



WORLD NEUROLOGY

THE OFFICIAL NEWSLETTER OF THE WORLD FEDERATION OF NEUROLOGY

PRESIDENT'S COLUMN

Brain Health Dominates WFN Efforts

Prof. Wolfgang Grisold provides updates on the Council of Delegates, regional societies, and global activities.

For this column, I would like to update you on the upcoming Council of Delegates (COD) meeting, the joint meeting of the Japanese Society of Neurology, and the Asian and Oceanian Association of Neurology (AOAN) in Japan, as well as report on other global activities.

Council of Delegates Meeting (COD)

Each year, the World Federation of Neurology (WFN) holds its COD meeting, which is the formal organizational meeting of the WFN. Preceding this meeting, all WFN procedures and activities from 2023 are audited and submitted to the delegates. This includes all activities and financial transactions, which are provided in a report. The trustees are responsible for this important document and will be

available for questions and answers.

This year's COD meeting will be held virtually, including the virtual election of one trustee. The experience of the past few years as well as the increasing challenges with travel have made these virtual meetings the best choice.

At the upcoming meeting, the elected trustee position held by Alla Guekht for two terms will need to be filled. The Nomination Committee, which acts independently from the trustees, has selected six candidates from Asia, Europe, and Latin America. The committee considers these candidates as equal and does not indicate any preference. Thus, it will be on the shoulders of the delegates to review the candidate presentations.



WOLFGANG GRISOLD

These are available on the WFN website and on page 15 of this issue. The election details will be communicated to the delegates, the voting will be conducted electronically, and the elected trustee will be presented at the trustee meeting.

There will also be reports from the president, vice president, treasurer, secretary general, and several committees. We also expect an update on preparations for WCN 2025, which will be hosted in Seoul, South Korea. The site of WCN 2027 will be Cape Town, South Africa. WCN 2029 will be in Europe. The call for candidate cities will be made soon.

We are pleased to announce the **International Congress of Neuromuscular Diseases (ICNMD)**

In addition to this report and update on WFN developments and activities since the last edition, please follow our [website](#) and social media for more information. This year, the WFN launched a WFN service page in the *Journal of the Neurological Sciences* (JNS). The third issue of the WFN service pages will contain information about the WFN core curriculum, the journal eNS, the WFN AFAN educational day, and the Italian Brain Health Initiative.

2024, which will take place in Perth, Australia, and will follow the successful series of WFN ICNMD Congresses. The newly introduced **World Federation of Neurology Update (WNU)** virtual congress will take place Sept. 26-27.

Regional Societies

We recently participated in the AAN meeting in Denver and the Japanese Society of Neurology and AOAN meeting in Japan. We look forward to the **European Academy of Neurology**

see **PRESIDENT'S COLUMN** page 3

The Launch of the Italian Brain Health Strategy

The One Brain, One Health Manifesto outlines strategy through 2031.

BY MATILDE LEONARDI AND ALESSANDRO PADOVANI

Globally, brain diseases represent the leading cause of disability and the second leading cause of death, with a burden expected to increase with the growth and aging of the population. These pathologies already pose a significant burden on health care systems today, and all estimates show that, without the appropriate interventions, the situation is destined to worsen in the coming years.

Faced with this epidemiological picture, the World Health Organization (WHO) has developed and provided the world with the Global Action

Plan on Epilepsy and Other Neurological Disorders (IGAP). The plan was endorsed by all member states at the World Health Assembly in 2022, and calls for radical change with respect to brain health and neurological disorders.

The Società Italiana di Neurologia (SIN) intends to implement the WHO Global Action Plan in Italy through the Italian Brain Health Strategy 2024-2031, launched in March during World Brain Week 2024. The strategy serves as a starting point for a reflection that involves all national stakeholders on the possible interventions



MATILDE LEONARDI



to be implemented in the fields of health planning, prevention, research, diagnosis, treatment, rehabilitation, and social issues.

The SIN adopts the definition of "brain health" provided in the IGAP

see **BRAIN HEALTH** page 8

INSIDE

WFN LAUNCHES E-LEARNING HUB

PAGE 4

HISTORY: FROM ANIMAL SPIRITS TO BRAIN-COMPUTER INTERFACE

PAGE 5

THE FIRST INTERNATIONAL CONGRESS OF THE NEPALESE ACADEMY OF NEUROLOGY

PAGE 10

MEET THE WFN TRUSTEE CANDIDATES

PAGE 15-17



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FROM THE EDITORS

BY STEVEN L. LEWIS, MD, EDITOR,
AND WALTER STRUHAL, MD, CO-EDITOR

Global Advocacy Training in the Spotlight

We'd like to welcome all readers to the June 2024 issue of *World Neurology*. This issue includes a call by WFN President Wolfgang Grisold and Dr. Justin Jordan for applications for the upcoming **Global Advocacy Leadership Program**, co-led by the American Academy of Neurology (AAN) and the World Federation of Neurology (WFN). Recognizing the important role of advocacy for improvement in neurologic care, access, outcomes, and the field of neurology worldwide, this is an innovative and exciting program for advocacy training for neurologists from low- and lower-middle-income countries. Please **visit the AAN website** for more information about the program and the application process! The application deadline is Aug. 14, 2024.

Continuing with the advocacy theme, Drs. Christina Briscoe Abath and Keryma Acevedo discuss the importance of collaborating for awareness, management, and education about infantile epileptic spasms syndrome, an epileptic syndrome where early diagnosis and management is critical for optimal developmental outcomes. Also in this issue, Drs. Matilde Leonardi and Alessandro Padovani report on the launch of the Italian Brain Health Strategy (2024-2031) and its One Brain, One Health Manifesto.

In the President's Column, WFN President Wolfgang Grisold provides



STEVEN L. LEWIS, MD



WALTER STRUHAL, MD

updates on many WFN activities, including World Brain Day (WBD) 2024, the introduction of the WHO Intersectoral Global Action Plan (IGAP) Toolkit, the upcoming World Federation of Neurology Digital Neurology Updates (WNU) 2024 (an important educational initiative planned for September 2024), as well as many other ongoing initiatives.

Drs. Morris Freedman, Surat Tanprawate, Steven Lewis, and Wolfgang Grisold, as well as Chiu Keung Man, report on the exciting launch of the WFN eLearning hub, a novel e-Learning platform that offers free access to a broad spectrum of high-level educational material in neurology for neurologists and other health care professionals across the world.

In the History Column, coinciding with the 100th anniversary of the first human EEG recording, Dr. Peter Koehler provides an extensive and well-illustrated report on the origins and development of EEG recording and leading into its current and evolving role in brain-computer interfaces.

This issue also includes reports from

recent national and regional congresses. Drs. Rajeev Ojha and Marianne de Visser report on the First International Congress of the Nepalese Academy of Neurology, and Dr. Aida Kondybayeva reports on the VI International Educational Forum, the Neurology Update in Kazakhstan, which took place in Almaty, Kazakhstan.

Dr. Tissa Wijeratne also reports on the session held at the recent 65th Japanese Society of Neurology and 19th Asian Congress of Neurology (AOCN2024), where a joint WFN-AOAN session focused on the WHO IGAP and its implications and call for action in the Asian Oceanian regions. This issue also includes a photo of Dr. Vladimir Hachinski, a previous WFN president, receiving the prestigious Ryman Prize from the president of New Zealand.

Finally, this issue includes the statements from each of the six candidates brought forward by the WFN Nominations Committee for the position of WFN elected trustee, in preparation for voting prior to the upcoming Council of Delegates meeting.

In closing, thank you for your continuing interest in the WFN and *World Neurology*, and we look forward to sharing more details about the many activities for neurologists worldwide in upcoming issues. We encourage all of you to participate in (and initiate) many activities surrounding World Brain Day 2024 devoted to Brain Health and Prevention. We also remind our readers from low- and lower-middle-income countries to consider applying for the **AAN/WFN Global Advocacy Leadership Program**. •

WHO Intersectoral Global Action Plan

A WFN-AOAN session provides a call for action to leaders in global neurology.

BY TISSA WIJERATNE

At the 65th Japanese Society of Neurology and 19th Asian Congress of Neurology (AOCN2024), the WFN-AOAN session focused on the WHO Intersectoral Global Action Plan (IGAP) and its implications, urging key opinion leaders in global neurology to take action. This session was chaired by Profs. Hamidon Basri, AOAN president, and Ryosuke Takahashi, from Kyoto University and the Japanese Society of Neurology.

WFN President Prof. Wolfgang Grisold explained the WHO IGAP to the delegates, encouraging an interactive discussion. WFN Trustee Prof. Mohammad Wasay provided insights into the status of the WHO IGAP, specifically in the Asia-Oceania region. Dr. Augustina Charway-Felli presented data on African neurology and the IGAP, highlighting regional challenges and progress.

Prof. Sarangerel Jambal, president of the Mongolian Neurological Society, gave a comprehensive overview of neurology in Mongolia, detailing the unique aspects



Participants at the WFN-AOAN session focusing on the WHO Intersectoral Global Action Plan (IGAP).

and challenges faced in the country.

Prof. Tissa Wijeratne, co-chair of World Brain Day (WBD), traced the evolution of WBD from its inception to the upcoming WBD 2024. He emphasized the importance of embracing WBD and prioritizing preventative brain health across the region. This call for action was strongly supported by all speakers, highlighting the significant impact of advancing brain health initiatives in the Asia-Oceania region.

The session underscored the critical need for collaboration among

global neurology leaders to address neurological disorders effectively. By adopting and promoting the WHO IGAP, the session aimed to mobilize efforts toward improving neurological health outcomes, emphasizing the importance of preventative measures and international cooperation. The discussions highlighted the diverse perspectives and regional insights, fostering a unified approach to tackling global neurological challenges. •

Prof. Tissa Wijeratne is co-chair of World Brain Day.

PRESIDENT'S COLUMN

continued from page 1

(EAN) meeting in Helsinki as well as the African Academy of Neurology (AFAN) meeting in Dakar. The WFN uses these opportunities to participate and communicate with leadership and delegates. We also hosted booths to present information about the WFN, the WCN, and the ICNMD.

The EAN organized its Brain Health Summit May 7 in Brussels and addressed many aspects of brain health. Several important European health analyses on neurological disease as well as an analysis of needs and costs were presented. Queen Mathilde of Belgium attended the sessions and held an animated discussion with the faculty during the coffee break. The EAN provided an impressive demonstration of how to raise the matter of brain health to higher political levels.

The joint meeting of the Journal of Neurological Sciences (JNS) and the AOAN took place May 29-June 2 in Tokyo, and included a leadership meeting with the JNS and the WFN, represented by Mohammad Wasay and Wolfgang Grisold, who were privileged to attend the AOAN delegate meeting. Hamidon Basri stepped down as the AOAN president, and Christopher Chen (Singapore) will serve as the new AOAN president. I want to thank Prof. Basri for his service in the past years, and I look forward to him continuing to work with the WFN.

