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September/October 2026

Hello patients, colleagues and friends! Thanks for opening our newsletter, I hope it finds you well. September is my favorite month to be in Philadelphia- not as hot as the other summer months, yet the local waters are still warm enough to enjoy. In this newsletter, I wanted to share some thought-provoking research about how ketamine is believed to work in the brain, how it can be helpful in the treatment of Obsessive Compulsive Disorder, and how it compares to electroconvulsive therapy for the treatment of depression.

Fowler Toad (?) Brigantine Beach, NJ



Ketamine: Connections That Sustain Progress

For over 20 years, neuroscience researchers have understood that brain cells in mice who are exposed to chronic stress have a diminished number of dendritic spines (branches that connect them to neighboring brain cells) as compared to non-stressed mice. The same phenomenon is seen when comparing the brains of depressed and non-depressed humans. Ketamine, as well as exercise, has been shown to cause the growth of new dendritic spines in depressed or chronically stressed brain cells. After this observation was made, researchers drew the conclusion that these new connections were what made people less depressed after ketamine treatments.

As we know, a ketamine treatment can reverse depression symptoms such as suicidality within hours in some patients. However, recent research indicates that new dendritic spine formation dose not begin until at least 12 hours after a ketamine treatment. This means that growth of new spines is not what causes the rapid antidepressant effect of ketamine. “We conclude from this and related experiments that after treatment with ketamine, the formation of new connections in this brain circuit isn’t required for initiating an antidepressant effect, but it is required for sustaining it over a period of days.”

It is not the new spine formation that causes the antidepressant effect, but it looks like they work as a structural framework to maintain the progress that people make after receiving ketamine treatments.

Researchers also discovered something quite interesting about the brains of depressed people compared to the brains of non-depressed people. There is actually a network (regional area of the brain) that is larger (or more present in imaging) in a depressed person. In the patients imaged for the studies, the frontostriatal salience network, also known as the “salience network,” was more pronounced in the brains of people who struggled with depression than those who did not. They also found that the appearance of the salience network remained unchanged even once a depressed person was successfully treated. Fascinating stuff! Plenty of electron-microscope slides and brain models here to geek out on, click on the link below for the full article.

[Read more here](#)

Ketamine and Obsessive-Compulsive Disorder

If you have visited our website, you will have noticed that while we advertise that ketamine infusions can be a useful tool in the treatment of depression, anxiety, PTSD and life transitions, we do not promote the infusions as being helpful for Obsessive-Compulsive Disorder (OCD). This is because I have not read any convincing research that ketamine can provide sustained relief from OCD symptoms. The research, as well as anecdotal experience from our clinic, has shown that any relief from OCD symptoms typically lasts less than a week. With such a short period of relief, it did not seem reasonable to promise that ketamine treatments would be helpful in the long term.

People who struggle with OCD have a high rate of co-existing mental health struggles, commonly depression and anxiety disorders. As we know, many people with anxiety and depression are able to find sustained relief when pairing ketamine treatments with psychotherapy. As a result, people with OCD and a co-existing condition may find their ability to manage their OCD symptoms increase if they have symptomatic relief from their depression and/or anxiety symptoms.

A recent study in *Psychopharmacology* duplicated the previous results of ketamine vs. OCD trials. Symptomatic OCD relief was short-lived after a ketamine infusion at standard dosing (0.5mg/kg over 40 minutes). However, the authors made the suggestion of using this brief window of relief to encourage patients to more intensely engage in behavioral therapy, a cornerstone of OCD treatment. Behavioral therapy techniques such as Exposure and Response Prevention (ERP) are very effective, but are also quite difficult to tolerate as it forces people to be exposed to circumstances that intentionally trigger their OCD symptoms. At Mindstream Medicine, we are strong supporters of the idea that ketamine therapy can make psychotherapy less difficult, for people struggling with OCD as well as anxiety/depression/PTSD. While ketamine alone cannot treat OCD, it can be a potentially helpful tool in making therapeutic progress.

[Read more here](#)

Ketamine in the News:

Ketamine vs. Electroconvulsive Therapy

For multiple decades, electroconvulsive therapy (ECT) has been the ultimate recourse for treatment-resistant depression. The ECT process occurs in a hospital setting where a patient is given medication to sedate them, followed by an additional medication to paralyze their muscles (to prevent dangerous movements/spasms) and then a current of electricity is passed through their brain using electric transmitter pads placed on opposite sides of the head. The electrical current results in a brief seizure, and the patient wakes ups shortly afterwards. In medical school, I had the opportunity to assist on ECT procedures during my psychiatry rotation. I was curious to see what the procedure actually looked like in a modern setting.

When many of us think of ECT, we may recall the experience of Jack Nicholson’s character in *One Flew Over the Cuckoo’s Nest*, where he receives involuntary ECT due to unruly behavior. Currently, ECT is only administered to people who consent to it after having it recommended by a psychiatrist. Although it sounds quite severe, it has been the only acceptable treatment for treatment-resistant depression that has not responded to multiple medications, especially when a patient has persistent thoughts of harming themselves.

In 2023, a large (400 patients) trial was published in *The New England Journal of Medicine* that showed head-to-head results of ECT vs. ketamine infusions in patients with treatment resistant depression. The two different techniques were found to be similarly effective, but the patients who received ketamine infusions were less likely to have memory loss than those who received ECT.

In addition, to being equally effective to ECT, and having participated in the administration of both interventions, I have to say that ketamine infusions are a much more gentle intervention. No paralysis or general anesthesia is necessary, and patients are able to return home after their two hour appointment, rather than spending the day in the hospital. Additionally, there is no concern for memory loss after a ketamine infusion because no seizure has taken place. I am hopeful that as more research emerges that shows ketamine can be equally as effective as ECT with fewer side effects, ketamine infusions will become more accepted as mainstream medicine and will be covered by health insurance plans, as ECT is today.

Announcements:

We will be closed from October 9th to October 12th for Fall Break. Please be aware of your “warning signs” of losing progress or returning to your pre-treatment baseline. Reach out to schedule your booster when you feel ready-

[Check out our Google reviews!](#)



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