

Cognitive Deficits in Schizophrenia: An Unmet Need

Most people with schizophrenia have difficulty with concentrating, remembering, maintaining attention, or making decisions, even when they are not experiencing auditory or visual hallucinations. For example, they may not remember a phone number they were just told, or they may feel “foggy” and can’t focus their attention on the task at hand. These difficulties are called “cognitive deficits.”¹ These deficits start before people with schizophrenia develop their first psychotic episode that leads to psychiatric hospitalization.² Those deficits also persist even when the most severe symptoms of schizophrenia have been brought under control with antipsychotic medication. Difficulties in thinking and processing routine information clearly make it hard to get and hold a good job, live independently, or develop social relationships. If you or a family member has schizophrenia, it’s important to be aware of these challenges in cognitive brain function.

Brain research has found that oscillations in electrical brain activity are important for normal thinking. Scientists have determined that the electrical brain activity that occurs in people with schizophrenia while they listen and respond to sounds is different than the brain activity recorded in people who don’t have schizophrenia.³⁻⁵ These differences are also present before people with schizophrenia are first hospitalized for treatment.⁶⁻⁸ The available medications that can help reduce delusions and hallucinations do not reverse these differences in brain activity, and the greater these differences are, the more challenging it is for people with schizophrenia to think clearly. Some scientists believe that the differences in brain activity in people with schizophrenia cause their difficulties in thinking



Tim Piser, PhD
*Chief Scientific Officer at
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rationally.⁹ Measurement of brain electrical activity with electroencephalography (EEG) may prove useful in the development of new medicines to help people with schizophrenia think more clearly.

Cognitive remediation therapy may help people with schizophrenia think more clearly.¹⁰ These treatments typically involve computer-based, social, and life skills training several times a week over several months. This kind of training may reshape the brain activity of people with schizophrenia so they can experience improvement in their cognitive functions during the activities of their daily lives. People with schizophrenia and their families should talk to their doctor or social

worker about the possible benefits of a program of cognitive remediation therapy to improve their thinking.

Medicines currently used to treat people with schizophrenia, called antipsychotic drugs, do not reverse these differences in brain activity. Instead, they mostly modify the functions of several brain chemicals, especially dopamine and serotonin. Fluctuations of these brain chemicals in various brain regions are thought to cause some symptoms of schizophrenia, like hearing voices that aren’t there, or acting on beliefs that aren’t true. However, in people with schizophrenia, there are changes in the function of other brain chemicals that are not affected by these medications. For example, the most common brain chemical involved in thinking is called glutamate, and one of the brain proteins activated by glutamate is called the NMDA receptor. Yet, most medicines currently used to treat people with schizophrenia do not directly affect glutamate or the NMDA receptor, which is believed to have low activity in schizophrenia.

In healthy individuals who don’t have schizophrenia, drugs of abuse that block glutamate’s activation of the NMDA receptor, such as ketamine and phencyclidine (PCP), can suddenly trigger several symptoms of schizophrenia.¹¹ Also, in people who don’t have schizophrenia, these drugs change electrical brain activity and cause cognitive difficulties that are very similar to those in people with schizophrenia.¹² Some scientists believe that reduced activation of the glutamate NMDA receptor may produce the symptoms of schizophrenia.¹³

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SCHIZOPHRENIA SURVIVORS



Susan Weiner

How Writing Poetry Changed My Life



Susan Weiner, author

My story has a happy ending, but it began with a catastrophe. I was in a PhD program in history when I came down with schizoaffective disorder. Unfortunately, before anyone could stop me, I broke from friends, family, and professors and lived alone in a ratty apartment for seven long months. Delusions became my only companion. Finally, after trying to jump off a building, I was detained by a small group of understanding policemen. Fortunately, these officers recognized that I was ill, but not a public threat.

So began a difficult period of two hospitalizations, and a five-year search for the right combination of medications. My psychiatrist dedicated himself to supporting my hopes in life. I was reunited with my family. However, anyone who knows anything about mental illness realizes that it may damage your life and alter everything you once knew.

