



**RESEARCH:
A NOVEL
APPROACH FOR
TREATING COCAINE
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**RESEARCH:
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Spreading the use of TMS worldwide



Welcome to the very first edition of TMS Update. We are excited to bring you articles from both the research community where TMS has been widely used for many years for a variety of groundbreaking research projects as well as from the clinical field where TMS is increasingly gaining acceptance.



According to WHO, more than 300 million people worldwide are living with depression – what if TMS became widely accessible to those not responding to medication?

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Editor-in-Chief: Gunnar Hallsson.

Editor: Anne-Mette Damon.

Editorial Board: Karina Haugaard Bech, Anne-Mette Damon.

Medical Advisory Board: Sanne Jessen, Claus Mathiesen.

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TMS for depression has been well-established in the US since the first FDA clearance in 2008. The treatment has gradually gained grounds in other parts of the world but a long way still remains until TMS is an actual option for the 300 million people who, according to WHO, suffer from depression. We therefore welcome the news from Australia that the Medical Service Advisory Committee (MSAC) is now recommending public funding of TMS for treatment of depression. The actual reimbursement is expected to come into effect late 2020 or early 2021.

We are also pleased that the Swedish health authorities have recently approved reimbursement for TMS for depression. Nine regions have already decided to offer TMS and the first patients will soon get treatment without having to pay for the treatment themselves. Canada and the UK also stand out when it comes to recognizing the benefits of TMS depression treatment.

In Brazil, several renowned TMS researchers have helped pave the way for TMS, and a growing number of psychiatry practices also offer the treatment. We now have a subsidiary in São Paulo, and hopefully this positive development will spread to the rest of Latin America, and thus help provide TMS treatment to more people with depression.

Stig Wanding Andersen

Founder and CEO, MagVenture

A novel approach for treating cocaine addiction

That cocaine is a highly addictive drug which can have extremely serious effects on one's mental and physical health is a well-known fact. That there, at present, is no approved medical treatment for cocaine-use disorder (CocUD), and that behavioral interventions have proven to be of limited use is also widely documented in various trials. The question is, could non-invasive brain stimulation be a possibility? An Italian research-team, led by Professors Luigi Gallimberti and Antonelli Bonci, has for more than 5 years investigated whether TMS may serve as a useful treatment option for CocUD. The clinical results compiled from over 1,000 patients have now paved the way for a randomized, double-blinded sham-controlled study.

Graziella Madeo is a neuroscientist currently working as the Scientific Coordinator at Fondazione Novella Fronda, and a Neurology Consultant at Studio Gallimberti-Bonci&Partners. She joined the research team in 2018 after years of research in brain stimulation techniques in the Parkinson's disease field. Her overall goal has always been to translate research findings from animal models to humans. "TMS offers us a promising tool to modulate brain circuitry activity in humans and possibly change the course of many neuropsychiatric disorders, including cocaine addiction, which is a disease of brain circuits," she explains: "As a scientist I am interested in understanding why TMS is effective for cocaine addicts and how we can improve the therapeutic options."

The largest cohort of CocUD patients

Although the sample sizes in early clinical studies were limited, the results did indicate that the researchers might be on to something. Larger sample sizes and prolonged follow-up times are, however, needed to confirm the findings. An important step has been to conduct a retrospective chart review study which was achieved earlier in 2019. It is the largest available so far, involving 284 CocUD patients who all received three months of TMS treatment for their addiction and were observed retrospectively for up to 2 years and 8 months.

Prolonged drugfree stretches

"The study showed that TMS treatment was accompanied by long-lasting reductions in cocaine use, with the first resumption of cocaine use occurring

Addiction and TMS: Mechanism of action

Alcohol, nicotine, and drugs, including heroin, morphine, and cocaine all activate the reward pathway involving key brain areas in addiction, namely the ventral tegmental area (VTA) and nucleus accumbens (NAc).

In spite of different mechanisms of action and effects, they all enhance the transmission of dopamine, a crucial brain messenger, in the VTA and NAc, resulting in an increased activity of the reward pathway. Therefore, we can assume that alterations of brain circuits underlying different addictions are similar, independently of the nature of the substance of abuse.

Moreover, a major feature of addiction is the loss of control, so that individuals engage in a compulsive behavior, even when faced with negative consequences. This loss of control seems to be driven by a dysfunction within the prefrontal cortical areas. Considering addiction as a brain disease, we can hypothesize that non-invasive brain stimulation techniques, such as TMS, can modulate brain circuits abnormalities in different substance use disorders.



