

# Providence MS

## Using Artificial Intelligence to Expand MRI Scan Sensitivity

Written by Stan Cohan, M.D., Ph.D.

### Conventional MRI Scanning

The advent of MRI scanning of the brain and spinal cord was a giant leap forward in improving our ability to diagnose MS with greater sensitivity and reliability, and to follow patients with MS over time to determine how effectively their MS is under control. In many cases, MRI may detect important changes in MS disease activity that cannot be detected as changes in a patient's symptoms or neurological examination. Conventional MRI scanning is now a crucial element in the care of people who have MS.

### Artificial Intelligence Analysis of MRI Scans

Artificial Intelligence is a tool that can be used to increase the ability of MRI scans to detect small or gradual changes in brain volume and MS lesion size over time that cannot be appreciated or detected by



conventional MRI methods and cannot be seen by traditional visual inspection of the scans. The artificial intelligence analysis does not replace the radiologist and neurologist in interpreting the scans, but instead is a tool they can use to enhance their ability to observe changes in the MRI scans.

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## Using Artificial Intelligence to Expand MRI Scan Sensitivity

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*Artificial intelligence analysis does not replace the radiologist and neurologist in interpreting the scans.*

### Icometrix/Icobrain

Icometrix is an artificial intelligence program that is now used by Providence Multiple Sclerosis Center and Providence MRI radiologists to enhance our ability to determine if there have been changes in the brain when compared to previous MRI scans. Sometimes this is not possible because of technical differences between the current and prior scans. To improve scan comparability, we request that our patients always obtain their scans at the same imaging center because of subtle differences between scanners or their software that could affect the accuracy of scan comparisons. Presently we are only able to perform the Icometrix analysis on scans obtained at Providence imaging centers. The Icometrix analysis is performed on routine scans, and there are no additional requirements on the part of the patient being scanned.

### Benefits of Using Artificial Intelligence/Icometrix Technology

Using Icometrix, we are able to detect changes in MRI that cannot be seen solely by visual inspection of the routine MRI scan images. Icometrix analysis of changes in brain volume and lesion volumes over time may be used to increase your neurologist's

ability to determine how well your medication is working. The analysis may also assist in deciding what MS medication to select for treatment.

Icometrix is also a powerful clinical research tool that will potentially allow Providence MS Center providers to compare the long-term benefits of all of the medications we use in a manner that has not been possible in the past. This could deepen and expand our understanding of the many current and future disease modifying medications used to treat MS. ■

## Providence Health & Services

### OUR MISSION

As expressions of God's healing love, witnessed through the ministry of Jesus, we are steadfast in serving all, especially those who are poor and vulnerable.

### OUR CORE VALUES

Compassion, Dignity, Justice, Excellence, Integrity

# Clinical Studies | Enrollment

For more information or to connect with a trial contact, please call Veronica Zelitchenko 503-216-1158.

## Traditional versus Early Aggressive Therapy for Multiple Sclerosis (TREAT-MS) Trial

The Traditional versus Early Aggressive Therapy for MS (TREAT-MS) trial is a pragmatic, randomized controlled trial that has two primary aims: 1) to evaluate, jointly and independently among patients deemed at higher risk vs. lower risk for disability accumulation, whether an 'early aggressive' therapy approach, versus starting with a traditional, first-line therapy, influences the intermediate-term risk of disability, and 2) to evaluate if, among patients deemed at lower risk for disability who start on first-line MS therapies but experience breakthrough disease, those who switch to a higher-efficacy versus a new first-line therapy have different intermediate-term risk of disability.

**Sponsor:** Patient-Centered Outcomes Research Institute (PCORI)

**Principal Investigator:** Stanley Cohan, M.D., Ph.D.

**Contact:** Noah Pounds

## Measurement of Relaxin in the Serum and Cerebrospinal Fluid of Subjects With and Without the Relapsing Form of Multiple Sclerosis (RELAXIN)

This study will evaluate relaxin levels in patients with multiple sclerosis.

**Sponsor:** Providence Health & Services

**Principal Investigator:** Stanley Cohan, M.D., Ph.D.

**Contact:** Hannah Hart, CCRP

## North American Registry for Care and Research in Multiple Sclerosis (NARCRMS)

The North American Registry for Care and Research in Multiple Sclerosis (NARCRMS) is a physician/clinicianbased registry and longitudinal database of clinical records and patient-centered outcomes. The goal is to create a large clinical database for researchers to study the disease course and the markers that predict MS disease progression.

