

EDITORIAL

Interventional psychiatry: 13 reasons why

Andre R. Brunoni,^{1,2,3,4} Leandro Valiengo,^{1,2} Jose Gallucci-Neto^{2,3}

¹Serviço Interdisciplinar de Neuromodulação, Laboratório de Neurociências (LIM-27), Instituto de Psiquiatria, Hospital das Clínicas da Faculdade de Medicina da Universidade de São Paulo (USP), São Paulo, SP, Brazil. ²Serviço de Cetamina, Instituto de Psiquiatria, Hospital das Clínicas da Faculdade de Medicina da USP, São Paulo, SP, Brazil. ³Serviço de Eletroconvulsoterapia, Instituto de Psiquiatria, Hospital das Clínicas da Faculdade de Medicina da USP, São Paulo, SP, Brazil. ⁴Departamento de Medicina Interna e Departamento de Psiquiatria, Faculdade de Medicina da USP, São Paulo, SP, Brazil.

The foundations of interventional psychiatry (IP) were initially established in 2014 by Williams et al.¹ at the Medical University of South Carolina. IP includes a new generation of acutely delivered pharmacological therapies – such as intravenous (IV) ketamine and intranasal esketamine for treatment-resistant depression and suicidality, IV brexanolone for postpartum depression, and interventions that might come soon to clinical practice, such as psilocybin and others – as well as a range of neurotechnologies, such as noninvasive neuromodulation (e.g., transcranial electrical stimulation, transcranial magnetic stimulation [TMS], and their variants), minimally invasive neuromodulation (also known as neuroelectric or convulsive therapies, such as electroconvulsive [ECT] and magnetic seizure [MST] therapies), and invasive neuromodulation (e.g., vagus nerve stimulation [VNS] and deep brain stimulation [DBS]) (see²⁻⁵ for reviews) (Figure 1).

However, considering that these interventions have distinct mechanisms of action, why are they grouped together? For many reasons, such as:

- 1) the need for specialized training to master their use and prescription, which is not usually offered during standard medical training;
- 2) the need to develop clinical interventions above and beyond standard pharmacotherapy, which usually present small to moderate effect sizes and adverse effects;
- 3) the need to develop skills and experience to liaison with other medical specialties, such as neurology, neurosurgery, anesthesiology, and internal medicine, which will be involved in many clinical situations (e.g., pre-anesthetic evaluation, indications and contraindications for invasive neuromodulation), as well as the need to develop skills and experience to liaison with the general psychiatrist for consultation and supervision;
- 4) the use of high-end technological interventions, which will be naturally concentrated in only a few centers;
- 5) the opportunity to develop long-term experience in treating and following patients with chronic psychiatric disorders who might be eligible for these treatments – e.g., guidelines for treatment-resistant depression do not discuss whether the next level for patients who have

- failed to respond to standard pharmacological treatments is TMS, ECT, ketamine, or a combination thereof;
- 6) to enucleate academic centers, which will be able to conduct basic, translational, and clinical research, such as studies combining neuroimaging with neuromodulation, modeling electric field cortical distribution to enhance precision, developing and testing closed-loop approaches, and recruiting patients with psychiatric and neurological disorders to evaluate the efficacy of novel IP treatments;
- 7) to rapidly absorb findings from clinical trials and translate them to clinical practice – e.g., in a timespan of a few years, several new developments in the IP field came to clinical use, such as theta-burst stimulation and accelerated theta-burst stimulation for depression; deep TMS for depression, smoking cessation and obsessive-compulsive disorder; mobile, home-use transcranial electric stimulation; intranasal esketamine; and brexanolone infusion;
- 8) to use novel IP technologies to probe the brain for diagnostic purposes. For instance, neuronavigated transcranial magnetic stimulation can be used to noninvasively map the extension of brain tumors in preoperative settings;
- 9) to provide opportunities for other medical specialties, as well as other mental health professionals, to specialize in this subfield (although we, and others, have suggested that this subspecialty be named interventional “psychiatry”);
- 10) to spread the word of IP to the medical community, other psychiatric services, and the lay public. IP should be presented as what it is: a set of interventions developed to treat patients with severe and chronic psychiatric disorders, which can be safely delivered in specialized centers. By adequately promoting IP, we can combat stigma and defend its incorporation in public and private healthcare services.

