THE LANCET
Child & Adolescent Health

Supplementary appendix

This appendix formed part of the original submission and has been peer reviewed. We post it as supplied by the authors.

Supplement to: Cortese S, Asherson P, Sonuga-Barke E, et al, for the European ADHD Guidelines Group. ADHD management during the COVID-19 pandemic: guidance from the European ADHD Guidelines Group. *Lancet Child Adolesc Health* 2019; published online April 17. http://dx.doi.org/10.1016/S2352-4642(20)30110-3.

Management approaches for ADHD during the COVID-19 virus pandemic: guidance from the European ADHD Guidelines Group (EAGG)

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The current COVID-19 virus crisis is creating unprecedented challenges at every level of society. The closure of schools and restrictions on direct physical contact implemented during the COVID-19 virus pandemic means that most families face enormous challenges as they try and navigate new ways of living together. Bored and listless children/adolescents are more likely to play up and cause disruption within the family. Frustrated parents may over-react to these challenges. Very quickly, situations can escalate into coercive cycles within families, leading to the breakdown of relationships and exacerbation of problems. These problems are likely to be aggravated when other members of the family have Attention-Deficit/Hyperactivity Disorder (ADHD).

With a worldwide estimated prevalence of around 5% in school-age children, ADHD is one of the most commonly diagnosed conditions in child and adolescent mental health services.[1] Impairing ADHD symptoms persist in adulthood in up to 65% of the cases.[2] As such, a sizeable portion of patients treated within mental health and primary care settings present with ADHD. National and international guidelines (e.g., those from NICE[3] or the American Academy of Pediatrics, APA[4]) include both pharmacological and non-pharmacological strategies for the management of ADHD. Medications for ADHD encompass psychostimulants (e.g., methylphenidate and amphetamines) and non-psychostimulants (e.g., atomoxetine, clonidine and guanfacine). Non-pharmacological treatments recommended within evidence-based guidelines include behavioural parent training programmes for ADHD in childhood and cognitive behavioral therapies for (young) adults. Psychoeducation is a key part of the management of ADHD across settings and across the lifespan.

The current crisis poses a significant challenge to clinicians and raises several important questions about how best to deliver care for individuals with ADHD within the new restrictions. In relation to the pharmacological treatment, many individuals with ADHD, their families and even professionals are asking whether it is appropriate and safe to start or continue medications for ADHD. Furthermore, due to the current burden on mental health services, prescribers may face challenges in issuing prescriptions and monitoring the effectiveness and tolerability of ADHD medications.

The present document provides guidance on the assessment and management of ADHD during the COVID-19 virus pandemic. This guidance was developed by the European ADHD Guidelines Group (EAGG), a working group of the European Network for Hyperkinetic Disorders (Eunethydis). The EAGG includes clinicians and researchers with expertise in the management of ADHD. Whilst we provide general recommendations for managing ADHD that we believe to be relevant and valid across countries and situations, we urge everyone to follow their own local and national COVID-19 virus advice and guidelines.

Diagnosis and follow-up assessments

Given the requirement of physical distancing and self-isolation in clinicians and patients, all relevant service provision should continue to take place using telephone or appropriate online video technology, in line with recommendations for the use of telepsychiatry (e.g., guidance from the Royal College of Psychiatrists[5], the American Psychiatric Association[6] and other professional organisations).

The importance of behavioural management strategies

EAGG recommends the use of behavioural parenting training strategies as a central feature of ADHD treatment because it improves parenting and has beneficial effects in reducing oppositional defiant and disruptive behaviour which is common in ADHD.[7] Parent training can help teach parents how to break coercive cycles that ADHD in either the child or parent can provoke. The appropriate use of these is even more important during this crisis when families are confined together for long periods – where tensions can easily escalate out of control. Thus, parent training is a vital aspect of child protection and safe guarding when parents are working under pressure as is currently the case.

Under the current circumstances, when face-to-face support is not possible parents will have to rely on self-help versions of evidence-based systems. The efficacy of some of these are supported by trial evidence.[8-10] Some online systems have also been shown to have value.[11] However, parents must be cautious and avoid paying for untested applications that could do more harm than good. Under the current circumstances EAGG would like to highlight the six essential messages common to most parent training approaches in Table 1.

insert Table 1 around here

With regard more specifically to adolescents, for all of them but especially for those with ADHD, the loss of a daily school and homework structure, hobbies and friends, the stress and anxiety related to COVID-19 virus and being together with their parents and siblings 24/7can be difficult to cope with. It can cause disruptions in their day-night rhythm and sleep problems known to be associated with ADHD [12] may occur or worsen. As a result, they may experience an increase in depressive and anxiety symptoms and it may lead to severe levels of family conflict.

