Although it has been long known how vitamin D deficiency can affect the bones, we are just learning now about how vitamin D affects the immune system and the role it can play in autoimmune diseases such as Multiple Sclerosis (MS). Vitamin D is mostly produced by the action of ultraviolet B (UVB) rays in the skin, providing 80-90% of human requirements, but vitamin D deficiency is seen more commonly in temperate regions of the world where sunlight is limited for long parts of the year. Food can also be a source for vitamin D, but even in a well-balanced or fortified diet the intake of vitamin D via this route may be insufficient.

It is well-known that latitude influences the risk for developing MS; the disease is more prevalent in regions farther from the equator, which likely is partly related to vitamin D exposure. It is known that children and teenagers who receive more UVB exposure have a lower risk later for MS. There is also data that babies born at the end of spring have an increased risk for MS, which has been attributed to the fact that their mothers had much less sun exposure in the major part of their pregnancy. Multiple studies have strongly suggested that insufficient exposure to the sun or vitamin D during the first part of life constitutes a major risk for MS. This also happens to be the time period when the immune system matures, which may be why these years are so important in terms of influencing MS risk.

There are potentially multiple ways by which vitamin D influences MS, either before or after the disease is triggered. The inflammatory or relapsing stage of MS appears to be the stage most affected by vitamin D levels. It is thought that vitamin D increases the anti-inflammatory and decreases the pro-inflammatory immune cells and signals. Vitamin D also enhances the positive effects of estrogen, which may be why there appears to be a more beneficial effect of vitamin D supplementation in women.

MS patients may in general be at greater risk for vitamin D deficiency. Patients may avoid direct sunlight because heat aggravates their symptoms, and also MS-related disability may lead to patients doing fewer outdoor activities. Many studies have suggested that high levels of vitamin D in the blood is helpful for disease activity in MS. Some studies using MRI testing have shown a decrease in the number of new T2 and gadolinium enhancing lesions in patients with high vitamin D levels. Other studies have demonstrated a reduction of relapses by 50-70% for each increase of 20 ng/mL in the 25-OH-D serum level. The most marked vitamin D effect on relapses was mainly seen between the levels of 26-44 ng/mL, so it has been...
Today, I had the opportunity to interview Elisabeth Lucassen, M.D. who is our new provider at the Providence MS Center.

**Where did you complete your training?**
I went to Penn State for medical school, University of Rochester for neurology residency, and was at the University Hospital in Basel, Switzerland for my MS fellowship.

**Why did you choose to move to Portland?**
Lots of reasons to move to Portland, but certainly taking this position was a big factor. I am excited to have joined a strong MS group that has a dedication to both clinical care and research. My husband was also looking for the next step in his career, and there are a lot of opportunities for him in this area. We also just thought that Portland is a great city that has a lot to offer (nature, culture, etc).

**How did you become interested in multiple sclerosis?**
I didn’t get a whole lot of exposure to MS in my residency, and MS is something that came into my life more serendipitously. I ended up in the MS clinic in Basel while I was working on my board certification requirements for Germany/Switzerland and really loved what I was doing. They were complex patients, but ones that I could help. I liked the pharmacotherapy aspects of the field. I liked taking care of young women and discussing the pregnancy related topics, as women’s health was always an interest of mine.

**What is one piece of advice you would like to give to patients with MS?**
I emphasize to my patients that we are a team in their care, and that what I can do for them is only part of the care plan. I emphasize the need to exercise, eat healthy, and to take care of their general health. My patients who do this seem to have always done better.

**What is one piece of advice you would like to give to caretakers?**
The concept of shared decision making is something we all learn in medical school, but has been vital to my success in taking care of my patients with Multiple Sclerosis. Knowing that they are active participants in their care gives them a sense of control in an often unpredictable disease, and allows for mutual respect and trust to grow within the patient-doctor relationship.

**What do you think will be the next major advance in MS treatment?**
Maybe this is more a naïve wish, but I am hopeful that we will find remyelinating medications that work.

**Who would you invite to your dream dinner party (alive or dead)?**
Dinner party with living people—Barack and Michelle Obama, Angela Merkel, Sheryl Sandberg, Meryl Streep. With dead people—Queen Elizabeth the 1st, Mozart, Empress Elisabeth of Austria, Shakespeare, Hermann Hesse.

**What has been the highlight of your career?**
At Penn State I became co-director of the MS center and worked to get our MS center recognized as a Comprehensive Care Center by the National MS Society.

**What do you like to do outside of work?**
I don’t always feel that I have a lot of time for hobbies between work and having a family, but my husband and I try to incorporate our children into the things we love to do. We love the outdoors, especially going hiking and running (I ran several half marathons last year). We love to travel and we go to Germany about once a year to visit family. We love good food and wine, and are looking forward to discovering what this area has to offer. I enjoy going to the symphony, opera, or ballet.

