

Department of Veterans Affairs



Multiple Sclerosis Centers of Excellence

**Fiscal Year 2023
Annual Report**

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MSCOE VISION, MISSION, & VALUES

VA



U.S. Department of Veterans Affairs

Veterans Health Administration
Multiple Sclerosis Centers of Excellence

VISION

To lead the nation in clinical care and the discovery of risk factors, therapeutics, and rehabilitation for Veterans with MS.

MISSION

To serve Veteran's living with Multiple Sclerosis and other neuroimmunological disorders, their families, and their care partners by ensuring access and excellence in clinical care, education, research, and partnerships.

VALUES

One MSCoE

Consistent delivery of a high-quality system of MS care, values, and expertise.

Accessible

Veteran-centric MS care at the right time and the right place.

Innovative

Improved outcomes with digital healthcare and innovative technologies.

Collaborative

Working together with Veterans, care partners, families, stakeholders, and community.

MSCOE – WHO WE ARE

WHY

Multiple sclerosis (MS) is the most common progressive neurological condition of young adults. MS is a unique disease in the VA Health Care System (HCS) with onset in young adulthood, female predominance, and common connection with military service. The variable presentation of MS, along with its dynamic and unpredictable course, and progressive nature make MS diagnosis and management challenging. *A multidisciplinary care team knowledgeable about MS is essential* for optimizing the health and quality of life of Veterans with MS. This is accomplished by selection and management of appropriate disease modifying therapies (DMT), symptomatic care, social and emotional support, and rehabilitation, all with a Veteran-centric approach.

WHEN

To address the unique needs of Veterans with MS, in 2001, Congress urged the Veterans Health Administration (VHA) to establish two MS Centers of Excellence to coordinate MS clinical care, education, and research [Conference report (H. Rept. 106-988), Senate Appropriations Committee Report (S. Rept. 106-410), House Appropriations Committee report (H. Rept. 106-674)] that accompanied the Department of Veterans Affairs' (VA) Fiscal Year 2001 Appropriation]. In response, the VA convened a committee of MS experts who defined the requirements for the Centers, mandated the establishment of national standards for the care of Veterans with MS. In 2002, two coordinating Centers were selected to lead MSCoE, **MSCoE-East**, jointly located in Baltimore, MD and Washington, DC, in Veteran Integrated Service Network (VISN) 5, serving VISNs 1–10, and **MSCoE-West**, jointly located in Seattle, WA and Portland, OR, in VISN 20, serving VISNs 12–23. MSCoE was made permanent by the Veterans Benefits, Health Care, and Information Technology Act of 2006 (S.3421).

HOW

MSCoE- East and MSCoE- West serve as models of ideal multidisciplinary MS care delivery, research, education, and informatics. Together they serve as coordinating centers for the delivery of MS care nationally via a hub and spoke network of affiliated programs that serve larger numbers of Veterans with MS, who in turn, support MS care to Veterans served at smaller VA locations. MSCoE is organized into four cores: Administration, Clinical Care and Informatics, Education, and Research.

OVERSIGHT

MSCoE activities are supervised by the VA National Executive Director, Neurology Services, by annual assessments by the Government Accountability Office (GAO) and VHA Neurology Centers Advisory Subcommittee (NCAS), and by an independent review every five years. For more information about MSCoE, visit the MSCoE website at www.va.gov/MS.

MSCOE MILESTONES

2001-2002

- Congress requests creation of MSCoE.
- MSCoE East and West selected as Coordinating Centers.

2006

- MSCoE made permanent.
- Center Cores established: Administration, Clinical, Informatics, Education, Research.

2007-2017

- Directives published every 5 years.
- Growth of Cores, expansion of DMTs, National education, MS Surveillance Registry, Research and publications, External stakeholder partnerships.

2023

- Multiple Sclerosis System of Care 1101.06 (published 2023) defines the criteria for Regional Specialty Programs (RSP),.
- Integration with National Neurology Program.

2024-->

- Strategic planning.
- Coordination with other CoEs.
- Certification and expansion of RSPs to reach every Veteran with MS.