The non-profit organization Fondazione Novella Fronda started in 2012. Some of the team members can be seen here.

From left Antonelli Bonci, Luigi Gallimberti, Sonia Chindamo, and in the treatment chair Alberto Terraneo (who is also featured on the cover of this edition of TMS Update).



after an average of 91 days since the beginning of TMS treatment. For the cohort of addicts who were treated as usual, in the form of individual or group therapy, the first lapse to cocaine was reported at 50 days,” says Graziella Madeo.

During the follow-up period, TMS was first re-administered weekly then monthly, prophylactically or if a relapse of cocaine use occurred. “Interestingly, we observed that the decrease in frequency of TMS was not accompanied by an increase in relapses to cocaine use. Over time we observed longer stretches of abstinence between relapses. Therefore, the gradual decrease of TMS sessions did not leave patients more vulnerable to relapses,” says Graziella Madeo.

Reduced frequency of cocaine use

Another crucial observation was the drop-down of cocaine use: “The mean frequency of cocaine use was less than 1 day per month compared to the weekly frequency of use before



Current research at Fondazione Novella Fronda led by Dr. Graziella Madeo and Professor Luigi Gallimberti

- A randomized double-blind sham-controlled study on the safety and effectiveness of TMS for patients with gambling disorders.
- Mapping brain circuits abnormalities in cocaine dependent populations and modulate these circuits using TMS.
- Investigating impairments in functions that underlie behavioral regulation, namely decision-making and inhibitory control and how TMS treatment can impact them.
- Developing patient-tailored stimulation protocols to enhance executive function control and reducing craving in treatment seeking individuals.

More info:
Website:
fondazione novellafronda.it



Graziella Madeo:
We do believe that it has the potential to be an FDA cleared or CE approved protocol for cocaine addiction.



Product Specialist (Mundinter) Marta Santos, Application Specialist (MagVenture) Kasper Bredkjær Sidenius, Dr. Laia Miquel de Montagut, Dr. Graziella Madeo, and Professor Luigi Gallimberti at the "Lisbon Addictions 2019" at which the current study on TMS for addiction was presented and discussed.

the treatment," says Graziella Madeo. She also points out that "TMS can be safely administered, as serious TMS related adverse events were infrequent, both during the actual treatment and the follow-up period". Do the findings indicate that this could lead to an approved treatment in the future? Graziella Madeo is optimistic: "We do believe that it has the potential to be an FDA cleared or CE approved protocol for cocaine addiction."

Necessary: double-blinded studies

The Italian research team has, over the course of 5 years, followed more than 1,000 CocUD patients, but Graziella Madeo points out that double-blinded studies are both warranted and necessary to examine the effectiveness and safety of neuromodulation and how to further improve the technology. "To our knowledge, there are already double-blind studies with proper control groups on the way, which could hopefully help to further advance TMS as an option for cocaine addiction and improve the availability of neuromodulation techniques in the public health care system."



What the patients say

The researchers compiled questionnaires from the CocUD patients in the TMS trials. A common experience among the patients were, according to the compiled data, a reduced craving, both spontaneous as well as cue-induced, as illustrated here:

"Cocaine was not in my thoughts; I no longer wanted to go buy it nor did I plan to do so."

"I can talk about it, meet a pusher, or read about it without being influenced. It does not touch me. It's not about me, it is far away from me."

Finding treatment options for Post-Traumatic Stress Disorder

Researchers at INSERM uses rat coil for PTSD-study

4 years ago, researchers at the French Institute of Health and Medical Research (INSERM) were among the first in the world to perform TMS on mice with the Cool 40 Rat Coil specifically designed for TMS on rodents. Their goal was to take a vital step towards finding new treatment options for Post-Traumatic Stress Disorder (PTSD).

“We expect to make useful findings for the practical application of TMS for treating depression and PTSD”. Those were the words of Professor Wissam El-Hage when he and his research team members sat out to examine how TMS could be applied in mouse models of PTSD. Four years down the road, the researchers have completed the study involving 155 mice and the results were recently published in the journal “Brain Stimulation”. We have asked Dr. Marc Legrand who was a prominent part of the research team if the initial expectations have been met and if he thinks it will be possible to find an effective TMS protocol for the treatment of PTSD in humans.

