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Treatment guidelines for Attention Deficit and Hyperactivity Disorder: A critical review

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A series of clinical guidelines for Attention Deficit and Hyperactivity Disorder throughout life have been published in recent years. The aim is to provide a synthesis of the best available scientific knowledge and facilitate clinical work as well as to make a critical review of the latest clinical guidelines based on treatment and recommendations. Searches of the following databases were performed: MEDLINE/ PubMed/ Index Medicus, PsycINFO/ Psylit and the Science Citation Index at Web of Science (ISI). The indexed MeSH terms "ADHD," "guideline," "therapeutics" were used for the search, and a total of 10 articles and 9 guides were selected. The guidelines indicate that the diagnosis of ADHD is made by clinical assessment and must be performed by a health professional with training and experience in the disorder. Multimodal treatment is ideal for the integral management of ADHD. Pharmacotherapy remains the first choice treatment for ADHD throughout life, particularly stimulant medication and among them, highlighting treatment with methylphenidate and all guidelines agree that psychological therapy increases the effectiveness of treatment as co-adjuncts to pharmacotherapy.

Keywords: ADHD, Clinical Guidelines, Treatment, Psychostimulants

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Guías para el tratamiento del Trastorno por Déficit de Atención e Hiperactividad: una revisión crítica

Una serie de guías clínicas para el Trastorno por Déficit de Atención e Hiperactividad a lo largo de la vida han sido publicadas en los últimos años. El objetivo es proporcionar una síntesis del mejor conocimiento científico disponible y facilitar el trabajo clínico así como hacer una revisión crítica de las guías clínicas más recientes basado en el tratamiento y las recomendaciones. Se revisaron las siguientes bases de datos: MEDLINE/ PubMed/ Index Medicus, PsycINFO/ Psylit and the Science Citation Index at Web of Science (ISI). La búsqueda se realizó usando los términos indexados en MeSH: "ADHD", "guideline", "therapeuticst. Se seleccionaron un total de 10 artículos y 9 guías. Las guías indican que el diagnóstico del TDAH se hace a través de la evaluación clínica y debe de llevarse a cabo por un profesional sanitario con formación y experiencia en el trastorno. El tratamiento multimodal es el ideal para el manejo integral del TDAH. La farmacoterapia permanece como tratamiento de primera elección para el tratamiento del TDAH a lo largo de la vida, en concreto la medicación estimulante y entre ella, destacando el tratamiento con metilfenidato y todas coinciden en que la terapia psicológica incrementa la eficacia del tratamiento como coadyuvante al tratamiento farmacológico.

Palabras clave: TDAH, Guías clínicas, Tratamiento, Psicoestimulantes

INTRODUCTION

Attention Deficit Hyperactivity Disorder (ADHD) is a neurodevelopmental disorder that can continue throughout life. This disorder is highly prevalent among children (5–6% of children¹) and in the adult population (3.8–4.4%^{2,3}). In 2010, the National Health Institute⁴ conducted a study to observe which disorders were most prevalent in children and adolescents. In a sample of 3042 participants aged 8–15, the most commonly occurring disorder was ADHD, at 8.6%. It is estimated that 80% of children with ADHD will continue to have symptoms linked to the disorder in adolescence^{1,5} and in around 60% of cases they will continue in adulthood.²

From the first clinical descriptions of the disorder by Crichton⁶ in 1798 until today, knowledge of the condition has evolved continuously, together with guidelines for treatment. It is currently considered that the treatment of ADHD should be multimodal,⁷ i.e. it should include both pharmacological and non-pharmacological (psychotherapy) treatment, with close collaboration between all parties involved (doctors, psychologists, teachers and family).⁸

Guidelines for treatment are useful tools for adapting evidence-based medicine and daily clinical practice, helping to improve the cost effectiveness of treatment options. For this reason, our purpose is to present a complete review of the key guidelines for clinical practice around the world for the diagnosis and treatment of ADHD in children, adolescents and adults.