For parents it is important to understand how difficult these times are for adolescents with ADHD, to be mild for themselves as parents and for the adolescent, to stay connected with their adolescent, ask about their feelings and if needed talk to the adolescent about a daily schedule. Schools and teachers should try to monitor all their students but especially adolescents with ADHD due to their noted disorganisation[13] and the risks described above (e.g., are they participating in online classes, are they submitting their tasks? Are there worries about their social emotional well-being?). In that case teachers need to actively reach out to parents and adolescents for individual tailoring of schoolwork and care.

With regard to other non-pharmacological strategies**,** patients using neurofeedback or cognitive training should be encouraged to continue practicing transfer exercises during homework and new challenges.

Pharmacological management

- Individuals with ADHD should, if clinically indicated and as recommended in standard national guidelines, be offered the opportunity to start on a pharmacological treatment after completion of the initial assessment or, if already on medication, continue with this as usual. The rationale behind this is that being prevented access to pharmacological treatment after the initial assessment or failure to continue ongoing pharmacological treatment may increase health risks from COVID-19 virus infection to patients, their families and members of the society. Indeed, behaviour related to ADHD may become more disorganised and poorly controlled at this time, impacting adversely on requirements for physical distancing and on family dynamics, already severely challenged by the consequences of the COVID-19 virus pandemic.

- Given the requirement of physical distancing and self-isolation for both prescribers and patients, the initial assessment, including psychoeducation on ADHD and the available treatments, as well as follow-up assessments to monitor effectiveness and tolerability of ADHD medications, can continue to take place using telephone or appropriate online video technology.
- In many countries, the prescription of psychostimulants for ADHD is subject to regulatory restrictions. It is hoped that regulatory authorities will allow for some flexibility around these measures during the COVID-19 virus crisis to make sure patients receive their medication in a timely manner, maximising, at the same time, any effort to reduce the risk of misuse/diversion. For instance, prescribers may be allowed to store, as securely as possible, prescription pads for psychostimulants at home, or extension for mandatory period renewal (usually, every 28 days) should be granted, as it has been the case, for instance, in France. Pharmacies can experience a delay in sourcing medication during this time and parents and patients should be aware that they may have problems getting their medication. This does not mean that they have to ask for extra prescriptions “just in case”, but adult patients and the parents of children with ADHD will need to make sure that they plan well in advance before medications are running low, in order to request a new prescription and to get the medication delivered on time.
- Parents of children with ADHD and adolescents/adults with ADHD should avoid increasing doses or adding additional doses (beyond those prescribed) to manage crisis/stress related to confinement. Likewise, the use of antipsychotics to manage disruptive behaviour or of sedative agents when not clinically indicated should be avoided. Parents should continue implementing behavioral strategies recommended for disruptive/challenging behaviors in children with ADHD[7] (see above).

- The diversity of available formulations (i.e., short/intermediate, and long duration) usually allows patients to tailor the treatment to the specific needs during the day. Considering the change in routine/schedule during the COVID-19 virus crisis, prescribers may want to discuss possible changes in the type of formulation with the patients and their families. In our previous recommendations on the management of adverse events during ADHD pharmacological treatment, we stated that "the risk-benefit balance of drug holidays during weekend must be taken into account and better investigated".[14] Given the risk that family confinement and physical distancing may exacerbate ADHD related risks, we see no strong rationale to introduce weekend drug-holidays under the current crisis.
- Monitoring of possible adverse events during pharmacological treatment:

1. Routine cardiovascular clinical examination and face-to-face monitoring for individuals with ADHD without any cardiovascular risk factors could be postponed until routine face-to-face visits are restarted, as currently, the risks from conducting face-to-face cardiovascular assessments in this patient group outweigh the benefits of cardiac monitoring. When possible, home monitoring of blood pressure and pulse using home blood pressure machines is recommended, following the guidance detailed in Table 2.

insert Table 2 around here

This advice is particularly pertinent for adults and children/adolescents who have previously been recorded as having increase pulse and/or blood pressures. We note here that, on average, modest increases in heart rate (3-10 beats/min), diastolic (3-8 mm Hg) and systolic (2-14 mm Hg) blood pressure are found in patients treated with psychostimulants or atomoxetine (while clonidine and guanfacine tend to decrease blood pressure) and only about 2% of children/adolescents discontinue their

medication due to any cardiovascular adverse event.[15] If measured at home, BP and HR values should be measured at approximately the same time on three separate days and the readings sent to the prescribers, who should average them and assess this value against expected age adjusted norms. As recommended in routine practice, and regardless of the availability of home blood pressure monitoring, patients should contact their prescribers should they experience any emerging cardiovascular symptom (e.g., chest pain, prolonged palpitations, and breathing difficulties). The decision to start or continue medication for ADHD in patients with cardiovascular conditions should be discussed on an individual basis with the prescriber and a specialist in cardiology.