Relevance of new cortical targets

“The studies carried out in mice provided useful insights on the application of rTMS in humans for the treatment of depression and PTSD. The experimental findings obtained in mice models of depression and PTSD allowed us to better characterize neurobiological mechanisms at play following chronic rTMS treatment and underlines the relevance of new cortical targets,” says Marc Legrand whose main objective for doing TMS research was to further the efficacy of TMS in humans and define new cortical targets that could prove relevant in the treatment of neuropsychiatric disorders and continues:

“The fundamental mechanisms at play in the therapeutic effects still remains poorly understood even though TMS has been widely used and studied in the past decades”.

The result: TMS reverses stress-induced behavioral impairment

“To step back from clinical trials to study such mechanisms in rodents was essential to improve the therapeutic efficacy of rTMS in future human



The Cool-40 Rat Coil from MagVenture was used for the PTSD study.





We expect to make useful findings for the practical application of TMS for treating depression and PTSD

Wissam El-Hage

research,” says Marc Legrand of the PTSD study which was the first to use prefrontal cortex rTMS in mouse models of PTSD. The main result of the study was that rTMS reversed stress-induced behavioral impairments and acted on distributed networks of fear extinction up to 10 days after treatment.

Targeting both hemispheres at the same time

Since the mouse brain is a lot smaller than the human brain, both hemispheres were stimulated when the vmPFC was targeted. According to Marc Legrand this could be of interest in terms of finding new treatments for humans.

“Most TMS clinical trials focus on one hemisphere, but our study approach where both hemispheres were targeted produced beneficial effects and might indicate that bilateral stimulation of the vmPFC could be of therapeutic interest in humans,” says Marc Legrand.

Successes and challenges

Looking back at how it was to apply TMS on mice, Marc Legrand stresses that the most satisfying part of the study was applying the high-intensity/high-frequency (12 Hz) protocol while maintaining spatial precision and be able to target specific subparts of the prefrontal structures.

In detail:

The main results of the study

Marc Legrand: "The chronic application of high-intensity/high-frequency rTMS (12 Hertz) to bilateral ventromedial prefrontal cortex (vmPFC) produced beneficial effects on behaviors, enhancing short-term memory and reducing the expression of fear behaviors (freezing) during a second exposure to the fear context. Chronic rTMS treatment* (5 sessions, 3,750 pulses) modified brain activity during this second exposure as seen with c-Fos immunohistochemistry, increasing the activity scores in the infralimbic cortex (i.e. vmPFC), the basolateral amygdala and the ventral hippocampus, which are cortical and subcortical structures involved in fear neurocircuitry and the expression of fear-related behaviors."

***Chronic rTMS definition:**

In the study, 5 rTMS sessions or sham TMS sessions are applied 24h apart over the course of 5 days, bringing the total number of pulses for each mouse up to 3,750 magnetic pulses.

"This was allowed by the active cooling properties for the coil and the use of a stereotaxic frame to position the coil at the given coordinates," Marc Legrand explains and stresses that the most challenging aspect of doing TMS on mice was to effectively target the prefrontal cortex:

"We managed to target the prefrontal cortex and extensively study the stimulation of the motor cortex. The latter showed that, in mice, the most effective part of the magnetic field was located on the periphery of the coil rather than in the center of the coil. Establishing this coil-to-brain relation was the most difficult part of developing relevant targeted TMS in mice," Marc Legrand says.

Upcoming TMS research on mice

Coming from a double academic background of medicine and neuroscience and having worked with TMS since 2014, Marc Legrand is interested in doing more TMS research in mice models. Currently, translational experiments are being designed on the application of rTMS in mice models of depression.

"The effects of bilateral vmPFC stimulation on subcortical limbic structures/neurobiology, such as the amygdala, the hippocampus and hippocampal neurogenesis, are of prime interest for me in future TMS research, ends Marc Legrand.



More info:
Website: www.inserm.fr

Australia: a big step closer to public TMS funding

Some things are worth fighting for – even though it may take years. Six years to be exact. We are talking about the recent recommendation by the Federal Government Medicare Services Advisory Committee (MSAC) for public funding of TMS for depression treatment in Australia. Paul Fitzgerald, Professor of Psychiatry at Epworth Healthcare, Monash University and Director of the Epworth Centre for Innovation in Mental Health and co-founder of TMS Clinics Australia, foresees that this funding will help provide access for patients who otherwise would not be likely to receive treatment and would thus ultimately remain ill and disabled over very long periods of time.

