

news **NEUROVIRTUAL**



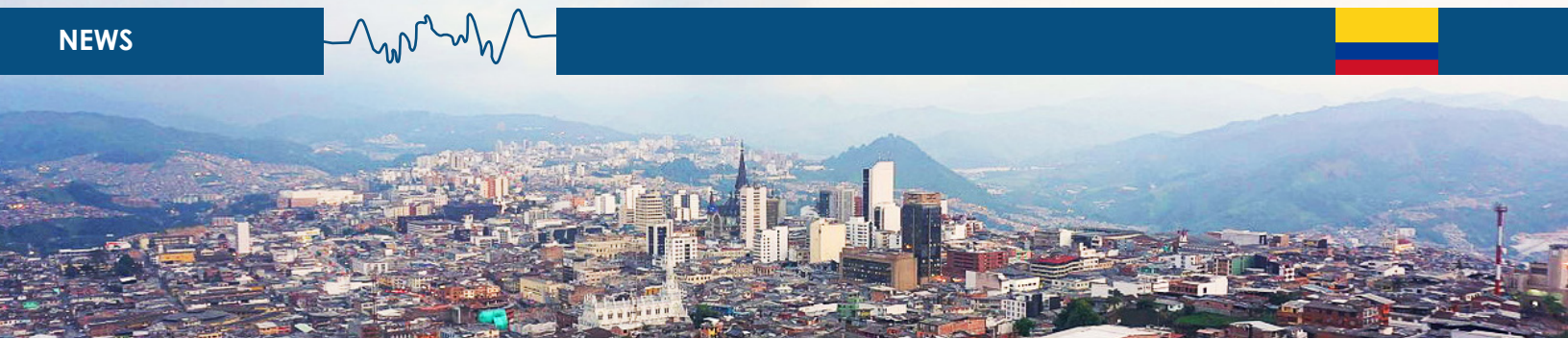
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XIII Colombian Congress of Child Neurology

The XIII Colombian Congress of Child Neurology, conducted by Asconi (Colombian Association of Child Neurology) in the city of Manizales, Colombia, from March 22nd to 24th, gathered around 160 participants, including specialists and residents in the area of neurology and neuropsychiatry.

Twenty-one national guest speakers addressed issues related to different clinical cases, including neuromuscular diseases in children. In addition, Dr. Lina Tavera shared a presentation about the relationship between sleep and neurology, where he reviewed chronic insomnia and ambulatory polysomnography.

Neurovirtual participated actively in the development of the congress and presented its line of medical equipment for EEG exams. Participants also had the opportunity to interact with our sales team to learn more about the history of Neurovirtual and its differential.



National Congress of Neurology in Panama



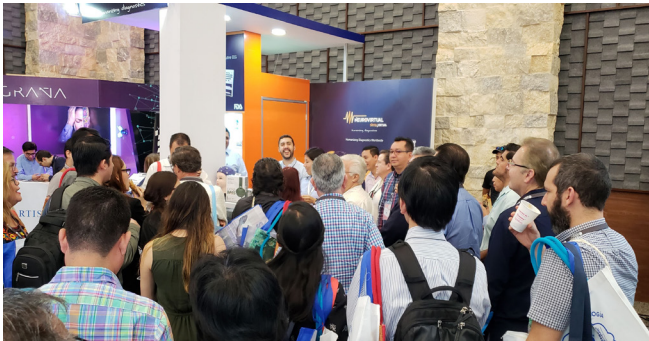
Neurovirtual participated in the National Congress of Neurology in Panama on October 5 and 6, 2018, with the assistance of 200 local, national, and international experts and a great influx of 31 speakers from all over the world.

Disconcerting neurological pathologies are present in the world population. Specialists in neurology embark on a great adventure from which they begin studies and investigations that help them arrive at a reliable diagnosis. For such, they rely on high quality technology. Neurovirtual stood out in the commercial arena, presenting the family of equipment for studies of electroencephalography, the BWMini EEG and BWIII EEG, emphasizing a unique software with the brand's own system and an ease of handling for specialists. This aids in obtaining quality studies with which to approach all of the neurological unknowns.