METHOD

A comprehensive search was made of the relevant guidelines both nationally and internationally, declarations of consensus and reviews published since 2007. Publications were obtained from the following databases: MEDLINE/ PubMed/ Index Medicus, PsycINFO/ PsycLIT and the Science Citation Index at Web of Science (ISI). The search was completed using the terms indexed on MeSH: "ADHD," "guideline," "therapeutics" and combinations of these as keywords. The search was updated to 10 December 2013.

RESULTS

Search results in research literature

A total of 324 articles were obtained. Redundant studies and letters to the Editor were excluded, selecting a total of 10 articles and 9 sets of guidelines. The key sets of guidelines for the treatment of ADHD were included. Table 1 lists the guidelines for the pharmacological treatment of ADHD in childhood and adolescence. Table 2 lists those for adults.

Results of the analysis of current guidelines for treatment

*ADHD. Parents' medication guide. American Academy of Child and Adolescent Psychiatry and American Psychiatric Association*⁹

The current guide has been drawn up jointly by the American Academy of Child and Adolescent Psychiatry (AACAP) and the American Psychiatric Association (APA).

From the diagnostic point of view, they conclude that ADHD is diagnosed clinically, and that complementary testing is not advisable. Pediatricians and child and adolescent psychiatrists are the professionals qualified to establish a diagnosis of ADHD in children and adolescents.

They establish a series of recommendations: including a screening test for ADHD within the mental health assessment; the assessment of ADHD in pre-schoolers, children and adolescents should consist of clinical interviews with parents and patients, obtaining information about school, day-to-day behavior, the assessment of comorbid psychiatric disorders and a review of the patient's medical, social and family history. If the patient's history does not present any clinically significant condition, neuroimaging tests are not required. Psychological and neuropsychological tests are not compulsory for a diagnosis of ADHD, although they should be completed if the patient's background suggests a cognitive impairment or poor performance in language, mathematics or intellectual ability. The clinician should assess the possibility of comorbid psychiatric disorders. A full treatment plan should be drawn up for the ADHD patient (pharmacological treatment and behavior therapy). Any pharmacological treatment initiated must be approved by the FDA for the treatment of ADHD (dextroamphetamines, methylphenidate, mixed amphetamine salts and atomoxetine).

Stimulants are recommended as a first line of treatment, especially where there are no comorbid disorders. Atomoxetine is recommended as first line of treatment where patients present issues of active substance abuse, anxiety, depression or ticks. If none of the above agents provides satisfactory treatment for an ADHD patient, the clinician must complete a careful review of diagnosis and then consider behavior therapy and/or the use of medication not specifically approved by the FDA for the treatment of ADHD such as tricyclic antidepressants, guanfacine, clonidine and bupropion. For patients under pharmacological treatment it is advisable to monitor the side effects of the medication. If an ADHD patient presents a solid response to pharmacological treatment and goes on to show good academic, family and social functioning, then only pharmacological treatment is recommended. If a patient shows a partially satisfactory response to pharmacological treatment, or has a