“We worked hard for years to achieve this as we clearly felt that funding through Medicare was critically required to allow a fair and equitable access to treatment,” says Paul Fitzgerald who expects the funding to be implemented in late 2020 or 2021. “Public funding will certainly enhance uptake of the treatment. Even if the cost of treatment may not be fully covered, it will substantially reduce the economic burden on patients and thus enhance access.”

From research to treatment

Paul Fitzgerald’s research has, from early on, been characterized by a significant translational focus. This has, among other things, led to the establishment of an educational program to train psychiatrists and nurses in the clinical applications and techniques of TMS. To date, more than 500 have completed the course. Furthermore, Professor Fitzgerald is the Medical Director of TMS Clinics Australia, which he co-founded with Dr. Ted Cassidy, who serves as the Chief Medical Officer.

Rapid growth

TMS Clinics Australia has experienced a solid growth over the years and according to Ted Cassidy this development has not slowed down one bit; on the contrary it seems to be going even faster: “In 18 months we have tripled the number of patients we treat each year. Several of our clinics are running



TMS Clinics Australia – in short

- **Founders**
Professor Paul Fitzgerald (Medical Director)
Dr. Ted Cassidy (Chief Medical Officer)
- **Number of clinics**
11 (as of November 2019) – with more expected
- **Typical referral source**
The patient’s own psychiatrist
- **Main marketing channels**
Health professionals educational meetings and visits, own website, social media
- **Response rates**
55-60%. Results are typically presented annually at the Royal Australia and New-Zealand College of Psychiatrist meetings, as a poster and live session.

More info:

Website: tmsaustralia.com.au

LinkedIn: linkedin.com/company/tmsaustralia

at full capacity so we plan to add an extra chair in some of them and to add many more clinics in the next six months.” Currently, TMS Clinics Australia has 11 clinics spread over 3 states. Today, 2/3 of the patients are funded through their workplace accident insurance, private health insurance, or are veterans (who receive free health care). In Australia, about 50% of the population has private health insurance, but not all cover TMS.

Public funding provides access to all

In spite of the lack of public funding thus far, the degree of TMS awareness in Australia is considered “reasonable, and growing slowly over time,” says Paul Fitzgerald. He further explains that the knowledge does vary from state to state – even from city to city – and clearly depends on how long existing services have been running in a particular location.

Online presence and education attract patients

To raise awareness, TMS Clinics Australia uses social media, Google Maps, and Yelp, and hosts medical education meetings. “Our new website and this online presence actually reassured patients and comforted them with the idea of trying this new treatment. Interestingly, patients (and their loved ones) just want to know that TMS is not ECT and that side effects are very few and tolerable,” says Ted Cassidy.

Moving from inpatient to outpatient funding

Today, most patients in Australia are admitted to TMS through inpatient clinical programs as part of their treatment plan. With a public funding of TMS, patients will no longer need to seek hospital admission to get TMS. This is a big advantage, according to Paul Fitzgerald: “As well as being economically inefficient, inpatient treatment is also associated with suboptimal aspects in terms of treatment response: patients are disengaged from families and their typical environment and treatment courses are often curtailed to fit within hospital admission time limits. Third-party funders of treatment are, fortunately, recognizing the need to provide more balanced outpatient funding of TMS but for the vast majority of patients, more widespread funding is required to ensure equitable and timely access,” says Paul Fitzgerald. For patients in Australia suffering from depression, the access to TMS now appears to be on the way very soon.



Paul Fitzgerald performs a Motor Threshold determination on Federal Health Minister, Greg Hunt. Ted Cassidy is seen on the right.



Ted Cassidy demonstrating the placement of the TMS coil for depression treatment on Dr. Jeff Adams, who runs a TMS Australia Clinic on the Gold Coast.



Public funding will certainly [...] reduce the economic burden on patients and thus enhance access.

Paul Fitzgerald



Integrated TMS proves successful at London practice

UK-based "Living Mind" believes in a holistic approach when treating mental illness, involving for instance acupuncture.

Dr. Arghya Sarkhel, founder of Living Mind in the UK.

