

World Psychiatry Congress 2019 - Pre-Congress Course

Title: Neuromodulation Treatment

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Introduction:

Neuromodulation techniques, using electrical or electromagnetic stimulation to alter neuronal activity, can be used to study brain neurophysiology as well as to treat several neuropsychiatric conditions. There are several types of neuromodulation treatments, including electroconvulsive therapy (ECT), vagus nerve stimulation (VNS), transcranial magnetic stimulation (TMS) and deep brain stimulation (DBS). The rapid development of applications for these techniques, namely TMS (non-invasive) and DBS (invasive), in neuropsychiatry has led to a growing need for professionals who treat mental disorders to know and understand their use. In fact, both TMS and DBS are valuable tools for interventional neurophysiology, modulating brain activity in specific neural networks with relevant behavioral impact. The current evidence concerning therapeutic use in psychiatry ranges from major depressive disorder and obsessive-compulsive disorder, for which there is regulatory approval, to post-traumatic stress disorder, bipolar disorder, acute manic symptoms, hallucinations, schizophrenia, catatonia, or addiction where these techniques are still experimental. In neurology and other areas of medicine there are also several indications for therapeutic use of central neuromodulation.

Learning Objectives:

In this course we will introduce the basic principles for the two most common neuromodulation modalities used in clinical practice: TMS and DBS. Current evidence regarding therapeutic applications of these techniques will be presented, namely for approved psychiatric indications. Moreover, we will share a practical guide of good practices to set up a TMS clinic, as well as for definition of the role of a Psychiatry in a multidisciplinary DBS team. Finally, we will briefly discuss clinical research in the field of therapeutic neuromodulation, pointing towards future perspectives.

Syllabus:

08.00-08.30 - TMS basic principles

08.30-09.00 - Clinical Applications of TMS in Psychiatry

09.00-09.30 - Setting up a TMS Clinic for Treatment Resistant Depression

09.30-10.00 - Experimental indications for TMS in Psychiatry

10.00-10.30 - Coffee Break & Informal Discussion

10.30-11.00 - DBS: basic principles and clinical applications

11.00-11.30 - The role of a psychiatrist in a multidisciplinary DBS team

11.30-12.0 - Research use of neuromodulation in Neuropsychiatry

Further readings:

1) Wagner, Timothy, Antoni Valero-Cabre, and Alvaro Pascual-Leone. "Noninvasive human brain stimulation." *Annu. Rev. Biomed. Eng.* 9 (2007): 527-565. **2)** Rossini, Paolo M., et al. "Non-invasive electrical and magnetic stimulation of the brain, spinal cord and roots: basic principles and procedures for routine clinical application. Report of an IFCN committee." *Electroencephalography and clinical neurophysiology* 91.2 (1994): 79-92. **3)** McClintock, Shawn M., et al. "Consensus recommendations for the clinical application of repetitive transcranial magnetic stimulation (rTMS) in the treatment of depression." *The Journal of clinical psychiatry* 79.1 (2018). **4)** Groppa, S., et al. "A practical guide to diagnostic transcranial magnetic stimulation: report of an IFCN committee." *Clinical Neurophysiology* 123.5 (2012): 858-882. **5)** Perlmutter, Joel S., and Jonathan W. Mink. "Deep brain stimulation." *Annu. Rev. Neurosci.* 29 (2006): 229-257. **6)** Krack, Paul, et al. "Deep brain stimulation: from neurology to psychiatry?" *Trends in neurosciences* 33.10 (2010): 474-484. **7)** Mayberg, Helen S., et al. "Deep brain stimulation for treatment-resistant depression." *Neuron* 45.5 (2005): 651-660.