

ADD Combined Type

The ADD combined type is often identified early in life, especially in boys. The level of hyperactivity, restlessness and impulsivity causes them to stand out from others. Brain studies of this subtype reveal decreased activity in the prefrontal cortex and pre-motor cortex in response to an intellectual challenge, most likely due to low dopamine availability in the basal ganglia (deeper structures in the brain). Combined or predominantly hyperactive-impulsive types usually are very responsive to stimulant medications, such as Ritalin (methylphenidate), Dexedrine (dextroamphetamine), Cylert (magnesium pemoline), Desoxyn (methamphetamine), and Adderal (a combination of amphetamine salts). These medications "turn on" the frontal lobes and prevent brain shutdown, allowing a person to have more access to this part of their brain.

Prefrontal Cortex Intervention

Nutritional intervention can be especially helpful in this part of the brain. For years I have recommended a high protein, low carbohydrate diet that is relatively low in fat to my patients with ADD. This diet has a stabilizing effect on blood sugar levels and helps both with energy level and concentration. Unfortunately, the great American diet is filled with refined carbohydrates which has a negative impact on dopamine levels in the brain and concentration. With both parents working outside of the home there is less time to prepare healthy meals and fast foods have become more the norm. The breakfast of today typically involves food that are high in simple carbohydrates, such as frozen waffles or pancakes, Pop Tarts, muffins, pastry rolls, cereal. Sausage and eggs have gone by the wayside in many homes because of the lack of time and the perception that fat is bad for us. Even though it is important to be careful with fat intake, the breakfast of old is not such a bad idea, especially where ADD or other dopamine deficient states exists.

The major sources of protein I recommend include lean meats, eggs, low fat cheeses, nuts and certain beans. These are best mixed with a healthy portion of vegetables. The ideal breakfast is an omelet with low fat cheese and lean meat, such as chicken. The ideal lunch is a tuna, chicken or fresh fish salad, with mixed vegetables. The ideal dinner contains more carbohydrates, such as bread or potatoes, with lean meat and vegetables. Eliminating simple sugars (such as cakes, candy, ice cream, pastries) and simple carbohydrates that are readily broken down to sugar (such as bread, pasta, rice, potatoes) will have a positive impact on energy level and cognition. This diet is helpful in raising dopamine levels in the brain. It is important to note, however, that this diet is not the ideal diet when there are circulate or over focus issues, which usually stem from a relative deficiency of serotonin. Since serotonin and dopamine levels tend to counterbalance each other: whenever serotonin is raised dopamine tends to be lowered and when dopamine is raised serotonin is lowered.

Nutritional supplements can also have a positive effect on brain dopamine levels and help with focus and energy. I often have my patients take a combination of tyrosine (500-1,500 milligrams two to three a day), OPC grape seed or pine bark (1 milligram per pound of body weight) and ginkgo biloba (60-120 milligrams twice a day). These supplements help increase dopamine and blood flow in the brain and many of my patients report that they help with energy, focus and impulse control.

ADD Inattentive Type

The onset of these symptoms often become apparent later in child-hood or early adolescence. The brighter the individual, the later symptoms seem to become a problem. The symptoms must be present for at least six months and not be related to a depressive episode or the onset of marijuana usage. Using marijuana can often make a person seem as though they have ADD without hyperactivity. It is important to screen for pot usage in teen-agers or adults.

Girls with ADD are frequently missed because they are more likely to have the non-hyperactive form.

The severity of the disorder is rated as mild, moderate or severe. Even though these children have many of the same symptoms of the people with AD/HD, they are not hyperactive and may appear hypoactive. Additional symptoms for this subtype include: excessive daydreaming, frequent complaints of being bored, appearing apathetic or unmotivated, appearing frequently sluggish or slow moving or appearing spacey or internally preoccupied -- the classic "couch potato."

Most people with this form of ADD are never diagnosed. They do not exhibit enough symptoms that "grate" on the environment to cause others to seek help for them. Yet, they often experience severe disability from the disorder. Instead of help, they get labeled as willful, uninterested, or defiant.

As with the ADD combined type, brain studies in patients with ADD, inattentive subtype reveal a decrease in brain activity in the frontal lobes of the brain in response to an intellectual challenge. Again, it seems that the harder these people try to concentrate, the worse it gets. ADD, inattentive subtype is often very responsive to stimulant medications, such as Ritalin (methylphenidate), Dexedrine (dextroamphetamine), Cylert (magnesium pemoline), Desoxyn (methamphetamine), and Adderal (a combination of amphetamine salts). These medications "turn on" the frontal lobes and prevent brain shutdown, allowing a person to have more access to this part of their brain.