London is widely known and recognized for the large number of private specialists in medicine and surgery, dating back to the 19th century. One such privately owned practice is "Living Mind" at Harley Street no 10. Here, Dr. Arghya Sarkhel and wife Malini Sarkhel have taken on a holistic approach to treating mental illness, offering what they describe as "integrated and personalised care" for the patients. Part of this care has, since 2018, included TMS.

Dr. Arghya Sarkhel greets us in the door with a warm, but apologetic smile: He is between two patient appointments and on his way to see another patient at his clinic in Essex. Just over a year ago he had one clinic and no TMS equipment – he now has three clinics, each with a TMS device. A fourth one may even be on the way soon. When asked why he decided to venture into TMS, he explains that he simply wished to optimize his treatment options, especially for those of his severely depressed patients who were not responding well to antidepressants. Being open to new technology, he had therefore also become acquainted with TMS, which in 2015 received published guidance by NICE (National Institute of Health and Care Excellence).



Dr. Arghya Sarkhel in his practice at Harley Street, London.

Excellent remission rates

Dr. Sarkhel looked at different TMS solutions before finally investing in his first TMS device in the early spring of 2018. He admits that since his treatment portfolio was more based within conventional treatment offerings such as antidepressants, he was initially rather sceptic of TMS, even referring to it as “mumbo-jumbo”. However, that conception has now been changed: By now, he has treated numerous patients suffering from treatment-resistant depression with TMS. The results have astounded him: Almost all of them have achieved full remission, he says, adding that he “really wasn’t expecting this”.

Essential: Training and ongoing support

Dr. Sarkhel has both attended the CME accredited Clinical TMS Course offered by Maastricht University and also received inhouse training by one of MagVenture’s inhouse application experts who also provides ongoing support. This has, in Dr. Sarkhel’s opinion, not only been vital for his good results, but has also given him more confidence and knowledge of the technology and has encouraged him to expand his TMS practice.

Integrated TMS

Living Mind offers what they call Integrated TMS to their patients. This means that TMS is part of a larger treatment package which also include complementary therapies such

Living Mind

Living Mind’s first private practice in mental health started in 2013 at Harley Street, London, and has offered integrated TMS since April 2018. Living Mind has since then expanded and now has three integrated TMS clinics in the UK – London, Essex, and Birmingham.

More info:

Website: livingmind.co.uk

Facebook: @livingminduk

Instagram: @livingminduk

as mindfulness, medical acupuncture, and reflexology. With this approach, Arghya and Malini Sarkhel are able to offer individualized treatment protocols for each of their patients. In Dr. Sarkhel's experience, this concept also attracts patients who may have otherwise been reluctant to try TMS. Most of his patients find him through his website and pay for the treatment themselves.

Some patients also receive maintenance TMS – whether this is needed is based on Dr. Sarkhel's psychiatric assessment. Dr. Sarkhel ends the interview with explaining that the treatment tolerance of his patients has been very high with, as he puts it, only “minor to no side effects.” We wave goodbye to Dr. Sarkhel, as he dashes off in the pouring London rain: another patient is waiting in Essex.



Dr. Arghya Sarkhel

Dr. Sarkhel (MBBS, FRCPsych (UK), DPM (Dublin), MSc) is an experienced Consultant Psychiatrist with over 25 years of experience in Mental Health services. He is on the Specialist Register of General Medical Council and a member and Fellow of The Royal College of Psychiatrists. Dr. Sarkhel specialises in Adult Psychiatry, Old Age Psychiatry and the administration of Repetitive Transcranial Magnetic Stimulation (rTMS/TMS). He has recently become a member of Clinical TMS Society which is headquartered in California and sits on their outreach committee.

STIMULATING MENTAL HEALTH

MagVenture
TMS Therapy®
Let's help you,
help your patients!



Significant cost-savings with theta burst stimulation

3 minute depression treatment sessions using theta burst stimulation is not only an advantage for the patient who has to spend less time in the doctor's office. A new cost analysis shows that it is also great news for the health care system because of lower treatment costs.

The cost-savings associated with the 3 minute theta burst sessions are significant compared to the standard protocol– both when it comes to costs per patient and cost per remission. This is the result of a cost analysis based on patient-level data from the groundbreaking THREE-D trial published in the Lancet in 2018. The researchers have scrutinized the data to conduct a cost analyses from a healthcare system perspective in order to compare the direct treatment costs per course and per remission for the 3 minute theta burst protocol (iTBS) versus the 37 minute standard TMS protocol.