In late 2019, we established the first medical service in IP in the Global South, at the Institute of Psychiatry, in São Paulo, Brazil, and, in 2021, the first IP fellowship in Latin America. We capitalized on our several strengths:

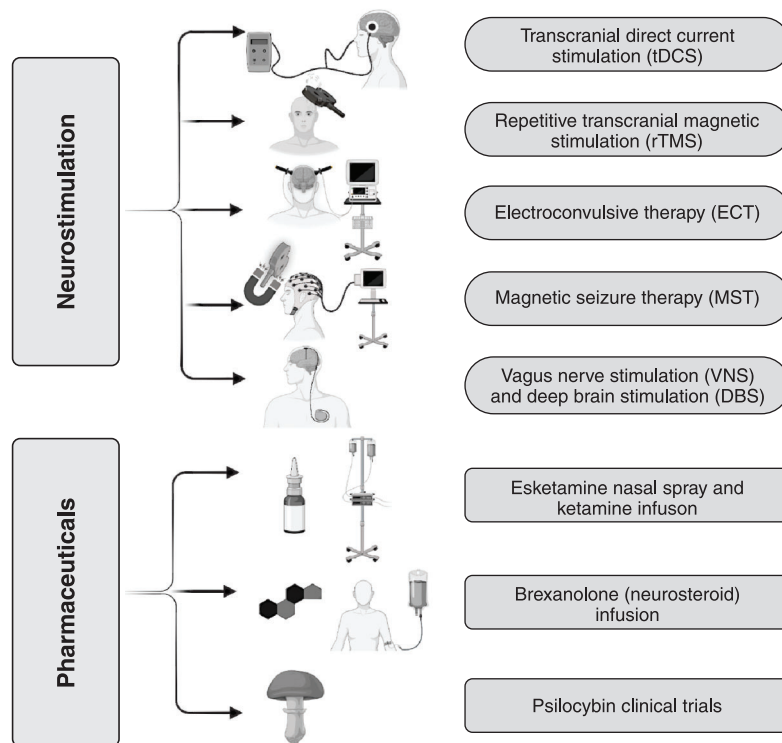


Figure 1 The interventional psychiatry field: from neurostimulation to pharmaceuticals.

longstanding clinical experience in neuromodulation therapies (in 2021, we delivered approximately 7,000 sessions of ECT and repetitive transcranial magnetic stimulation [rTMS] each), the large-scale trials of non-invasive neuromodulation that have been and are being conducted by our research groups, and our privileged location at the most important tertiary mental health care center in Brazil. Our fellows rotate in our clinical services of – noninvasive neuromodulation, neuroelectric therapies, and ketamine – for 3 months each, with an additional month in one for these centers. The feedback from patients and fellows has been remarkably positive. For us and our staff, there are also three additional reasons regarding why IP is important: 11) we realized that IP is more than the sum of its parts. Our discussions regarding whether a given patient should be prescribed tranylcypromine, ECT, rTMS or be enrolled in our clinical trials of accelerated theta burst stimulation or MST, and regarding the clinical benefits and ethical and regulatory issues of allowing guided psychotherapy during the dissociative phase of ketamine treatment, have been particularly remarkable for me; 12) we are experiencing a dawn of a new era in psychiatry, which is truly exciting; and 13) although we cannot go back in time, perhaps Hannah Baker and many other cases of depressed patients

with acute suicidality could have been helped by IP procedures.

Disclosure

The authors report no conflicts of interest.

References

- Williams NR, Taylor JJ, Snipes JM, Short EB, Kantor EM, George MS. Interventional psychiatry: how should psychiatric educators incorporate neuromodulation into training? *Acad Psychiatry*. 2014; 38:168-76.
- Brunoni AR, Sampaio-Junior B, Moffa AH, Aparício LV, Gordon P, Klein I, et al. Noninvasive brain stimulation in psychiatric disorders: a primer. *Braz J Psychiatry*. 2019;41:70-81.
- Borrione L, Bellini H, Razza LB, Avila AG, Baeken C, Brem A-K, et al. Precision non-implantable neuromodulation therapies: a perspective for the depressed brain. *Braz J Psychiatry*. 2020;42:403-19.
- Razza LB, Santos LA, Borrione L, Bellini H, Branco LC, Cretaz E, et al. Appraising the effectiveness of electrical and magnetic brain stimulation techniques in acute major depressive episodes: an umbrella review of meta-analyses of randomized controlled trials. *Braz J Psychiatry*. 2021;43:514-24.
- Cho H, Razza LB, Borrione L, Bikson M, Charvet L, Dennis-Tiwary TA, et al. Transcranial electrical stimulation for psychiatric disorders in adults: a primer. *Focus (Am Psychiatr Publ)*. 2022;20:19-31.