MSCOE COORDINATING CENTERS

MSCOE EAST

VA Maryland HCS
Baltimore, MD



Washington VAMC
Washington, DC



MSCOE WEST

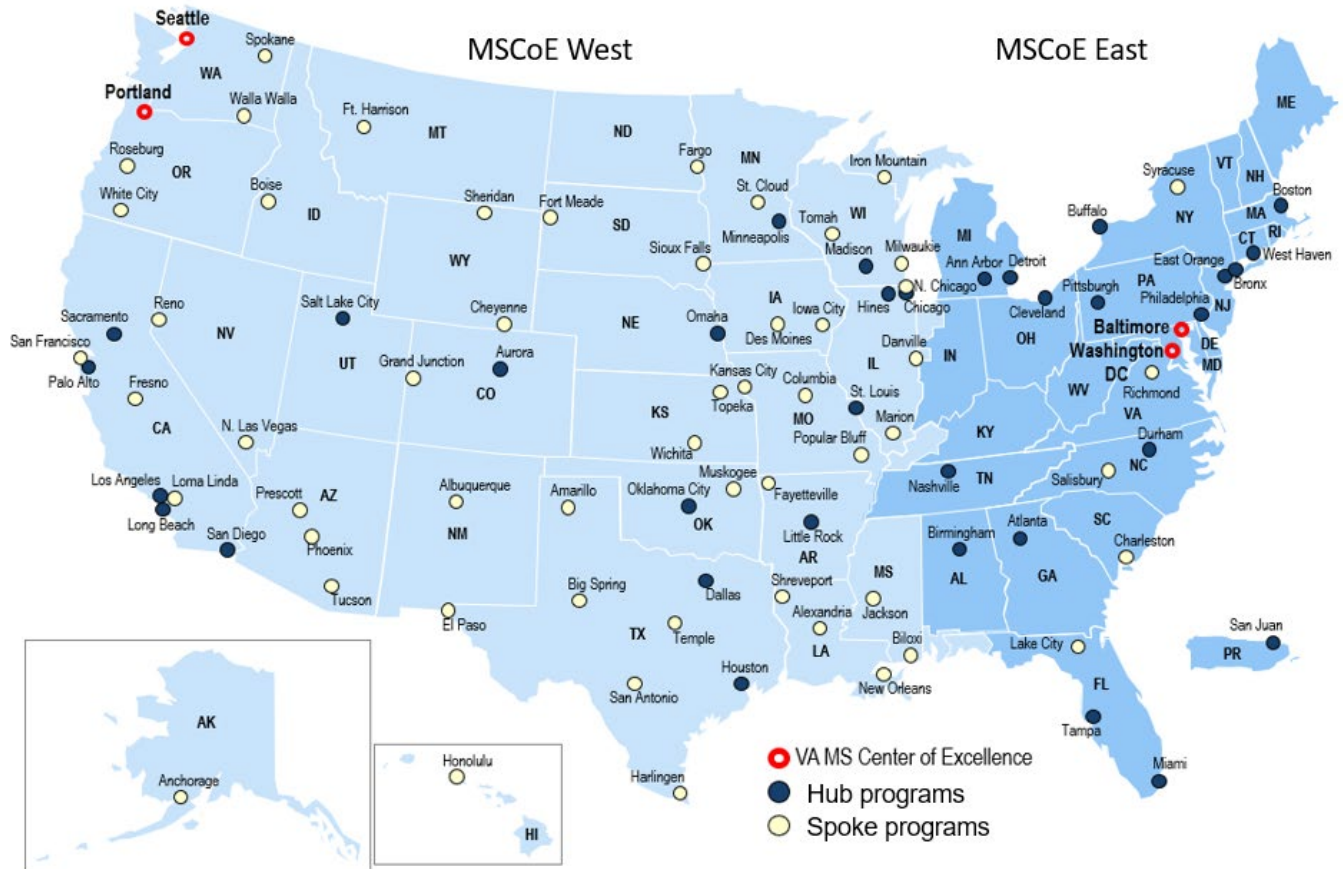
VA Puget Sound HCS
Seattle, WA



VA Portland HCS
Portland, OR



MS HUB & SPOKE NETWORK OF CARE



HUB & SPOKE PROGRAMS

MSCoE East

VISN	Hub Programs	Spoke Programs
1	Boston, MA; West Haven, CT	
2	East Orange, NJ; Bronx, NY; Buffalo, NY	Syracuse, NY
4	Philadelphia, PA; Pittsburgh, PA	
5	Baltimore, MD; Washington, DC	
6	Durham, NC	Salisbury, NC
7	Birmingham, AL; Decatur, GA	Charleston, SC
8	Tampa, FL; San Juan, PR; Miami, FL	Lake City, FL
9	Nashville, TN	
10	Cleveland, OH; Detroit, MI; Ann Arbor, MI	

MSCoE West

VISN	Hub Programs	Spoke Programs
12	Chicago, IL; Hines, IL; Madison, WI	Danville, IL; North Chicago, IL; Iron Mountain, MI; Tomah, WI; Milwaukee, WI
15	Saint Louis, MO	Columbia, MO; Marion, IL; Topeka, KS; Wichita, KS; Kansas City, MO; Poplar Bluff, MO
16	Little Rock, AR; Houston, TX	Fayetteville, AR; New Orleans, LA; Pineville, LA; Shreveport, LA; Biloxi, MS; Jackson, MS
17	Dallas, TX	Amarillo, TX; Big Spring, TX; El Paso, TX; Harlingen, TX; San Antonio, TX; Temple, TX
19	Aurora, CO; Oklahoma City, OK; Salt Lake City, UT	Grand Junction, CO; Fort Harrison, MT; Muskogee, OK; Cheyenne, WY; Sheridan, WY
20	Portland, OR; Puget Sound, WA	Anchorage, AK; Boise, ID; Roseburg, OR; White City, OR; Spokane, WA; Walla Walla, WA
21	Mather, CA; Palo Alto, CA	Fresno, CA; San Francisco, CA; Honolulu, HI; North Las Vegas, NV; Reno, NV
22	Long Beach, CA; Los Angeles, CA; San Diego, CA	Tucson, AZ; Loma Linda, CA; Phoenix, AZ; Prescott, AZ; Albuquerque, NM
23	Minneapolis, MN; Omaha, NE	Des Moines, IA; Iowa City, IA; St. Cloud, MN; Fargo, ND; Sioux Falls, SD; Fort Meade, SD

MS SYSTEM OF CARE: CORES SUPPORT HIGH QUALITY MS CARE



ADMINISTRATION	Budget, staffing, strategic planning, external partnerships, oversight of Cores, national communications, and policy execution.
CLINICAL	Access to DMTs (with VA Pharmacy Benefits Management), MS care coordination, clinical guidelines, clinical note documentation, clinical education.
INFORMATICS	Supports all Cores with VA data including identifying Veterans with MS, access to MS care, use of DMTs, utilization of VA and community care services, support of MS Surveillance Registry.
EDUCATION	Patient-facing and provider-facing materials to support MS care including MSCoE website, newsletters, podcasts, conferences, continuing medical education (CME), brochures, partnerships with Veteran Service Organizations and National MS Society. Support of VA-funded advanced fellowships for MS.
RESEARCH	VA-funded MS research including epidemiology, health services research, clinical trials, and basic science. Promotion of research among VA junior faculty. Leadership and participation in multi-site VA MS studies.

FY23 NATIONAL PROGRAM GOALS & ACCOMPLISHMENTS

FY23 goals	Met expectations	In progress	On hold	Description
Administrative				
Submit MS System of Care Directive 1101.6 for formal review	X			Directive published July 27, 2023. Directive disseminated with 3 listening sessions for Network members.
Develop care models to improve access to quality care through efficient and effective consultation between Regional Programs and MS Subspecialty Centers and implement one of these models.		X		Stepped model of MS care highlighted in materials shared with VA Centers seeing large numbers of Veterans with MS (formerly “Regional Programs”) and expectation for interfacility consult (IFC) mechanism for providing consultation.
Initiate the MSCoE Baseline Program Evaluation to better understand the characteristics, healthcare utilization and quality metrics of Veterans with MS seen in VA specialty Care, other VA clinics, and Community Care		X		Completed, data presented at 2023 Paralyzed Veterans of America meeting, manuscript drafted for publication.
Clinical				
<i>Optimize Cerner for MS Care: Pilot and revise templates and order sets. Focus on Spokane, WA</i>		X		Delayed due to Cerner delay. Pivoted to create templates for CPRS. Workgroup identified in FY23 for FY24 completion and distribution of template.
<i>Quality measure indicators for MS notes: Increase adoption of QM indicators by 25% nationally. Reassess progress.</i>		X		Plan to increase QM in clinical notes by creating and publishing CPRS templates for MS clinic notes (see #1 above).
<i>Expand national MS e-consult service: Set up MSCoE IFCs with MS support programs in VISN 5, 20 and 2 other VISNs</i>		X		MSCoE-East (VISN 5) set up 4 new IFCs in FY23 but identified logistical problems. Process will inform future employment of the IFC mechanism.