The average cost per patient was USD 1.108 for a treatment course consisting of 3 minute sessions, whereas the price was USD 1.844 for the 37 minute, standard TMS protocol. The average cost per remission was USD 3.695 for iTBS and USD 6.146 for standard TMS – which is a difference of USD 2.451. According to the cost analysis, the reasons for these significant cost-savings associated with the short 3 minute iTBS stimulation can be attributed to the shorter treatment sessions and increase in treatment capacity. The researchers used direct healthcare costs associated with the equipment, coils, physician assessments and technician time over the course of the treatment to establish all costs involved in the treatment.

More info:

The iTBS/TMS cost analysis:
Implementation of intermittent theta burst stimulation compared to conventional repetitive transcranial magnetic stimulation in patients with treatment resistant depression: A cost analysis.

► ► Mendlowitz *et al*, *Plos One*, 2019.

THREE-D study: Effectiveness of theta burst versus high-frequency repetitive transcranial magnetic stimulation in patients with depression

► ► (THREE-D): a randomised non-inferiority trial. Blumberger *et al*, *The Lancet*, 2018.



The THREE-D trial – in short

- **The study**

The effectiveness of TMS from the world's largest randomized controlled trial, known as the THREE-D trial, involved 414 patients suffering from major depressive disorder.

- **The results**

32% of those receiving the TBS protocol achieved full remission, whereas 49% responded to the treatment. These response rates are similar to the 37 minute standard 10 Hz TMS protocol. The THREE-D trial also established that the 3 minute iTBS treatment is as safe and effective for the treatment of major depressive disorder as standard TMS, only much faster.

- **The indication**

The substantial scientific evidence from the THREE-D study led to an FDA clearance in the fall of 2018 of the 3 minute protocol for treatment of depression. MagVenture was the first TMS company to receive FDA clearance for the Theta Burst protocol, which is also trademarked as "Express TMS®".

New MagVenture subsidiary in Brazil

MagVenture has – as of November 1st 2019 – opened a subsidiary in Brazil. MagVenture is now represented with subsidiaries in the US, Germany, UK and Brazil and furthermore represented in over 50 countries through a global network of distributors.

“From our vast experience we know that physical presence and a strong local knowledge are vital in order to serve our customers best,” says Leonardo M. Gallardo, Area Sales Manager, MagVenture. “We believe that a subsidiary in Brazil will not only benefit our customers and the patients, but also let us build an even stronger position and presence in Latin America.”

TMS: Rapid growth worldwide

TMS is currently undergoing a rapid growth worldwide, not just within treatment of major depressive disorder but also in brain research as well as neuro-diagnostics.

“Over the past 5 years, we’ve seen a tremendous growth within TMS research in Brazil, ranging from basic neuroscience, to physical therapy, pain management, and functional rehabilitation. Last but not least, several psychiatry practices now offer TMS and are seeing good results with their treatment-resistant depression patients,” says National Sales Manager for Brazil, Lucas Godoy. Globally, TMS for depression is particularly booming, and Lucas Godoy is certain that the same will happen in Brazil.

Beacon in South America

“Brazil has served as a beacon for Latin America, with several renowned researchers paving the way for a



Several psychiatry practices [in Brazil] now offer TMS and are seeing good results with their treatment-resistant depression patients.

Lucas Godoy

broader dissemination of TMS, both clinically and scientifically. The University of São Paulo has for years hosted well-attended TMS certification courses, attracting hundreds of healthcare professionals from across the country,” says Lucas Godoy, adding that other universities now have their own TMS research departments. “The next logical step for us is to further advance this positive development by establishing a MagVenture subsidiary here where we already have a large customer base.”



Several prominent guests attended the opening reception of the new MagVenture subsidiary in São Paulo. From left to right: MD Kallene Summer with her husband, Professor Andre Brunoni. Andre Brunoni has been a driving force in raising awareness of TMS and is behind several large studies conducted at the University of São Paulo which also organizes biannual TMS certification courses. Next is Nurse Rosa Rios who is an extremely experienced TMS technician. Professor Ricardo Galhardoni, MD Leandro Valiengo, and MD Izio Klein also have extensive experience within TMS.



Celebration in São Paulo

On November 18th 2019, a reception was held at The Danish Trade Council in São Paulo to officially mark the opening of the new MagVenture subsidiary.