42nd Annual Meeting of the Mexican Academy of Neurology

With the goal of optimizing care for the neurological patients in Mexico this year, the 42nd Congress of the Mexican Academy of Neurology was conducted at the International Congress Center of Yucatán, located in the city of Merida Yucatán, from November 5th through the 11th, 2018. This annual



congress constitutes the largest and most important academic event of neurology in Mexico, where they gathered over 1,000 participants. This forum was attended by professors of the highest academic level, both nationally and internationally, and brought together different international neurological societies, such as the World Federation of Neurology (WFN) and the American Academy of Neurology (AAN), among others. The 42nd Annual Meeting of the Mexican Academy of Neurology included multiple academic activities in search of a synergy that allows better results and excellence in continuing medical education. It should be noted that all of these activities, given their high academic value, have recertification scores by the Mexican Board of Neurosurgery.



In addition, this year a special impetus was given to online courses, with the academy being the platform, where the update in continuous and interactive medical education will foster a projection and participation of the academics in specific topics.

On this occasion, the participation of Neurovirtual was no exception, as we aim to collaborate with physicians in the treatment of our patients, presenting the newest technology of our devices developed for the diagnosis of multiple neurological pathologies. Such is the case of the BWIII EEG equipment, a device designed for routine EEG studies, perfect for movement from one place to another, and offering easy-to-use software.

This meeting allowed us to understand the position that we have achieved so far. "We are very excited to participate in one of the most important Neurology events in Mexico," added Marcelo Belli, commercial representative of Neurovirtual México.





Interview with Diego Garcia-Borreguero, Director of the Sleep Research Institute, Spain

“In the broad field of movement disorders during sleep, the most frequent of all of them, the most important in terms of the consequences for health, is the restless legs syndrome...”

I am a neurologist, psychiatrist, and sleep specialist. I started working in the latter when I finished my doctorate studies and specialization at the Max-Planck Institute in Munich (Germany) and I then completed a sub-specialty in sleep medicine in the United States where for five years I was working at the National Institutes of Health of Bethesda and at Georgetown University. I then came back to Spain, where I directed the Sleep Unit of Fundación Jiménez Díaz for ten years. And then, since 2005, I created the Instituto de Investigaciones del Sueño. My investigation field is focused on movement disorders during sleep, a field in which we are leaders among the most recognized centers in the world. From the care standpoint, we are the main private sleep center of Spain. We conduct more than two thousand polysomnographies every year and we have a broad base of patients within the private sector in Madrid.

NN: Your career, both in the academic and in the professional fields, includes important experiences in several countries, in Europe, North America and Asia, countries in which you have participated in events and conferences. What's your opinion on the progress of sleep medicine studies worldwide? Is there a more outstanding country in this area?

There is a certain dispute over the place where sleep medicine began. Europeans think of themselves as the innovators. The United States also think of themselves as the first in sleep medicine. They both tell the story as if from inception. In actuality, it probably started in many places at the same time. The point is that sleep medicine went from being something in which only scholars – that is, people only interested in research – were interested in. Sleep medicine experienced an important shift towards the end of the '70s. The concept of sleep medicine centers as institutions that initially were exclusively devoted to treating respiratory disorders during sleep was developed for mainly sleep apnea.

However, with time in sleep research, more attention was devoted to the fact that there was a variety of pathologies which could have overall repercussions on health. REM sleep behavior disorder was discovered towards the end of the '80s, and after that it has been discovered that this condition is an early marker for the likeliness to suffer from Parkinson's Disease, which is a neurological disorder which 1% of the population suffers from. I am talking about REM sleep behavior disorder, a condition which had not been discovered up until the mid-'80s. I am giving this as an example of how there is still a lot to be discovered in sleep medicine. There are still entire conditions to be discovered, researched, and cared for, that require treatment.

Concerning the most outstanding country, the country that sets the norm for the rest of the world is the United States. This is something that depends on the amount of resources devoted to this, and on the amount of resources devoted to research. In Europe, there are great developments in sleep medicine, particularly in Germany, and not far from this country, France, Spain, and Italy. But sleep medicine is in constant progress all over Western Europe.