The WFN continues its efforts to participate in worldwide activities on brain health, as well as advocate for the importance of the Intersectoral Global Action Plan on Epilepsy and Other Neurological Disorders (IGAP). It also excited about the upcoming presentation of the WHO IGAP toolkit, which will be available July 8. Prof. Grisold stressed the importance for member societies engaging with this important WHO initiative to promote and advocate for brain health and the IGAP.

The WFN has entered into a joint initiative with the AAN. Called the Global Advocacy and Leadership Program (GALP), this unique program is designed to provide young neurologists in low- and middle-income countries around the

world tuition for live, in-person courses on advocacy and leadership in San Diego (AAN) and Seoul (WCN) as well as a series of virtual sessions in between. Graduation will be held at the Seoul congress. This joint AAN-WFN activity will increase the potential of young neurologists to advocate for neurology as well as increase the awareness for advocacy and leadership worldwide. The applications will be announced by the AAN and WFN in July 2024.

The JNS meeting was perfectly organized, and the JNS now has 10,000 members. The WFN was invited to participate in a session on gender and diversity issues, and received input from speakers from Canada, Japan, and Malaysia, giving regional insight into these important aspects.

The gender distribution worldwide for WFN delegates is 77% male and 23% female. The speaker distribution in Montreal (WCN 2023) was 57% male and 43% female. The membership in WFN committees and subcommittees is 53% male and 47% female. Worldwide, the distribution of parliamentary members is approximately 75% male and 23% female; the distribution of WFN delegates is similar. But we have been more successful with the distribution in the committees and speakers. Our goal will be a 50/50 distribution. We congratulate the JNS for the organization of this important session.

The highlight for the WFN presence was a session on global neurology with a discussion of the IGAP. WFN speakers were Wolfgang Grisold, Mohammad Wasay, and Tissa Wijnerate. The importance of brain health and the IGAP were emphasized by Prof. Grisold.

From Mongolia, a detailed lecture was given by neurologist Jambal Sarangerel. Prof. Augustina Charway Felli, from the AFAN, presented her lecture via recorded video. The ensuing discussion gave additional information on the purpose and content of the IGAP, and the impression was that the messages were well received.

Prof. Grisold was honored to be one of three speakers at the JNS delegates gala dinner. In addition to the recognition of the JNS and its excellent partnership over

see PRESIDENT'S COLUMN page 13



From left to right: Queen Mathilde of Belgium, Elena Moro, EAN president-elect, and Claudio Bassetti, EAN past-president.



Carlayne Jackson, AAN president, (foreground), and Tarun Dua, head of the WHO brain health unit, are taking notes.

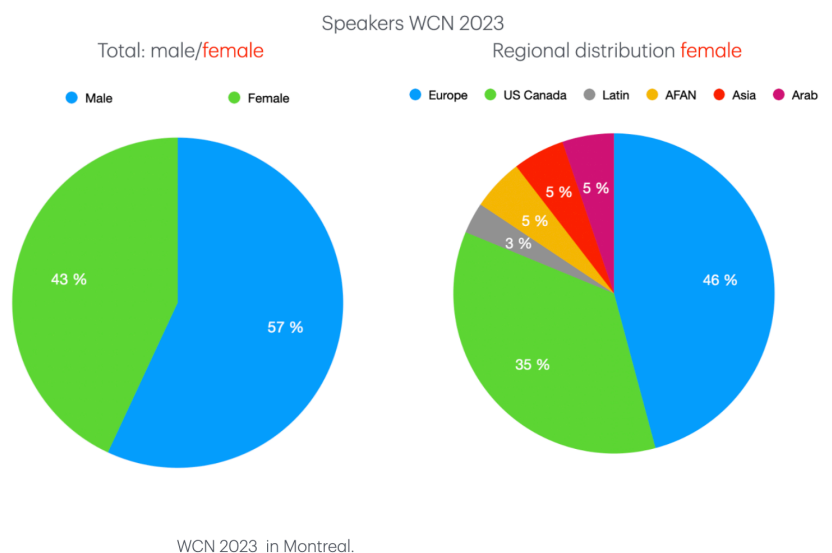


Figure 1. Speaker distribution at the World Congress of Neurology (WCN) 2023 in Montreal by gender and region. While the distribution of speakers approaches an equal distribution, the regional participation of female speakers is dominated by Europe and North America.

WFN Delegates - May 2024

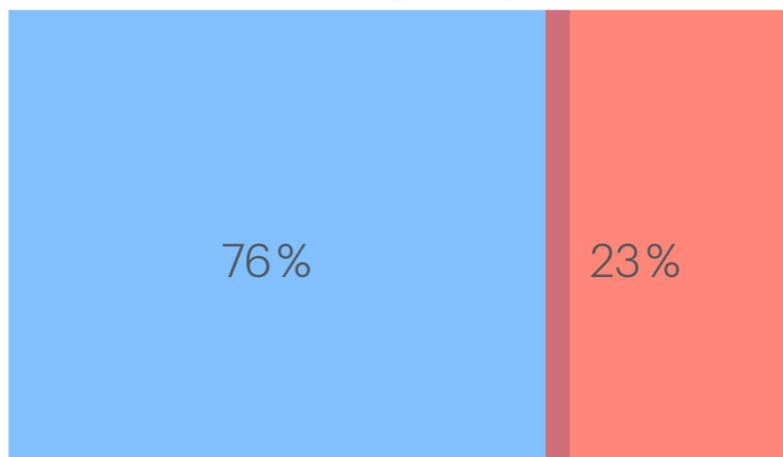


Figure 2. Gender distribution of WFN delegates. This is similar to the worldwide distribution of parliamentary members.

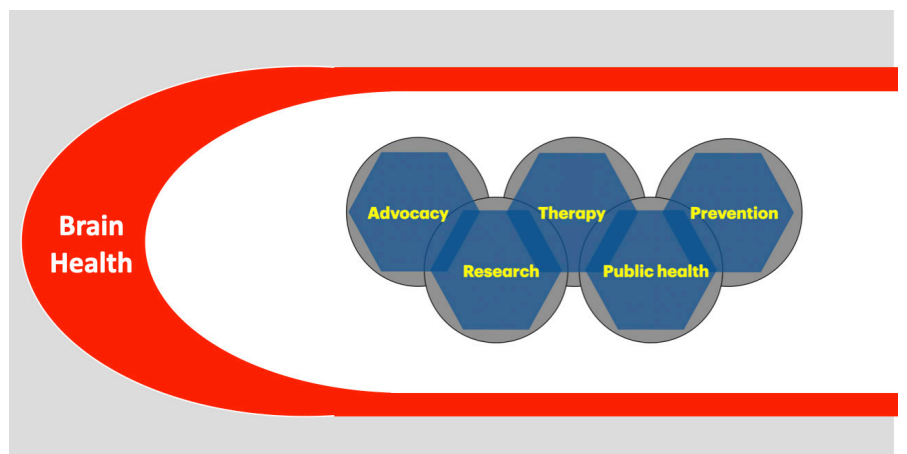


Figure 3. Brain health is a powerful envelop to promote neurology worldwide. Embedded is the IGAP and its five pillars.

WFN Launches e-Learning Hub

Visitors can get free access to global virtual education.

MORRIS FREEDMAN, SURAT TANPRAWATE, CHIU KEUNG MAN, STEVEN LEWIS, WOLFGANG GRISOLD

The World Federation of Neurology (WFN) has launched its novel e-Learning platform, which offers free access to a broad spectrum of high-level educational material in neurology for health care professionals. Branded as the WFN e-Learning Hub, this platform has been designed as a full-access electronic library that includes WFN programs. It also features external material from centers across the globe, such as teaching rounds, seminars, webinars, lectures, master classes, and related academic activities.

The WFN e-Learning Hub serves as a one-stop shop to access this material by simply clicking on links to archived videos. For programs involving the WFN, these include the World Congress of Neurology, WFN Digital Neurology Update, WFN-AFAN e-Learning Day, WFN-AOAN e-Learning Day, International Congress on Neuromuscular Diseases, and Education in Headache to Health Care Providers in Africa.

As the WFN e-Learning Hub grows, with more sites contributing to its archived educational videos, it will be poised to become the go-to website where health care professionals from all countries will be able to access free educational material on any topic of their choice. Moreover, new content will be added on a regular basis.

The WFN e-Learning Hub features a broad spectrum of topics. Clicking on any of the menu items will open a page with access to recorded videos within this topic area. These videos will be focused on events organized by the WFN or in collaboration with the WFN. The hub also includes information on special educational days as well as External Resources.

Videos related to a specific topic,

such as Prof. Suvarna Alladi speaking on Advocacy in Dementia at WCN in 2021, can also be found on the site.

Visitors can view videos from previous events, such as Prof. Wolfgang Grisold giving a welcoming address during the WFN-AOAN e-Learning Day in 2023 with the theme of advancing stroke care in Asia.

External Resources, the lower button on the upper left side of the hub, opens a web page from sites outside of the WFN. We invite organizers of educational events from WFN member societies, academic institutions, and hospitals across the world to submit requests for a link to their archived programs for posting on the WFN e-Learning Hub. These requests, as well as questions, should be sent to Dr. Surat Tanprawate, chair of the e-Communications & e-Learning Committee. His email address is surat.md@gmail.com.

Access to the WFN e-Learning Hub is open to all health care professionals. The hub can be accessed by clicking on the Education tab on the [WFN website](http://www.wfn.org) or directly [here](http://www.wfn.org).