FY23 goals	Met expectations	In progress	On hold	Description
Education				
Enhance visibility of MSCoE Cores' missions and projects to providers, Veterans, and care partners to increase participation and utilization.	X			Achieved via a variety of platforms: Regional meetings, PVA and CMSC meetings, national education partnerships, provider webinars, Veteran podcasts.
Explore national education partnerships with other neurology Centers of Excellence.	X			Educational partnerships included a CoE Veteran e-letter, all CoE fellowship orientation, National VHA Neurology Seminar.
Improve understanding of the effectiveness and utilization of educational programming.	X			Methods included a Veteran Education Needs Assessment, MS Provider Education Needs Assessment, MS Fellowship Survey.
Research				
Submit at least two research grants within MSCoE-East and West networks.	X			Achieved. See Appendix A . FY23 MSCoE multi-site and FY23 MSCoE single PI research projects
Publish a minimum of 25 manuscripts in peer-reviewed journals.	X			Achieved. See Appendix B . FY23 MSCoE research publications
Present at least four posters and/or presentations at national and international meetings concerning a topic relevant to the research mission of the CoE during the reporting year.	X			Achieved. See Appendix C . FY23 MSCoE research posters and Appendix D . FY23 MSCoE research conference presentations and invited talks. Notably, Drs. Haselkorn and Wallin presented "Veterans with MS: How close do they live to specialty care services" at the Aug 2023 PVA Healthcare Summit + Expo (Orlando, FL, see Informatics)
Informatics				
Assess VA vs Community Care for Veterans with MS through with the assistance of an IT contract.	X			See Clinical Core Figure 1.

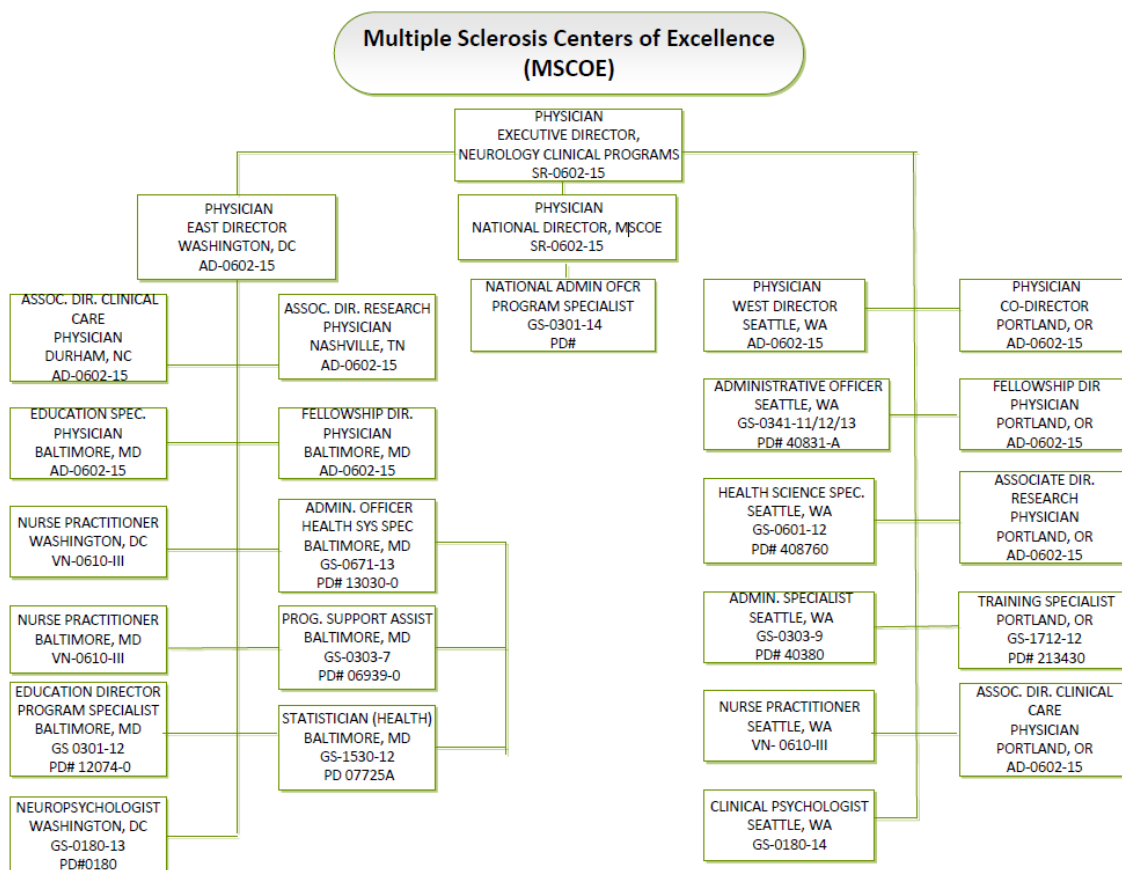
FY23 goals	Met expectations	In progress	On hold	Description
Publish a MS-COVID19 outcomes manuscript from the VA healthcare system.				<p>These appear in Appendices B and C:</p> <ol style="list-style-type: none"> 1. Barter, K., & Bagnato, F. (2023). Olfactory Hallucinations Following COVID-19 Vaccination. <i>Federal Practitioner</i>, 40(9), 1. 2. Keszler, P., et al. (2022). Telemedicine and multiple sclerosis: a survey of health care providers before and during the COVID-19 pandemic. <i>International Journal of MS Care</i>, 24(6), 266-270. 3. Sumner, L. et al. (2023). Use of Telemedicine Among People with Multiple Sclerosis Before and During the COVID-19 Pandemic. <i>Telemedicine and e-Health</i>, 29(8), 1152-1163. 4. Harel, T., et al. (2023). New onset or relapsing neuromyelitis optica temporally associated with SARS-CoV-2 infection and COVID-19 vaccination: A systematic review. <i>Frontiers in Neurology</i>, 14, 1099758. 5. Cameron M, et al. Multiple sclerosis rehabilitation research during the COVID pandemic: Participant and Therapist Satisfaction. Poster.
Develop a sustainable method to add cases to MSSR and increase by patients by at least 10%		X		MSSR sustainment and enhancement was accomplished by a FY23 VA OI&T programming support contract. Future addition of patients will be coupled to funding of Regional Specialty Programs

