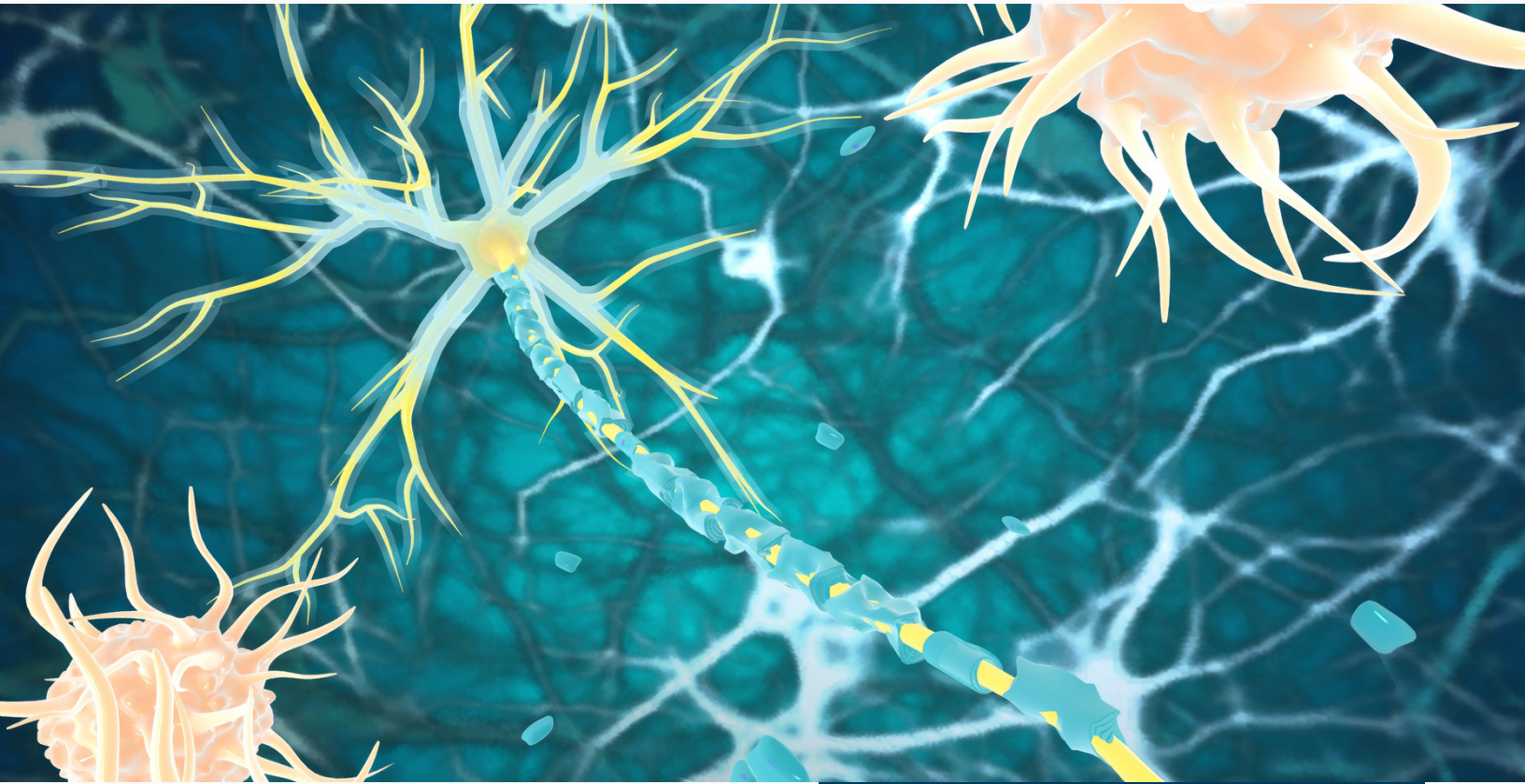


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THE GEORGE WASHINGTON UNIVERSITY

WASHINGTON, DC

The Neurology & Rehabilitation Medicine Newsletter



The GW Medical Faculty Associates
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A WELCOME MESSAGE

Dear colleagues,

I am delighted to share some exciting updates from the Department of Neurology and Rehabilitation Medicine at MFA!

First and foremost, I am delighted to announce that we are on the verge of acquiring groundbreaking neurosurgical technology for our hospital. Stay tuned for further details as we prepare to integrate this cutting-edge technology into our clinical practice.

In addition to this, we are embarking on new research ventures that promise to make a significant impact in the field. We will soon start a research project in collaboration with Children's National hospital, focusing on stem cell injections into the hippocampus of patients with intractable temporal lobe epilepsy. This innovative approach holds immense potential for improving outcomes in epilepsy management.