That had happened to me. The real direct challenge I faced was what was I going to do with my life if I couldn't be a professor anymore, my long-cherished dream?

I thought I had an answer: I would become a nonfiction writer in my field of seventeenth-century British history. I couldn't wait, and I had big dreams. I tried to work toward this goal for years, focusing all my time and all the energy I could muster on making a book a reality. But it seemed to all be for nothing.

I had trouble doing the necessary research long term. In fact, I found that after a while I could no longer concentrate on historical events or synthesize them at all. There were just too many facts. They blew in like leaves in a storm round and round my head. I still wonder if it was the disease or the medication that destroyed my ability to analyze and synthesize data.

To tell the truth, for some time, I was despondent. But I refused to give up or give in to despair. I continued to write for journals and magazines as often as I could, pushing myself to meet the demands of my ambition and dreams. And then one day to my utter surprise, something clicked, and it was an unexpected turn that made all the difference.

It was the day when I decided to write a poem again, an art I had once practiced but also had long since abandoned. I found that writing poetry once more was a source of the deepest delight and creative freedom. It was something I found myself capable of doing. Before long, I spent as much time as I could writing poetry. I wrote and wrote for years. My output was severely limited because of illness; yet, eventually I completed two books of verse.

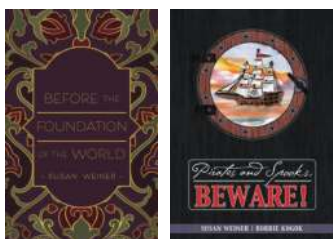
One was a children's book of pirate poems (ages seven through twelve). The book was rooted in real historical events and drew on my knowledge of the Golden Age of Piracy in the seventeenth and eighteenth-century colonies of the Caribbean.

My other book of poetry followed in the Christian tradition of writers such as John Donne and George Herbert. This book of Christian devotion took all my heart and strength to complete. But when I was writing, I hardly felt sick anymore. I forgot my illness and the crippling sedation of the antipsychotic medications. To write meant I was alive again and in love with words. As well as it could, my heart spread its tattered wings and soared.

*"...when I was writing, I
hardly felt sick anymore.
I forgot my illness..."*

And so, in the end, I do find myself a writer, branching out to new fields with hope and anticipation. Having published two books, I'd like to turn to helping others now rather than just myself. To this end, I'm pursuing writing Christian material for prisons in America, though I don't know yet where this will lead.

Through hard years of disappointment and experience, I've learned that hope is real and not illusory. You never know where life may take you. No matter what, always look to the future with hope. It may take a while, but you can succeed in creating a rich and satisfactory life again. All you need is perseverance, motivation, and hard work, and you too may create a life that is full of purpose and delight once more.



Susan's poetry, published by Belle Isle Books, may be seen or purchased at susanweinerbooks.com. You may also contact her there if you wish.

EXPERT

INTERVIEWS

A Finger Prick for Clozapine

An Interview with Pita Navarro,
Head of Clinical Operations for Athelas

Q: How did Athelas come into the field of psychiatry?

When we started Athelas, our original goal was to build at-home tools for cancer patients. When our site went live, we were inundated with stories from psychiatric patients. After digging a little deeper and speaking to different patients and key opinion leaders in the industry, it seemed like a great field to deploy our devices in.

The device for monitoring the white blood cell count of patients on clozapine is called the Athelas One. Getting a simple, onsite finger-prick (as opposed to a venous draw in a lab) is easy, and we are able to return a neutrophil count within a couple of minutes.

We see this device in all settings where a patient may benefit: inpatient, outpatient, as well as assisted living homes. Our goal at Athelas is to be at the patient's point of care, wherever that may be. The technology is now available in all 50 states within the U.S.

There are many ways that our device helps patients with schizophrenia. The most impactful is the amount of time and stress that our device saves them. We've essentially eliminated the need for an extra trip to the lab and the invasive venous blood draw.

