NINET
Noninvasive Neurostimulation Therapies

# NINET-IMH Clinic Newsletter

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www.ninet.med.ubc.ca

**The NINET-IMH Clinic and Laboratory researches clinical applications of Non-Invasive Neurostimulation Therapies to improve the health of those suffering from a variety of mental illness.**

**Spring is fully underway and this is our 4th newsletter** from the NINET Public Advisory Committee (PAC), comprised of members of the public, clinic patients, lab personnel and Dr. Fidel Vila-Rodriguez. We meet monthly to discuss improvements at the clinic, on-going research, and to exchange ideas how to improve access to and education about non-invasive neurostimulation therapies for people with mental illness. If you have questions, suggestions, or topics you would like to see in the newsletter, contact us at newsletter.ninetlab@gmail.com or leave a note for the newsletter editors at the NINET office.

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## Seeking MSP Coverage: Update!

In the March edition of this newsletter, we outlined the process to have rTMS included under the Medical Services Plan (MSP) here in BC. The NINET Clinic and Lab led the submission of rTMS to the province's Health Technology Assessment Committee (HTAC) in December 2018. The first step toward approval is for HTAC to accept the nomination and move forward with an evaluation of the scientific research on rTMS' effectiveness.

**We are pleased to share that HTAC accepted rTMS for its scientific review process in April.** If all goes well, sometime this fall, HTAC will make a recommendation to the BC Ministry of Health on whether rTMS treatment ought to be included as part of the public health care system. Then, it will be up to the Ministry to consider implementing HTAC's recommendation (along with funding and logistic issues). Stay tuned!

## Ask an Expert: Different rTMS Protocols

**Our research expert, Dr. Fidel Vila-Rodriguez, shares some of the differences between the rTMS protocols.**

Not everyone at the clinic gets the same rTMS treatments even if they share a common diagnosis. Do you ever wonder why? Just as different people often need different combinations of medication to treat similar illness, there are many different rTMS protocols, depending on the effect we want to achieve for an individual patient.

After the initial assessment with one of the NINET Clinic psychiatrists, patients are assigned to the most appropriate protocol, depending on their individual needs. The rTMS protocols fall into two categories: excitatory and inhibitory:

| Excitatory (+) | Inhibitory (-) |
|---|---|
| > 5 Hz | < 5 Hz |
| Intermittent theta burst stimulation | Continuous theta burst stimulation |

**Excitatory protocols:** As the name suggests, this protocol excites the brain cells when delivered. This increases the brain activity of the area that is stimulated, to counter the suppressed activity of the brain.

Suppressed activity of the left dorsolateral prefrontal cortex of the brain is commonly described in depressed patients. This is associated with anhedonia, lack of motivation, and indecisiveness.

**Inhibitory protocols:** Antagonistic to the excitatory protocols, this protocol suppresses the brain cells. This decreases the brain activity of the area that is stimulated, to counter the hyperactivity of the brain.

Hyperactivity of the right dorsolateral prefrontal cortex of the brain is commonly described in depressed patients. This is associated with negative emotion processing, pessimistic and unconstructive thinking styles, and disturbed sleep.

**The energy frequency as well as its pattern is different between the excitatory and inhibitory protocols as well.**

**Frequency:** To increase brain excitability, we use frequencies higher than 5 Hertz (Hz). Lower frequencies (below 5 Hz) will induce an increase in excitability of the neurons.

**Pattern:** The pattern of the stimulation also has an excitatory or inhibitory effect. To increase brain activity, the theta bursts are delivered intermittently. Decreased brain activity is obtained with theta bursts in a continuous pattern.

There are many other parameters of the protocols, such as phases, placement of coil, and duration of treatment, which vary for each individual. Also, the dose varies based on each individual's motor threshold test. Motor threshold was discussed in our April newsletter which you can find here.

**Questions?** You can ask them at a Group Medical Visit!

## NINET Clinic Patient Media Panel

**Last month, we included a call for volunteers among NINET Clinic patients who would be willing to answer questions**

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**about their experience with rTMS.** The NINET office receives these requests from the media from time to time. **In this article, Brenda J. explains why she feels responding to media requests is important:**

There is incomplete awareness of rTMS as a treatment option amongst patients and healthcare providers.

Some of us have a much better response to rTMS than we do to alternative treatments - and it is incredibly important that patients who need it receive adequate intervention for depression early as possible.

The more people who know about rTMS, the better the support we can gather towards achieving MSP coverage for treatment.

I was a research subject in a recent NINET rTMS study, and many patients (including me!) are receiving clinical treatment benefits because of that study. Sharing that information might support research donations. It might also encourage members of the public to participate in research, so that potential studies are never detrimentally affected by recruitment difficulties.