Furthermore, I am pleased to announce that a distinguished Yale-trained neuroimmunologist has joined our team and will begin working with us this summer. More information about this exciting addition will be shared in the coming months. Additionally, we are actively recruiting a talented movement disorder specialist to enhance and revitalize our Deep Brain Stimulation (DBS) program. This initiative reflects our commitment to providing top-notch care and expanding our services for patients with movement disorders.

Lastly, I am proud to share that our department's utilization of the MFA pharmacy has doubled in the last month. We are dedicated to further increasing this utilization and ensuring that our patients receive the highest quality of pharmaceutical care.

These developments highlight our department's ongoing commitment to excellence, innovation, and collaboration. I am confident that together, we will continue to achieve great strides in advancing neurology and rehabilitation medicine.

M. Z. Koubeissi, MD
Professor and Interim Chair
GW Department of Neurology & Rehabilitation Medicine



OUR NEWS



Dr. Ted Rothstein is invited to be the keynote speaker at the 2024 Annual National Neuroscience Review Conference, taking place in Fairfax, VA on the 12th of April 2024.



Dr. Mohamad Koubeissi's abstract titled 'Human Piriform Cortical Representations Of Perceived Odor Intensity.' will be presented at the Association for Chemoreception Sciences Annual Meeting, taking place in Bonita Springs, FL from April 17 - 20, 2024.

Researchers at the George Washington University are looking for interested volunteers for a healthy control study to better understand an autoimmune, neuromuscular (disease affecting nerves and muscles) known as Myasthenia Gravis.

Faculty and staff are welcome to participate.

PARTICIPATION INVOLVES:
One-time blood draw (You will have either 4 teaspoons (20 milliliters) or 10 teaspoons (50 milliliters) from an arm vein.
YOU MAY QUALIFY IF YOU:

- Don't have any autoimmune diseases
- No prednisone or corticosteroid use
- No vaccinations within a month



For more information, contact goztosun@mfa.gwu.edu



WHAT'S NEW IN NEUROLOGY

WHAT'S NEW

New insights into lumbar spinal stenosis to be derived from multimodal data set

WHY IT MATTERS

Symptomatic lumbar spinal stenosis (sLSS) is characterized by the narrowing of the spinal canal in the lower back, which can lead to compression of the nerves and spinal cord. It may result from age-related changes, herniated discs, thickened ligaments, or abnormal bone growth. The symptoms of sLSS typically include pain, numbness, tingling, weakness, or cramping in the lower back, buttocks, or legs. Surgical intervention may be necessary to alleviate symptoms and prevent further complications.

Researchers from Basel, Switzerland, propose a protocol to examine the relationship between posture, spinal balance, muscle fatigue, and symptoms in patients with sLSS before and after elective surgery. Over one year, 122 patients will undergo thorough assessments, including clinical evaluations, biomechanical analyses, and radiological examinations. Clinical evaluations, incorporating the Back Performance Scale and patient-reported outcome measures (PROMs), will occur at baseline and the 1-year follow-up to assess overall health, symptoms, and kinesiophobia. Biomechanical parameters will be recorded using advanced technology during activities like walking, with muscle fatigue induced through a modified Biering-Sørensen test. MRI will gauge muscle size and quality, while EOS radiographies will evaluate spinal stenosis severity. Continuous monitoring of physical activity via wrist-worn activity monitors will offer longitudinal data. This comprehensive approach aims to advance understanding of the pathophysiology, biomechanics, and treatment outcomes of degenerative sLSS. The collected data may refine patient treatment norms, surgery criteria, and post-surgery rehabilitation plans, potentially leading to more effective management strategies for individuals with sLSS.

Reference: Koch D, Nüesch C, Ignasiak D, et al. The role of muscle degeneration and spinal balance in the pathophysiology of lumbar spinal stenosis: Study protocol of a translational approach combining in vivo biomechanical experiments with clinical and radiological parameters. *PLoS One*. 2023 Oct 27;18(10):e0293435.

WHAT'S NEW

Multidisciplinary rehabilitation is effective in the management of Parsonage-Turner syndrome

WHY IT MATTERS

Parsonage-Turner syndrome, also known as idiopathic brachial neuritis or neuralgic amyotrophy (NA), is a neurological disorder characterized by sudden, severe shoulder pain followed by weakness and atrophy of the muscles in the upper limb. The nerve inflammation, pain, and weakness in the shoulder and arm, often leads to lasting issues in over 60% of patients, including difficulties linked to scapular dyskinesia.