Table 1 Pharmacological treatment for ADHD in children and adolescents			
Guide	1 st line of treatment	2 nd line of treatment	3 rd line of treatment
American Academy of Child and Adolescent Psychiatry (AACAP), 2007.	Psychostimulants.	Atomoxetine	
British Association of Psychopharmacology (BAP, 2007)	Psychostimulants, atomoxetine.	Imipramine, bupropion	Clonidine, guanfacine
National Institute for Health and Clinical Excellence (NICE, 2008).	Pre-schoolers: Pharmacological treatment not recommended. Schoolchildren and adolescents with severe deterioration: Methylphenidate (max. dose 90 mg/day), atomoxetine (max. dose 80 mg/day) and dextroamphetamines (max. 20 mg/day).		
Ramon de la Fuente National Psychiatric Institute. Mexico, 2010	Stimulant medication at a dose of 0.6-1 mg/kg/day up to a maximum of 72 mg/day. Atomoxetine: 0.5 mg/kg/day for one to three weeks, followed by 1.-1.8 mg/day.		
National Health System of the Ministry of Health, Social Policy and Equality, Catalonia, 2010	Pharmacological treatment indicated from the age of 6. Immediate release methylphenidate at a dose of 0.5-1 mg/kg/day up to a maximum of 60 mg/day. Extended-release methylphenidate up to a maximum of 54 mg/day. Atomoxetine: 0.5 mg/kg/day for one to two weeks followed by the recommended maintenance dose of 1.2 mg/day.	There is limited scientific evidence that modafinil is related to clinical improvement	
Canadian Attention Deficit Hyperactivity Disorder Resource Alliance (CADDRA, 2010)	Children: Amphetamine salts up to 30 mg/day. Methylphenidate up to maximum of 72 mg/day. Atomoxetine at an initial dose of 0.5 mg/kg/day, up to a maximum of 1.4 mg/kg/day. Lisdexamphetamine dimesylate at a maximum dose of 60 mg/day. Adolescents: Amphetamine salts up to 50 mg/day. Methylphenidate up to maximum of 90 mg/day. Atomoxetine at an initial dose of 0.5 mg/kg/day, up to a maximum of 1.4 mg/kg/day. Lisdexamphetamine dimesylate at a maximum dose of 70 mg/day.	Intermediate or short release drugs such as dextroamphetamines, HCl methylphenidate	Bupropion, modafinil and imipramine
National Institute of Mental Health (NIMH). 2008	Amphetamines, methylphenidate, dextroamphetamines, atomoxetine, lisdexamphetamine dimesylate.		
Latin American League for the Study of ADHD (LILAPETAH) 2009	Methylphenidate at a dose of 0.6 to 1 mg/kg/day.	Atomoxetine at a dose of 1.2 to 1.8 mg/day	ADT, modafinil, bupropion, guanfacine

comorbid disorder or stressful experiences in the family environment, a psychosocial approach is advised together with pharmacological treatment. Patients should be assessed regularly in order to determine whether ongoing treatment is necessary or the symptoms have subsided. Finally, they recommend that during pharmacological treatment, the patient's weight and height should be monitored.

To conclude, this guide considers psychostimulants to be the first treatment of choice for managing the symptoms of ADHD, either alone or in combination with behavior therapy, based on the Multimodal Treatment Study (MTA)¹⁰ for the treatment of children with ADHD. Combining behavior therapy with the administration of medication helps families, teachers and children to learn ways to control

and alter the behavior that causes problems in the home and at school. Furthermore, they consider that some children receiving combined treatment could take smaller doses of medication. They suggest that atomoxetine could be a good alternative for children with ADHD who do not respond well to stimulants or who suffer other conditions such as depression and anxiety.

Evidence-based guidelines for managing attention deficit hyperactivity disorder in adolescents and adults: recommendations by the British Association for Psychopharmacology (BAP)¹¹

The BAP is an association of psychiatrists, psychopharmacologists and pre-clinical investigators interested in the overall effects of drugs and the brain. The BAP is the largest national organization of its kind in the world, and publishes the Journal of Psychopharmacology.

They state that the diagnosis of ADHD is clinical. The use of assessment scales combined with the developmental background, observation, family and other risk factors allow a high level of diagnostic accuracy.¹² Current neuropsychological tests based solely on executive functioning probably have a limited diagnostic value, although the batteries of tests assessing multiple domains of neuropsychological performance may be useful for determining individual deficiencies and to propose adapted management strategies.

Treatment according to the BAP:

1. Pharmacological treatment in childhood: Pharmacological treatments tested in children include psychostimulants and atomoxetine as first line treatment. Imipramine and bupropion are given as second line treatments, and clonidine and guanfacine as adjuvant treatment.
2. Pharmacological treatment in adults: The first choice drugs would be both psychostimulants such as methylphenidate or amphetamines and non-stimulants, e.g. atomoxetine. Other non-stimulants are not considered appropriate, including alpha-2 adrenergic receptor agonists (clonidine and guanfacine), tricyclic antidepressants, bupropion, modafinil and venlafaxine. The use of serotonin reuptake inhibitors are also not considered to be indicated.
3. Psychotherapeutic approach: Individual and family psychotherapy is useful for providing information on the condition and its prognosis, and helps to prevent negative effects on self-esteem or unrealistic expectations of treatment. Structured psychotherapy can be useful to encourage trust, develop leadership skills, manage anxiety and depression and improve performance. Group therapy also helps to tackle the issue of social isolation.