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Cingulate System Hyperactivity

Over focus Issues

People with cingulate hyperactivity tend to get locked into things and they have trouble shifting their attention from thought to thought. This brain pattern shows increased blood flow in the top, middle portion of the frontal lobes (cingulate area of the brain). This is the part of the brain that allows you to shift your attention from thing to thing. When this part of the brain is working too hard, people have trouble shifting their attention and end up "stuck" on thoughts or behaviors.

This brain pattern may present itself differently among family members. For example, a mother or father with cingulate hyperactivity may experience trouble focusing, along with obsessive thoughts (repetitive negative thoughts) or compulsive behaviors (hand washing, checking, counting, etc.). The son or daughter may be oppositional (get stuck on saying no, no way, never, you can't make me do it). Another family member may find change very hard for him or her.

This pattern is often made worse by the stimulant medications. The problem is not inattention, but over-attention. When you give them a stimulant medication they tend to focus more on the thoughts they get stuck on. The best medications for this problem tend to be the "anti-obsessive antidepressants," which increase the neurotransmitter serotonin in the brain. I have nicknamed these medications "anti-stuck medications." At the time of this writing there are 10 medications which are commonly used to increase serotonin in the brain. These medications include Effexor (venlafaxine), Prozac (fluoxetine), Paxil (paroxetine), Zoloft (sertraline), Anafranil (clomipramine), Desyrel (trazodone), Celexa (citalopram), Remeron (mirtazapine) and Luvox (fluvoxamine).

Cingulate System Hyperactivity Interventions

Low serotonin levels and increased cingulate activity are often associated with worrying, moodiness, emotional rigidity and irritability. There are two ways that food can increase serotonin levels. Carbohydrate containing foods, such as pastas, potatoes, bread, pastries, pretzels, candy and popcorn, increase l-tryptophan levels (the natural amino acid building block for serotonin) in the blood, resulting in more l-tryptophan available to enter the brain where it is converted to serotonin. The calming effect of serotonin can often be felt in 30 minutes or less by eating these foods. Cerebral serotonin levels can also be raised by eating foods rich in tryptophan such as chicken, turkey, salmon, beef, peanut butter, eggs, green peas, potatoes and milk. Many people unknowingly trigger cognitive inflexibility or mood problems by eating diets that are low in l-tryptophan. For example, high protein, low carbohydrate diets that I recommend for low dopamine states (related to prefrontal cortex underactivity) often make cingulate problems worse. L-tryptophan is a relatively small amino acid. When you eat a high protein diet the larger amino acids more successfully compete to get into the brain, causing lower levels of brain serotonin and more negative emotional reactivity.

St. John's Wort, L-tryptophan, and 5-HTP are helpful for cingulate gyrus overactivity. St. John's Wort comes from the flowers of the St. John's Wort plant (wort is Old English for plant). It got its name from the fact that it blooms around June 24, the feast day of St. John the Baptist and the red ring round the flowers when crushed looks like blood, the blood of the beheaded John the Baptist. St. John's Wort seems to be best at increasing serotonin availability in the brain. The starting dosage of St. John's Wort is 300mg a day for children, 300mg twice a day for teens, and 600mg in the morning and 300mg at night for adults. Sometimes I'll go as high as 1800mg in adults. The bottle should say that it contains 0.3% hypericin, which is believed to be the active ingredient of St. John's Wort. I have done a number of before and after SPECT studies with St. John's Wort. It clearly decreases cingulate gyrus hyperactivity for many patients. It also helps with moodiness and trouble shifting attention. Unfortunately, I have also seen it decrease prefrontal cortex activity. One of the women in the study said, "I happier, but I'm dingier." When cingulate symptoms are present with ADD symptoms it's important to use St. John's Wort with a stimulating substance like L-tyrosine or a stimulant such as Adderall. It has been reported that St. John's Wort increases sun sensitivity (you could get sunburned more easily and need to be careful in the sun). Also don't use it if temporal lobe symptoms are present, without first stabilizing the temporal lobes.

L-tryptophan (the amino acid building block for serotonin) and 5HTP (also a serotonin building block) are other ways of increasing cerebral serotonin. L-tryptophan was taken off the market a number of years ago because one contaminated batch, from one manufacturer, caused a rare blood disease and a number of deaths. The L-tryptophan actually had nothing to do with the deaths. L-tryptophan is a naturally occurring amino acid found in milk, meat and eggs. I have found it very helpful for patients to improve sleep, decrease aggressiveness, and improve mood control. In addition, it does not have side effects, which is a real advantage over the antidepressants. L-tryptophan was recently re-approved by the Food and Drug Administration and is now available by prescription. I recommend L-tryptophan in doses of 1,000-3,000 milligrams taken at

bedtime. One of the problems with dietary L-tryptophan is that a significant portion of it does not enter the brain. It is used to make proteins and vitamin B3. This necessitates taking large amounts of tryptophan.