This study aimed to compare the impact of multidisciplinary rehabilitation (MR), emphasizing motor relearning to enhance scapular dyskinesia, along with self-management strategies, versus usual care (UC) on shoulder, arm, and hand function in NA patients. In a randomized controlled trial involving 47 NA patients, those undergoing MR, comprising diagnostic consultations and eight therapy sessions, exhibited significantly greater improvements in functional capability compared to UC. Specifically, MR participants showed a mean improvement of 8.60 points in the Shoulder Rating Questionnaire-Dutch Language Version (SRQ-DLV) scores, with 59% achieving clinically significant enhancements compared to 33% in the UC group. These findings underscore the effectiveness of MR, incorporating motor relearning and self-management, in improving scapular dyskinesia and overall functional capability in NA patients compared to standard care.

Reference: Janssen RMJ, Lustenhouwer R, Cup EHC, et al. Effectiveness of an outpatient rehabilitation programme in patients with neuralgic amyotrophy and scapular dyskinesia: a randomised controlled trial. *J Neurol Neurosurg Psychiatry*. 2023 Jun;94(6):474-481.



Interview with

Dr. Perry Richardson



Please provide an overview of EMG in clinical practice.

Electromyography (EMG) is a crucial two-part diagnostic test in clinical practice. The first part involves a nerve conduction study (NCS), while the second part entails recording muscle activity using needle electromyography. Early in my career, I needed to diagnose symptoms related to sensory and motor problems. Sensory issues included numbness, twitching, and cramps. EMG and NCS studies help pinpoint the source of nerve problems, distinguishing between acute, recent, chronic, or new issues atop old ones. For instance, if a patient presents with leg numbness, it's challenging to determine if it stems from the leg nerve or the lumbar spine nerve through a neurological exam alone. EMG clarifies this distinction. Despite common misconceptions limited to diabetic neuropathy, numerous causes exist, and EMG aids in narrowing down the differential diagnosis. It helps identify the type of pathology, whether axon or myelin neuropathy, and supports theories based on the patient's history. Notably, EMG is a pivotal diagnostic tool for various neuropathies, including neuromuscular junction diseases and motor neuron diseases. Our collaborative team utilizes EMG to guide treatment decisions and sometimes avoids unnecessary surgeries, benefiting patients.

How has EMG evolved over the years?

The history of EMG traces back to the 1800s when researchers discovered the ability to externally stimulate nerves and observe their function. Over time, EMG technology has advanced significantly.

During my fellowship, I had the opportunity to collaborate with Dr. Roger Gilliatt, a pioneer in modern EMG development. In the 1960s and 1970s, EMG machinery primarily consisted of an amplifier that recorded biological signals after placing electrodes on muscles or skin. The oscilloscope displayed the relevant biological signals, and measurements such as latency and amplitude were manually calculated using rulers. Subsequently, the introduction of computers revolutionized EMG, integrating them into preamplifiers and display monitors. Modern EMG instruments, powered by computers, are now more accessible, faster, compact, and affordable.

Despite these advancements, skilled operators are still essential to interpret EMG data within the clinical context. Like any test, EMG may reveal incidental findings unrelated to symptoms but valuable for guiding further investigations' intensity and approach.

Interview with

Dr. Perry Richardson



What services does GW offer to patients?

At GW, we provide patients with cutting-edge equipment and highly trained technologists instructed by top educators. Dr. Marie Russo, our former electrodiagnostic technologist with 30 years of experience and recognized nationally, played a pivotal role in training our current technologists. They initiate conduction studies, while the provider conducts the needle EMG. Our sophisticated instrumentation enables quantitative analysis of collected data, and we also utilize an ultrasound probe to complement nerve electrical studies, aiding in confirming anatomical abnormalities. Additionally, our computer systems offer specialized tests for conditions like myasthenia gravis (e.g., repetitive stimulation, single fiber EMG). These advanced capabilities set us apart from most other EMG-equipped offices across the country.

How long have you been at GW?

I've been at GW for 29 years, and I've had an incredible experience here. Before joining GW, I served as a general neurologist in the navy. My interest in neurology grew, particularly in the diagnostic precision of electrodiagnosis. Following an EMG fellowship, I focused on neuromuscular disease. I was drawn to GW because its neurology department, led by Dr. John Kelly Jr., a renowned neuromuscular specialist, offered ample opportunities in this field. I have been fortunate to shape my clinical work. We are also expanding our database to enhance our appeal for multi-clinical trials, given the remarkable advancements in muscular and autoimmune disease research.

I aim to publish our experiences at GW, showcasing our diagnostic prowess using EMG to identify challenging disorders. For instance, brachial plexus neuritis, once underestimated, has emerged as a common cause of shoulder pain and arm weakness with distinct pathology. These nuanced diagnoses are crucial as they often present subtly. I collaborate extensively with colleagues nationwide, particularly at Mayo Clinic.