“The human body is trained to change the circadian cycles for us to adapt to a life rhythm in which we sleep during the day and work at night, but always in a constant manner.”

- Dr. Diego Borreguero (neurologist, psychiatrist, and sleep medicine specialist)

NN: Movement disorders are one of the main references during sleep. What are the most common disorders patients are suffering from? Are there significant differences among continents?

Clearly, within the broad field of movement disorders during sleep, the most frequent among them – epidemiologically speaking, the most important one in terms of the consequences for health, is the restless legs syndrome (RLS). Yes, there are various differences among the continents, but these depend on ethnic characteristics.

Among the white population, restless legs syndrome can be seen in up to 5% to 7% of adults. In other regions of Europe, it may be seen in up to 3% of adults, which is a high figure. However, in non-white populations, frequency clearly decreases. We know that the prevalence of this condition in Japan is between 1% and 4% of the population. There are more studies stating that it is more toward the 1% figure than toward the 4% one, and in black people

the restless legs syndrome is not as frequent. This means there is certainly an ethnic racial element linked to the presence or absence of certain genes which are risks of polymorphism that increase the chance of this condition being present.

NN: Specifically, regarding the restless legs syndrome, a topic in which you have specialized, when does a patient need to go see a doctor, and how is a diagnosis reached?

Today, diagnosis is clinical. This is something that has been decided should be treated in this way. There are of course great doubts on whether diagnosis is enough, but the consensus is that the diagnosis must be conducted clinically, and that sleep laboratory testing should only be used when there are doubts in the diagnostics. This is likely to change in the future. Based on what I just said, patients are advised to seek medical assistance whenever this condition alters night sleep or their quality of life. This should never prevent them from going on trips, or to the theater, et cetera – that is, to be in situations of relaxed wakefulness – but this is purely a clinical criterion. All of this is likely to change as we have more and more information telling us that the restless legs syndrome is a cardiovascular risk. There are various prospective studies investigating this matter more fully, but it is perfectly possible that in the future, when this relation has been established sufficiently, we place the consultation point with the doctor in a different place. This means that it is possible that from a certain number of periodical leg movements during sleep or during wakefulness we have biological markers to signal the level of seriousness of the

disease in a more appropriate way than purely clinical criteria. When we reach that point, we stop worrying so much about the clinical aspect and start being more interested in these types of biological markers as the starting point for defining treatment.

NN: Which are the most recent studies, and how have treatments against the restless legs syndrome evolved in the latest years?

The restless legs syndrome currently has various important investigation lines. One of them related to its cause, the connection between brain iron and the appearance of the disease itself, is reaching an important development and is in fact opening a way to one of the most effective forms of treatment in the last years, this being administering iron intravenously as a direct way to fill those brain deposits which are depressed. On the other hand, there is a whole line of genetic research being done. An article stating there are up to 19 risk polymorphisms has been recently published. We are talking about genes, which, depending on the variants of those genes in the genotype, will determine whether we are at a higher or lower risk of developing the condition. The function of these genes is barely known; generally speaking, however, we see some of them are involved in the embryonic development of the central nervous system. The third line is related to what causes the disease. As to this issue, we are working jointly with a center in the United States, the National Institutes of Health in Bethesda, on the physiopathology, which



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was mainly centered on dopamine. Dopamine are the mechanisms related to adenosine as a regulator, which in the end produces an increase in the functioning of the glutamatergic system and an increase in the dopaminergic system. This opens a new vision to the condition's physiopathology and it is mostly giving way to the first treatment options that are not at all related to glutamic acid or dopamine.

NN: In a world that works 24/7, there are many people working at night and who can only sleep during the day. Is this habit harmful? What would you recommend to them?