Several customers, both from the clinical field as well as researchers participated. Some guests even flew in to attend, including Physical Therapist Arthur Padão from Rio de Janeiro, here seen (middle picture, right) along with MagVenture Sales Consultant Gabriel Godoy.



Besides the "MagVenture Brazil Team", representatives from MagVenture's head office in Denmark also attended (bottom picture): From left: Area Sales Manager Leonardo Melo Gallardo, National Sales Manager (Brazil) Lucas Godoy, Head of Partner Sales Tomas Larsen, Business Relationship Analyst (Brazil) Rafael da Silva, and Technical and Quality Responsible (Brazil) Mateus Ferreira .

TMS EXPRESS NEWS



DANISH INNOVATION FUND GRANTS EUR 1.9 MILLION TO DEVELOP INDIVIDUALIZED TMS TREATMENT

The Innovation Fund Denmark has invested EUR 1.9 million to make it possible to gather an expert team to bring the project all the way from idea to clinical testing and commercialization as a stimulation-based precision medicine which is expected to revolutionize the treatment of depression.

The project is a collaboration between leading researchers from the greater Copenhagen health authorities, the Technical University of Denmark, MagVenture, and several international partners. Jointly, they will develop and commercialize the new equipment as well as software which is meant to make the individual stimulation possible and through this process gain the best impact on

the individual patient.

MagVenture will be at the head of the technical development of the equipment which makes the advanced brain stimulation possible. Researchers from The Capital Region of Denmark, headed by the Danish Research Centre for Magnetic Resonance at Hvidovre Hospital and the Technical University of Denmark as well as German Localite will in parallel develop and integrate the procedure and software, which are to ensure that the stimulation takes into account both the specific disease-related needs of each individual patient and the tailoring according to the brain's anatomy.

Psychiatrists from The Capital Region of Denmark as well as Munich will lead the first testing on patients.

TMS CERTIFICATION COURSES

If you want to increase your knowledge of TMS, a number of industry-independent academic courses are offered throughout the world by research facilities and universities. The courses are often taught by renowned international experts in the field of non-invasive brain stimulation.

The courses typically consist of a mix of academic lectures and intensive hands-on training with TMS equipment from leading TMS providers and are for healthcare professionals,

Want to become a certified TMS practitioner? Check magventure.com for an updated course list.



Picture from the TMS Certification course in London, October 2019.

clinicians and researchers who seek training in TMS. Whether you are a beginner or a more advanced user of TMS, working within TMS therapy or TMS research, there is a course for you.



Testimonials from the European TMS certification course

“Really learned a lot about the science and application of TMS.”

“The course was pitched at a very good level, easy and clear enough to understand. Latest and useful research relating to the topics was very good.”

“Great to meet mind-liked people.”

REIMBURSEMENT IN SWEDEN

The National Board of Health and Welfare now offer TMS for treatment of mild and severe depression. 9 regions have decided to implement TMS in the years to come and the first regions have already begun treating patients.

This is great news for patients suffering from depression because the treatment is now an official option in the Swedish public healthcare system which means that TMS becomes available without patients having to pay for the treatment themselves.





About MagVenture

MagVenture is a Danish medical device company specializing in non-invasive magnetic stimulation systems for the treatment of major depressive disorder and neuroscience research.

Through collaborations with leading neuroscientists around the world, MagVenture has – for well over two decades – helped researchers push the technology forward in fields such as neurophysiology, neurology, cognitive neuroscience, rehabilitation, and psychiatry, thus shaping the future path of TMS.

Our coils and magnetic stimulators are ranked among the most powerful, advanced and durable on the market and sold globally through direct sales subsidiaries in the USA, Brazil, the UK, and Germany, and through a network of distributors in Europe, Asia, Middle East and the Americas.

www.magventure.com



MagVenture A/S • Lucernemarken 15, DK-3520 Farum, Denmark • Phone: +45 38 40 84 44 • info@magventure.com

*Indications for use MagVenture TMS Therapy® is CE approved for: "Treatment of Major Depressive Disorder in adult patients who have failed to achieve satisfactory improvement from two prior antidepressant medications, at or above the minimal effective dose and duration in the current episode."

MagVenture TMS Therapy® is FDA cleared for: "Treatment of Major Depressive Disorder in adult patients who have failed to receive satisfactory improvement from prior antidepressant medication in the current episode."