**What life experience has taught or changed you the most?**
Probably having children. Parenting has been my biggest joy and biggest challenge!
Together We Are Stronger

Ending multiple sclerosis for good will take all of us. Walk MS helps us team up with friends, loved ones and co-workers to change the world for everyone affected by MS. Together, we become a powerful force. And with every step we take, every dollar we raise…we’re that much closer. Together, we will end MS forever.

JOIN OUR TEAM! Joining the Providence MS Center team means you support critical funds to support local programs and cutting-edge research. Our team can get us closer to realizing our promise to STOP MS in its tracks, RESTORE lost function and END MS forever. Ending MS means no one will receive an MS diagnosis again. Every step counts. Every dollar helps. Every connection matters.

VISIT OUR TEAM PAGE: http://main.nationalmssociety.org/site/TR/Walk/ORCWalkEvents?team_id=538409&pg=team&fr_id=29555

Vitamin D and Multiple Sclerosis

suggested that a useful goal may be to reach a level in the range of 40-50 ng/mL to obtain an optimal effect from supplementation. Overall, it appears very likely that vitamin D decreases the inflammatory component of the disease, and thus it is a very important component in MS therapy.

For the majority of MS patients, supplementation with a vitamin D3 supplement between 2000 and 4000 IU/d should be undertaken, including in pregnant women. This dosage range will typically correct any vitamin D deficiency existing in the great majority of MS patients, and allow for levels to reach the currently recommended range. Additionally, these moderate doses will not cause vitamin D toxicity, which can result in very high calcium levels. Most patients will need ongoing supplementation since vitamin D is not stored in the body for very long. Checking the level yearly can ensure that the goal range has been reached and maintained. Further studies may be helpful to clarify some of the remaining questions about the mechanisms by which vitamin D is helpful in MS, and more practically to help develop clearer treatment recommendations to ensure that patients are receiving optimal therapy. ■
Cognitive complaints in multiple sclerosis are estimated to affect 40-65% of those living with MS and can occur at any stage of the disease independent of physical disability. Cognitive issues in MS include a variety of symptoms, such as slower information processing, attention difficulty, impaired short-term memory, and problems with time management and planning. This can lead to problems with job performance, activities of daily living, and overall quality of life (DeLuca et al, 2015).

While several studies have looked at different medications directed at improving cognition in MS, the results have not shown promise and there is currently no FDA-approved medication to treat cognitive dysfunction in MS (Motl et al, 2011).

In the past several years, there has been increasing evidence to support physical activity as a way to improve cognition in older adults, including those with multiple sclerosis. One study found in older adults, regular aerobic exercise over six months improved time management, planning, and working memory (Kramer et al, 1999). A separate study found aerobic exercise (30-minute sessions at least three times weekly for three months) increased brain volume, specifically hippocampal volume, by 16.5% and memory improvement by 53.7% (Leavitt et al, 2014).

An agreed upon dose of aerobic exercise required to yield cognitive improvement in MS remains to be determined. In the meantime, we recommend individuals with MS adding exercise to their treatment regimen following discussion with their MS neurologist. For those who have difficulty walking, use of a stationary bicycle, arm cycle/arm crank, or aquatic exercise may be considered. For those with heat sensitivity, this should be discussed with your physician when deciding on an exercise regimen. While the benefits of exercise on cognition become further evident, the current evidence demonstrates a positive impact on physical, mental, as well as cognitive health in MS.

References:
Clinical Studies | Enrollment

Study Title: Pacific Northwest Multiple Sclerosis Registry
Objective: The purpose is to measure MS prevalence in the Pacific Northwest and to create a database for ongoing epidemiological and health services research.
Sponsor: Providence Health & Services
Principal Investigator: Stanley Cohan, M.D., Ph.D.
Project Manager: Tamela Stuchiner

Study Title: Providence Ocrelizumab Patient Registry
Objective: The goal of this registry is to collect information from patients receiving ocrelizumab for the treatment of MS to assess its long-term utilization, safety, tolerability and efficacy.
Sponsor: Providence Health & Services
Principal Investigator: Kyle Smoot, M.D.
Study Coordinator: Lois Grote

Study Title: Measurement of Relaxin in the Serum and Cerebrospinal Fluid of Subjects With and Without the Relapsing Form of Multiple Sclerosis
Objective: This study will evaluate relaxin (RLX) levels in patients with multiple sclerosis.
Sponsor: Providence Health & Services
Principal Investigator: Stanley Cohan, M.D., Ph.D.
Site Study Coordinator: Hannah Voss