The biggest problem, as far as we are currently concerned, is that sleeping during the day is not really harmful as long as it is done under environmental conditions of noise, light, and the lack of interruptions similar to the ones at night. However, what is more and more frequent in modern society is working in shifts. That is, we sleep during the day some days; we sleep during the night some other days. This variation in schedules is the most novel characteristic. The human body is trained to change the circadian cycles for us to adapt to a life rhythm in which we sleep during the day and work at night, but always in a constant manner. The problem is, this rarely happens. This variation in the circadian cycle of sleeping three days in the morning, three days in the afternoon, three days at night, is something our nervous system has not been trained for, and in the long term, this produces an increase in morbidity, at least cardiovascular morbidity. This may be the biggest issue. Research at the moment is somehow directed at seeking new ways of using light therapy to influence those circadian rhythms while the patient is doing other activities. This can even occur when the patient is asleep, so other light frequencies are being researched. Frequencies that can even be used with workers of night shifts.

NN: How did you know about Neurovirtual?

I knew this brand through Dr. Thomas Penzel, who is a friend and colleague and prominent doctor in sleep medicine in Germany. He put me in touch with this brand and with the company's staff. At that moment, I needed to buy a new device. We currently have three devices from Neurovirtual. We were the first ones in Spain to acquire them. Basically two things caught my attention. The software is tremendously easy to use. It's flexible and robust. This characteristic I defined in three terms: It's tremendously easy to use, flexible, and solid. The second element which is essential to me is technical support. Any brand can offer excellent products, but if tech support is not efficient enough, we are going to have problems sooner or later. Neurovirtual is different. They offer 24-hour service in Spanish and English, a great advantage for the staff in my laboratory. We even take advantage of the time difference between Spain and America, because it allows us to have support during the hours in which sleep studies are being conducted in Spain. Staff there assists patients in the evening. Neurovirtual's tech support is probably the best I have ever seen. It is the fastest. They work sending parts and giving solutions online, almost to the minute, and we have seen that ourselves from the time we have been working with them. The Instituto del Sueño currently has plans for expansion. We are going to start activities in a new center in Santiago de Chile and Panama City. We count on Neurovirtual for all these centers. They will be our brand of reference.

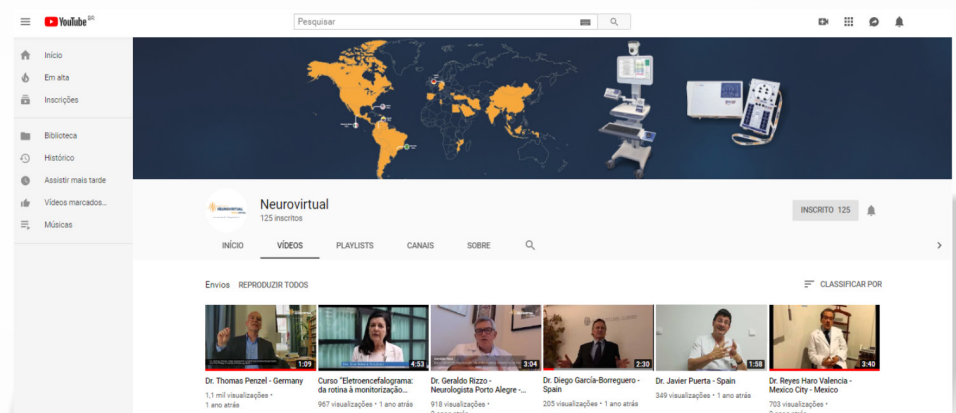
NN: Would you recommend Neurovirtual products to your colleagues in neurology and sleep medicine?

Clearly, the best recommendation I can give now is the one I just gave to you. All the expansion our center is going to have throughout 2018 is going to be done with Neurovirtual. The experience we have had in 2017 has convinced us enough to make them our brand of reference from now on.



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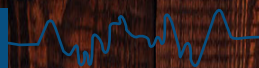
Neurovirtual sells 12 PSGs/EEGs to Decatur Memorial Hospital in Illinois

Decatur Memorial Hospital (DMH) has been serving the people of Central Illinois since 1916, and today is regionally ranked and considered high performing in four different areas. Neurovirtual is providing the Sleep and EEG Labs at the hospital with the latest equipment and software to help the dedicated team at DMH continue to provide excellent care to all those they serve. The combined experience of their Sleep and EEG staff spans many decades, and with that experience comes expert care.