Quick reference guide. Attention deficit hyperactivity disorder. Diagnosis and management of ADHD in children, adolescents and adults. National Institute for Health and Clinical Excellence (NICE)¹³

This is a quick reference guide that summarizes the recommendations of the National Institute for Health and Clinical Excellence for the diagnosis and treatment of children, adolescents and adults with ADHD.

Diagnosis should only be made by a specialized psychiatrist, pediatrician or other medical professional with training and experience in the diagnosis of ADHD. The diagnostic process should include an assessment of needs, coexisting disorders, social, family and educational/occupational environment and physical health. In the case of children and adolescents, a mental health assessment parents or guardians should also be performed. The diagnosis of ADHD should not only be based on assessment scales or observational data. However, assessment scales are valuable tools, and the observations (for example at school) are useful in case of uncertainty regarding symptoms. Symptomatic criteria for behavioral disorders should be adapted to the patient's age.

With regard to pharmacological treatment in children and adolescents, the guide recommends using methylphenidate (maximum dose 90 mg/day), atomoxetine (maximum dose 80 mg/day) and dextroamphetamines (maximum 20 mg/day), within authorized indications, as options for the management of ADHD. The use of methylphenidate should be considered for ADHD without significant comorbidity and for ADHD with comorbid behavioral disorders. Methylphenidate or atomoxetine should be used where there are ticks, Tourette's syndrome, anxiety, stimulant abuse or the risk of stimulant exchange. Atomoxetine should be used if methylphenidate has been tried and has proven ineffective at the maximum tolerated dose, or if the child or adolescent has not tolerated low or moderate doses of methylphenidate.

This guide specifies a list of recommendations by age. In pre-school aged children pharmacological treatment is not recommended. In children of school age and adolescents presenting moderately severe ADHD and moderate functional deterioration, the guide does not recommend first line pharmacological treatment. In these cases, it advises a training/education program for parents. In older adolescents, the use of individual psychological intervention should be considered. When the severity and deterioration is grave, first line pharmacological treatment should be offered, together with proposing a group training/education program for parents.

In treatment for adults, initial treatment with methylphenidate is recommended (maximum dose 100 mg/day).

Table 2		Pharmacological treatment for ADHD in adults		
Guide	1 st line of treatment	2 nd line of treatment	3 rd line of treatment	
British Association of Psychopharmacology (BAP, 2007).	Psychostimulants and atomoxetine.	Imipramine, bupropion	Clonidine, guanfacine	
National Institute for Health and Clinical Excellence (NICE, 2008).	Methylphenidate (max. dose 100 mg/day).	Atomoxetine (max. dose 100 mg/day) and dextroamphetamines (max. 60 mg/day)		
European Network Adult ADHD, 2010.	Methylphenidate at 0.3-1.5 mg/kg/day.	Atomoxetine	Bupropion, modafinil, guanfacine and tricyclic anti-depressants	
Canadian Attention Deficit Hyperactivity Disorder Resource Alliance (CADDRA, 2010).	Amphetamine salts up to 50 mg/day. Methylphenidate up to maximum of 90 mg/day. Atomoxetine at an initial dose of 0.5 mg/kg/day, up to a maximum of 1.4 mg/kg/day. Lisdexamphetamine dimesylate at a maximum dose of 70 mg/day.	Intermediate or short release drugs such as dextroamphetamines, HCl methylphenidate	Bupropion, modafinil and imipramine	
National Institute of Mental Health (NIMH), 2008.	Amphetamines, methylphenidate, dextroamphetamines, atomoxetine, lisdexamphetamine dimesylate.	Bupropion		