5-HTP is a step closer in the serotonin production pathway. It is also more widely available than L-tryptophan and it is more easily taken up in the brain. Seventy percent is taken up into the brain, as opposed to only three percent of L-tryptophan. 5-HTP is about five to ten times more powerful than L-tryptophan. A number of double blind studies have shown that 5-HTP is as effective as antidepressant medication. 5-HTP boosts serotonin levels in the brain and helps to calm cingulate gyrus hyperactivity (greasing the cingulate if you will to help with shifting of attention). The dose of 5-HTP for adults is 50-300mg a day. Children should start at half dose. Take 5-HTP and L-tryptophan on an empty stomach. The most common side effect of 5-HTP is an upset stomach. It is usually very mild. Start slowly and work your way up slowly.

There have also been some recent studies with Inositol, from the B vitamin family, which you can get from a health food store. In doses of 12-20 milligrams a day it has been shown to decrease moodiness, depression and overfocus issues.

Do not take St. John's Wort, L-tryptophan, or 5-HTP with prescribed antidepressants, unless under the close supervision of your physician.

Limbic System Hyperactivity

The limbic system lies near the center of the brain. It is about the size of a walnut. This is the part of the brain that sets a person's emotional tone or how positive or negative you are. The limbic system also affects motivation and drive. It helps get you going in the morning and encourages you to move throughout the day. It controls the sleep and appetite cycles of the body. It affects the bonding mechanism that enables you to connect with other people on a social level; your ability to do this successfully in turn influences your moods.

Mood problems often occur when the limbic system of the brain is overactive. Clinical depression, manic-depressive disorder and severe PMS are more severe problems than the garden variety most people experience in the form of bad moods. For complete healing to take place, the addition of antidepressant medication or appropriate herbal treatment may be needed. A sure sign that the prescribed medications are really treating the depression is that the deep limbic system activity normalizes. Whenever limbic activity normalizes, there is a corresponding decrease in the patient's symptoms.

Limbic Medications

In recent years, new antidepressants have entered the market that have a wider application and often have fewer side effects than the original antidepressants. Some of the new pharmaceuticals are important because they have the additional benefit of affecting the subclinical patterns the rest of us are more likely to experience at some time in our lives, such as moodiness and negativity. In treating clinical depression, it is important to use enough medication for a long enough period of time. Often, antidepressants take 2-4 weeks to become effective.

St. John's Wort is an herbal treatment that has also been shown to have a positive impact on depression and a cooling influence on deep limbic structures. It has been used in Europe for many years and it is the most commonly prescribed antidepressant with the least amount of side effects. For adults I recommend 500mg. two times a day of St. John's Wort, containing 0.3% hypericin. Even though St. John's Wort has fewer side effects than traditional antidepressants it is not without side effects. Some people become sun sensitive and become more easily sunburned. I have noticed an increase in acne. Also, I had one patient who developed a seriously slow heart rate after taking it for a month. I believe if St. John's Wort is being taken for depression it should be done under the supervision of a psychiatrist.

The medications used for limbic hyperactivity include standard antidepressants, such as Tofranil (imipramine), Norpramin (desipramine), and Pamelor (nortryptiline), the newer antidepressants such as Prozac (fluoxetine) and Wellbutrin (buprion), and the stimulants.

Limbic Intervention

Over the past decade there has been significant research on food, nutrients and depression. The results surprise many people. We have been inundated by nutritional experts and news reporters who tell us we should eat low fat, high carbohydrate diets. "Low fat" is everywhere. Unfortunately, low fat is not the complete answer. In two studies in the American Journal of Psychiatry men who had the highest suicide rates had the lowest cholesterol levels. Our deep limbic system needs fat in order to operate properly. Certainly, some fats are better for us than others, such as omega-3 fatty acids found most prevalently in fish. Protein is also essential to a healthy "deep limbic diet." Proteins are the building blocks for brain neurotransmitters. Low levels of dopamine, serotonin and norepinephrine have all been implicated in depression and mood disorders. It is essential to eat enough protein in balanced amounts with fats and carbohydrates. Too much protein for some people may actually restrict the amount of "brain proteins" to cross into the brain. Not enough protein will leave you with a brain protein deficit. Here are some clues.