I value the loyalty of our patients here at GW, and it's evident in their actions. Working here is rewarding because our patients are knowledgeable, supportive, and appreciative. Their gratitude reminds us why we chose this field in the first place.

Interview with

Dr. Perry Richardson



January 9, 2024
Adam Ostendorf, MD
Nationwide Children's National, Ohio,
United States
Title: The Future of The Epilepsy
Monitoring Unit

February 13, 2024
Emilio Perruca, MD, PhD, FRCP
University of Melbourne, Australia
Title: Recent Advances and Future
Perspectives in The Pharmacological
Treatment of Epilepsy

March 12, 2024
Fred Lado, MD, PhD
Northwell Health, New York, United
States
Title: TBA

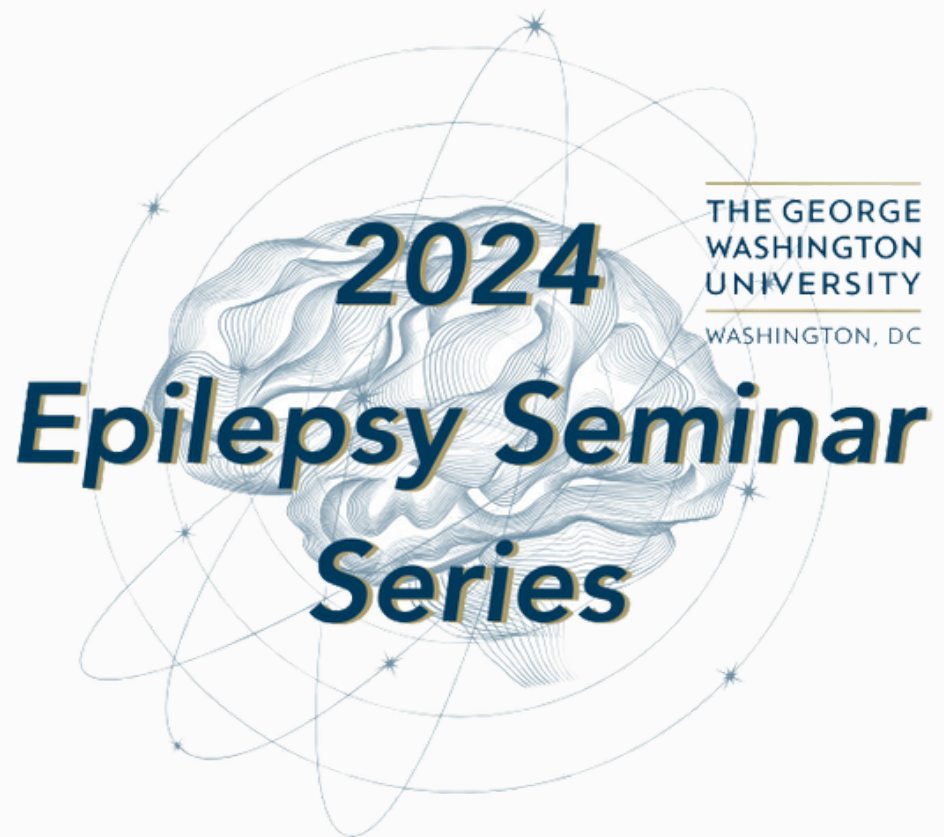
April 9, 2024
William Stacey, MD, PhD
University of Michigan,
United States
Title: Predicting Surgical Outcome With
Network Properties of HFOs

May 14, 2024
Judy Liu, MD, PhD
Brown University, Rhode Island, United
States
Title: Metabolic Pathways in Epilepsy

June 11, 2024
Samir Sheth, MD, PhD
Columbia University, New York,
United States
Title: Network-Minded Epilepsy Surgery

July 9, 2024
Brian Lundstrom, MD, PhD
Mayo Clinic, Minnesota
United States
Title: Low Frequency Brain Stimulation

August 13, 2024
Michael Fox, MD, PhD
Brigham and Women's Hospital,
Massachusetts, United States
Title: Causal Mapping of Epilepsy and Other
Symptoms Onto Human Brain Circuits



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September 17, 2024
Carrie McDonald, PhD
University of California San Diego,
United States
Title: Imaging of Cognitive Networks in
Epilepsy

October 15, 2024
Lori Isom, PhD
University of Michigan,
United States
Title: Discovering Mechanisms of
Developmental and Epileptic Encephalopathy
With SUDEP

November 11, 2024
Jeff Noebels, MD, PhD
Baylor College Of Medicine, Texas,
United States
Title: Glioblastoma Epilepsy: A
Hypersynaptic Ring of Fire

December 17, 2024
Joseph Tracy, PhD, ABPP/CN
Thomas Jefferson University, Pennsylvania,
United States
Title: TBA



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