The possibility of using atomoxetine (maximum dose 100 mg/day) or dextroamphetamines (maximum 60 mg/day) should be considered if there is no response to methylphenidate or the patient does not tolerate it after an appropriate attempt at treatment (normally around 6 weeks). Antipsychotic drugs should not be used for ADHD in adults. The use of cognitive-behavioral therapy in groups or individually should be considered for adults who are stable under medication but have persistent functional deterioration associated with ADHD and/or have partial or no response to pharmacological treatment or do not tolerate it.

Declaration of European Consensus on the diagnosis and treatment of ADHD in adults: the European Network Adult ADHD¹⁴

The European Network Adult ADHD was founded in 2003 with the objective of increasing awareness, improving knowledge of the condition and medical attention for adults with ADHD across Europe.

The diagnosis of ADHD in adults should be made via the clinical assessment of current symptoms and those suffered in childhood. Currently there are no neurobiological or neuropsychological tests for ADHD with sufficient sensitivity and specificity to serve as individual diagnostic tests. It is considered that functional imaging studies appear promising, but further research is required in order to establish the clinical use of these tests. Neuropsychological tests can

complement diagnostic assessments and provide an objective cognitive function index.

The beneficial effects of stimulants (preferably extended release formulations) and atomoxetine for the treatment of ADHD are highlighted. Atomoxetine is habitually considered as a second line treatment, followed by other non-stimulant drugs such as bupropion, guanfacine, modafinil and tricyclic anti-depressants.

The guide proposes adopting a multimodal strategy for adults with ADHD. The multimodal strategy comprises the following: psychoeducation on ADHD and comorbid disorders, pharmacotherapy, individual and group cognitive-behavioral psychotherapy and family therapy.

Clinical Guide for Attention Deficit Hyperactivity Disorder. Ramon de la Fuente National Psychiatric Institute¹⁵

After the creation of specialized mental health units throughout Mexico, a series of clinical guidelines on the most common disorders in the country were requested, including ADHD. The diagnosis of ADHD must be mainly based on clinical assessment and on a system of multiple informants, including parent interviews, direct examination of the child and a review of information provided by the school teacher. Electroencephalograms are not indicated for diagnosis. This guide proposes multimodal treatment for ADHD

including professionals from different areas such as general practitioners and family doctors, pediatricians, psychiatrists, neurologists, psychologists, social workers and teachers. Until now the most effective treatments have proven to be pharmacotherapy, psychoeducation, behavior therapy, cognitive-behavioral treatment and guidance for parents and teachers. The first line of treatment includes stimulants such as methylphenidate (0.6-1 mg/kg/day, up to a maximum of 72 mg/day) and non-stimulant medication such as atomoxetine (0.5 mg/kg/day for one to three weeks, followed by 1.2 to 1.8 mg/day). This guide presents a series of recommendations: the use of short-release methylphenidate in patients who are underweight for their age with the possibility of adjusting morning doses; the use of extended release methylphenidate as it facilitates adherence to treatment; atomoxetine is recommended for patients with predominantly inattentive type ADHD, and those with sleep alterations, symptoms of anxiety, enuresis, ticks and Tourette's syndrome; atomoxetine is also recommended for patients with a history of substance abuse.

*Clinical Practice Guidelines for Attention Deficit Hyperactivity Disorder in Children and Adolescents. Quality Plan for the for the National Health System of the Ministry of Health, Social Policy and Equality*¹⁶

In early 2006, the Directorate General for the Quality Agency for the National Health System (NHS) in Spain drew up its Quality Plan in order to increase NHS cohesion and help to guarantee maximum quality in medical attention for all citizens regardless of their place of residence. The Plan initially included the drawing up of eight Guidelines for Clinical Practice by different agencies and expert groups in prevalent conditions relating to healthcare strategies.