ADMINISTRATIVE CORE

MSCOE ADMINISTRATIVE CORE OBJECTIVES

- Establish the vision, mission, goals, and strategies of the MSCoE.
- Serve Veterans with MS through oversight of the Clinical Care, Informatics, Education, and Research Cores.
- Execute the MSCoE Directive, including reporting and accountability.
- Manage the budgets, staffing, and employee experience.
- Report to leaderships in the VA Central Office and National Program Office.
- Partner with VISN and facility leadership to fulfil MSCoE goals.
- Collaborate with other Neurology Centers of Excellence to efficiently deliver high-quality neurological care, training, and education.
- Partner with advocacy organizations to maximize the benefits to Veterans living with MS.

MSCOE ORGANIZATIONAL STRUCTURE



The MSCoE approved **annual budget for FY23 was \$3.14 million**. The authorized **full-time employment equivalent (FTEE) for the MSCoE is 14.0**. The actual **FTEE level is 10.0, with 4 vacancies**.

MSCOE PERSONNEL

MSCoE East

Name	MSCoE Position	Location
Mitchell Wallin, MD, MPH	Director East	Washington, DC
Heidi Maloni, PhD, ANP-BC, CNRN, MSCN	Associate Director Clinical Care (retired)	Washington, DC
Suma Shah, MD	Associate Director Clinical Care (incoming)	Durham, NC
Francesca Bagnato, MD	Associate Director Research	Nashville, TN
Dan Harrison, MD	Fellowship Director	Baltimore, MD
Sarah Fredrich, MD	Education Coordinator	Baltimore, MD
Angela Young, MBA	Administrative Officer	Baltimore, MD
Kenith Walker	Program Support Assistant	Baltimore, MD
Shan Jin	Statistical Programmer	Baltimore, MD
Bethany Ferguson, LCSW	MS/SCID Social Worker	Baltimore, MD

MSCoE West

Name	MSCoE Position	Location
Jodie Haselkorn, MD, MPH	Director West	Seattle, WA
Rebecca Spain, MD, MSPH	Co-Director West	Portland, OR
Rebecca Spain, MD, MSPH	Associate Director Clinical Care	Portland, OR
Lindsey Wooliscroft, MD	Associate Director Research	Portland, OR
Aaron Turner, PhD, ABPP (RP)	Associate Co-Director Research	Seattle, WA
Vijayshree Yadav, MD, MCR	Assistant Director Clinical Care/ Fellowship Director	Portland, OR
Jaimie Henry, MPA	Training Specialist	Portland, OR
Steven Leipertz, PhD	Associate Director Informatics	Seattle, WA
Lynda Hillman, DNP, ARNP	National Clinical Nursing Director	Seattle, WA
Lani Pitofsky	Administrative Specialist	Seattle, WA

VA Advanced Fellows – MS FY23

Name	MSCoE Position	Location
Yesenia Enriquez-Gonzalez, MD	MSCoE MS Clinical Fellow (OAA)	Baltimore, MD
Erin Mistretta, PhD	MSCoE MS Neuropsychology Fellow (NMSS)	Seattle, WA
Jacob Perelman, MD	MSCoE MS Clinical Fellow (OAA)	Portland, OR
Carolina Garcia Garcia, MD	MSCoE MS Clinical Fellow (OAA)	Portland, OR
Cole Crowson, MD	MSCoE MS Clinical Fellow (OAA)	Portland, OR

MSCOE REGIONAL MEETINGS

MSCoE East and West held their annual meetings with their Regional Network. The MSCoE West meeting was held virtually on July 27, 2023 while the East meeting was held in person March 19-21, 2023 in Baltimore, MD.



MSCoE East Regional Attendees: (left to right) front Aisha Clark, SW; Angela Young; Terry Lee-Wilk, PhD; Carol Gibson-Gill, MD; Joyce Williams, LCSW; Anza Memon, MD; Lisa Mitchell, RN, BSN; Heidi Maloni, NP, PhD; Sharon Bottomley, NP; Demetrios Konstas, MD; Janice Leon, MD; Marinella Galiea, MD; Natasha Antonovich; PharmD; Brian Smith, MD; Kenith Walker; (left to right) back Carey Deluca, NP; Christine Holman, PharmD; Andrew Tarr, MD, William Tyor, MD; Islam Zayden, MD; Mitchell Wallin, MD; Bethany Ferguson, LCSW; Nakia Shull, RN; Francesca Bagnato, MD; Hector Soto-Negron, RN; Roden Smith, NP; Annie Altendor, LCSW, Sarah Jackson, NP; John Rinker, MD; Carla Veronese; PharmD; Suma Shah, MD; Ernest Acheampong, NP

VHA NEUROLOGY CENTERS ADVISORY SUBCOMMITTEE (NCAS)

The MSCoE convenes a VHA NCAS that reports to the VA Federal Advisory Committee (FAC) on VA Advisory Committee on Prosthetics and Special Disabilities (ACPSD) in accordance with 38 U.S.C. 7314. The committee meeting was held on November 14, 2023.

Subcommittee Requirements

The responsibility of the VHA NCAS is to assemble, review, and make policy recommendations related to: (1) assessing the capability of VA health care facilities that host Neurology Centers of Excellence to respond with the most effective and appropriate services available to Veterans struggling with the physical, emotional, and social challenges of neurological disorders; and (2) advancing scientific knowledge to meet those needs by enhancing neurological care for Veterans through research, the training of healthcare professionals (HCP) in the provision of specialized neurological care, and developing improved models of clinical services for Veterans with neurological disorders. The NCAS may perform specific projects or assignments as necessary and consistent with the parent Committee's mission.

The VA MSCoE Designated Federal Officials includes Dr. Mitchell Wallin, Dr. Jodie Haselkorn, Mr. Kenith Walker, and Ms. Lani Pitofsky. FY23 NCAS members are found in [Appendix A](#).

MSCOE STAFF MEMBERSHIPS IN NON-VA ADVISORY COMMITTEES

MSCoE staff are maintain active memberships in non-VA advisory committees. See [Appendix B](#) for a current list of memberships.

