

Pediatric Epilepsy and ADHD

What is ADHD?

Attention deficit hyperactivity disorder (ADHD) is a disorder in which a person struggles with paying attention and staying on task. ADHD usually starts before age 8. To make the diagnosis, the symptoms have to be present in two different settings (for example, home and school), and the symptoms should be affecting the everyday life of the patient. Some patients just have symptoms of inattention, some just have symptoms of hyperactivity, some patients have impulsivity, and some patients might have all of the symptoms, or a combination of them. It is not necessary to have symptoms of hyperactivity to make the diagnosis of ADHD.

ADHD is probably the most frequent school-related issue found in youth with epilepsy. The high incidence of ADHD in this group might be related to the area of the brain where the epilepsy is coming from: Some areas of the brain have been recognized as especially important for information processing and attention. Difficulties related to ADHD can have negative impact on a child's development at home and at school. They can also keep kids from making and keeping friends.

How is ADHD diagnosed?

The American Academy of Child and Adolescent Psychiatry (AACAP) has developed some guidelines for the diagnosis, evaluation and treatment of children with ADHD. Ask your doctor about referring your child to a child psychiatrist or child psychologist if you are worried that your child might have ADHD. Doctors sometimes use scales to help in the diagnosis; sometimes they ask for information from school teachers or other important people who know your child in settings where your child might be struggling with symptoms of ADHD.

What are the differences between children with epilepsy and ADHD and children with ADHD only?

We do not know much about how seizures affect ADHD. Some of the attention symptoms can be caused by the side effects of the medication, the effect of poor control of the seizures, or problems with the child's thinking skills.

What comes first: ADHD or epilepsy?

The relationship between epilepsy and ADHD is a two-way street. Many studies have reported that the symptoms of ADHD sometimes start before the first seizures, and despite good seizure control, patients still struggle with ADHD. Also, many parents decide to wait until the seizures are well-controlled before addressing the ADHD. Studies have reported that ADHD symptoms can negatively affect the quality of life of youth with epilepsy even more than the seizures. Talk to your neurologist about the right time to address the ADHD symptoms and what treatments your child should have.

What other factors are important to consider when thinking about ADHD?

The symptoms of inattention occur equally in boys and girls. Boys may have more symptoms of hyperactivity early on (before age 8); this may be why girls, who have inattention symptoms, are sometimes not diagnosed until they are teenagers.

Another important consideration is the presence of intellectual disabilities. Some studies have reported that youth with epilepsy that comes from the frontal lobe might have more attention problems compared to those with epilepsy coming from other parts of the brain.

How frequent is ADHD in youth with epilepsy?

In the general population, the estimate of ADHD is around 3 to 7 percent; in youth with epilepsy it ranges from 12 to 57 percent.

Do antiepileptic drugs (AEDs) have any impact on the ADHD?

Yes. Some of the AEDs, such as topiramate, phenobarbital, benzodiazepines, tiagabine and zonisamide, might have a negative effect on attention. It can be really useful to diagnose ADHD, when there are reports of inattention (or concern by the parents), before the AED is prescribed.

It is always important to tell the specialist your concerns about your child's attention problems, if you feel your child is worse on the medication, you need to let someone know. As an important part of the healthcare team for your child, you are in a great position to help make the best decisions for your child, which might include trying a new AED or decreasing the dose if necessary. **Do not stop or slowly reduce the medication on your own! This can cause problems, such as a breakthrough seizure, for your child.**

Is it true that kids with ADHD tend to have other behavioral issues?

In youth with epilepsy, the impact of ADHD on school work and on other behavioral disorders is often seen. Other behavioral disorders can include: intermittent explosive disorder (IED) and oppositional defiant disorder (ODD).

What if we decide to wait on treatment (either medication or therapy)?

As long as you know and recognize the risks of not addressing the symptoms, this is your decision. When youth feel they are not doing well in school, their self-esteem suffers, which increases the risk of depression. This becomes a cycle in which lack of success contributes to a disconnection from school, which leads to additional lack of success, and so on. Sometimes the teacher sees this and expects less from a child with epilepsy.

Is there a relationship between ADHD, social skills and epilepsy?

Children who started having seizures before age 8 tend to have more problems with social skills than children who started having seizures after age 8. Some are diagnosed with autism spectrum disorder or any other diagnosis in the social spectrum. These patients have more attention, impulsivity and aggression issues than other children with epilepsy with no autism spectrum disorder.

When do we need neuropsychological testing?

Every youth with epilepsy should have neuropsychological testing to measure how they are doing in school. These scores can help us find problems with learning that can be addressed in the IEP (Individualized Education Plan). See *Epilepsy and School Fact Sheet*.

Do kids with ADHD and epilepsy have more trouble sleeping than other kids?

Yes, children with ADHD have a higher rate of sleep problems. Patients with electrical status epilepticus of sleep (ESES) have more problems with attention and hyperactivity. Patients with nocturnal frontal lobe epilepsy also can have more problems with inattention and sleep.

Important questions:

1. What was recognized first, the epilepsy or the ADHD?
2. Did the ADHD become worse after a new AED was started?
3. Are the school demands higher?
4. Are there other behavioral problems?
5. Is the child sleeping well at night? The quality of sleep can have an impact on the behavioral issues.
6. Are there things your child was able to do and learn that he or she is not able to do and learn anymore?