This guide indicates that the diagnosis of ADHD in children and adolescents is exclusively clinical. It recommends obtaining information from schools and parents (psychiatric history and specific ADHD issues must be assessed) and neuropsychological testing is not indispensable for a diagnosis of ADHD in children and adolescents. Regarding psychological treatment the guide considers effective therapy to be one that follows cognitive-behavioral principles, and recommends psychopedagogical treatment through ADHD therapy programs at schools. Cognitive-behavioral therapy is recommended as the initial treatment for ADHD in children and adolescents in any of the following situations: the symptoms of ADHD are mild, the impact of ADHD is minimal, there is a notable discrepancy between the frequency and intensity of the symptoms between parents or between parents and teachers, the diagnosis of ADHD is uncertain, parents reject the use of medication or in children

aged under 5 (although this age group is excluded from this guide).

With regard to pharmacological treatment, the guide shows that stimulants have proven more effective in reducing the symptoms of ADHD in comparison with non-stimulants. The drugs used in Spain for the treatment of ADHD are listed in Table 3. The first line of treatment is methylphenidate (short release methylphenidate at a dose of 0.5-1 mg/kg/day, up to a maximum of 60 mg/day, and in the case of extended release up to a maximum of 54 mg/day), and atomoxetine (0.5 mg/kg/day for one to two weeks, followed by a recommended maintenance dose of 1.2 mg/day). The guide states that there is no scientific evidence that tricyclic anti-depressants, SSRIs, SNRIs and bupropion are of use in the treatment of ADHD. Atomoxetine may be considered as the first line of treatment for patients with active substance abuse or comorbid anxiety or ticks. It should also be considered if the patient has experienced significant adverse effects from stimulants.

The guide recommends increasing the dose to the maximum indicated amount or tolerated dose if a partial response to the drug is obtained. If no response is obtained at the maximum dose, the alternative drug not used for that patient should be considered (another presentation of methylphenidate or atomoxetine).

*Canadian practical guide for the treatment of attention deficit and hyperactivity. Canadian Attention Deficit Hyperactivity Disorder Resource Alliance (CADDRA)*¹⁷

The Canadian ADHD Resource Alliance is a national, independent non-profit organization of professional working in family medicine, pediatrics, psychiatry (children, adolescents and adults), psychology and other health professionals. Diagnosis must be made by a professional with training in ADHD. The guide stresses the need for a multimodal approach where it is necessary to intervene with psychoeducation in the first instance, plus behavior therapy, social skills training, psychotherapy, action in the educational environment and pharmacological treatment. It establishes a differentiation in pharmacological treatment by age (See Tables 1 and 2), although in general the first line treatment are extended release amphetamine salts, methylphenidate, lisdexamphetamine dimesylate and atomoxetine. In urgent cases, the treatment of choice is stimulant drug therapy. Medication with amphetamine salts is contraindicated in the case of cardiac issues, glaucoma and hyperthyroidism. Treatment with methylphenidate is contraindicated in the case of ticks, heart problems, glaucoma, hyperthyroidism and where there is anxiety/tension. Atomoxetine is contraindicated in patients with heart problems, glaucoma and hyperthyroidism.

Table 3 Drugs used in Spain for the treatment of ADHD		
Chemical type	Active ingredient	Treatment indications approved for ADHD
Psychostimulants	Methylphenidate -Immediate release -Modified release (30-70)	ADHD from the age of 6 until 18, where other pharmaceutical treatments alone have proved to be insufficient and not authorized for use in adults.
	Methylphenidate -Modified release pellets (50-50) -Extended release OROS	ADHD from the age of 6 until 18, where other pharmaceutical treatments alone have proved insufficient. In adolescents whose symptoms persist into adulthood and who have clearly benefited from treatment, it may be appropriate to continue treatment.
	Lisdexamphetamine dimesylate	ADHD from the age of 6 where there is insufficient response to methylphenidate. In adolescents whose symptoms persist into adulthood and who have clearly benefited from treatment, it may be appropriate to continue treatment.
	Modafinil	None
Selective norepinephrine reuptake inhibitor	Atomoxetine	ADHD in children aged over 6, adolescents and adults.
Agentes adrenérgicos	Clonidine	None
Antidepresivos	Bupropion	None
	Venlafaxine	None
	Tricyclic antidepressants	None
	MAOIs	None
	Roboxetina	Ninguna

Lisdexamphetamine dimesylate is contraindicated in the case of ticks, epilepsy, heart conditions, glaucoma and hyperthyroidism. Dextroamphetamine sulphate is contraindicated in patients with heart conditions, glaucoma, hyperthyroidism and psychosis.