2. Weight and height should be monitored every 3 months in children < 10 y, at 3 and 6 months after starting treatment in children > 10 years and young people, and every 6 months thereafter. Given the current constraints, these measurements may need to be performed, for some patients, at home rather than in the clinic. Whilst ADHD medication can impact on weight, it should be considered that weight may also be affected by factors related to self-isolation (reduced physical activity and increased caloric intake).
3. Likewise, whilst sleep-onset delay is a possible adverse event during psychostimulants treatment, it should be considered that sleep disruption may be accounted for by other factors, such as stress and disruption of daily routines related to the COVID-19 virus crisis. Appropriate sleep hygiene norms should be implemented/reinforced in preference to inappropriately increasing the doses of melatonin beyond the therapeutic range (up to 5-6 mg/nocte[16]).

4. Headache can occur during treatment with psychostimulants. Given uncertainty around its possible unfavourable effects in patients with COVID-19 virus infection[17], ibuprofen for headache should be avoided.
5. If adult patients feel they have (or parents of children/adolescents with ADHD think that their children have) the COVID-19 virus infection and they experience important symptoms (e.g., alteration in blood pressure, pulse or breathing) they need to notify their prescriber/clinician and discuss whether it is advisable to continue with the ADHD treatment.

Conclusions

In summary, COVID-19 virus infection and the attendant physical distancing are presenting many challenges for children, young people and their families, and these are likely to be considerably greater for those with ADHD. It will therefore be even more important to draw upon the strategies routinely recommended in parent-focussed ADHD interventions, as well as mental well-being interventions for children and young people. The inability to undertake routine, face-to-face clinical visits to initiate and monitor medication should not be viewed as an absolute contraindication to pharmacotherapy. Instead, the risks and benefits of initiating/maintaining medication under the current COVID-19 virus guidance should be carefully considered. Where the use of medication is deemed desirable, strategies for remote monitoring, as described above, should be implemented.

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Table 1. Tips for parents in confinement during the CoViD19 crisis adapted from "How to…parent under pressure"; South London & Maudsley Trust – London.

1. <u>Keep positive and motivated.</u> • Don't let things get you down – no parent is perfect – remember small changes in your parenting can really improve things. • Everyday find time and space to do some small thing <u>you</u> enjoy. • Share your experiences with other parents – get on-line or call your friends.
2. <u>Make sure all family members know what is expected of them.</u> • Agree house rules - then get the children's buy in to the rules. • Keep rules simple — pick the ones that really matter. • Put rules on a display so everyone can see them. • Parents must work together so children don't play one parent off against another.
3. <u>Build your child's self-confidence and trust in you.</u> • Children act up if they are feeling uncertain or anxious - take time to listen to them. • Give children lots of positive feedback – do tasks together where praise can be given. • Do things you enjoy together as a family – it's an opportunity to praise and build confidence.
4. <u>Help your child to follow instructions.</u> • Move to the same room, remove distractions and make eye contact before giving an instruction. • Speak slowly in short simple sentences - one idea per sentence. • Be polite, calm but firm – don't plead. Respect breeds respect. • Give warnings when asking your child to stop something they enjoy.
5. Promote better behaviour. • Use rewards to encourage your child to follow rules. • Only use sanctions, for instance by taking something your child values, as a last resort to discourage really bad behaviour. • Make it clear what you are rewarding or sanctioning – don't get into debates. Do not use corporal punishment. • Always follow through on what you promise. • Record rewards on a chart as soon as possible after the reward has been given.
6. Limit conflicts. • Keep your child occupied and work to routines – plan each day. • Avoid situations which provoke you or your child. • Distract your child if they start getting upset - talk about something they enjoy or find funny. • If you are starting to over-react step back, take a breath and collect your thoughts before continuing. • Make a quiet and safe space at home where you or your child can go to calm down.