**Sponsor:** Consortium of MS Centers (CMSC)

**Principal Investigator:** Stanley Cohan, M.D., Ph.D.

**Contact:** Kai Darke, MS

## Providence Sphingosine-1-Phosphate (S1P) Receptor Modulator Registry

The goal is to collect information from patients receiving S1P therapies, including fingolimod, siponimod, and ozanimod, for the treatment of MS to assess their long term utilization, safety, tolerability and efficacy.

**Sponsor:** Providence Health & Services

**Principal Investigator:** Kyle Smoot, M.D.

**Contact:** Veronica Zelitchenko

## Clinical Studies | Team

Stanley Cohan, M.D., Ph.D., Director, and Principal Investigator

Kyle Smoot, M.D., Principal Investigator

Jessica Rice, M.D., Investigator

Vitalie Lupu, M.D., Investigator

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Hannah Hart, CCRP, Senior Clinical Research Coordinator

Sara Guedry, Clinical Research Coordinator

Amy Holden, Clinical Research Coordinator

Maria Kirusenko, Clinical Research Coordinator

Kai Darke, MS, Senior Research Assistant

Sarah Williams, MS, Senior Research Assistant

Noah Pounds, Senior Research Assistant

Veronica Zelitchenko, Associate Research Assistant

**For more information on clinical trials and research, visit us at [oregon.providence.org/our-services/c/clinical-trials-brain](https://oregon.providence.org/our-services/c/clinical-trials-brain) or [clinicaltrials.gov](https://clinicaltrials.gov)**



## INTERVIEW WITH: Kyle Smoot, M.D.



Dr. Kyle Smoot, Neurologist

### Where did you complete your training?

I attended the US Naval Academy, and after graduation, I returned to Ohio where I completed medical school at the University of Cincinnati.

### Why did you choose to move to Portland?

I wanted to move to the West Coast after completing medical school. So, I interviewed at several residencies along the West Coast, and I really liked OHSU. They have a great MS Center, and I knew I was interested in specializing in MS. Also, I was attracted to Portland given the outdoor opportunities, and the city seemed more manageable than Seattle and San Francisco especially since I was moving from the Midwest.

### How did you become interested in multiple sclerosis?

My mother was diagnosed with MS during my first year of medical school, and I was quite frightened. Especially when I was going up one of our neighbors had MS, and she was severely impacted by her MS. So, this motivated me to learn as much as possible about MS. In addition, I had a fantastic neuroscience teacher in medical school who also sparked my interest. I am very grateful for the teachers I have had in my life!

### What is one piece of advice you would like to give to patients with MS?

Well, I have a few which I call the 3 A's. Attitude is extremely important. While it is easier said than done, practicing gratitude daily can really change your mindset causing one to focus on the positive and not dwelling on the negative. The second piece of advice is to adapt by listening to your body which includes taking breaks when needed. The last piece of advice is to advocate for yourself.

### What is one piece of advice you would like to give to caretakers?

Take care of yourself – schedule time in the day to do something you enjoy. Also, be open and honest with the person you are taking care of.

### What do you like to do outside of work?

As many of you know, I love to cycle. I bike to work most days, and I bike at least one day on the weekend. Lately, I have enjoyed participating in some gravel races. Since the pandemic, I have fallen in love with fly fishing. Being on the river is extremely peaceful and rewarding as long as my line is not tangled.

### What do you think will be the next major advance in MS treatment?

Hopefully, there will be better medication options for people with the progressive forms of MS. Several studies are ongoing studying a class of medications called

BTKis. Possibly, we will have some results next year. Also, there is an unmet need for repair/remyelination although multiple studies are underway.

**Who would you invite to your dream dinner party (alive or dead)?**

I am not a fan of large dinner parties as I am always concerned about how guests would get along, and I do not like doing dishes. So, I would like to have dinner with my great grandmother and great grandfather who died when I was relatively young. My great grandmother moved to the US from Switzerland, and

I would have liked to have learned more about her journey to the US and her extended family.

**What life experience has taught or changed you the most?**

Being a physician everyday is extremely rewarding. I have learned a great deal from patients as well as about myself.