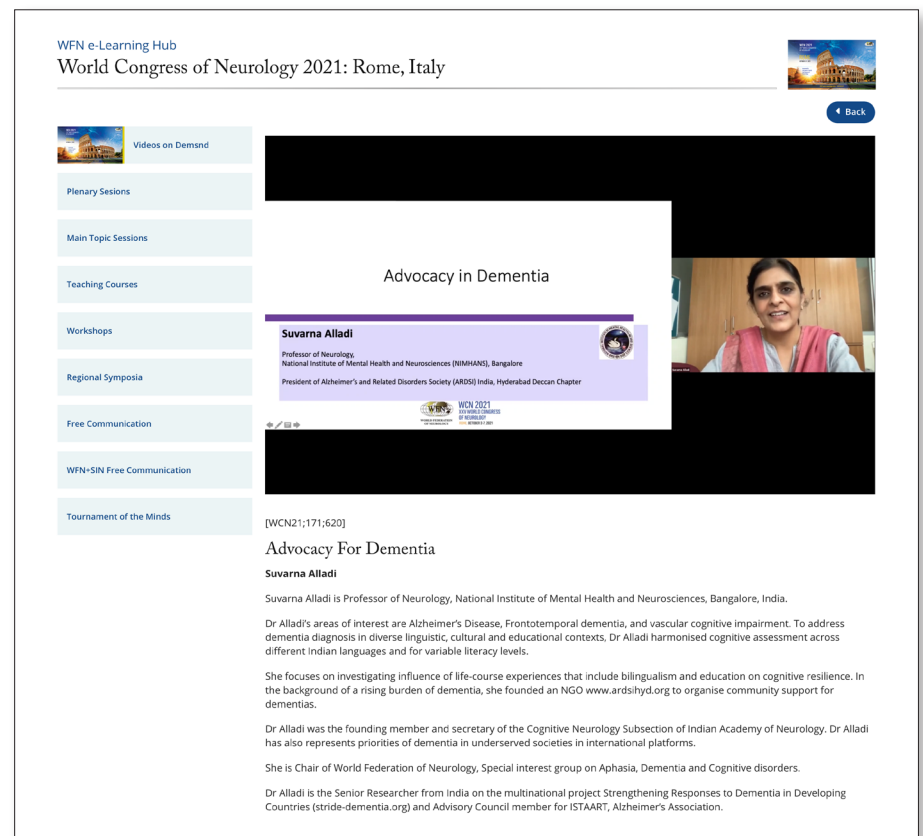
Acknowledgements

We gratefully acknowledge the current WFN trustees: Maria Benabdeljlil, Alla Guekht, Minerva López Ruiz, Chandrashekhar Meshram, Guy Rouleau, and Mohammad Wasay, as well as the former WFN trustees: William Carroll, Walter Struhal, and Marianne de Visser for their contributions to the development of the WFN e-Learning Hub. •

Morris Freedman is treasurer of the WFN, Surat Tanprawate is chair of the WFN e-Communications & e-Learning Committee, Chiu Keung Man is WFN Digital Content and IT Management consultant, Steven Lewis is secretary general of the WFN, and Wolfgang Grisold is president of the WFN.



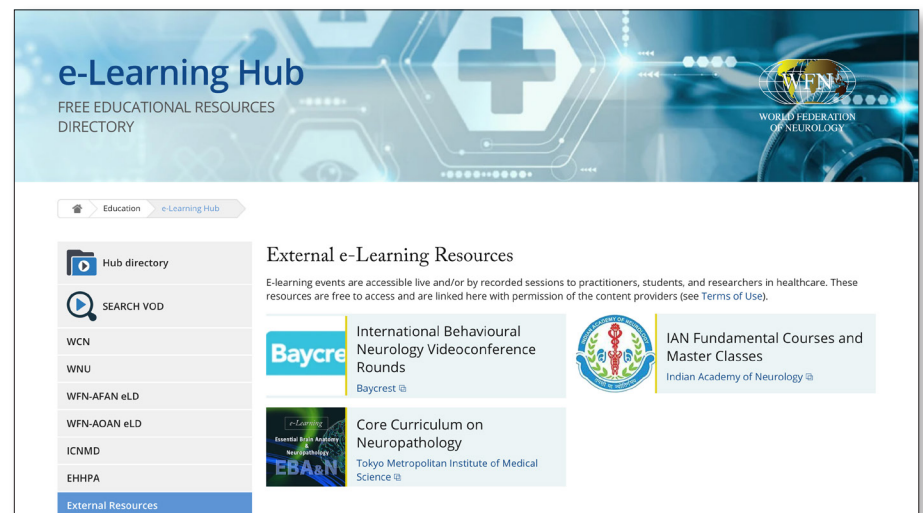
Directory items for easy navigation on the WFN e-Learning Hub.



Videos by topic can be searched for, such as this video of Suvarna Alladi.



Sample video page of Prof. Wolfgang Grisold's welcome address at the WFN-AOAN e-Learning Day.



The External Resources menu item provides links to resources outside of WFN.

HISTORY

From Animal Spirits to Brain-Computer Interface

A look back at the relationship between electricity and the brain on the 100th anniversary of the first human EEG recording.

BY PETER J. KOEHLER

This year marks the centennial of the first registration of a human electroencephalogram (EEG). Why is it that just a few hundred years ago physicians were still thinking in terms of animal spirits (*spiritus animalis*) flowing through cerebral ventricles and hollow nerves, when today we can create brain-computer interfaces to help disabled persons control their wheelchairs?¹

“Neurophysiology” Before the 18th Century

The doctrine of *pneuma* (*spiritus* in Latin, a very fine and volatile material principle of life) states that natural spirits (*spiritus naturalis*) arise in the liver, according to the physiology of Galen (129-c.199). These are converted into vital spirits (*spiritus vitalis*) after passing through tiny pores between the right and left parts of the heart. After passing through the *rete mirabile* — a vascular plexus of blood vessels at the base of the brain surrounding the pituitary gland that is present in mammals, but not in humans — they become animal spirits (*spiritus animalis*),² flowing through the brain cavities and nerves. (See Figure 1.) Greco-Roman medicine, with the even older humoral pathophysiology in addition to this *pneuma* doctrine, was influential for many centuries.

In the Middle Ages, the material part of the soul was still localized in the brain cavities — a system also known as ventricular or cell doctrine. It was assumed that in the first cell — our first and second ventricles — the information from the senses comes together

(Figure 2; *sensorium commune*). This is also where fantasy and imagination reside. In the second cell (today’s third ventricle), thinking and judgment were localized, and in the third cell memories were stored. The *spiritus animalis* could reach the muscles through nerves, which were assumed to be hollow.

In *Traité de l’Homme*, written in the 1630s but published posthumously in 1664, René Descartes (1596-1650) described his reasons for localizing the material part of the soul in the pineal gland (*glandula pinealis*) rather than in the ventricles. In the following 150 years, a debate arose as to whether this gland was the seat of the soul, particularly because of the discovery of stones (calcifications) often found in this gland at autopsy. Some denied it for this reason, such as the Dutch physician Cornelis Stalpart van der Wiel (1620-1702, Figure 3).³

Others reasoned instead that people with such stones exhibited behavioral disorders. For example, a case involved a young woman who was convicted of infanticide of her newborn in the 17th century. She was decapitated and at autopsy a pineal gland stone was found that would have explained her behavior.

In the 18th century, electric fish, specifically the electric eel, found in Dutch colonies in the West Indies — present-day Surinam and British Guiana — played a role in the realization that electricity is connected to nerve function. These fish can build up a potential of 700 to 800 volts, much more than the electric ray (torpedo), which had already been described in Ancient Greece.

Dutch colonists, who had felt the

effects of a Leyden jar with Pieter van Musschenbroek (1692-1761) from 1745 onward, recognized this feeling when they encountered the electric eel in the West Indies. Experiments were conducted, and correspondence took place with the Hollandsche Maatschappij der Wetenschappen in Haarlem (Netherlands), which had been founded in 1752. The final proof of the electrical properties occurred when sparks were drawn at demonstrations before the Royal Society in London in the 1770s. Thus arose the concept of animate electricity from Luigi Galvani (1737-1798) which, incidentally, was opposed by Alessandro Volta (1745-1827).^{4,5}

Neurophysiology in the 19th Century

Finally, it was Emile Dubois Reymond (1818-1896) who was able to demonstrate the action potential (he called it “negative variation”) in a peripheral nerve with a sensitive galvanometer (1848). With this, he provided irrefutable proof that nerves were actually “electric,” which greatly influenced thinking about the etiology and treatment of nervous diseases. Shortly thereafter, the inventor of the ophthalmoscope (1851), Hermann von Helmholtz (1821-1894), was able to determine the velocity of the signal that propagates along the sciatic nerve of a frog.

Meanwhile, various physicians had begun to apply electrotherapy. In fact, this had been possible since the aforementioned invention of the Leyden jar, which allowed electricity to be brought outside the walls of the laboratory. With

electromagnetic equipment and increased interest in the electrical properties of the nervous system, the use of electrotherapy gained interest.

This interest in electricity gradually shifted to the central nervous system, especially when the physician-electrotherapist Eduard Hitzig (1838-1907) got the idea of stimulating the brain of laboratory animals after a chance observation.^{6,7} With his sensitive stimulation method, he and Gustav T. Fritsch (1838-1927) were the first to be

see HISTORY page 6

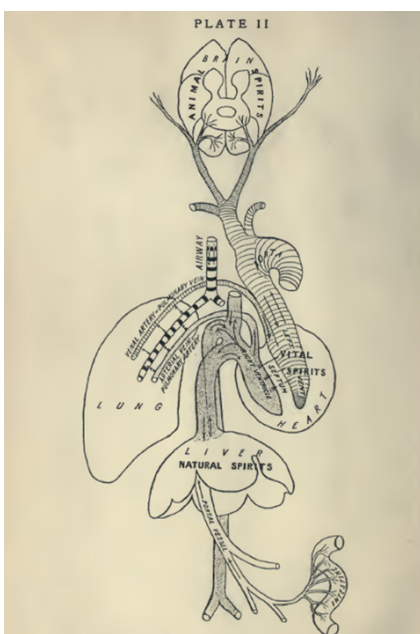


Figure 1. Human physiology according to Galen (129-c.199).

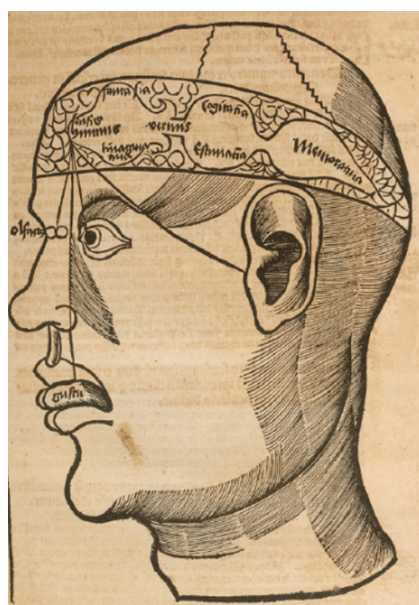


Figure 2. Ventricular or cell doctrine from the 1508 edition of Gregor Reisch’s *Margarita philosophica*.

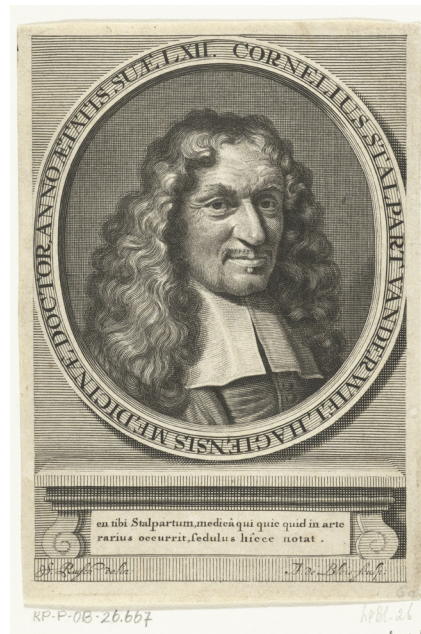


Figure 3. Cornelis Stalpart van der Wiel contested the localization of the soul in the pineal gland.