Study Title: Evaluating the Efficacy and Safety of Transitioning Patients From Natalizumab to Ocrelizumab
Objective: The primary objective of this study is to assess the efficacy of ocrelizumab (Ocrevus) in Relapsing Multiple Sclerosis patients who have been previously treated with natalizumab (Tysabri) by evaluating relapse rate, progression on MRI and disability progression.
Sponsor: Providence Health & Services
Site Principal Investigator: Kyle Smoot, M.D.
Study Coordinator: Genevieve Leineweber
Study Title: Long-term, Prospective, Multinational, Parallel-cohort Study Monitoring Safety in Patients With MS Newly Started With Fingolimod Once Daily or Treated With Another Approved Disease-modifying Therapy

Objective: The purpose of this world-wide prospective parallel-cohort study in patients with relapsing forms of Multiple Sclerosis, either newly treated with fingolimod or receiving another disease-modifying therapy, is to further explore the incidence of selected safety-related outcomes and to further monitor the overall safety profile of fingolimod under conditions of routine medical practice.

Sponsor: Novartis Pharmaceuticals
Site Principal Investigator: Stanley Cohan, M.D., Ph.D.
Study Coordinator: Lynette Currie

Study Title: Measuring the Impact of Tecfidera on the Gut Microbiota: Does a Change in the Gut Flora Correlate With Gastrointestinal Disturbances Following Therapy Initiation?

Objective: The primary objectives of this study are to determine whether a measureable change in bacterial species representation follows the institution of DMF (Tecfidera); to determine whether a specific pattern of change in the microbiota phylotype with DMF therapy correlates to onset and severity of gastrointestinal disturbances (heartburn, nausea, flatulence, and diarrhea); to determine whether any instability of microbiota phylotype representation persists following the institution of DMF or whether stabilization relates to resolution of gastrointestinal disturbances; and to determine whether there is a correlation between a pre-existing functional bowel disorder and development or severity of gastrointestinal disturbances and of peripheral eosinophilia.

Sponsor: Evergreen Health
Site Principal Investigator: Kyle Smoot, M.D.
Study Coordinator: Lynette Currie

Study Title: Effect of M.D.1003 in Progressive Multiple Sclerosis: a Randomized Double Blind Placebo Controlled Study

Objective: The purpose of this study is to demonstrate the superiority of M.D.1003 over placebo in the disability of patients suffering from progressive multiple sclerosis and especially those with gait impairment.

Sponsor: MedDay Pharmaceuticals
Site Principal Investigator: Kyle Smoot, M.D.
Study Coordinator: Emily Moher
Study Title: A Multicenter, Global, Observational Study to Collect Information on Safety and to Document the Drug Utilization of Tecfidera™ (Dimethyl Fumarate) When Used in Routine Medical Practice in the Treatment of Multiple Sclerosis (ESTEEM)

Objective: The primary objective of the study is to determine the incidence, type, and pattern of serious adverse events, including but not limited to infections, hepatic events, malignancies, and renal events, and of adverse events leading to treatment discontinuation in patients with MS treated with dimethyl fumarate.

Sponsor: Novartis Pharmaceuticals
Site Principal Investigator: Walter Carlini, M.D., Ph.D. (Medford, OR)
Study Coordinator: Kari Jaasko (Medford, OR)

Study Title: Evaluation of Evidence from Smart Phone Sensors and Patient-Reported Outcomes in People with Multiple Sclerosis (elevateMS)

Objective: The primary objective is to characterize changes in participant-reported outcomes and functional performance tests collected on the elevate MS mobile application.

Sponsor: Novartis Pharmaceuticals
Site Principal Investigator: Kiren Kresa-Reahl, M.D.
Study Coordinator: Hillary Frey

Study Title: A Study of Immune Phenotype Biomarkers in Patients With Relapsing Multiple Sclerosis (RMS) After Treatment With 0.5mg Fingolimod (FLUENT)

Objective: The purpose is to characterize the changes in patients’ immune system after treatment with Fingolimod.

Sponsor: Novartis Pharmaceuticals
Site Principal Investigator: Stanley Cohan, M.D., Ph.D.
Study Coordinator: Hannah Voss

Study Title: Efficacy and Safety of BIIB033 (Opicinumab) as an Add-on Therapy to Disease-Modifying Therapies (DMTs) in Relapsing Multiple Sclerosis (MS) (AFFINITY)

Objective: The objective is to evaluate the effects of BIIB033 versus placebo on disability improvement over 72 weeks and to evaluate the effects of BIIB033 versus placebo on additional measures of disability improvement.

Sponsor: Biogen
Site Principal Investigator: Stanley Cohan, M.D., Ph.D.
Study Coordinator: Hillary Frey
**Study Title: Creation of a multi-center database to study real world brain and lesion volume changes in Multiple Sclerosis (MS)**

**Objective:** The primary objective is to determine whether retrospective collection of MRI scan data collected in real world clinical practice can be utilized to observe changes in brain and lesion volume using the NeuroSTREAM application.