There is still an immense stigma regarding mental health conditions. It is very difficult for us as patients to publicly discuss depression treatment, as compared to how we would feel discussing our experiences using a new type of splint for a broken leg.

If we are able to, I think speaking out helps to support our fellow patients who are not comfortable with public discussion. I know I appreciated other patients being a voice during the many years when I couldn't have imagined disclosing my depression.

➔ **Call to Action:** If you feel comfortable, please consider joining the NINET patient rTMS media contact list. If you are not comfortable joining the contact list but would like to make a comment, email us or leave a note at the NINET office (giving your name is entirely optional). Your remarks are important. Submitting them privately allows us to say, "Other patients have commented…" while respecting your anonymity. – *Brenda J.*

## Depression & the Laws of Energy

**One of the greatest difficulties of living with depression is coping with the apathy and fatigue it introduces into our lives. To explain talk about methods of surviving daily life with this illness, I use the lens of the often-reviled science of thermodynamics.**

**We'll start with the concept of entropy.** Entropy is the force that causes buildings to collapse and statues to erode; it is the thermodynamic law that states, in time, every complexity must be reduced to its lowest forms of energy – boulders crumble into sand, stars collapse in on themselves, and once-folded laundry disperses like dust over my bedroom floor.

**Depression is like entropy; it reduces us to our lowest forms of energy. It keeps us trapped in that energetic sinkhole where we are weakest.** In order to better live with this illness, we must learn to use whatever energy we can muster to bring structure into our lives again.

The problem is depression can often make the smallest tasks seem daunting or even impossible. It might seem futile to make the bed every morning. The tedium of cleaning the house or filing taxes can lead to feeling overwhelmed.

**A few years ago, my doctor said something that really resonated with me: for change to happen, reactant molecules must collide with enough energy.** This energy barrier is known as the activation energy. Otherwise, the molecules stay in entropy. **So how do molecules with lower energies overcome this barrier? They find ways to lower it.**

**Overcoming the Activation Energy Barrier:** one way to lower activation energy is to use a catalyst to divide one big reaction into several smaller reactions. By tackling the problem in a different way, complex structures can be synthesized and life itself sustained.

**Our daily lives can be tackled in much the same way.** For example, going from not exercising to doing a 10 km run every morning seems impossible, but so does eating an elephant. The trick lies in first carving the beast into bite-sized pieces and taking your time. The benefits of doing this are threefold: first, by shrinking the task down, you lower its activation energy, making it easier to start. Second, in setting and achieving attainable goals for yourself, you build confidence to set further, more ambitious goals for yourself. Third, by giving yourself an excuse to start, you'll likely find it easier to continue working and potentially exceed your expectations.

**Inertia is a fundamental law of thermodynamics which states that objects in motion find it easier to stay in motion.** This principle applies to human beings too. As long as we're here, our brains say, we might as well take the next step. And once we do that, we might as well continue on to the next. **However, inertia also states that objects at rest tend to stay at rest.** That's what makes starting new projects and getting out of bed every day so tough.

**The challenge is to keep in motion for as long as possible**. This can be accomplished by doing one productive thing a day, no matter how small. Remember that elephant you chopped up into tasty hors d'oeuvres? Take a bite or two every morning. Some days you don't have much of an appetite, so maybe you take a few nibbles. Other days, you're so hungry you eat the whole trunk. After the first week, you might find your appetite for elephant has increased, and maybe you even start craving that tasty meat. By the end of the first month, there will be no more elephant left to eat.

**Finding Activities:** Of course, that is all assuming you have an elephant to eat. But often, we find ourselves with too much free time and not enough activities to fill it with. Depression has a way of leaching away our joy and motivation to do the things we love. Maybe you've lost interest or simply don't know what you enjoy doing anymore. There's nothing wrong with that, it just means you have a bit more work to do.

**Think about things you used to enjoy or find interesting, then start slowly incorporating that activity into your life.** If that interest is painting, maybe try painting for 10 minutes every day. If you're having trouble thinking of activities, try a short walk every morning or pick a low intensity activity like meditation. The key is to go slow and to keep doing it. Having a goal to work towards will likely be beneficial for your mental health. Over time, you may find enjoyment in the activity.

It's also important to recognize our limits. Doing something every day, no matter how small, can be incredibly challenging, especially depression. There will be days when we can barely get out of bed, much less go to the gym. Living with depression is like that Rodney Atkins' song lyric, "If you're goin' through hell, keep on going." **So, keep going. Keep moving forward, no matter how slow you are going or how long it takes. We will all get there one day.** – *Kevin Jiang* [Ed.: a longer version of this article is posted on the NINET blog].