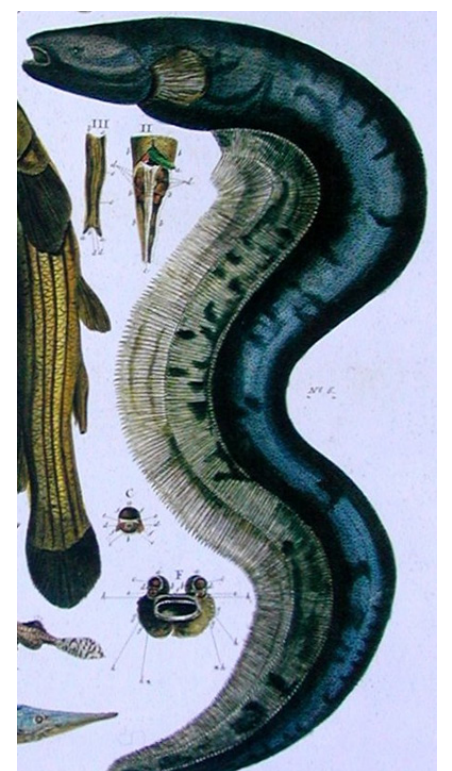


Figure 4a. Leyden jar (top) at the Museum Boerhaave, Leiden, and Figure 4b. Electric eel from Albertus Seba’s *Thesaurus: Naaukeurige beschryving van het schatryke kabinet der voornaamste seldzaamheden der natuur* [Accurate description of the treasury of the principal rarities of nature] (*Locupletissimi rerum naturalium thesauri accurata descriptio* (4 Vols. 1734-65)).

HISTORY

continued from page 5

able to elicit muscle contractions in the limbs of a dog (1870; Figure 6). Due to the Franco-German war, however, their publication was hardly noticed. Three years later, it could be confirmed by David Ferrier (1843-1928), who did more detailed neurophysiological research in several species of animals.

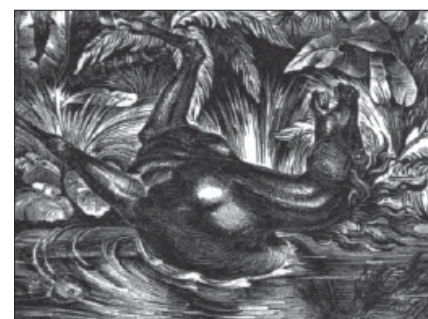
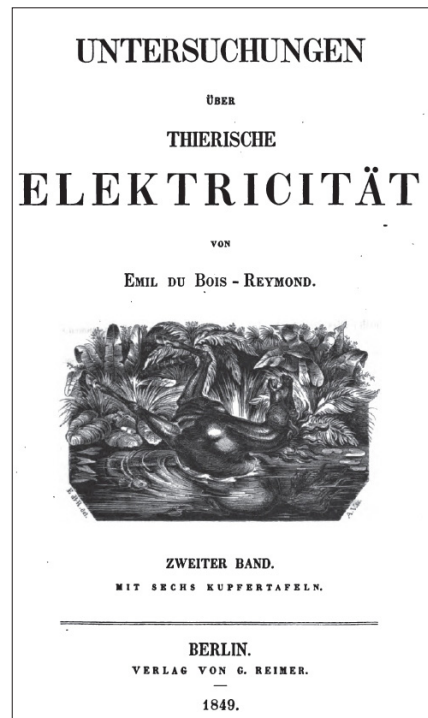


Figure 5a. Title page of Dubois Reymond's book (second volume), on which we see a drawing of a horse falling paralyzed into a stream by the discharge of an electric eel. Figure 5b. Apparently the drawing was made by him, as we read (to the left below): "EdBRdel" (E dBR delineavit)

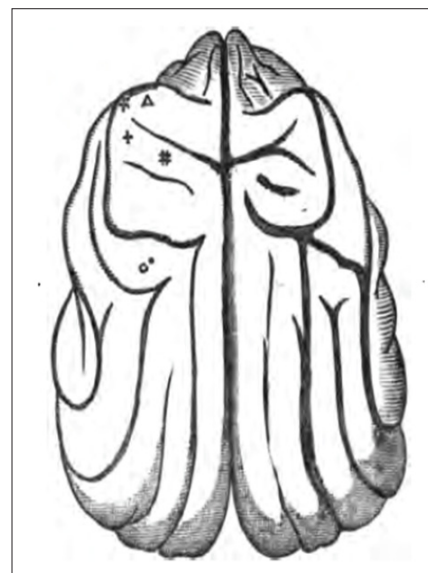


Figure 6. From Fritsch G, Hitzig E. Über die elektrische Erregbarkeit des Grosshirns [About the electrical excitability of the cerebrum] (1870).⁸

Electrodiagnostics

Shortly thereafter, Richard Caton (1842-1926) in Liverpool was able to observe "feeble currents of varying direction" with electrodes on the cortex of a rabbit using a sensitive coil galvanometer combined with optical magnification.⁹ Several other researchers engaged in similar studies, including Adolf Beck (1863-1942) in Kraków. In 1890, Beck observed in laboratory animals that spontaneous fluctuations ceased after sensory stimulation. He also observed desynchronization of cortical activity upon sensory stimulation.

In 1901, Leiden physiologist Willem Einthoven (1860-1927) invented the string galvanometer, which shortly thereafter enabled him to record the ECG. He received the Nobel Prize for this in 1924. Hans Berger (1873-1941), who was interested in psycho-physical correlation through a telepathy (he did not use that term) incident, used this instrument — and later the Edelmann string galvanometer — for the registration of brain waves in humans. This year marks the centennial of his first registration from the human cortex in someone with a skull defect. (See Figure 7.)

It was not until five years later, in 1929, that he began to publish papers about it.¹⁰ In fact, recognition came only after

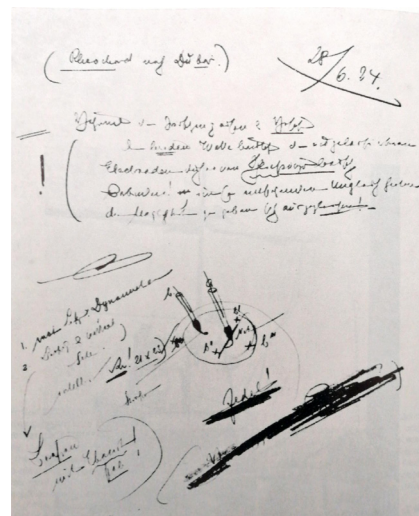


Figure 7. Berger did not publish his first human registration. This is the protocol of his registration on June 28, 1924, with a drawing showing the area of the skull defect and position of the electrodes.



Figure 8. Hans Berger and the EEG of his 16-year-old daughter Ilse at rest (top), during a math problem (middle) and after she had solved it (bottom). The recordings were published in Berger's 12th report of 1937.¹²

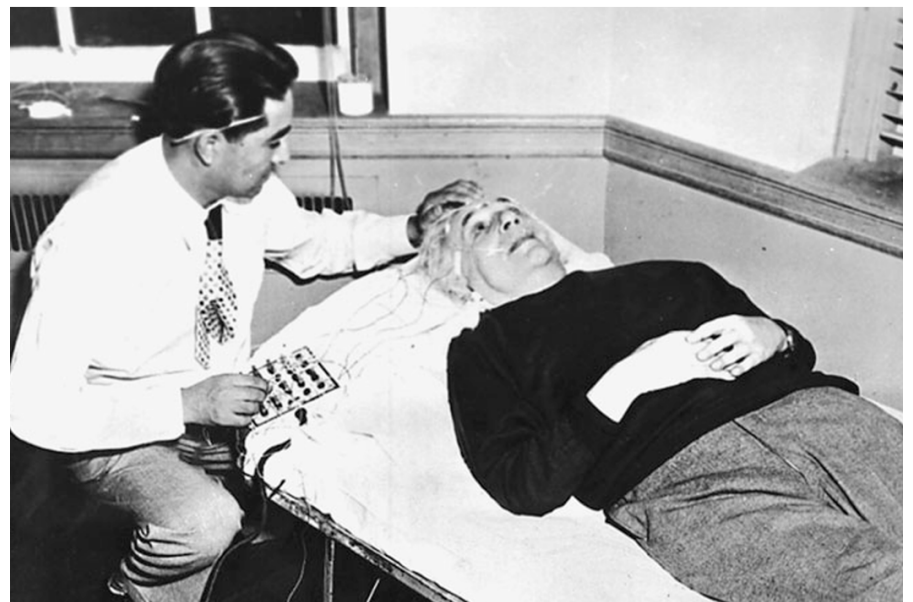


Figure 9. Albert Einstein's EEG being registered and compared with other scientists at Massachusetts General Hospital in 1950.

confirmation by Edgar D. Adrian (1889-1977) and Bryan Matthews (1906-1986), who presented their work to the British Physiological Society in May 1934. In an article in *Brain* in the same year, they proposed the eponym Berger rhythm in reference to the alpha rhythm, which they believed could be found occipitally. Berger's role during the Nazi period — some sources originally claimed he was forced by the Nazis to retire and commit suicide because he disagreed with the regime — turned out to be less courageous than previously suggested.¹¹

The discovery of EEG had a huge impact, both on science and the general public. The latter has been fascinatingly described by medical historian Cornelius Borck in his book *Hirnströme. Eine Kulturgeschichte der Elektroenzephalographie*.¹³ His book was later translated into English.¹⁴

Brain Organ

Some years ago, I received a box with historical material from the son of Dutch clinical neurophysiologist Willem Storm van Leeuwen (1912-2005). The box contained recordings from the 1950s carrying the name "Brain organ." After digitization, I was able to hear the sonified EEG signal, a registration made by Jan Willem Storm van Leeuwen in the 1950s.

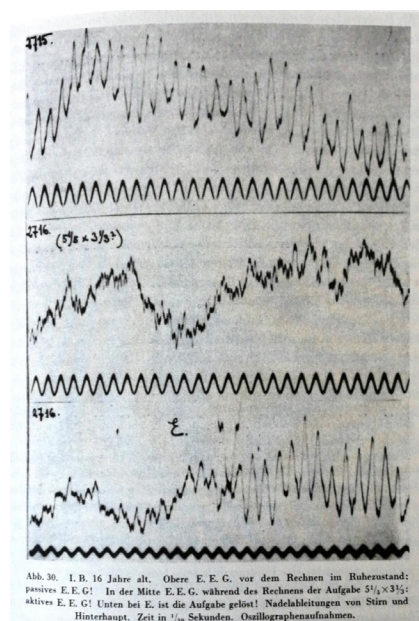


Abb. 30. I. B. 16 Jahre alt. Obere E. E. G. vor dem Rechnen im Ruhezustand; mittlere E. E. G. In der Mitte E. E. G. während des Rechnens der Aufgabe 57/5 x 315; untere E. E. G. Unten bei E. ist die Aufgabe gelöst! Nadelableitungen von Stirn und Hinterhaupt. Zeit in 1/10 Sekunden. Ozillographenaufnahmen.