Low serotonin levels are often associated with worrying, moodiness, emotional rigidity and irritability (a combination of deep limbic and cingulate problems). To enhance serotonin levels, eat balanced meals with carbohydrate snacks (such as crackers or bread). Exercise can be a tremendous help along with nutritional supplementation with the amino acid L-tryptophan that was recently re-approved by the Food and Drug Administration and is now available. I recommend L-tryptophan in doses of 1,000-3,000 milligrams taken at bedtime. L-tryptophan was taken off the market a number of years ago because one contaminated batch, from one manufacturer caused a rare muscle disease and a number of deaths. The L-tryptophan actually had nothing to do with the deaths. L-tryptophan is a naturally occurring amino acid found in milk, meat and eggs. I have found it very helpful for patients to improve sleep, decrease aggressiveness and improve mood control. In addition, it does not have side effects, which is a real advantage over the antidepressants. There have been some recent studies with Inositol, from the B vitamin family, which you can get from a health food store. In doses of 12-20 milligrams a day it has been shown to decrease moodiness and depression.

Low norepinephrine and dopamine levels are often associated with depression, lethargy, trouble focusing, negativity and mental fuzziness. To enhance norepinephrine and dopamine levels it is better to have protein snacks (such as meat, eggs, or cheese) and to avoid simple carbohydrates, such as bread, pasta, cakes and candy. Also, I often have my patients take natural amino acids such as Tyrosine (1,000-1,500 milligrams a day) for energy, focus, impulsivity and DL-phenylalanine (400 mg three times a day on an empty stomach) for moodiness and irritability.

I have also found SAME helpful for limbic problems. SAME is involved with the production of many important brain compounds, such as neurotransmitters. It donates "methyl" groups to these compounds so that they can function properly. Normally, the brain manufactures all the SAME it needs from the amino acid methionine. In depression, however, this synthesis has been found to be impaired. Supplementing the diet with SAME has been found to increase the neurotransmitters involved with depression and improve cell membrane fluidity. SAME is one of the best natural antidepressants, a number of recent studies have shown that it is as effective as antidepressant medication. SAME has also been found helpful for people who suffer from fibromyalgia, a chronic muscle pain disorder. Fibromyalgia and ADD run commonly together. I think the chronic stress associated with ADD is in part responsible for the muscle pain. People who have bipolar disorder or manic-depressive illness should not take SAME. There have been a number of reported cases of SAME causing manic or hypomanic episodes (excessively up or happy moods, extreme impulsivity in sexuality or spending money, pressured speech, or decreased need for sleep). I think these reports highlight that SAME is an effective antidepressant, as all of the prescription antidepressants have that capability as well.

The dosage of SAME is between 200mg to 400mg two to four times a day, half that for children. One of the problems with SAME is that it is expensive, as expensive as many of the newer antidepressants. Insurance companies do not, in general, cover herbal or supplemental treatments, making SAME even more expensive than prescription medication for most people. Over time the cost is likely to come down.

Basal Ganglia Hyperactivity [top](#)

The basal ganglia are a set of large structures toward the center of the brain that surround the deep limbic system. The basal ganglia are involved with integrating feelings, thoughts and movement, along with helping to shift and smooth motor behavior. In our clinic we have noticed that the basal ganglia are involved with setting the body's idle or anxiety level. When they work too hard people have problems with anxiety, nervousness, panic, fear, and physical tension.

Anti-anxiety medications are often very helpful for severe basal ganglia problems. Nervousness, chronic stress, panic attacks, and muscle tension often respond to medications when the other techniques are ineffective. There are five classes of medication helpful in treating anxiety.

Benzodiazepines are common anti-anxiety medications that have been available for many years. Valium, Xanax, Ativan, Serax, and Tranxene are examples of benzodiazepines.

There are several advantages to these medications. They work quickly; they generally have few side effects, and they are very effective. On the negative side, long-term use can cause addiction. In the panic attack plan I give my patients, I often prescribe Xanax as a short-term anti-anxiety medication to use in conjunction with the other basal ganglia prescriptions.

Buspar is often very effective in treating long-term anxiety. It also has the benefit of not being addictive. On the negative side, it takes a few weeks to be effective and it must be taken all of the time to be effective. It has shown to have a calming effect on aggressive behavior.

Certain antidepressants, such as Tofranil (imipramine) and the MAO inhibitor Nardil, are especially helpful for people who have panic disorders. I have found these medications to be helpful in patients who have both limbic system and basal ganglia problems.

Focal basal ganglia abnormalities, like focal limbic system changes, are often helped with nerve stabilizing medications, such as Lithium, Tegretol, or Depakote. I have seen these medications be very helpful for some patients.