Neurovirtual's evaluation process identified the DMH team's most important selection factors in selecting new equipment to modernize their labs and offered the customization and attention necessary to win their trust. A live trial of the equipment and software gave the team at DMH the opportunity to learn firsthand why Neurovirtual is simply a better choice. As a teaching hospital, DMH required many features that other brands either do not offer, or consider an "add-on," whereas at Neurovirtual any improvement that helps one customer is freely given to all of our customers in an effort to improve patient care across our customer network.

In today's environment of diminishing returns on capital investment, Neurovirtual offers the latest and most adaptive technology at an excellent value, making the choice easier when it comes time to choose new sleep or EEG equipment for your hospital.





Neurovirtual participates on average in 20 to 30 congresses and conferences in different countries around the globe. Taking our goal to humanize the diagnostic, we pride ourselves in being part of this community and to be able to give our contribution to clinicians and patients.

Below you will find the list of events for 2019, where Neurovirtual will be presenting its solutions to make neurology and sleep diagnostic's more human! We hope to see you there!

USA

American Academy of Neurology Annual Meeting

📍 Philadelphia, PA, USA
May 4 – 10, 2019

SLEEP 2019

📍 San Antonio, TX, USA
June 8 – 12, 2019

American Association of Sleep Technologists (AAST)

📍 St. Louis, MO, USA
September 6 – 8, 2019

American Epilepsy Society - Annual Meeting

📍 Baltimore, MD, USA
December 6 – 10, 2019

BRAZIL

XVII Congresso Paulista de Medicina do Sono

📍 São Paulo - SP
May 3 – 4, 2019

XII Congresso Paulista de Neurologia

📍 Guarujá - SP
May 29 – June 1, 2019

XXVII Congresso Brasileiro de Neurofisiologia Clínica

📍 São Paulo - SP
August 14 – 17, 2019

COLOMBIA

XI Simposio Actualización Medica

📍 Bogota, Colombia
February 1, 2019

Curso de Avances en Trastornos del Sueño

📍 Bogota, Colombia
February 22 – 23, 2019

XIII Congreso Colombiano de Neurología Infantil

📍 Manizales, Colombia
March 22 – 24, 2019

II Simposio de Semiología en Epilepsia

📍 Bogota, Colombia
April 5 – 6, 2019

MEXICO

XXVIII Congreso Anual de la Sociedad Mexicana de Neurología Pediátrica A.C.

📍 San Luis Potosí, Mexico
May 15 – 17, 2019

XXV Congresos Mexicano e internacional de Cirugía Neurológica 2019

📍 Jalisco, Mexico
July 8 – 12, 2019

X Encuentro Nacional de Medicina del Dormir

📍 Mexico City, Mexico
August 14 – 17, 2019

ARGENTINA

IV Diplomatura en Medicina del Sueño

📍 Buenos Aires, Argentina
March 29, 2019

Congreso LACE 2019 Liga Argentina contra la epilepsia

📍 Buenos Aires, Argentina
September 19 – 20, 2019

Congreso de la Sociedad Argentina de Neurología Infantil

📍 Santa Fe Province, Argentina
October 17 – 19, 2019

56° Congreso Argentino de Neurología

📍 Mar del Plata, Buenos Aires, Argentina
November 19 – 22, 2019

CHILE

X Simposio Internacional de Epilepsias: Encuentro Latinoamericano de Centros de Epilepsia

📍 Santiago, Chile
May 16 – 17, 2019

II Simposio Internacional de Medicina del Sueño

📍 Las Condes, Chile
July 4 – 6, 2019

VII Congreso Chileno Sochimessi

📍 Santa Cruz, Chile
October 24 – 26, 2019

LATAM

Diplomatura Latinoamericana En Medicina Del Sueño – Perú 2019

📍 Universidad Peruana Cayetano Heredia
May 20 – 1 June, 2019

VII Congreso Internacional de Neurología, VI Simposio internacional de Neurología

📍 San Salvador, El Salvador
October 7 – 10, 2019

XIX Congreso De La Sen y XVIII Jornadas De La LECE

📍 Ecuador
October 7 – 10, 2019

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