The sound changed tone with the opening and closing of the eyes. He published a paper on it in 1958.¹⁵

As Storm Van Leeuwen had trained in Bristol with William Grey Walter (1910-1977) and in Cambridge with Adrian in the late 1940s, it is likely that he got the idea from the latter, who had written that by listening to the nerve discharge during an experiment, he had been able to save a lot of time and photographic material. Moreover, Adrian sometimes found it an advantage to be able to both hear and see the rhythm as he took the EEG from himself.¹⁶ Listening provided a useful complement to visual analysis, as several EEG phenomena could be more easily identified with hearing.

Cybernetic theory-inspired physicist Edmond Dewan (b. 1931) — a friend of the pioneer in that field, the mathematician and philosopher Norbert Wiener (1894-1964) — designed a "brainwave control system" in the 1960s that allowed him to turn off a bedside lamp without using motor skills.

As an amateur organist, Dewan befriended experimental composer Alvin Lucier (1931-2021), who was inspired to create the first composition based on brainwaves. *Music for Solo Performer* was first performed in 1965. Sitting on a chair with his eyes closed, Lucier's EEG was transmitted to numerous speakers scattered around the auditorium. Because the amplified alpha rhythm was below human audible range, the speakers were placed directly opposite various percussion instruments, which were then activated by vibration. As Lucier tried to refrain from mental activity, percussion sounds gradually emerged in the room (Figure 10). These then suddenly stopped again when he opened his eyes, engaged in mental exercises, or when his attention was drawn to sounds from the audience.

Brain-computer music interfaces became very popular. In 1995, when I attended a meeting of the European Club for the History of Neurology in Oslo, Norway, the opening ceremony took place in the Town Hall. The Norwegian composer Arne Nordheim (1931-2010), a



PROF. VLADIMIR HACHINSKI AWARDED THE 2024 RYMAN PRIZE

On the left, Christopher Luxon, Prime Minister of New Zealand, presenting the **Ryman Prize** for the “world’s best development, advance, or achievement that enhances quality of life for older people” to Prof. Vladimir Hachinski. Congratulations to Prof. Hachinski. •

APPLY NOW FOR THE AAN & WFN ADVOCACY LEADERSHIP PROGRAM

BY WOLFGANG GRISOLD AND JUSTIN JORDAN

The American Academy of Neurology (AAN) and the World Federation of Neurology (WFN) will host the first global advocacy leadership program for low- and low-middle-income countries. This is the first global advocacy leadership program created exclusively for neurologists. It will include exciting in-person and virtual training sessions from San Diego to Seoul and will include several units of personal training and a faculty composed of worldwide experienced advocates for neurology.

For 20 selected individuals, all costs will be included. Please see our [joint announcement](#) and go to [//AAN.com/GALP](https://aan.com/galp) to find out if you are eligible. •

HISTORY

continued from page 6

pioneer of electronic music in Norway, produced music from signals routed to a computer from the EEG recording of a mother and her epileptic child. Today, such an experiment would probably raise eyebrows and ethical questions, but at the time, it was reported in Norwegian newspapers.

The sonification of brain waves took a new turn toward the late 1960s, when cybernetic theories and scientific breakthroughs gave rise to the field of biofeedback, in which biological processes were measured and fed back to the same individual to gain control over those processes. The sonification of EEG provided an interaction between neurophysiology and experimental music. Although initially applied by neurophysiologists as an adjunct visual EEG analysis, experimental composers turned to brainwave sonification to explore the sonic boundaries between mind and machine.¹⁷

Brain-Computer Interfaces

During the past decades, the EEG signal became important as a diagnostic tool for communication with patients suffering from disorders of consciousness.¹⁸ In the field of rehabilitation of paralyzed patients, intracortical brain-computer interfaces are being used to restore movement and communication by decoding movement signals from the brain. Brain-computer interfaces enabled functional restoration of movement and communication, including robotic arm control, reanimation of paralyzed limbs through electrical stimulation, cursor control, translating attempted handwriting movements into text, and decoding speech.¹⁹

EEG became a promising tool for bridging the gap between mind and machine, enabling the integration of



Figure 10. Alvin Lucier during a performance of *Music for Solo Performer*, which can be found on YouTube (Alvin Lucier - “Music For Solo Performer” (1965) - YouTube).

mental and computer processes into one comprehensive system. Berger probably would have been thrilled.

Acknowledgement

I am grateful to Ragnier Stien for making available the program of the performance in Oslo. •

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Partita electroencephalonica in five movements

by Arne Nordheim

- 1: With eyes open, then closed (3 min.)
- 2: Hyperventilation (2 min.)
- 3: Eye blink (1 min.)
- 4: Mastication (1 min.)
- 5: With eyes closed, then open (3 min.)

Composition for two patients and EEG machines.

First performance on the occasion of the

5th European Symposium on the History of Neurosciences and
“The Year of the Brain.”

Oslo City Hall
Friday, 23rd of June 1995

Fig. 11. Program of the performance by Norwegian composer Arne Nordheim.

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BRAIN HEALTH

continued from page 1

by the WHO as a condition in which “each individual can realize his or her capabilities and can optimize his or her cognitive, emotional, psychological, and behavioral domains to deal with life situations,” in the belief that an overall approach to all these aspects can improve the mental and physical well-being of the individual and reduce the impact of brain diseases on patients, caregivers, the health care system, and the social and economic fabric.

To spread this approach to brain health, the SIN intends to start a fruitful comparison with the so-called “6 Ps.” They are:

- Patients (patient and family associations)
- Health Care Professionals
- Providers (of public and private health and social services, therapies, and technologies)
- Partners (scientific societies, universities, and research institutes)
- Politicians (decision makers and financiers of public policies and institutions)

The General Population

The Italian approach promoted by SIN finds space in the Italian Manifesto, “One Brain, One Health,” presented to the Chamber of Deputies with dozens of institutional representatives in March. The manifesto outlines the key points of the Italian Strategy for Brain Health 2024-

2031 and identifies the priorities for action to be implemented in the coming years with the collaboration of all the actors in the social and health care panorama — in particular all the parties involved in various capacities in brain health.

The manifesto considers the brain as a single complex system in relation to the physical and social environment, where the two components operate together and influence each other. One brain therefore means that each person’s brain and mind are strongly connected with the brains and minds of all others, and that the health of the brain, therefore, is equivalent to the health of the community. One health is based on the recognition that human health, animal health, and ecosystem health are inextricably linked and therefore support the existence of a single health, where no component predominates over the others and all are closely connected and interdependent.

The Italian Strategy for Brain Health 2024-2031 is also in line with the global WHO IGAP implementation plans, promoted by the World Federation of Neurology (WFN) and promoted by the European Academy of Neurology (EAN), which launched its Brain Health Mission in 2022.

The primary objective of the Italian Strategy is to create awareness about Brain Health throughout the country and start the implementation of initiatives to prevent and combat the development of mental and neurological diseases. The WHO IGAP provides a clear and precise map of actions that each country will

need to take to optimize brain health.

The “One Brain, One Health” Manifesto — in total harmony with what is contained in the WHO IGAP — allows us to define a work plan in line with the WHO global strategy and to place brain health and the reduction of the burden of brain diseases as Italian priority for the coming years. The Italian Brain Health Strategy 2024-2031 is thus in line with the global WHO IGAP implementation plans, promoted by the WFN and the EAN.

With the Italian Brain Health Strategy, our country has the opportunity to be among the first to adopt concrete solutions to enhance, promote, and protect the brain throughout the entire lifespan and in all segments of the population, because brain health plays a fundamental role at any age and for every person, regardless of social and geographical conditions. To face this enormous challenge, different actions are needed to increase awareness, education, research, but also to create new integrated public health approaches (Global Health)

and boost the empowerment of people. Collaboration between those who deal with the different fields of neurology, psychiatry, neuropsychiatry, psychology, neurorehabilitation, and in general, research and treatment in neuroscience is an essential requirement to improve the effectiveness of interventions and to reduce the impact of neurological and mental pathologies.

During the event held at the Italian Parliament in front of the Minister of Health, representatives of WHO, WFN, and the EAN (Dr. Devora Kerstel, Prof. Wolfgang Grisold, and Prof. Paul Boon), Parliamentarians, and representatives of more than 18 scientific and patient organizations, the manifesto was signed, and Italy is ready to work on its implementation to promote brain health and to fight the burden of neurological disorders. •

Matilde Leonardi is Società Italiana di Neurologia (SIN) board member, and Alessandro Padovani is SIN president.



Prof. Wolfgang Grisold



Program cover of the One Brain, One Health meeting.



Representatives of the WHO, WFN, and EAN.



The Italian Strategy for Brain Health.

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The First International Congress of the Nepalese Academy of Neurology

More than 250 participants and speakers bring updates on Parkinson's disease, migraines, and more.

RAJEEV OJHA AND MARIANNE DE VISSER

I was fortunate to be invited to the First International Congress of Nepalese Academy of Neurology May 18-19 in Kathmandu, Nepal. Sessions on major neurological disorders, such as stroke, movement disorders, demyelinating disorders, epilepsy, headache, and cognitive neurology filled two conference days. There were also sessions on neuromuscular disorders and general neurology. Plus, there were posters and oral communications presented by early-career neurologists and residents. Dr. Rajeev Ojha, co-author of this report, was instrumental as one of the organizers of the congress, and he invited me to participate in the congress.

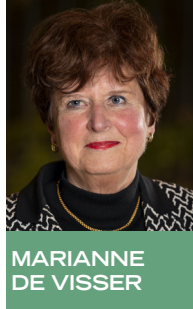
When I was on stage for my talk, I conveyed a message from WFN President, Prof. Wolfgang Grisold, in which he congratulated the president of the Nepalese Academy of Neurology on this unique event. It was a splendidly organized congress in a beautiful hotel in the center of Kathmandu, thanks to the assistance of the upcoming neurological generation and volunteers from the medical school. There were more than 250 participants and many speakers from abroad, including India, Malaysia, the Netherlands, Spain, and the United States.

During breaks between the sessions, there was plenty of time for networking. We were able to discuss how training in neurology and neurological care was organized in Nepal. The standard of care in Nepal is impressive considering that according to the World Bank it is a low- and middle-income country. MRI and endovascular interventions are readily available. However, the cost of thrombolysis and mechanical thrombectomy is high, and the insurance service is not available to most of the general public.

