observation' template has been created to aid clinicians in their observational assessment.

Step 4: Assessment feedback

Following the full assessment and MDT discussion, the clinician arranges a feedback review for the young person and their parents/guardians. During this meeting, the clinician reviews the rating scales, school reports, other reports, clinical history and observation, QbTest ± school observation with the family. This allows them to provide a clear rationale for the diagnostic formulation they offer and helps the family to understand why a diagnosis of ADHD is, or is not, being made.

If a diagnosis of ADHD is not made, the clinician makes recommendations about whether further investigations are required, or if referral to other medical practitioners/allied health professionals is indicated. Once the family have been supported in making these onward referrals, the young person is discharged to the CAMHS team (if attending for other moderate-severe mental health difficulties) or back to their GP.

If a diagnosis of ADHD is made, psychoeducation about ADHD is provided to parents/guardians and young person at the initial feedback, and all families are directed to the ADMiRE / Trinity College Dublin (TCD) online ADHD Psychoeducational tool: https://www.tcd.ie/medicine/psychiatry/research/adhd/, which provides information about ADHD, ADHD medication, and a comprehensive list of additional resources for parents, young people, educators and clinicians. A second individual psychoeducational session is offered to families. Options for intervention are

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discussed. A structured ADMiRE 'feedback form' is used to ensure that no information is overlooked. Depending on the presentation of the child and their previous history, the family may be offered individual or group non-pharmacological interventions, and may be offered medication for ADHD. The majority of young people referred to ADMiRE present with moderate to severe ADHD symptoms that continue to cause persistent functional impairment after environmental modification. Therefore as per NICE guidelines, a trial of medication is indicated for most young people presenting to ADMiRE who meet criteria for a diagnosis of ADHD.

Step 5: Referral for management of co-occurring difficulties

A high proportion of children and adolescents with ADHD will have a co-occurring condition (Gillberg *et al.* 2004; Hollingdale *et al.* 2020; Kraut *et al.* 2013). Neurodevelopmental difficulties (e.g., ASD / language disorders / sensory processing disorder / motor disorders), mental health conditions (e.g., mood disorders / anxiety / substance misuse) and behavioural disorders (e.g., ODD / conduct disorder) are common. Psychosocial difficulties are also frequently reported. If co-occurring difficulties are not managed appropriately, it is likely that treatment for ADHD will appear sub-optimal, therefore it is important to assess for these and offer intervention or signpost to appropriate services.

For children presenting to ADMiRE with likely ASD, the family are encouraged and supported to self-refer for an 'Assessment of Need', a multidisciplinary assessment offered by the HSE Disability Service. If SLT or OT assessment appears to be indicated, the ADMiRE team discuss the case with the ADMiRE SLT / OT to determine the most appropriate pathway for the young person. If learning difficulties are suspected, this is discussed with the family and a recommendation is made for an educational psychological assessment to be completed. For moderate-severe mental health difficulties, the referring CAMHS team is alerted to the young person's needs. For families presenting with psychosocial difficulties, referral to appropriate services is supported.

Step 6: Non-pharmacological interventions

As described in Step 4, psychoeducation about ADHD is provided to parents/guardians and young person at the initial feedback, and the family are provided with an information sheet with details about the ADMiRE/TCD online ADHD Psychoeducational tool: https://www.tcd.ie/medicine/psychiatry/research/adhd/. Many families attend a second individual psychoeducational session following the feedback appointment.

In addition, the parents/guardians of young people in primary school are offered an ADHD-specific parenting programme, the Parents Plus ADHD Children's Programme. This programme is run on a rolling basis in the service. A parenting programme for adolescents with ADHD is currently being developed by the ADMiRE team.

A psychoeducational programme for adolescents with ADHD has recently commenced. This groups adopts a neurodivergent affirmative approach, teaching young people about their differences, their strengths and challenges they might encounter associated with their ADHD diagnosis. Young people learn to build on their strengths and strategies to manage difficulties associated with academics, sleep, emotional regulation and relationships. The group also offers the opportunity for peer support.

Other ADHD-specific groups or interventions that are offered, where indicated, include an ADHD-specific transition programme for children moving from primary to secondary school, an ADHD-specific study skills group, an ADHD sleep clinic, and CBT for ADHD. Discipline-specific individual work is offered if indicated.

Step 7: Pharmacological treatment of ADHD

The aim of this section is to outline the structured protocol used in ADMiRE for (a) pre-medication work up, (b) medication initiation and titration, and (c) optimisation and follow up. A full description of all the pharmacological treatment options for ADHD used in ADMiRE is outside the scope of this article. There are many reviews summarising best practice in pharmacological treatment of ADHD for example (Cortese 2020; Cortese *et al.* 2013; Cortese *et al.* 2021).