**Sponsor:** SUNY University at Buffalo

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

**Study Coordinator:** Hillary Frey

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For more information on clinical trials and research, visit us at [oregon.providence.org/our-services/c/clinical-trials-brain](http://oregon.providence.org/our-services/c/clinical-trials-brain) or [clinicaltrials.gov](http://clinicaltrials.gov)
Providence Brain and Spine Institute invites people living with Multiple Sclerosis and their loved ones to join our monthly meetings for support and education. The group is led by experts from the Providence Multiple Sclerosis Center, and includes lunch.

**The group is held on the first Thursday of every month, from 12:00 p.m. – 1:00 p.m., at the:**

Providence St. Vincent Medical Center  
9135 SW Barnes Road  
Portland, OR 97225

The group is held in the Stanley Family Conference Rooms, in the East Pavilion of the hospital.

**PLEASE NOTE** | The group on May 3, will be held in the Providence Basecamp Cardiac Wellness + Prevention Center, located on the first floor of the Providence Mother Joseph Plaza, on the Providence St. Vincent Medical Center campus, in the Springwater & Wildwood conference rooms.

There is no registration required for this group, and you are welcome to attend anytime.
Community Multiple Sclerosis Forum

MacLeay Conference Center—Fireside Hall
2887 74th Ave SE Salem, OR 97301
Presented by Dr. Kyle Smoot | Providence MS Center

Join us to learn more about:

- Current treatments for relapsing and progressive forms of MS
- The newest research & information from recent MS conferences
- The future direction of MS therapies and options

Wednesday, April 18th
Doors open 5:30 p.m. | Presentation at 6:00 p.m.

Dinner will be provided at this free community event. Pre-registration is required.

Call 503-574-6595 or visit
www.providence.org/classes to register
Our Providence Multiple Sclerosis Center team specializes in:
- Comprehensive MS care
- Neurology
- Neuro-ophthalmology
- Neurotology (for ear disorders)
- Nursing
- Physical therapy
- MS research

Clinicians:
- Stanley Cohan, M.D., Ph.D., Neurologist; medical director of Providence Multiple Sclerosis Center
- Kiren Kresa-Reahl, M.D., Neurologist
- Elisabeth Lucassen, M.D., Neurologist
- Meghan Romba, M.D., Neurologist
- Kyle Smoot, M.D., Neurologist
- Leah Gaedeke, FNP, Multiple Sclerosis Nurse Practitioner

Nurses:
- Brittany Hannon, RN, Patient Care Coordinator
- Sam Brighton, RN, Clinical Case Manager
- Sarah Hogue, RN

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
- Salem Community MS Forum

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.

The Providence Multiple Sclerosis Center’s research is supported by generous donations from friends in the community. If you are interested in learning more about supporting the center’s work, please contact Joel Kelly, Director of Development, at (503) 216-2198.
Available on our Web site at providence.org/brain:

- **Physician directory:** Get contact information for all Providence Brain and Spine Institute physicians.
- **Upcoming events:** Providence offers educational events throughout the year. Check our online calendar to view upcoming topics.
- **Clinical trials:** Find out about multiple clinical trials for investigational treatments for MS, as well as other clinical trials available through Providence.
- **Support groups:** Get details on support groups in Oregon.
- **Additional resources:** Our website offers the latest information on available programs and services; educational toolkits; and links to trusted sources of information.

News & Events:

**Multiple Sclerosis 101: What Every Patient Should Know About Multiple Sclerosis**

**Dates:** Wed., April 25th, 2018 and Thurs., September 6th, 2018  
**Time:** 6 - 7:30 PM

Providence St. Vincent Medical Center, Brain and Spine Institute  
Conference Room  
9135 SW Barnes Rd, Ste 363  
Portland, OR 97225

Multiple Sclerosis 101 is ideal for newly diagnosed patients and their family members. Dr. Meghan Romba will review the basics of multiple sclerosis including treatment options for the relapsing forms of the disease. Complimentary dinner will be provided.

Space is limited, RSVP is required.  
To register, please call (503) 574-6595 or visit www.providence.org/classes

Dr. Kyle Smoot is accepting patients on the East Side

Dr. Kyle Smoot is now offering patient appointments every Friday on the East side.

Providence Neurological Specialties-East  
5050 NE Hoyt Street, Suite 615  
Portland, OR 97213  
(503) 215-8580

**Our Mission**  
As people of Providence, we reveal God’s love for all, especially the poor and vulnerable, through our compassionate service.

**Our Core Values**  
Respect, Compassion, Justice, Excellence, Stewardship

**Providence Multiple Sclerosis Center**  
9135 SW Barnes Road, Suite 461  
Portland, OR 97225  
(503) 216-1150  
providence.org/ms

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http://oregon.providence.org/our-services/p/providence-multiple-sclerosis-center