Prof. Shen-Yang Lim, co-lead of monogenic portal development and underrepresented populations for the East Asia branch of the Global Parkinson's Genetics Program (GP2), congratulated Nepal on being connected to the GP2, which is a collaborative research program to understand the genetic architecture



RAJEEV OJHA



MARIANNE DE VISSER

of Parkinson's Disease. Dr. Avinash Chandra from Nepal highlighted how oral abortive treatments for migraine, such as rizatriptan and sumatriptan, have been available for a few years and recently zolmitriptan has been made available in nasal spray. On the other hand, local speaker Dr. Niraj Gautam spoke about the unavailability of monoclonal antibodies used in the treatment of multiple sclerosis in Nepal. Prof. Lekha Pandit, from India, and Prof. Xavier Montalban, from Spain, presented an excellent diagnosis update and a discussion about the management of multiple sclerosis, respectively.

The organizing committee included a neuromuscular session in the program. I selected myositis as a topic. Another speaker in that session was Prof. Nalini Atchayaram, from India, who gave a presentation on Hirayama disease, a disorder that should not be missed because it is treatable by surgery and may mimic ALS. She cited studies composed of hundreds of patients with this disease who, if diagnosed early, usually had excellent outcomes.

The other speakers gave excellent presentations on the diagnostic approach of muscular dystrophy (Dr. Saraswati Nashi, also from India) and on ocular myasthenia gravis (Prof. Rabindra Shrestha, from Nepal). Part of the congress was dedicated to an amazing cultural event with dancing and singing by local dancers in traditional costumes from different regions across Nepal.

All in all, this was an extremely inspiring and memorable congress that also put early career neurologists in the spotlight. During the breaks, many neurologists were willing to share the history of neurology becoming a separate discipline in Nepal and how they managed to establish three training



Prof. Marianne de Visser giving a lecture during the neuromuscular session of congress on the second day.



Right Honorable Vice President of Nepal, Mr. Ram Sahaya Prasad Yadav, congratulating first Nepalese neurologist Prof. Dinesh Bikram Shah during the inauguration ceremony of First Nepalese International Congress 2024.

centers across Nepal. There is an urgent need for training more neurologists (currently four residents per annum), since Nepal currently has 35 neurologists for a population of 31 million inhabitants.

I am indebted to the organizers of the congress, in particular to NAN President Prof. Kumar Oli and Secretary General Prof. Rabindra Shrestha. To my esteemed colleague and co-author, Rajeev Ojha, and to everyone who made my first visit to

Nepal an incredible experience, I would like to express my sincere gratitude. •

Marianne de Visser, MD, PhD, FEAN, is a neurologist at Amsterdam University Medical Center in the Netherlands, and emeritus professor of neuromuscular diseases. Rajeev Ojha, MD, DM, FEBN, is a lecturer in the department of neurology at Tribhuvan University Institute of Medicine in Kathmandu, Nepal.



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Infantile Spasms: Collaborating for Awareness, Management and Education

Partnerships could lead to new treatments and improved patient care.

CHRISTINA BRISCOE ABATH, MD, AND
EDMKERYMA ACEVEDO, MD

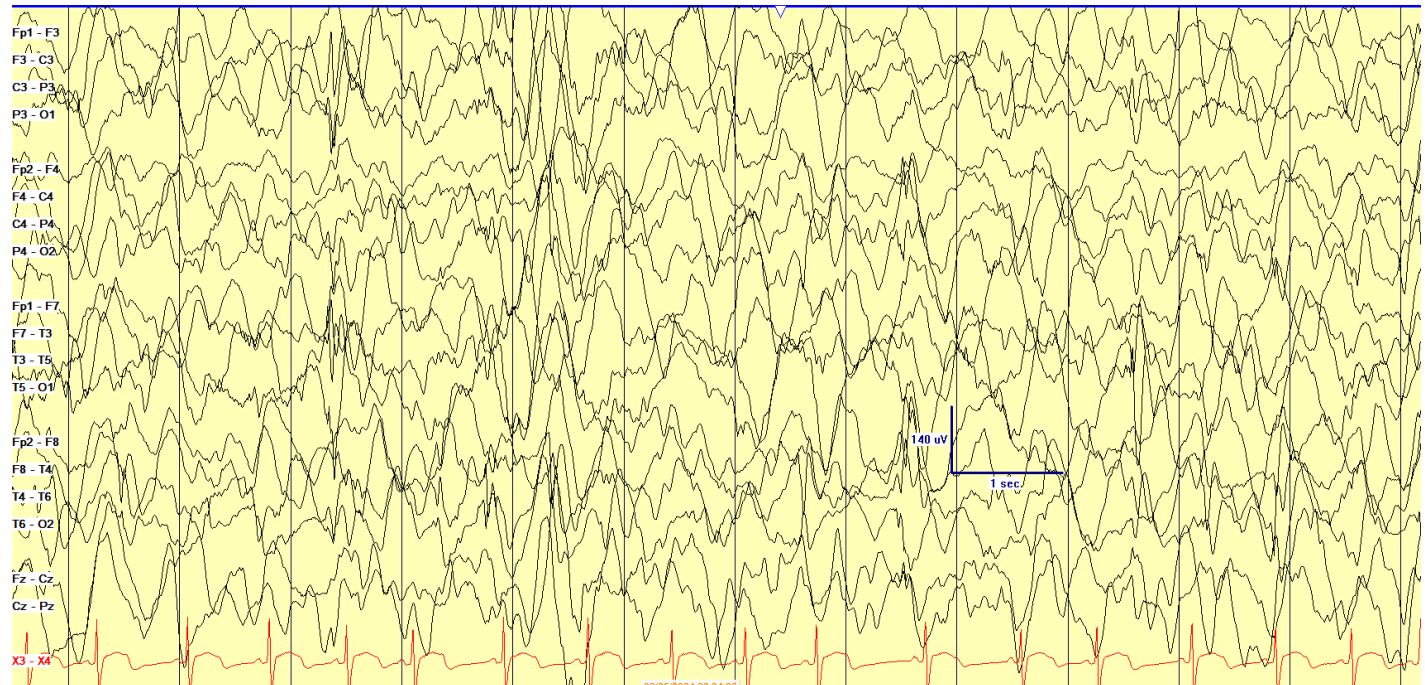
Although it has gone by many other names, infantile epileptic spasms syndrome (IESS) has been described since 1841. It is the most common infantile-onset epilepsy syndrome, and first-line treatments are over 40 years old. Steroids (prednisolone or ACTH) have been used since the 1950s, and vigabatrin has been used since the 1980s. The newest effective treatment for some children, epilepsy surgery, has been prescribed for epileptic spasms since 1990.¹ There has been consensus about the initial treatment for over a decade, as well as recognition that the lead time to standard treatment affects long-term developmental outcomes.^{2,3} Treatment initiation of first-line therapy is considered a priority for the clinical team.

Despite this, most children in the world continue to have long delays in diagnosis. Although present in most settings, these delays are not equally distributed. In a large series from Bangladesh, the median lead time to a standard therapy was 5 months.⁴ Even in Boston (U.S.), the average lead time to standard therapy was 29 days.⁵ In the U.S., BIPOC (Black, Indigenous, and People of Color) infants, and those whose caregivers speak another language, are more likely to have delays to neurology referral.^{6,7}

Just as disturbing, not all children who are correctly diagnosed will receive appropriate treatment despite consensus about standard therapies. At quaternary care centers in the U.S. with pediatric epileptologists, Black/Non-Hispanic children and those with public insurance are less likely to receive a standard treatment course.⁸

In many countries, standard therapies are not always readily available. In Chile, for example — despite access to pediatric neurologists and similar delays to diagnosis as in Boston — challenges with access to standard treatments in the public system mean that between 2015-2022, only 67% of children received a standard treatment course.⁵ Moreover, anti-seizure medications (ASMs) for IESS are not covered by the National Epilepsy Plan, resulting in an extremely heavy economical overload for families.^{9,10}

On top of these issues, ACTH and vigabatrin have not been consistently available, and prednisolone has not been incorporated in the country's list of approved drugs. This means that prednisolone is not available for purchase in Chile, resulting in families needing to go to Perú or other countries to buy the



Hypsarrhythmia, initially described by Gibbs and Gibbs in 1952 (spelled as hypsarhythmia), is the classical interictal background pattern found in children with infantile epileptic spasms syndrome (IESS). It is high voltage, chaotic, and has embedded multifocal epileptiform abnormalities. Hypsarrhythmia may be state dependent, and only present in sleep. While no longer required for IESS diagnosis, when present it can suggest a diagnosis when accompanied by history concerning for epileptic spasms in children of the appropriate age (1-24 months).

medication if indicated by their clinical team.¹¹ Efforts are underway to address these challenges with the Ministry of Health.

Partnering Together for Solutions

New therapies and research to understand mechanisms of disease for IESS are certainly needed, since only around half of children will respond to the first standard therapy and only around 70% will respond to early sequential or dual therapy.^{12,13} For this, significant increases in research for pediatric epilepsy are needed, given significant disparities in funding.¹⁴ The U.S. National Institutes of Health (NIH) spent approximately \$68 per person with epilepsy in 2023 (\$232 million for 3.4 million individuals in the U.S.).^{15,16} In contrast, ALS receives \$9,512 per person, Alzheimer's \$583 per person, and Parkinson's disease \$270 per person.¹⁶ Inadequate funding for drug research and development may be one reason why there have been no new first-line medications approved for IESS since the 1980s.

However, the percentage of children who do respond means that most children will still benefit from what we currently know and can apply appropriately.¹³ Given the high morbidity and mortality of IESS — with a 5-10% chance of response to a non-standard therapy — standard therapies are most likely cost-effective for public systems. Research should be done to support this supposition. We do know

that epilepsy surgery is cost-effective for epilepsy, though cost-effectiveness specifically for epileptic spasm surgery has not been specifically assessed to our knowledge.^{17,18}

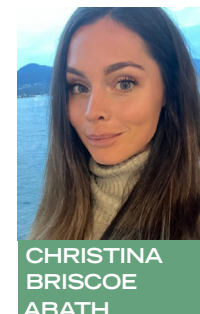
Intervention is needed at every level of health systems to effectively address these gaps in diagnosis and therapy. In May 2022, the Intersectoral Global Action Plan on Epilepsy and Other Neurological Disorders (IGAP) was unanimously approved at the 75th World Health Assembly, providing an invaluable tool to advocate for treatment and access around the world.^{19,20}

Joint efforts are needed to improve the standard of care for IESS, including early diagnosis, training general practitioners and pediatricians about adequate referral for suspicious clinical events, education of parents of children at high risk for IESS (Down Syndrome, Tuberous Sclerosis, Hypoxic Ischemic Encephalopathy), and access to standard treatments.