**What would you do if you were not a physician?**

I am fascinated with the airline industry, maybe an air traffic controller. ■

JOIN PROVIDENCE MS CENTER AT OUR

# 2023 Educational Gatherings

**September 12, 2023**

**Living Well with MS, tips and tools**

presented by Marcia Woodburn, DNP

**November 14, 2023**

**MS 101: resources for your new diagnosis**

presented by Jessica Rice, M.D.

Join us at Providence St. Vincent Medical Center's East Pavilion  
in the Souther Auditorium at 5:30 p.m.



To register, email: [ProvBrain.Academy@providence.org](mailto:ProvBrain.Academy@providence.org)

# Fatigue in MS

Written by Marcia Woodburn, DNP

Fatigue is one of the more common symptoms for patients with multiple sclerosis (MS). Over 80% of patients with MS may complain of fatigue and over half of those may report it as their worst symptom. Fatigue can impact your ability to work, social and family relationships and overall quality of life, leading to financial concerns, feelings of isolation, depression and reduced physical fitness.



## How do we define fatigue?

According to the Multiple Sclerosis Council for Clinical Practice Guidelines, fatigue in MS is defined as the “subjective lack of physical or mental energy that is perceived by the individual or caregiver to interfere with usual and desired activities”.

It is good to clarify that fatigue is not depression, sleepiness, or weakness. Fatigue also does not necessarily mean you will be unable to complete a task, so it is important to discuss the specific characteristics of your fatigue with your provider.

## How do we measure it?

Fatigue is measured commonly with the Modified Fatigue Impact Scale (MFIS). This scale consists of 21 questions where you report on various symptoms impacted by fatigue and rate their severity. While

there is no one scale or test that can truly measure fatigue, as it is subjective to each individual, this assessment can help providers determine how your fatigue is progressing over time and if treatments are effective or if other treatments may be needed.

## How do we treat it?

Before we can say fatigue is attributable to multiple sclerosis, it is important to rule out other causes.

Certain medical conditions and medications can contribute to fatigue. Medical conditions such as anemia and even low vitamin D levels have been linked to fatigue. Pain medications including narcotics, anticonvulsants (used for neuropathic pain), anti-anxiety medications, and muscle relaxers such as baclofen and tizanidine, can cause increased drowsiness during the day. If medications are causing you fatigue, their dose may be adjusted.

Your provider may also ask about sleep. If you snore at night, this may be an indication of sleep apnea, which can interrupt your sleep and cause daytime fatigue. In this case, your provider may order a sleep study.

If you wake often at night to urinate, these interruptions can lead to daytime fatigue. In this case, medications such as oxybutynin (Ditropan), mirabegron (Myrbetriq), solifenacin (Vesicare), or tolterodine (Detrol) may be prescribed or a referral placed to a urologist.

Your provider may also ask about depression, life stressors, or your sleep cycle. If stress is keeping you awake, or your natural sleep cycle is altered (i.e., going to sleep too early/too late or excessive sleep during the day), cognitive behavioral therapy can be effective. Antidepressants or sleep medications may also be considered.

Diet and lifestyle may also contribute to fatigue. According to Harvard Medical School, nine tips to boost your energy naturally include:

- 1. Control stress** – talk with a friend or counselor; consider relaxation therapies like yoga, tai chi, or meditation
- 2. Lighten your load** – set your priorities and remove unnecessary tasks; ask for help if you need it
- 3. Exercise** – this can elevate mood and give you better sleep at night
- 4. Avoid smoking** – nicotine is a stimulant which can increase heart rate and blood pressure as well as stimulate brain waves and nighttime cravings which may keep you awake

**5. Restrict your sleep** – avoid daytime naps, and consider a regular bedtime and wake cycle that gives you a deep sleep

**6. Eat for Energy** – eat more slowly absorbed foods such as whole grains, high fiber vegetable, nuts, proteins, and healthy fats like olive oil

**7. Use caution with caffeine** – It can help sharpen your mind, but do not take past 2PM

**8. Limit alcohol** – use in moderation and only at times you feel ok to relax

**9. Drink water** – dehydration may cause fatigue, monitor hydration by looking for clear yellow urine

If all these things are addressed, your provider may consider stimulant medications such as amantadine (Symmetrel) or modafinil (Provigil). Provigil is a controlled substance, so we may start with amantadine first and use Provigil only if needed. Amphetamine/dextroamphetamine (Adderall) and methylphenidate (Ritalin) are also controlled substances that may be considered.