Psychopharmacologic (Medication) Treatment

ADHD can be treated with medication and therapy. The most effective medications to treat ADHD are stimulants. Studies in children without epilepsy have demonstrated that after treatment with a combination of medication and psychotherapy, patients' ADHD symptoms improved. Among children with epilepsy that is well-controlled, the stimulant methylphenidate (MPH) reduces the symptoms of ADHD.

Behavior therapy should always be the first treatment, especially if children are younger than 8 years old.

While stimulants are generally the first medication used for ADHD, there are other medications that can be discussed with your doctor, such as guanfacine, clonidine and atomoxetine. However, these medications may not be as effective as stimulants.

Are there any differences in the medication side effects with different epileptic syndromes?

Patients with lower IQ and ADHD have more brain abnormalities and different epileptic syndromes that may increase the risk for side effects of medications. In children with epilepsy, genetic and central nervous system abnormalities are often responsible for learning disorders and lower IQ. Severity can worsen with the impact of ADHD.

The medications for the ADHD treatment should be managed by a child psychiatrist.

A summary of medications for the treatment of mental health comorbidities in youth with epilepsy

Different kinds of medications are used for different conditions:

1. **Antidepressant medications:** Antidepressant medications are the treatment of choice for patients with depression, anxiety disorders, obsessive-compulsive disorder (OCD) and panic disorder, among others. There are different types of antidepressants. The most frequently used for the treatment of these conditions in children are selective serotonin reuptake

inhibitors (SSRIs), which are effective for the treatment of mood disorders and anxiety disorders in children. In children and youth with epilepsy, antidepressants can help improve the symptoms of depression without having a negative impact on the seizures.

Common brand names: Prozac®, Zoloft®, Celexa®, Lexapro®, Paxil®

Common generic names: fluoxetine, sertraline, citalopran, escitalopram, paroxetine

2. **Stimulant medications:** There are two families of stimulants: methylphenidate (MPH) and dextroamphetamine. These medications have been shown to be safe and effective for youth with ADHD without epilepsy. Quality of life of youth with ADHD improves with stimulant medication treatment. These medications are better than behavior treatment and routine community care.

An important question remains: Are stimulants safe to use in the treatment of children and youth with epilepsy? Parents should move carefully when making this decision, especially in patients whose epilepsy is poorly controlled, and in patients with recent (in the last three months) history of generalized tonic clonic seizures or those with history of electrical status epilepticus.

Stimulants for youth with epilepsy should be closely watched by a child psychiatrist. If the number of seizures increases in the three months after the medication is started, other treatments should be considered for ADHD in these children. Children with lower IQ and those in the autism spectrum are more sensitive to the effects of the stimulants, and may have increased irritability, aggression and additional side effects. Special consideration might, therefore, need to be taken when considering stimulants with these children. Children who have heart defects or heart disease might need to have an EKG. If there are abnormalities, a cardiologist should be consulted.

Common brand names: Ritalin®, Focalin®, Concerta®, Daytrana®, Adderall®, Adderall XR®, Vyvanse®

Common generic names: methylphenidate, dexamethylphenidate, methylphenidate ER, methylphenidate transdermal system, dextroamphetamine

For more information on the medication treatment for ADHD, see the following link:

parentsmedguide.org/pmg_adhd.html

3. **Atypical antipsychotic medications** are frequently used in the treatment of bipolar disorder, psychosis, aggression and violence, in combination with SSRIs to increase the effect of antidepressants. Atypical medications can be highly effective in controlling agitation in children and youth with epilepsy who are also in the autism spectrum. Children who take these medications must be watched closely since most of these drugs (with the exception of aripiprazole and ziprasidone) can affect blood glucose and appetite. While taking these medications, your child will have blood tests twice a year; in addition, he or she will be weighed every month in case his or her appetite increases. Other important side effects with these medications are an increase in seizures, especially in those patients with poorly controlled generalized epilepsy tonic-clonic seizures.

Common brand names: Risperdal®, Abilify®, Geodon®, Zyprexa®, Seroquel®, Clozaril®

Common generic names: risperidone, aripiprazole, ziprasidone, olanzapine, quetiapine, clozapine

Important questions to ask before starting any psychotropic medication:

1. Was my child examined by a child psychiatrist who recommended the psychotropic medication?
2. Were other treatment choices (psychotherapy) explored before a new medication was started?
3. Did the symptoms we are observing begin soon after my child started taking a new antiepileptic medication?
4. Is there any history of mental health condition in the family? Is there a history of suicide attempts in the family?
5. Is the psychiatric problem affecting the patient in more than one setting? If not, what can we do to improve the stressful situation?
6. If there is anyone in the family with a similar condition? If so, are they taking any medication that has been effective?
7. Are the symptoms related to how severe the epilepsy is? Do the symptoms get better a couple of days after the last seizure?
8. What are the risks, benefits, and alternatives of taking this medication?
9. Does the child have any conditions or other reasons to not take this medication?
10. For how long should the medication be continued? What happens if we miss a dose of the medication?
11. Is it OK to stop the medication on the weekends?
12. What are the major side effects and the most common side effects?
13. Is there any interaction between this medication and any of the other medications my child is taking?
14. Who is going to follow this new medication and how frequently should we see the doctor? If I have questions, whom should I call?