Table 2. Recommendation for home blood pressure monitoring.

- Use an age adapted cuff size
- Take the BP at least 2 hours after taking a dose
- Sit down for 10-15 minutes before taking the reading
- Take the reading on the left arm
- Take the lowest of 3 readings, approximately the same time on three separate days and send the readings, alongside the pulse values, to the prescribers

Declaration of interests

SC reports honoraria and reimbursement for talks on ADHD from the Association of Child and Adolescent Mental Health, British Association of Psychopharmacology, and the Canadian ADHD Resource Alliance and Healthcare Convention. PA reports honoraria for consultancy to Shire/Takeda, Eli Lilly, and Novartis; educational and research awards from Shire, Lilly, Novartis, Vifor Pharma, GW Pharma, and QbTech; and speaking at sponsored events for Shire, Lilly, Flynn Pharma, and Novartis. ES-B reports personal fees from Shire and Neurotech Solutions. TB reports personal fees for being on the advisory board from Lundbeck, Medice, Neurim Pharmaceuticals, Oberberg GmbH, Takeda/Shire, and Infectopharm; speaker's fees from Medice, Takeda/Shire, and Lilly; and royalties from Hogrefe, Kohlhammer, CIP Medien, and Oxford University Press, outside the submitted work. DB is an unpaid scientific advisor for an EU-funded Neurofeedback trial. JB reports personal fees for lectures from Janssen, Takeda/Shire, and Medice; and personal fees for being on the advisory board from Roche, Medice, Servier, and Angelini, outside the submitted work. DC reports grants and personal fees from Shire and Takeda, and personal fees from Medice, Servier, and Oxford University Press, outside the submitted work. DD reports grants, personal fees, and non-financial support from Shire/Takeda, personal fees and non-financial support from Eli Lilly and Medice, non-financial support from Qb Tech, book royalties from Hachette, and training and supervision fees from the New Forest Parent Training Programme, outside the submitted work. RWD has received compensation for serving as consultant or speaker, or he or the institution he works for have received research support or royalties from the following organisations or companies: EU (FP7 Programme), US National Institute of Mental Health, German Federal Ministry of Health/Regulatory Agency, German Federal Ministry of Education and Research, German Research Foundation, Volkswagen Foundation, Boehringer Ingelheim, Ferring, Janssen-Cilag, Lilly, Lundbeck, Otsuka, Servier, Shire, Sunovion/Takeda, and Theravance. He was an employee of Eli Lilly in clinical CNS research until August 2008, and owns Eli Lilly stock (small part of the respective annual salary). The drug marketed by Eli Lilly is not mentioned in this

guidance. MDo reports grants and personal fees from Eli Lilly, Medice, Shire, Janssen Cilag, Takeda, and Vifor; grants from the German Resesarch Foundation, German Ministry of Health, and Innovation Fund; personal fees from the National Association of Statutory Health Insurance Physicians in Germany, Beltz Publisher, Elsevier, Guilford, Hogrefe, Springer, Wiley, Kohlhammer, and Schattauer. MF reports fees for lectures from Medice and ROVI. CH was an expert member of the National Institute for Health and Care Excellence Guideline (NG87): Attention deficit hyperactivity disorder: diagnosis and management, published in 2018. MH reports personal fees from Medice, Shire, Takeda, Neuroconn, and Hogrefe, outside the submitted work. EK is CSO and Board Member of NLS Pharmaceutics, investigating drugs that are not mentioned in the current guidance. PS reports speaker's fees paid to his department; and is the CEO and shareholder of HealthTracker Ltd, which is unrelated to the submitted work. CS reports non-personal research funds from Lundbeck and Shire paid to his institution; is a consultant and advisory board member of Editorial Médica Panamericana, Medice, NeuroTech Solutions Ltd, and Shire; received speaker's bureau from Medice and Shire, and royalties from Editorial Médica Panamericana, Mayo Ediciones, and Springer SBM Spain. H-CS reports speaker's fees from Medice and book royalties from Cambridge University Press, Elsevier, Hogrefe, Huber, Klett, and Kohlhammer. IW reports grants from Research Grant Council Hong Kong; personal fees from Medice; and grants and personal fees from Janssen, outside the submitted work. AZ reports personal fees for being on advisory boards from Angelini, Edu Pharma, and Shire-Takeda; research grants from Angelini, Janssen, Lundbeck, Otsuka, and Servier; and royalties from Giunti OS and Oxford University Press, outside the submitted work. All other authors declare no competing interests.