A. Pre-medication work up

When considering the use of stimulant/non-stimulant medication for ADHD, pre-medication work up is completed as listed in Table 2. Parents/guardians are explicitly informed about the aim of pharmacotherapy, which is to treat ADHD core symptoms. They are advised that ADHD medication will not eliminate symptoms attributable to other comorbidities.

B. Medication initiation and titration

Stimulant medication

Many guidelines for methylphenidate prescription exist internationally. The following titration protocol is not intended to be a formal recommendation, rather a description of what has worked well in ADMiRE, based on practical experience from working with young people with ADHD. Over the past five years the risk of occurrence of side effects has been minimised through use of a structured 'slow but steady' titration of methylphenidate. Prescribing clinicians in ADMiRE typically increase methylphenidate in increments of 5–10 mg a week to 20 mg. Once sustained release methylphenidate has been introduced, upward titration is in larger increments (typically 10 mg) as needed. Modified release (MR) versions of methylphenidate are used, unless there is a clear rationale for an immediate release (IR) formulation (Table 3). Although this titration is unlikely to result in clinical symptom reduction in the first 2–3 weeks, the experience of ADMiRE clinicians has been that parents and young people have been very attuned to side effects, and are more likely to tolerate small side effects that often resolve – ultimately facilitating optimal dose titration.

If there is no response to the first formulation of methlyphenidate, a second formulation is trialled. If there is no response or intolerable side effects, a trial of lisdexamphetamine is offered. The lowest licensed and available dose of lisdexamphetamine in Ireland is 20 mg. Titration is in increments of 10 mg.

Non-stimulant medication

If methylphenidate and lisdexamphetamine are ineffective or side effects are intolerable, non-stimulant medications (atomoxetine/guanfacine) are considered. Possible reasons for poor response are considered (e.g., is the diagnostic formulation correct? Are there other co-occurring difficulties that are masking response? Is treatment adherence good?). Titration of atomoxetine is started at 0.5mg/kg and increased gradually in weekly increments up to 1.2mg/kg. Guanfacine extended release (ER) is started at 1 mg and titrated upwards in increments of 1 mg weekly. Maximum dose is age- and weight-based. ADMiRE clinicians initiate guanfacine at night to minimise the sedation that often occurs, and only start morning or twice daily dosing when fatigue settles

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Table 2. ADMiRE pre-medication workup

Pre-medication work up	Yes	No
Has assessment confirmed that the symptoms of ADHD meet the diagnostic criteria in DSM-5/ICD-10?		
Do the symptoms of ADHD cause impairment in two or more settings (e.g., school/home/socially)?		
Have the family received psychoeducation about ADHD?		
Has a parent training course been offered?		
Has a risk assessment for substance misuse/diversion been completed?		
Has cardiac screen* been completed with parents?		
• If there are no risk indicators on cardiac screening, a cardiovascular examination is required, typically completed by GP or psychiatrist		
• If risk is identified on cardiac screening, referral to cardiology is required		
Has baseline ADHD severity rating scale been completed by parent, teacher ± young person?		
Has baseline side effect rating scale been completed?		
Has heart rate and blood pressure been recorded (and centiles calculated?		
Has height and weight been plotted on centile chart?		
Have medication information sheets been given to parents/guardian and young person?		
Has appropriate consent been obtained for starting medication?		

*Cardiac screening is completed by the prescribing clinician with parents/guardians. A cardiac screen has been developed in ADMiRE, based on international recommendations for cardiac screening (NICE 2018; Vetter *et al*., 2008; Wolraich *et al*., 2019) and work is ongoing in the cardiology department of Children's Health Ireland, Crumlin to develop guidelines for cardiac screening that could be used nationally. If there are no risk factors identified on cardiac screening history, cardiovascular assessment is completed. If risk factors are identified, the young person is referred to paediatric cardiology. NICE guidelines (NG87) recommend that an electrocardiogram is not required before starting stimulants, atomoxetine or guanfacine, unless the person has any risk factors identified on the cardiac screening (NICE 2018). If the family history is not known for one/both biological parents, it is not possible to conduct an accurate cardiac screen, so cardiology referral/opinion is sought.