Q: How does this device help patients?

We see this helping patients with schizophrenia the most in their early transition back into outpatient care and on their way to independent lives. In outpatient settings, getting to the lab, waiting in line, tracking down your results and making sure they get communicated to your pharmacy is extremely difficult. Administrative challenges of clozapine management decidedly seem to be one of the biggest causes of patients falling off their treatment. By automating this system and making the weekly monitoring less invasive and more accessible, **this device ensures a more successful treatment path for patients.**

Q: What has the feedback been from doctors, patients, nurses?

The feedback we've received from all parties has been positive. Doctors and nurses are able to offer better care to their patients and eliminate some of the clerical errors that occur within the current system. **This device allows them to reach new patients they wouldn't have been able to help previously.** Patients are glad to not have to be the middleman between all of the facilities, and they are happy to see how easy and painless the procedure is.

We've had doctors let us know they are now able to prescribe clozapine to a larger population of their treatment resistant patients. Doctors highlight the fact that access to this device opens the door to treatment for so many patients who have been struggling for months, even years, who previously felt they had no options left. Nurses are relieved to no longer have to try to track down patient results from labs and coordinate results with the clozapine registry. Most importantly, patients we've spoken to find our device and fingerstick method to be hassle free.

We've witnessed multiple patients getting their finger pricked for the first time and their reaction after the finger prick typically is *"that's it?"* They're surprised and relieved at how painless blood monitoring will be for them going forward.



VIDEO HIGHLIGHT



WHAT ARE THE SYMPTOMS OF TARDIVE DYSKINESIA
(Part 1 of 4)

Tardive dyskinesia is a neurological side effect of antipsychotic medications (and other dopamine receptor blocking agents) which may emerge after months or years after receiving these medications. Tardive means *"late"* and *"dyskinesia"* is a Greek word that means abnormal movement.

Epidemiological surveys estimate that there are at least 500,000 people in the United States who suffer from TD.

The movements associated with TD are called *"choreiform"* because they are random, involuntary and not rhythmic. They commonly start in the face, mouth, lips, tongue, jaw or eyes and then spread to the neck, shoulders, fingers, legs and toes. Sometimes persons with TD may have swaying movements of their trunk. TD movements are different than other antipsychotic-induced movement disorders such as Parkinsonian tremors and rigidity.

Untreated TD can greatly and adversely impact one's quality of life because persons with it may become embarrassed to participate in social settings or may not be able to use their hands for typing or writing or drawing, and may even affect their gait. Fortunately, after several decades of no treatment at all, in 2017 two drugs to treat TD were approved by the FDA, valbenazine and deutetrabenazine.



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One medicine that is available for some people with schizophrenia is clozapine (Clozaril). Clozapine may improve symptoms of schizophrenia that persist even after receiving several of the other medicines used to treat schizophrenia.¹⁴ Some scientists think that clozapine may help improve the severe symptoms of schizophrenia by indirectly increasing activation of the NMDA receptor by glutamate.¹⁵ Unfortunately, clozapine is not used very often because it can produce several serious side effects in some patients and requires weekly blood draws to measure the white blood cells.

New treatments are in development to try to restore cognitive functions like memory and attention and making daily plans in people with schizophrenia. For example, Cadent Therapeutics is developing CAD-9303, a drug that increases activation of NMDA receptors by glutamate. Cadent has already started clinical studies of CAD-9303 involving people with schizophrenia.

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Your contribution will help provide education and referrals to persons with schizophrenia, their families, and those who work with the seriously mentally ill. CURESZ informs the general public to better understand this serious brain disorder, and to provide scientific advances showing that there is hope for recovery, and a return to a fulfilling and normal life. The CURESZ Foundation is a 501(c)(3) nonprofit organization. All contributions are tax deductible.

"We are committed to helping individuals to cope with and recover from schizophrenia."

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