MSCOE INTERNAL & EXTERNAL PARTNERSHIPS

Internal Collaborations

VA Office of Academic Affiliations

The VA conducts education and training programs to enhance the quality of care provided to Veterans within the VA HCS. Building on the longstanding, close relationships among the VA and the nation’s academic institutions, the VA plays a leadership role in defining the education of future HCPs that helps meet the changing needs of the nation’s healthcare delivery system. Through its partnerships with affiliated academic institutions, the VA conducts the largest education and training effort for health professionals in the nation.

VHA Office of Community Care

The VHA Office of Community Care (OCC) operates two main service lines, Delivery Operations and Revenue Operations, that support medical care delivery and services for Veterans and their families. VHA OCC is also responsible for functions that support service lines such as administration, planning, oversight, and stakeholder relations. VHA OCC works closely with Veterans and their families, community providers, and VA staff to ensure that Veterans can get care from community providers when needed.

VHA National Center for Healthcare Advancement & Partnerships

The VHA National Center for Healthcare Advancement and Partnerships (HAP) serves as a trusted resource and a catalyst for the growth of effective partnerships at the national, state, and community level. It also serves as a facilitator/access point for public and private entities interested in partnering with VHA to benefit Veterans, their families, care partners, and survivors.

VA Employee Education System

The VA Employee Education System (EES) partners with the VA, VHA program offices, and VISNs to provide quality workforce education and training to improve outcomes in Veteran clinical care, healthcare operations, and administration. VA EES also offers accredited courses and programs, in association with 17 national and two state accrediting bodies.

VA Office of Information & Technology

The VA Office of Information and Technology (OI&T) provides a seamless, unified Veteran experience through the delivery of state-of-the-art technology through collaboration with business partners.

VHA Pharmacy Benefits Management Service

The VHA Pharmacy Benefits Management Service (PBM) provides leadership for pharmacy activities in the VHA and provides advice and support regarding pharmacy issues to a wide variety of stakeholders, including Veterans, the Under Secretary for Health, VA medical facility Directors, and clinical staff across the system. VHA PBM works to enhance clinical outcomes and improve the health of Veteran patients through the appropriate use of pharmaceuticals.

VA Office of Research & Development

The VA Office of Research and Development (R&D) is focused on health issues that affect Veterans. It is part of an integrated HCS and has come to be viewed as a model for superior bench-to-bedside research. The VA R&D program has been improving the lives of Veterans and all Americans through health care discovery and innovation.

VHA Advisory Committee on Prosthetics & Special Disabilities

The VHA Advisory Committee on Prosthetics & Special Disabilities (ACPSD) provides advice to the VA Secretary on VA prosthetics and special-disabilities programs; coordination of VA and non-VA programs to develop and test prosthetic devices; and coordination of the informational exchange regarding development and testing of prosthetic devices. VHA ACPSD also serves as the parent VA FAC to the VHA NCAS.

VA Spinal Cord Injury & Disorders National Program

The VA Spinal Cord Injury & Disorders (SCI-D) National Program supports and maintains the health, independence, quality of life, and productivity of Veterans with SCI-D throughout their lives. These objectives are accomplished through rehabilitation, sustaining medical and surgical care; patient and family education; psychological and vocational care; education; and professional training. In addition, VA SCI-D National Program works collaboratively with MSCoE in the care management of Veterans with MS who also have spinal cord lesions and complications.

External Collaborations & Partnerships

MSCoE collaborations and partnerships with non-VA organizations exist for the purpose of building strong communities, sharing knowledge, and enhancing communication within the MS network to optimize services and resources for Veterans. Services include providing educational materials and programs for HCPs and Veterans, developing strategies to reach people with MS in rural areas, providing fellowship opportunities and experiences, promoting research in MS, and providing networking opportunities. The following organizations are the primary MSCoE external collaborators and partners:

University Affiliates

Through partnerships with affiliated academic institutions, the VA conducts the largest education and training effort for health professionals in the nation. The MSCoE collaborates with our VA facility university affiliations University of

Maryland School of Medicine, University of Washington School of Medicine, Oregon Health and Science University, and Vanderbilt University Medical Center



National MS Society



The MSCoE and National MS Society (NMSS) have collaborated since the MSCoE establishment in 2003. As part of the VA's efforts to advance and improve the lives of Veterans with MS, the VA formalized a partnership with the NMSS on March 6, 2019. The partnership continues to support and maintain the VA's national network of MS clinical services, education, and research. The VA and NMSS seek to enhance health services, patient and HCP education, Veteran self-efficacy, and promote whole health goals of Veterans, care partners, and their families. Progress toward a Memorandum of Agreement (MOA) was accomplished in FY23, with the expectation of the VA Undersecretary for Health and the President of NMSS jointly signing in FY24. The purpose of the MOA is for VA to formally partner with the NMSS, a community partner, promote and facilitate access for Veterans with MS to high quality MS care by each organization promoting their shared resources to patients and clinicians to optimize and streamline MS care.

Consortium of MS Centers



The Consortium of MS Centers (CMSC) provides leadership in clinical research and education, develops opportunities to share information and knowledge among consortium members, and disseminates information to the health care community and to people affected by MS. The CMSC has been a consistent partner and supporter of the MSCoE and has provided excellent education opportunities for VA HCPs through scholarships to attend the CMSC Annual Meetings, with additional training opportunities for fellows and nurses. During the CMSC annual meetings, the MSCoE is complemented with two sponsored education symposia that are facilitated by VA presenters. The Consortium also provides an opportunity for MSCoE to host an annual VA Business Meeting, host an educational booth in the exhibit hall, and collaborate with the CMSC on the annual Patient Education Program. The CMSC provides complementary consortium membership to all VA employees and a position on the CMSC Board of Governors to a MSCoE representative. Dr. Haselkorn is currently serving as the MSCoE representative.

International Organization of MS Nurses

The International Organization of MS Nurses (IOMSN) is the first and only international organization focused solely on the needs and goals of



professional nurses, anywhere in the world, who care for people with MS. Mentoring, educating, networking, sharing – the IOMSN supports nurses in their continuing effort to offer HOPE. This year, Lisa Mitchell, RN, MSN, MSCN, VA Maryland Healthcare System, Baltimore, MD, served as the VA MS Nurse Representative from 2020-2023. Tomicka McMillion, DNP, MSN, RN MSCN, VA New Jersey HCS, East Orange, NJ, will serve as the newly appointed VA MS Nurse Representative from 2023 – 2026. Also, from the VA New Jersey HCS, East Orange, NJ, Ms. Maryann Rosenberg, a Nurse Case Manager, was recognized and selected to receive the 2021 *Nightingale Award*. The award was for Ms. Rosenberg and her clinical team’s proposal to expand MS nursing education that would have a lasting impact.