It is important to know that most research has shown stimulant medications to provide limited benefit for MS fatigue and their side effects may be more common. Ultimately, it is important to rule out other causes of fatigue and discuss your situation with your provider before proceeding to stimulant medications. ■

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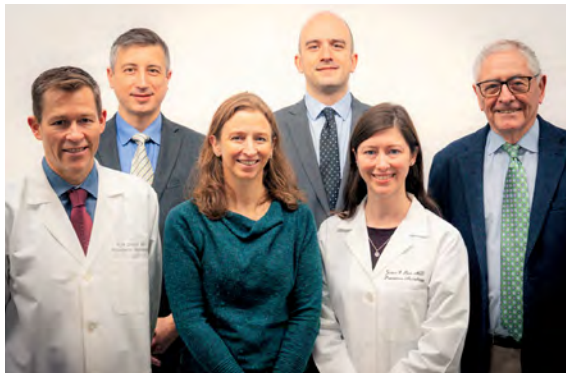
<sup>1</sup>Multiple Sclerosis Council for Clinical Practice Guidelines. (1998). *Fatigue and Multiple Sclerosis: Evidence-Based Management Strategies for Fatigue in Multiple Sclerosis*. Washington DC: Paralyzed Veterans of America.

<sup>2</sup>Harvard Medical School. August 30, 2020. *9 tips to boost your energy – naturally*. Harvard Health Publishing. [www.health.harvard.edu/energy-and-fatigue/9-tips-to-boost-your-energy-naturally](http://www.health.harvard.edu/energy-and-fatigue/9-tips-to-boost-your-energy-naturally)

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# Providence Multiple Sclerosis Center



Providence Multiple Sclerosis Center team

Providence Multiple Sclerosis Center, the only center of its kind in Oregon, is the state's leading care provider for people with MS. Our medical director, Stanley Cohan, M.D., Ph.D., was an investigator in the original, pivotal trial of beta interferon 1-A, one of the key medications for treating multiple sclerosis. He continues to play a leading role in MS research and founded the Pacific Northwest Multiple Sclerosis Registry Project, which will be used to help advance treatment of multiple sclerosis.

Our goal at Providence Multiple Sclerosis Center is to provide persistent, proactive, focused treatment that minimizes the effects of MS on your life. Patients benefit from comprehensive services that may include medication therapy, physical rehabilitation, counseling and other support. In addition, patients have access to the newest therapies through regional and international clinical trials.

## Our Providence Multiple Sclerosis Center team specializes in:

- Comprehensive MS care
- Nursing
- Support and wellness programs
- MS research
- Neurology
- Physical therapy

### OUR CLINICIANS:

**Stanley Cohan, M.D., Ph.D.,** Neurologist,  
Medical Director of Providence Multiple Sclerosis Center

**Kyle Smoot, M.D.,** Neurologist  
Co-Medical Director of Providence Multiple Sclerosis Center

**Vitalie Lupu, M.D.,** Neurologist

**Jessica Rice, M.D.,** Neurologist

**Luka Vlahovic, M.D.,** Neurologist

**Marcia Woodburn, DNP,** Multiple Sclerosis Nurse Practitioner

### OUR NURSES:

**Ken Hirsch, BSN, RN** Care Manager RN

**Heather McGee, BSN, RN** Clinic RN Supervisor

**Amaka Okoye, MHA, BSN, RN** Clinic RN

**Mikayla Olinger, BSN, RN** Clinic RN

**Nora Vetto, MSN, BSN, RN** Clinic RN

### OUR SERVICES:

- Highly advanced diagnostics
- Personalized treatment plans
- Attentive use of medications
- Rehabilitation with therapists who specialize in MS care
- Continence treatment for bladder and bowel dysfunction
- Emotional support and psychological counseling
- Opportunities to receive investigational medicines through clinical trials
- Close coordination with your primary care physician
- The Pacific Northwest Multiple Sclerosis Registry Project, a database created for epidemiological and health services research
- An MS Network that allows physicians to collaborate on MS treatments
- Community and provider education forums throughout Oregon

## Thanks to clinical research, people with MS are living longer, stronger, healthier lives.

Learn how you can help Providence Multiple Sclerosis Center. Call Dawn Johnston: 503-216-2198.