The last class of medications I find helpful in severe cases of anxiety are anti-psychotic medications, such as Risperdal, Mellaril or Haldol. Because of their side effects, I usually save these medications until I have tried other options. When psychotic symptoms are present, these medications are often lifesaving.

Basal Ganglia Intervention

What you eat has an important effect on how you feel. If your symptoms reflect heightened basal ganglia activity and anxiety you'll do better with a balanced diet that does not allow you to get too hungry during the day. Hypoglycemic episodes make anxiety much worse. If you have low basal ganglia activity and low motivation you will likely do better with a high protein, low carbohydrate diet to give yourself more energy during the day. It is also often helpful to eliminate anxiety producing chemicals such as caffeine, and to eliminate alcohol as the withdrawal symptoms often induce anxiety.

Some herbal preparations such as kava extract and valerian root have also been reported to help anxiety and likely have a calming effect on the basal ganglia. The B vitamins, especially vitamin B6 in doses of 100-400 milligrams, are also helpful. If you take B6 in these doses it is important to also take a B complex as well. My patients have also found the scents from essential oils chamomile and lavender to be helpful.

Temporal Lobe System

In my clinical experience, temporal lobe symptoms are much more common in psychiatry than most people think. These include periods of panic or fear for no specific reason, periods of spaciness or confusion, dark thoughts (such as suicidal or homicidal thoughts), significant social withdrawal, frequent periods of déjà vu, irritability, rages, and visual changes (such as frequently seeing shadows out of the corner of the eye). Temporal lobe dysfunction may be inherited or it may be caused by some sort of brain trauma.

Temporal lobe symptoms are often responsive to anti-seizure medication, such as Depakote, Neurontin or Tegretol. Temporal lobe symptoms are often made worse by serotonergic medications such as Prozac, Paxil, Zoloft, etc.

Temporal Lobe Intervention

Strategies geared toward temporal lobe stabilization and enhancement have proven valuable. From a medication standpoint I have seen antiseizure (also called anticonvulsant) medications be the most helpful. One of the mechanisms these medications work is by enhancing the amino acid gamma-aminobutyric acid (GABA). GABA is an essential neurotransmitter in the brain. It is formed in the body from glutamic acid. It's function is to decrease neuron activity and inhibit nerve cells from overfiring or firing erratically. GABA can be taken as a supplement. It acts like an anticonvulsant and also as an anti-anxiety agent. In the herbal literature it is reported to work in much the same way as diazepam (Valium), chlordiazepoxide (Librium), and other tranquilizers, but without fear of addiction. I have seen it have a nice calming effect on people who struggle with temper, irritability, and anxiety (all which may be temporal lobe symptoms). The doses of GABA range from 100-500mg a day for adults, half that for children.

Many people with temporal lobe problems suffer from memory problems. I have found a number of natural substances helpful to enhance memory. These include:

Phosphatidyl Serine (PS): PS plays a major role in determining the integrity and fluidity of brain cell membranes. Normally the brain can manufacture sufficient levels of PS, but if there is a deficiency of folic acid or vitamin B12, or essential fatty acids, the brain may not be able to make enough. Low levels of PS are associated with memory problems and depression in the elderly. I often recommend PS as a supplement for memory problems. There are 18 double blind studies that report how effective PS can be for memory issues. In the largest study 494 elderly patients (65-93) with moderate to severe senility were given PS (100mg three times a day) or placebo for six months. The patients were assessed for cognitive function, behavior, and mood at the beginning and end of the study. Statistically significant improvements in all three areas were noted in the PS group. I recommend that my patients take 100mg twice a day for 2 weeks then, if needed, 100mg three times a day for memory.

Ginkgo biloba, from ginkgo trees, is a powerful antioxidant that is best known for its ability to enhance circulation. In a number of studies at major universities ginkgo biloba has been shown to improve energy, concentration, focus, and memory. Ginkgo biloba has been reported to enhance cerebral blood flow and reduce or slow the symptoms of Alzheimer's Disease. There are many different forms of ginkgo, making dosing confusing. Ginkoba and Ginkgold (Nature's Way) are brands that have been compounded to reflect those done in the major studies on ginkgo biloba. I recommend doses of 60-120mg twice a day

Vitamin E is an antioxidant that has been shown to be helpful for many things, including memory problems and muscle movement disorders. Doses of 400-600 IU twice a day are often recommended for enhancing memory.

Ibuprofen: an anti-inflammatory pain medication has been shown in several studies to enhance memory and decrease the progression of Alzheimer's Disease. It probably works by decreasing inflammation in the brain and allowing better circulation. Doses of 200mg twice a day are usually recommended.