Can Do MS



Can Do MS is a nonprofit that delivers health and wellness education programs for families with MS. The organization has been at the forefront of promoting the culture and belief that everyone living with MS has the power to live full lives. MSCoE partners with Can Do MS to deliver health and wellness education programs via monthly patient-education webinars and virtual programs.

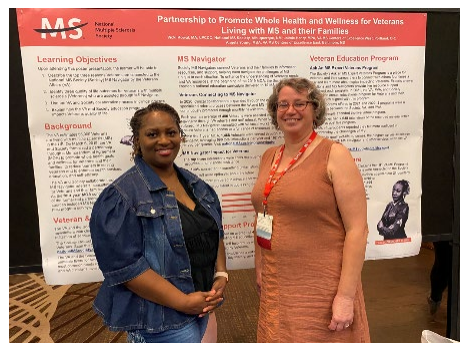
Paralyzed Veterans of America



The Paralyzed Veterans of America (PVA) is a Veterans Service Organization (VSO) that holds 34 chapters and 69 National Service Offices in the US and Puerto Rico. PVA staff are skilled at working with the unique issues involved with MS care access, disability, and service-connection as well as a variety of recreational opportunities. PVA visits many VA MSCoE Regional Programs as part of its evaluation of SCI-D Centers, providing Veteran and organizational perspectives, highlighting VA MSCoE locally and in the VISN, and recommending opportunities for improvements. PVA representatives are also members of facility internal review boards (IRB), providing a voice for Veteran needs. Dr. Maloni and Dr. Lee-Wilk serve as planning committee members.



PVA Summit: Jodie Haselkorn, MD, MPH (MSCoE West), Lani Pitofsky (MSCoE West), and VA Puget Sound HCS staff



PVA Summit, VA and NMSS Partnership Poster: Angela Young, MBA (MSCoE East) and Vicki Kowal, MA, LPCC, NCC (NMSS)



PVA Summit: Lani Pitofsky (MSCoE West), Angela Young, MBA (MSCoE East), and Vicki Kowal, MA, LPCC, NCC (NMSS)

CLINICAL CARE & INFORMATICS CORES

MSCOE CLINICAL CARE & INFORMATICS CORE OBJECTIVES

- Understand the demographics, utilization, locations, and needs of Veterans with MS in the VHA
- Ensure high-quality clinical care across the US for Veterans with MS
- Optimize MS care via a national Network in a hub and spoke stepped model
- Promote a wellness-first approach to care for Veterans with MS
- Advise for appropriate, safe, and monitored use of MS disease-modifying therapies (DMT)
- Partner for education, support services, outreach, and advocacy

MS VETERAN DEMOGRAPHICS, OUTPATIENT & SPECIALTY CARE UTILIZATION, & DISEASE MODIFYING THERAPY USE

Knowing our Veteran population with MS is fundamental to ensuring the high quality of their care. MSCoE obtains and synthesizes demographic and utilization data for a confirmed cohort of Veterans with MS. For the following tables, a Veteran is counted as having MS if they have had three MS encounters (Inpatient/Outpatient/Prescription [Rx]) within any year (Culpepper WJ, et al Neurology 2019 DOI: 10.1212/WNL.0000000000007043). The data is confirmed using the VA Computerized Patient Record System (CPRS), MS Surveillance Registry (MSSR), MS Repository, VHA Pharmacy Benefits Management (PBM), and other data streams, either taking an MS-specific therapy or at least one encounter per year with a primary diagnosis of MS.

MS Veteran Demographics

Clinical Care/Informatics Table 1 shows total numbers of Veterans with MS nationally, in VISNs containing MSCoE East (VISN 5) and MSCoE West (VISN 20), in the combined MSCoE VISNs, and by other VISNs. Methods to count Veterans with MS include using the algorithm described above and by *International* Statistical Classification of Diseases and Related Health Problems (ICD) codes, by Veterans served at MS clinics identified by the 344 MS Service Clinic Stop Code, and by entry into the MSSR. **Lower numbers of Veterans identified by MS Service Clinic stop code and by MSSR entry highlight geographic areas needing additional support for these efforts.**

Clinical Care/Informatics Table 1: FY22-23 Numbers of Veterans with MS seen in the VA system by VISN based on ICD Code, MS Service Clinic Stop Code 344, and MSSR.

VISN	FY22			FY23		
	Unique MS Veterans Collected by VSSC Neurology Cube	Unique Veterans Received MS Service Clinic Stop Code 344, n (% of Cube totals)	Unique Veterans Registered at MSSR (n, % of Cube totals)	Unique MS Veterans Collected by VSSC Neurology Cube	Unique Veterans Received MS Service Clinic Stop Code 344, n (% of Cube totals)	Unique Veterans Registered at MSSR (n, % of Cube totals)
Total	19,172	3,990 (21)	2,858 (15)	18,619	4,740 (25)	3,277 (18)
5: MSCoE East	792	597 (75)	539 (68)	783	732 (93)	605 (77)
20: MSCoE West	1,324	675 (51)	757 (57)	1,252	703 (56)	773 (62)
ALL MSCoE East	9,989	1,831 (18)	1,551 (16)	9,727	2,388 (25)	1,843 (19)

VISN	FY22			FY23		
	Unique MS Veterans Collected by VSSC Neurology Cube	Unique Veterans Received MS Service Clinic Stop Code 344, n (% of Cube totals)	Unique Veterans Registered at MSSR (n, % of Cube totals)	Unique MS Veterans Collected by VSSC Neurology Cube	Unique Veterans Received MS Service Clinic Stop Code 344, n (% of Cube totals)	Unique Veterans Registered at MSSR (n, % of Cube totals)
ALL MSCoE West	9,603	2,159 (22)	1,295 (13)	9,275	2,356 (25)	1,414 (15)
1	880	94 (11)	19 (2)	838	116 (14)	63 (8)
2	934	185 (20)	417 (45)	881	231 (26)	429 (49)
4	962	75 (8)	139 (14)	978	98 (10)	156 (16)
6	1,419	177 (12)	89 (6)	1,395	207 (15)	92 (7)
7	1,327	295 (22)	226 (17)	1,312	407 (31)	278 (21)
8	1,748	35 (2)	64 (4)	1,697	158 (9)	73 (4)
9	805	148 (18)	15 (2)	763	184 (24)	15 (2)
10	1,687	228 (14)	34 (2)	1,603	262 (16)	132 (8)
12	946	446 (47)	16 (2)	900	533 (59)	39 (4)
15	746	13 (2)	21 (3)	733	30 (4)	21 (3)
16	1,132	277 (24)	28 (2)	1,103	343 (31)	30 (3)
17	1,196	0 (0)	195 (16)	1,156	0 (0)	210 (18)