Table 3. Methylphenidate formulations available in Ireland, equivalent doses and slow titration regime for sustained and immediate release formulations (Medikinet MR, Ritalin IR and Medikinet IR)

	Medikinet MR	Ritalin IR / Medikinet IR	Equasym XL	Ritalin LA	Concerta XL
Week 1	5 mg mane	5 mg mane			
Week 2	10 mg mane	5 mg BD (8am & midday)	10 mg mane		
Week 3	15 mg mane	10 mg (8am) 5 mg (midday)			18 mg mane
Week 4	20 mg mane	10 mg BD (8am & midday)	20 mg mane	20 mg mane	27 mg mane

(typically after 2–4 weeks). Parents are warned not to stop guanfacine ER suddenly to avoid risk of rebound hypertension. Many parents have reported a reduction in oppositionality/irritability with this medication. Augmentation of stimulant medication with guanfacine ER is licensed by the FDA, and is a commonly used treatment approach in the US however combination treatment is not yet licensed in Ireland.

C. Optimisation and follow up

'Optimisation' refers to 'the process of making something as good as possible'. Optimisation of ADHD management indicates improvement in core symptoms of ADHD. In general terms, during titration of all ADHD medications the dose is gradually increased until there is no further improvement in ADHD symptoms, behaviour, education or socially, and side effects are tolerable.

If there are other co-occurring difficulties, medication treatment of ADHD may effectively treat the core ADHD symptoms but other (non-ADHD) symptoms will persist. ADMiRE clinicians provide a clear formulation following initial assessment and are explicit about the specific aims of ADHD medication, so that expectations are realistic.

A standardised follow up assessment template has been adapted from the Dundee clinical care pathway, which pioneered the use of a measurement-based care approach for ADHD (Coghill & Seth 2015). During follow up assessment, standard ADHD-symptom and side-effect rating scales are used regularly to provide quantitative ratings of clinical improvement or deterioration. The SNAP-IV-26 item rating scale is used (Bussing *et al.* 2008) to monitor core symptoms of ADHD. Physical monitoring of weight, height, blood pressure and heart rate is conducted as per international guidelines (NICE 2018). Weight, height, and blood pressure centiles are calculated and reviewed regularly to ensure that there are no concerning trends. The structured follow up assessment template prompts clinicians to enquire about other features including sleep, appetite, mood, anxiety, school performance and peer relationships. If there is poor response to medication, the assessment form provides a list of prompts for the clinician to consider including diagnostic accuracy, presence of comorbidity and medication adherence.

Effectiveness of the pathway and future directions

Research in ADMiRE has shown that use of the ADMiRE clinical pathway has led to high-quality care for children and adolescents

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with ADHD with significant improvement in the clinical management of young people with ADHD, risk-reduction with strong clinical governance, facilitation of rapid clinician training, and high service-user satisfaction levels (McGrath 2020; McGrath *et al.* 2024). Following a recent inspection (2022), the Irish Mental Health Commission commended ADMiRE and welcomed the development of this specialist ADHD service. The 2022 Look Back review into CAMHS Area A stated that use of the ADMiRE Clinical Pathway 'will allow a sustainable increase in the quality and efficiency of care' (Maskey 2022). The service has won a number of awards and grants including a HSE Open Access award (2020), Spark Ignite award (2022), Science Foundation Ireland Frontiers for the Future research grant (2022), and a Public Service Innovation Award (2023). There is interest in implementing the ADMiRE Clinical Pathway in a number of CAMHS teams nationally.

While the ADMiRE Clinical Pathway is standardised, effective and safe, there is a significant administrative burden for clinicians to ensure that the pathway is correctly followed. The time-consuming nature of the current protocol reduces capacity. An electronic system would increase scalability and transferability, which is urgently required due to service demand and to facilitate wider implementation. To meet this need, funding has been secured from the Public Service Innovation Fund and HSE Spark Ignite for the development of the ADMiRE ADHD app, a secure, web-based system that will translate the ADMiRE standardised clinical pathway into one comprehensive digital platform for optimal assessment and treatment of young people with ADHD. It is anticipated that this project will deliver significant benefits to CAMHS services and, by extension, the care offered to young people. The increased efficiency that will result from use of the app has the capacity to reduce wait times, increase service capacity and reduce service costs. Prototype testing and refinement in ADMiRE will be followed by testing in early adopter teams nationally, with potential for national implementation and expansion to an adult population.

Conclusion

ADMiRE is the first public healthcare specialist service for children with ADHD in Ireland. Originally adapted from the Dundee Clinical Care Pathway, the ADMiRE Clinical Pathway has been tailored for use in an Irish healthcare setting, and offers a strongly evidence-based, standardised, effective, efficient and safe model for assessment and treatment of ADHD. Clinical resources are available on request. The ADMiRE ADHD app is currently under development, and will provide a comprehensive digital platform for optimal assessment and intervention for ADHD.

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Competing interests. None.

Ethical standards. The authors assert that all procedures contributing to this work comply with the ethical standards of the relevant national and institutional committee on human experimentation with the Helsinki Declaration of 1975, as revised in 2008.

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