Families of children who have been affected by IESS are uniquely motivated to address these challenges. Partnering with these families to advocate for awareness and access to therapies is also needed. At a micro level, social media campaigns can promote epileptic spasm awareness. At the middle level, medical and other



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professional schools should incorporate pediatric epilepsy education (more common than other conditions that receive more attention). At a macro level, health systems should prioritize access to

cost-effective epilepsy medication and therapies (including epilepsy surgery).

Much remains to be done around the world. In the U.S., one of the authors (CB) has been fortunate to start to work with the Infantile Spasms Action Network, parents of children with IESS, and other neurologists who are passionate about closing the equity gaps. We have created a **module** for primary care providers to recognize epileptic spasms and are working on a series of grassroots initiatives (a children's book and a stuffed bear with EEG electrodes) to promote pediatric epilepsy awareness in Spanish, French, and English.

In Chile, the Chilean League Against Epilepsy (LICHE) is a non-profit organization that has several pharmacies distributed around the country that not only provide social benefits and discounts in ASMs, but also act as an intermediary to import medications to collaborate in the management of epilepsies, partnering with patients and their neurologists. As

INFANTILE SPASMS*continued from page 11*

a PAHO/WHO Collaborating Centre, LICHE is committed with advocacy and education for patients, their families, caregivers and the community.

We believe collaboration, funding, and advocacy will be essential to making progress for children with IESS around the world. Please reach out to us with ideas, comments, and questions at: christina.briscoeabath@childrens.harvard.edu and kacevedo@uc.cl.

Christina Briscoe Abath, MD, EdM, is incoming instructor of neurology, Boston Children's Hospital. Keryma Acevedo, MD, is associate professor, Section of Neurology, Division of Pediatrics, Pontificia Universidad Católica de Chile, and president of the Chilean League Against Epilepsy

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PRESIDENT'S COLUMN

continued from page 3

decades, he praised the late WFN past-president J. Kimura and past vice president Ruyji Kaji for their contributions to the WFN.

“The world does not stop” was his call to the delegates to take up brain health as well as to use the content of IGAP to advocate for neurology in the region.

The WFN was also present in the exhibition hall in two booths. The WFN shared one booth with Korea, which presented information about WCN 2025 in Seoul. The other booth featured the WFN International Congress on Neuromuscular Diseases (ICNMD), which will have its meeting this year in Perth, Australia. The booth was attended by Carlos Hunt from the WFN head office, and the ICNMD stand was attended by Alan Lee. Both stands distributed ample informational material.

The Latest Global Activities

The recent meeting at the U.N. ECOSOC Multistakeholder Forum on Science, Technology, and Innovation for the Sustainable Development Goals in New York was attended by Profs. Alla Guekht and Wolfgang Grisold, who delivered a statement on “Bridging the science, technology and innovation divides to eradicate poverty and end hunger.”

This was well received and conveyed the importance of brain health.

On April 26, the high-level WHO Meeting to Defeat Meningitis took place in Paris.

It was under the patronage of French President Emmanuel Macron and was attended by WHO Director General Tedros Ghebreyesus. Impressive stories of patients made it clear to the audience that not only is fighting and defeating

meningitis important, but a significant number of survivors suffer from disability. The actions and success of the WHO in this important task are impressive. The WFN is a stakeholder in this initiative and will help to bring this important information to our member societies.

The most important activity at present is the introduction of the WHO IGAP Toolkit, which will be released on July 8, 2024. This toolkit has been developed with support of the WFN, and is a well-balanced document that explains the implementation of the IGAP to all stakeholders. It is of extreme importance that this document, signed by all member states, will give neurologists a solid basis for discussing, implementing, and improving neurology services in their regions. The center of all activities are the persons affected.

The World Health Assembly took place in Geneva May 27-31. The WFN was represented by Profs. Alla Guekht and Ksenia Pochigaewa, who made statements on behalf of the WFN. Details of this meeting will be reported separately in *World Neurology*.

On July 22, World Brain Day (WBD) will be celebrated, and the theme is Brain Health and Prevention. Please see our [website](#) for information and the available material in our toolkit. Please use and modify the material to your needs and make your local society, and your country, aware of the importance of brain health and prevention. On July 22, please join us for an international webinar, with participants from the WHO and all WFN regions.

We look forward to your input and work for neurology worldwide. Last but not least, we congratulate Prof. Alla Guekht for her election as the incoming ILAE president.

WFN Pin

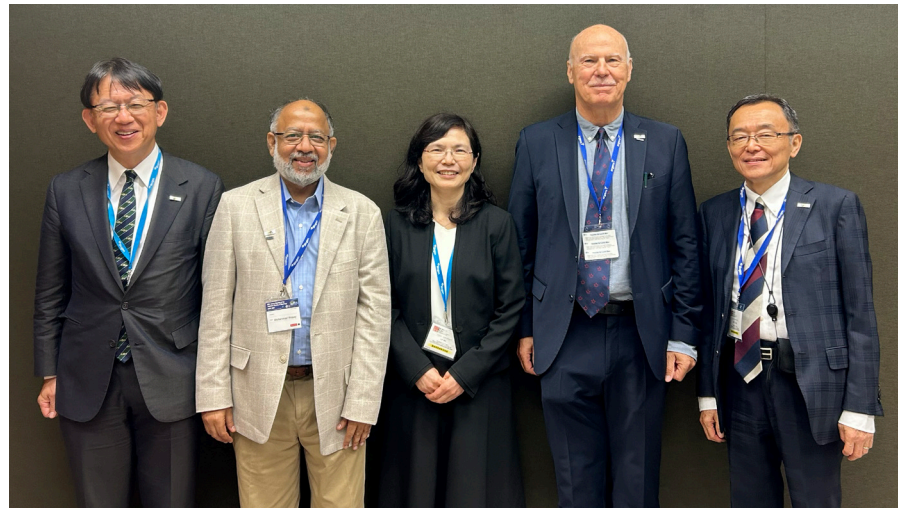
The WFN has created a new WFN pin. We will be glad to ship a pin and an IGAP information folder to the first 20 applicants before July 22, 2024. Please send your name, region, country, and professional role in your member society. Please also include comments on World Brain Day and the IGAP with a maximum of 500 words. Use the following address: info@wfneurology.org. The jury will select the most inspiring comments and use them for publication in an upcoming issue of *World Neurology*. •



A special snow globe version of the WFN pin produced exclusively as a gift for the AAN leadership.



Some of the the AOAN delegates, from left to right: Dr. Hino, Dr. Thirugnam, Dr. Wiratman, Prof. Kim, Dr. Chung, Prof. Sambal, Prof. Lay, and Prof Ogawa.



Leadership Meeting with the Japanese Society of Neurology. (from left to right) Prof. Ryosuke Takahashi, Prof. Mohammad Wasay, Prof. Ritsuko Hanajima, Prof. Wolfgang Grisold, and Prof. Yoshikazu Ugawa.



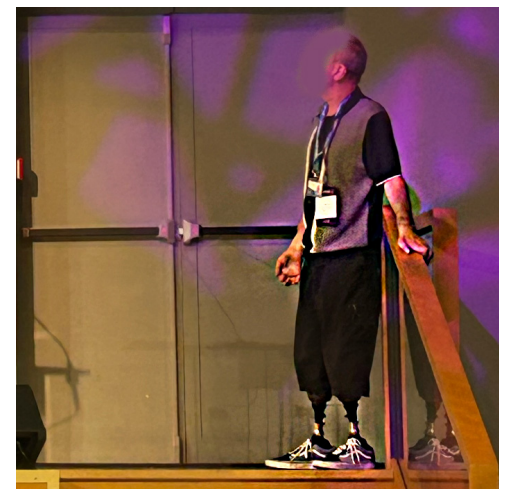
Ryosuke Takahashi (second from the right) invited the lecturers of the gender session (Lorraine Kalia, Isobe Noriko, Sonoko Misawa, Aihuey Tan, Wolfgang Grisold) to a traditional Japanese restaurant, where discussions could be continued.



Wolfgang Grisold giving a statement at U.N. ECOSOC.



Who Director General Tedros Ghebreyesus at the WHO Meeting to Defeat Meningitis.



This patient suffered from meningitis, followed by sepsis, and lost both arms and lower legs. He impressively sketched his long rehabilitation process, and walked to the stage on bilateral leg prosthesis and using hand transplants.

Neurology Update in Kazakhstan

Neurologists from around the world converge in Almaty.

BY AIDA KONDYBAYEVA

The VI International Educational Forum: Neurology Update in Kazakhstan, took place May 17-18, 2024, at the DoubleTree by Hilton Hotel in Almaty, Kazakhstan. The forum has become an annual tradition for neurologists not only from various regions of Kazakhstan but also from Kyrgyzstan, Azerbaijan, and Uzbekistan, gathering more than 700 doctors online and in person. The forum was supported by the Asfendiyarov Kazakh National Medical University and the Central City Clinical Hospital of Almaty.

The forum featured world-renowned neurologists, including:

- Paul Boon, MD, PhD, FEAN, president of the European Academy of Neurology, Belgium;
- Andrei Alexandrov, MD, professor of neurology at the University of Arizona, United States;

- Thanh Nguyen, MD, FRCPC, FSVIN, FAHA, president of the Society of Vascular and Interventional Neurology, United States;
- Dieter Ritmacher, PhD, vice dean for research and postgraduate education, professor of neurosciences, at the Nazarbayev University School of Medicine in Astana, Kazakhstan;
- Valery Feigin, MD, PhD, professor, National Institute for Stroke and Applied Neurosciences, School of Clinical Sciences at the Auckland University of Technology in New Zealand;
- Celia Oreja-Guevara, MD, vice chair and senior neurologist of the department of neurology at the University Hospital San Carlos, associate professor of neurology at the Universidad Complutense, and head of the Multiple Sclerosis Center at the University Hospital San Carlos in Madrid, Spain;
- Ugur Uygunglu, MD, professor,

department of neurology at Istanbul University, Cerrahpasa School of Medicine;

- Natalia Khachanova, department of neurology and clinical neurophysiology at the Pirogov National Medical and Surgical Center, and neurologist of the MS department of City Clinical Hospital No. 24.

The forum also featured a number of Kazakh speakers, including:

- Prof. Zhannat Idrisova, Asfendiyarov Kazakh National Medical University;
- Prof. Gulnar Kabdrakhmanova, Marat Ospanov West Kazakhstan Medical University;
- Ruslan Belyaev, Karaganda Medical University;
- Aida Kondybayeva, MD, PhD, Asfendiyarov Kazakh National Medical University;
- Karlygash Kuzhibayeva, head of the Center for Multiple Sclerosis,

Autoimmune, and Orphan Diseases of the Nervous System, in Almaty;

- Tatyana Kaymak, neurologist at “SanClinic” in Semey; Adil Bisembaev, Private Clinic Almaty.