	FY22			FY23		
19	1,327	263 (20)	208 (16)	1,286	283 (22)	268 (21)
21	937	0 (0)	15 (2)	923	0(0)	14 (2)
22	1,446	382 (26)	34 (2)	1,403	338 (24)	38 (3)
23	1,034	105 (10)	21 (2)	984	131 (13)	21 (2)

Source: ICD codes are from the VHA Support Service Center Neurology Cube. ICD codes are from the VA CDW.

Clinical Care/Informatics Table 2 contains the demographics of Veterans with MS. In FY23 they are on average 74% male, age of 60, and predominantly White (71%). Two-thirds are classified as relapsing-remitting (RRMS) subtype or clinically isolated syndrome (CIS), while the remaining third have progressive subtypes (secondary progressive MS and primary progressive MS). A third of Veterans with MS live in rural locations.

Both age and rurality are important considerations for selecting appropriate MS therapies for Veterans given less favorable benefit to risk balance with advancing age, and less access to infusion centers in rural locations.

Clinical Care/Informatics Table 2: FY23 demographics of Veterans with an MS diagnosis in the VA system.

Demographic Variable	FY21	FY22	FY23
N (number of Veterans with MS)	19,806	19,079	18,619
Female	25%	25%	26%
Average age males, years	66	62	61
Average age females, years	57	56	55
Caucasian	77%	72%	71%
Black	20%	19%	19%
Rural	33%	31%	32%
Operation Enduring Freedom/ Operation Iraqi Freedom	7%	7%	7%
Veterans represented in the MSSR	NA	NA	3473
Veterans in MSSR with subtype (used for subtype %)	NA	NA	3221
MS subtype: Clinically Isolated Syndrome*, n (%)	NA	NA	148 (5)
MS subtype: Relapsing Remitting MS*, n (%)	NA	NA	1895 (59)
MS subtype: Secondary Progressive MS*, n (%)	NA	NA	876 (27)
MS subtype: Primary Progressive MS*, n (%)	NA	NA	302 (9)

Data source: VA Corporate Data Warehouse (CDW) tables describing patient by station and related tables. *Data for MS subtype from the MS Surveillance Registry (MSSR), accessed 3/4/2024.

MS Veteran Density & Distance to MS Clinical Hub

FY23 density of Veterans with MS and distance to VA MS Clinical Hubs (formerly called Regional Programs) are shown in **Figures 1 and 2**. Areas of Veteran population without a Clinical Hub and with long driving distances in the Western United States highlight unmet MS clinical needs. These areas will be prioritized for the establishment of new Regional Specialty Programs and/or increased use of Telehealth. These figures and other quality indicators regarding community care is in preparation for publication.

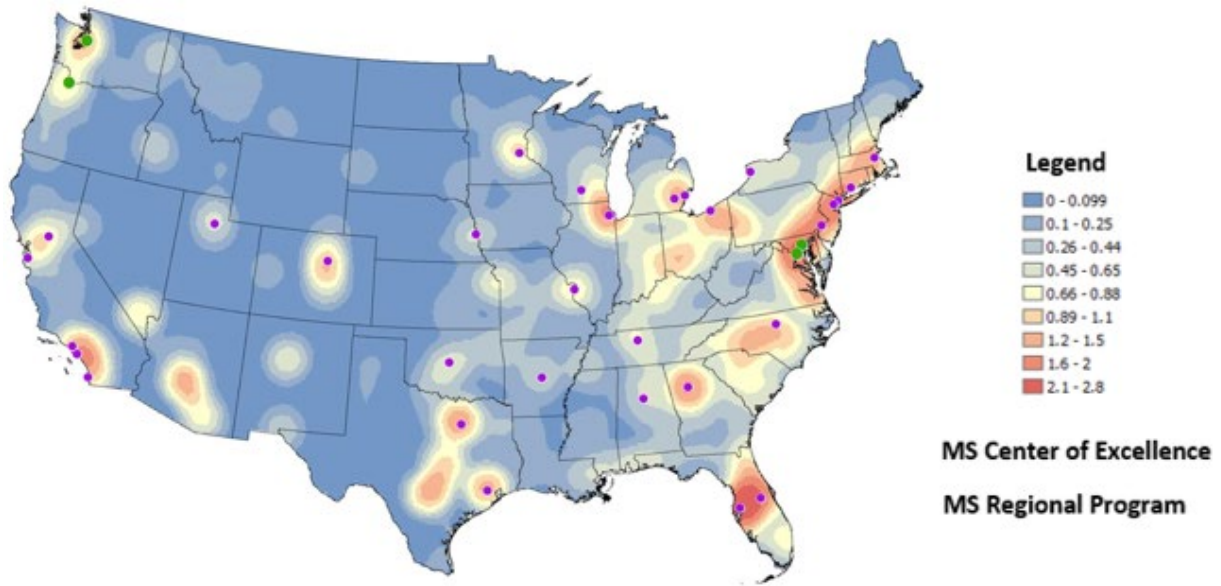


Figure 1. FY23 population density of Veterans with MS and location of MS Centers of Excellence and Clinical Hubs (formerly termed Regional Programs). IDEAS Center, Veterans Affairs Salt Lake City Health Care System, Salt Lake City, UT (publication pending).