Clinical Guide for Attention Deficit Hyperactivity Disorder. National Institute of Mental Health (NIMH)¹⁸

The US National Institute of Mental Health is the largest scientific organization in the world dedicated to research focused on the understanding and treatment of mental illness.

The guide states that the diagnosis of ADHD throughout life is fundamentally clinical and that it is not necessary to perform complementary tests. Treatments currently available concentrate on reducing the symptoms of ADHD and improving performance. Treatments include medication, psychotherapy (behavioral), education or training, or a combination of therapies. Just like children with this

disorder, it is recommended that adults with ADHD be treated with medications, psychotherapy or a combination of treatments.

The medications indicated for ADHD are amphetamines, methylphenidate, dextroamphetamines, atomoxetine, and lisdexamphetamine dimesylate. Although they are not FDA-approved specifically for the treatment of ADHD, antidepressants are sometimes used for adults with the condition. Tricyclic anti-depressants are sometimes used for their effect on norepinephrine and dopamine. Venlafaxine may also be advisable for its effect on norepinephrine. Bupropion may also be considered for its principally dopaminergic effect.

Multimodal treatment algorithm for Latin American school children with Attention Deficit Hyperactivity Disorder. Latin American League for the Study of ADHD (LILAPETDAH)¹⁹

This guide was drawn up by a panel of experts from the fields of psychiatry, child and adolescent psychiatry and

neuropsychiatry from six Latin American countries, all member of LILAPETDAH.

They establish a decision tree consisting of 6 stages and two alternative phases. The numerical stages involve pharmacological intervention. On their part, the alphanumeric phases also add psychosocial treatments:

- Stage 0: Diagnosis and basic psychoeducation.
- Stage 1: Stimulants (methylphenidate at a dose of 0.6 to 1 mg/kg/day, and amphetamines). If a partial response is obtained after two weeks, treatment moves on to stage 1A.
- Stage 1A: Continue treatment with stimulants and extend psychoeducation. If the response is partial obtained between the fourth and sixth weeks, treatment moves on to Stage 2.
- Stage 2: Atomoxetine (1.2-1.8 mg/day). Response is re-assessed after four weeks; if partial a full review of the diagnosis is made, and if confirmed, treatment moves on to Stage 2A.
- Stage 2A: Atomoxetine and parent training program. Training program should last between four and six weeks. If the response is partial, the diagnosis of ADHD should be reviewed more thoroughly and if confirmed, treatment moves on to Stage 3.
- Stage 3: Tricyclic anti-depressants, Modafinil or Bupropion. If a partial response is obtained after four weeks, treatment moves on to stage 3A.
- Stage 3A: Prior medication and therapy at school. Response should be assessed between weeks four and six; if partial, treatment moves on to Stage 4.
- Stage 4: Alpha adrenergic agonists such as guanfacine at 1 to 3 mg/day; response is assessed at three weeks. If the response is partial, treatment moves on to Stage 4A.
- Stage 4A: Alpha adrenergic agonists and social skills training program for the child. Response should be assessed between weeks four and six; if partial, diagnosis should be re-assessed, and if confirmed, treatment moves on to Stage 5.
- Stage 5: Combination or use of alternative medication.

The objective of psychosocial interventions is to provide parents with a tool for managing their child's behavior and for the child to acquire academic and social skills.⁹ There are currently three intervention models: family, school and patient.