Next year, the International Educational Forum: Neurology Update in Kazakhstan 2025, will be held on April 25-26.

We look forward to seeing you in Almaty in 2025! •

Aida Kondybayeva, MD, PhD, FEAN, is head of the Scientific and Educational Center for Neurology and Applied Neuroscience at Asfendiyarov Kazakh National Medical University, and chair of the Educational Committee at Kazakhstan National Association of Neurologists “Neuroscience” and Institutional Delegate at the European Academy of Neurology from Kazakhstan.



MEET THE WFN TRUSTEE CANDIDATES

Get to know the candidates for WFN trustee in their own words.

Six candidates have been recommended by WFN's Nomination Committee for the upcoming election of a trustee at the virtual Council of Delegates (COD) meeting in September and have presented their statements.

According to the WFN guidelines, further nominations can be submitted by five member societies 30 days prior to the election date. **The deadline for additional nominations will be Friday, July 26, 2024.**

Electronic voting will occur over three weeks starting Aug. 26, 2024.

Here are the statements for the six nominees (listed in alphabetical order) recommended by the Nomination Committee.

CANDIDATE STATEMENT FOR WFN TRUSTEE: FERNANDO CENDES



Fernando Cendes

It is with great enthusiasm that I present my candidacy for the position of elected trustee at the WFN 2024 elections. I have the commitment, expertise, and background necessary. I am deeply committed to supporting the WFN's mission and am eager to contribute my skills and experience to this important work.

I am a former Fellow and completed my PhD at the Montreal Neurological Institute and Hospital, McGill University, Canada (1991-1997), where I have an appointment as a part-time adjunct professor.

I have been a full-time neurology professor since 1997 and am currently the

head of the Neurology Department at the University of Campinas, São Paulo state, Brazil. Our university hospital is a referral center for about four million people with complex neurological diseases. In addition to patient care, I teach and train undergrad and graduate students and neurology residents.

I am the principal investigator of The **Brazilian Research Institute for Neuroscience and Neurotechnology (BRAINN)**, which is one of the **Research, Innovation, and Dissemination Centers (RIDC)** sponsored by FAPESP (São Paulo Research Foundation) with a 12-year operational grant. This center investigates the basic mechanisms leading to epilepsy and stroke, combining genetics, neurobiology, pharmacology, neuroimaging, computer sciences, robotics, physics, and engineering.

My service as an educator in neurology goes beyond my institution in the form of numerous lectures, teaching seminars, invited conferences worldwide, and participation in various international commissions in the International League Against Epilepsy and other societies. I also served as a member of the program subcommittee of the Global Alliance for Chronic Diseases and a delegate to the WFN for the Brazilian Academy of Neurology.

I am the newly appointed editor-in-chief of *Epilepsia*, and I serve on several editorial boards. My research is focused on epilepsy, neuroimaging, and clinical neuroscience, with more than **500 papers published**. •

CANDIDATE STATEMENT FOR WFN TRUSTEE: VALERY L. FEIGIN



Valery L. Feigin

I am a professor of neurology and epidemiology and director of the National Institute for Stroke and Applied Neurosciences at Auckland University of Technology in New Zealand. I am also a Fellow of the Royal Society of New Zealand; an affiliate professor of the Department of Global Health at the University of Washington (U.S.); visiting professor of Capital Medical University (China); a member of the WHO Technical Advisory Group on NCD-Related Research and Innovation; founder and ex-officio co-chair of the GBD Stroke and Neurology Groups; editor-in-chief of *Neuroepidemiology* (IF 5.7) and co-chair of the Global

Policy Committee of the World Stroke Organization (WSO) where I also served as a member of the Board of Directors, co-chair of the Research Committee, Guidelines Committee, Member-at-Large, and Executive Committee.

I have been working with the WFN for more than a decade as an active neurology advocate (including the Soriano Award Lecture and other public lectures and interviews), and served as a member of the Neuroepidemiology Speciality Group. Together with seven other WHO Stroke Advisory Group members for ICD-11, we justified and argued successfully for the reclassification of stroke as a neurological disease, which was endorsed for global use by the U.N. in 2020.

My 500-plus journal publications (h-index 136) have been cited more than 330,000 times, and used for evidence-based guidelines, health-care planning, priority setting, and resource allocation across the globe.

My motivation to become a trustee of the WFN is to enhance the role of the WFN in the global awareness of neurological disorders and implementation of evidence-based prevention and management strategies, workforce development, and organization of neurological services to reduce the burden of neurological disorders, with strong emphasis on low- and middle-income countries. Given my position on the Global Burden of Disease Study, I would also like to ensure that more WFN members are involved as co-authors/lead authors in the GBD Study collaboration. •

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CANDIDATE STATEMENT FOR WFN TRUSTEE: MIGUEL OSORNO GUERRA



Miguel Osorno Guerra

I am honored to be nominated as trustee of the WFN. We are in a time where innovation, collaboration, and organization must meet the diverse needs of different countries.

My name is Miguel Osorno Guerra. My professional experience in both public and private institutions in Mexico has given me insight into the significant deficiencies and challenges in neuroscience education, particularly in economically disadvantaged areas.

As secretary and later president of the Mexican Academy of Neurology (MAN), I contributed to redesigning the *Journal of Neuroscience* and consolidating the textbook "Elementary Neurology" for

medical schools, now in its third edition. Our guiding principle was "what every doctor should know about neurology." My organizational skills in academic events and congresses, both nationally and internationally, have significantly contributed to the dissemination of neurological knowledge.

I am also a postgraduate professor, working closely with young neurologists, encouraging them to develop research projects. This mentoring is crucial in fostering a new generation of skilled and innovative neurologists.

Our collaboration with the WFN included promoting the certification of three Mexican hospitals and participating in the WFN's educational programs, enabling young neurologists from Latin America to enhance their skills and positively impact their communities.

My commitment to neurology education aims to improve the quality of neurological care and develop comprehensive programs for addressing neurological diseases. Through my work with the WFN, I have learned two key lessons:

- Individual and isolated efforts have limited impact.
- Several regions, including Latin America, need better integration with the WFN and should play a larger role in the future.

If elected, I pledge to work diligently with the WFN to achieve our shared goal of improving neurological patient care worldwide. •

CANDIDATE STATEMENT FOR WFN TRUSTEE: BRIAN SWEENEY



Brian Sweeney

Thank you for considering my application to be a trustee of the WFN. I have had a lifelong commitment to neurology as a clinician and educator. Having trained in medicine and neurology in Ireland and the U.K., I returned home to Ireland in 1996 as one of three neurologists in my province.

I have been a teacher all of my working life, and an administrator as the national specialty director of neurology for the Royal College of Physicians Ireland, a member of the Specialist

Certificate Examination Committee of the Association of British Neurologists (ABN) and Royal College of Physicians U.K. As a member of the European Union of Medical Specialists, I have had the privilege of training and working with neurologists from all over the world – Africa, Asia, Australia/New Zealand, Europe, and North and South America.

I have been the senior neurologist in my region of Ireland, national lead for neurology for the Health Service Executive, Ireland, and national specialty director for neurology training and dean of the Irish Institute of Clinical Neuroscience.

My experience of working in and trying to develop an understaffed and underfunded neurology service in Ireland from the 1990s through the 2020s gives me insight into the challenges and advances facing neurology worldwide in the 21st century. These include amazing diagnostic and therapeutic developments in areas like stroke, neuroinflammation, neuroradiology and genetics on one hand, with major challenges providing the staffing and other resources to allow people with neurological illness to access these innovations on the other.

My vision is for neurology to keep its clinical soul while embracing new technologies such as AI to better provide care to our patients and their families. •

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CANDIDATE STATEMENT FOR WFN TRUSTEE: BARBARA TETTENBORN



Barbara Tettenborn

My name is Barbara Tettenborn, I am professor of neurology in Switzerland and Germany. I received my neurological education in Berlin and Mainz, Germany; London, England; Dublin, Ireland; and Boston, United States. I am a general neurologist with special interests in epilepsy, stroke, sports neurology, and brain health. I was chair of the Department of Neurology in St. Gallen, Switzerland, from 1999–2023 and work now as head of the Center for Neurological Preventive Medicine and Sports Neurology in Zürich. I am

a very active member of the European Academy of Neurology as editor-in-chief of eLearning and a WFN delegate of the Swiss Neurological Society.

I was board member of the Swiss Neurological Society for eight years, a member of the administrative board at hospital St. Gallen for four years, and treasurer of the Swiss Federation of Clinical Neuro-Societies for four years until 2022. Currently, I am president of the Swiss League against Epilepsy, president of Women in Neurology Switzerland, and president of the Scientific Board of Highly Specialized Medicine Switzerland. My research interests are epilepsy in the elderly, vascular epilepsy, vertebrobasilar ischemia, gender aspects in neurology, brain health, and sports neurology.

Neurology is not only my profession but also my first and favorite hobby. My second hobby is sport, especially triathlon and mountaineering. I like to cooperate and communicate with people and to encourage the next generation. Being recently retired from my department chair position gives me time and energy to take on new tasks. I have a lot of experience in administrative positions and political communication. It would be a great honor for me to serve as trustee of the WFN and I promise to put all my energy, enthusiasm, time, and effort into this position to help give neurology as much worldwide visibility and impact as possible. •

CANDIDATE STATEMENT FOR WFN TRUSTEE: TISSA WIJERATNE



Tissa Wijeratne

I am Prof. Tissa Wijeratne, co-chair for World Brain Day. Since the inception of World Brain Day in 2014, I have been dedicated to making brain health a priority for all. With Prof. Mohammad Wasay, I co-founded this vital initiative to promote global brain health.

Preventative brain health is essential. Nearly one in two people will experience a brain disorder in their lifetime, as highlighted in our latest GBD publication in *Lancet Neurology*. With the World Health Organization set to release the Intersectoral Global Action Plan (IGAP) toolkit, we have a unique opportunity to

promote brain health at the grassroots level.

My extensive experience spans from rural Sri Lanka to urban Australia, providing me with a unique perspective on brain health in different settings. In Australia, I am spearheading a significant movement in preventative brain health with schools, city councils, and state governments recognizing its importance. Our progress shows that awareness and action can lead to meaningful change.

Education and advocacy are key to this effort. I have developed and promoted programs that raise awareness about brain health, providing valuable information in schools, community centers, and workplaces. I have also worked with local and state governments to create policies that support brain health initiatives, including funding for research and public health campaigns.

As a trustee at the WFN, I will bring my experience and dedication to the global stage. I am committed to supporting the mission and vision of the WFN and will work tirelessly to advance our shared goals.

I invite you to visit the [WFN YouTube channel](#), [World Neurology](#), and the [WFN website](#) to see how I have contributed to brain health for all since 2005. Your support and vote are crucial.

Together, we can continue to advance preventative brain health and improve lives globally. •



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