DISCUSSION

Methodological aspects

The guides by the AACAP, the Ramón de la Fuente National Institute of Psychiatry, the Ministry of Health, Social Policy and Equality National Health System and LILAPETDAH focus on children and adolescents. The guides by the BAP, NICE, CADDRA and NIMH focus on ADHD throughout life. Only the European Network Adult ADHD guide focuses exclusively on treatment for adults.

Each guide has been presented by different multidisciplinary teams made up of different health professionals in order to facilitate treatment for people with ADHD in different countries. The majority of the guides^{9,11,15,16,19} base their recommendations on the MTA study.¹⁰

Recommendations for diagnosis

According to most of the clinical practice guides, the diagnosis of ADHD is exclusively clinical⁸ in most cases. It is recommended to complete a full assessment with multiple informants on current symptoms. In adults, both current symptoms and those observed in childhood should be assessed. It is not considered necessary to perform image or neurophysiological testing or neuropsychological studies for diagnosis, except where the patient's history suggests a clinically significant condition.

Recommendations for treatment

There is full consensus on the recommendation of multimodal treatment as the ideal way to manage ADHD. The use of pharmacotherapy, cognitive-behavioral psychotherapy, psychoeducation, family and school intervention is considered to be the full treatment for ADHD.

None of the guides reviewed advise against the use of drug therapy for the treatment of ADHD. None of the guides exclude the use of psychostimulants; all recommend their use as first line treatment. It is noteworthy that the NICE¹³ guide is the only one not to recommend pharmacological treatment in the first instance where ADHD or deterioration is mild or moderate.

Table 1 shows the first, second and third lines of treatment for ADHD in children and adolescents, and Table 2 shows the first, second and third lines of treatment for adult ADHD. It can be seen that all the guides agree on pharmacological treatment as first line of treatment at all ages, most of them recommending both methylphenidate and atomoxetine in the first instance, while AACAP and the European Network Adult ADHD relegate atomoxetine to second line treatment. None of the guides exclusively

recommends atomoxetine as the first line of treatment, leaving psychostimulants as second line treatment.

Included in the psychostimulants, it should be remembered that amphetamines are not available in some of the countries of origin of the guides, meaning that the Spanish NHS guide or that of the Ramón de la Fuente Institute in Mexico do not include amphetamines in their recommendations. Most of the guides originate in countries where amphetamines are available and recommend their use as first line treatment, just as methylphenidate.

In general, there is a broad consensus to consider tricyclic antidepressants, modafinil, alpha adrenergic agonists, venlafaxine or bupropion as second line treatment, although the Spanish guide considers that there is insufficient evidence to recommend the use of bupropion. None of the guides recommend the use of selective serotonin reuptake inhibitors.

No other pharmacological or nutritional treatments are currently recommended for ADHD.

CONCLUSIONS

In general there is broad consensus between the guides studied with regard to the diagnosis and treatment of ADHD. Regardless of their origin and the professionals sitting on the panel, the conclusions are relatively consistent.

The guides states that the diagnosis of ADHD must be made by clinical assessment and should be performed by a health professional with training and experience in the disorder. Multimodal treatment is considered ideal for the integral management of ADHD. Pharmacotherapy is still the first treatment of choice for ADHD throughout life,¹⁰ specifically using stimulant medication, particularly treatment with methylphenidate. Despite their heterogeneity, all the guides agree that the most effective treatment for the symptoms of ADHD is pharmacological therapy. All the guides also highlight the importance of complementing pharmacotherapy with individual psychotherapy or psychoeducation on the disorder in order to alleviate the social, academic, employment or family issues that may have been caused by the presence of ADHD.

The limitations of our study primarily include the heterogeneity of the guides in terms of design and methodology, the difference between the different countries of origin, partly due to the disparity in availability of different treatments, but also due to socioeconomic differences in the countries in question.

The treatment guides can prove to be useful tools for reducing the variability of the clinical practice, the improvement of diagnostic and therapeutic skills for

complex disorders, and they present the consensus of experts' opinions, always based on evidence.

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