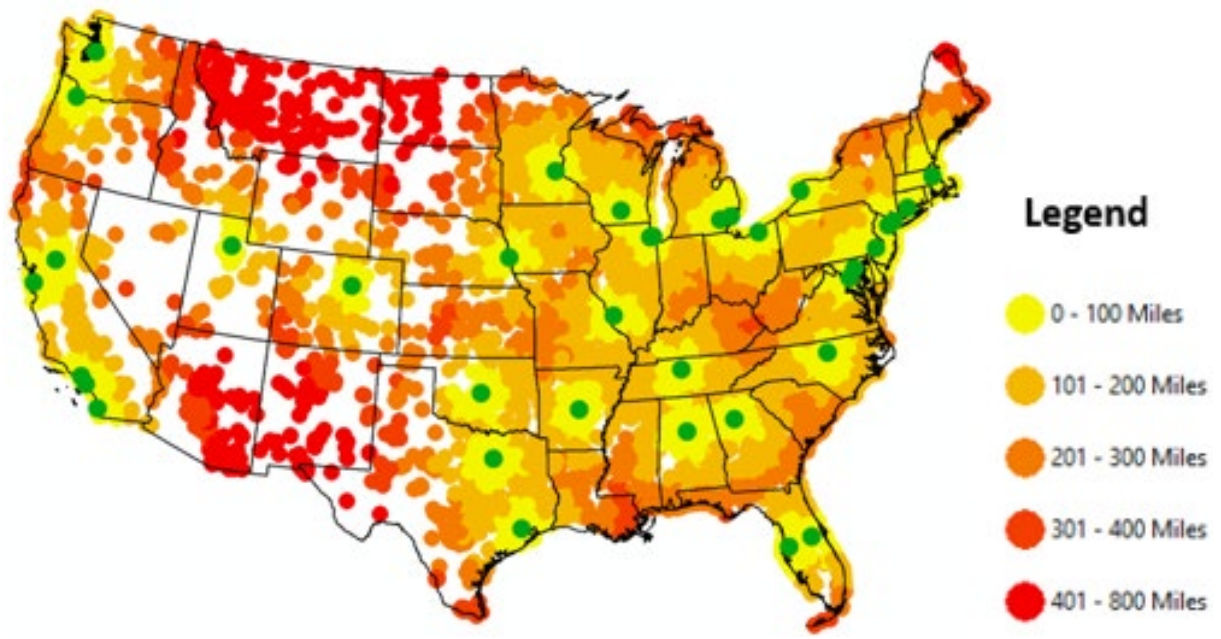


Figure 2. FY23 driving distance for Veterans with MS and location of MS Centers of Excellence and Clinical Hubs. IDEAS Center, Veterans Affairs Salt Lake City Health Care System, Salt Lake City, UT (publication pending).

MS Veteran Outpatient & Specialty Care Utilization

Veterans with MS are high utilizers of medical care with an average 39 outpatient visits/year (**Clinical Care/Informatics Table 3**). Most Veterans with MS are seen by neurologists; however some are seen instead or additionally by Rehab Physicians and SCI-D programs (**Clinical Care/Informatics Table 4**). Community Care is utilized widely by Veterans with

MS (Clinical Care/Informatics Table 5). FY23 analyses indicated that Veterans with MS care only at VA facilities have greater odds ratios of receiving DMT and MRI surveillance than Veterans receiving MS care only through Community Care neurologists (publication pending).

MS Outpatient Care Visits

Clinical Care/Informatics Table 3: FY23 Totals of unique Veterans with MS and unique outpatient visits in the VA nationally.

FY	Unique Outpatient Visits (n)	Unique Veterans with MS (n)	Average Visits/Veteran
2023	725,010	18,619	38.9
2022	742,402	19,172	38.7
2021	770,448	19,806	38.9
2020	813,702	22,456	36.2

Data source: VHA Support Service Center Neurology Cube Neurology Cube

MS Specialty Care Visits

Clinical Care/Informatics Table 4: Veterans with MS seen in national specialty care visits to Neurology, Rehabilitation (Rehab) Physicians, and SCI-D programs with MS as primary or secondary diagnosis.

FY	Veterans with MS Seen by Providers in Neurology, Rehab Physicians, and SCI-D	Percent of All MS Veterans	Veterans Encounters with MS Provider	As % of all Outpatient Encounters	
23	Neurology	8,402	45.1%	19,469	2.7%
	Rehab Physicians	1,119	6.01%	2,966	0.4%
	SCI-D	3,554	19.1%	48,012	6.6%
22	Neurology	8,417	43.9%	19,604	2.6%
	Rehab Physicians	1,133	5.9%	2,718	0.4%
	SCI-D	3,470	18.1%	46,688	6.3%
21	Neurology	7,824	39.5%	17,739	2.3%
	Rehab Physicians	1,152	5.8%	2,600	0.3%
	SCI-D	3,596	18.2%	46,198	6.0%
20	Neurology	8,807	39.2%	18,720	2.3%
	Rehab Physicians	1,303	5.8%	3,216	0.4%
	SCI-D	3,654	16.3%	49,559	6.1%

Data source: VHA Support Service Center Neurology Cube Neurology Cube

Clinical Care/Informatics Table 5: Office of Community Care (OCC) utilization by Veterans with MS FY22-FY23. Data from OCC, VACO. Abbreviations: Pt: patients; Enc.: Encounters; *Numbers covered OCC services after payment was made for the encounter. (Last date of service_09/21/2023_, last date of paid process_09/29/2023).

Location	FY23: # Veterans with MS Receiving OCC	FY23: # OCC Encounters from Veterans with MS Receiving OCC	FY23: Mean # OCC Encounters from Veterans with MS Receiving OCC
Total	10,986	569,294	51.82
VISN 1	449	22,244	49.54
VISN 2	371	23,452	63.21
VISN 4	448	21,421	47.81
VISN 5	376	19,038	50.63
VISN 6	788	40,475	51.36
VISN 7	786	36,145	45.99
VISN 8	916	52,193	56.98
VISN 9	500	19,656	39.31
VISN 10	888	52,678	59.32
VISN 12	486	29,512	60.72
VISN 15	454	17,443	38.42
VISN 16	703	33,814	48.10
VISN 17	672	35,947	53.49
VISN 19	830	36,518	44.00
VISN 20	819	37,221	45.45
VISN 21	469	25,720	54.84
VISN 22	702	36,921	52.59
VISN 23	593	28,896	48.73

Clinical Care Interfacility Virtual Consults

Interfacility consults (IFC) are a mechanism for smaller MS programs to receive intermittent help with managing complex MS care via e-consults and virtual visits. Reasons for IFCs can include diagnosis confirmation, help with initiating or switching DMT, and symptomatic management. MSCoE East and West serve as models of regional MS care by providing IFCs within VISNs 5 and 20, respectively. Consults utilize telehealth (e-consults and Veteran Video Connect consultations). Informal consultation to Veteran providers by email is also utilized until a formal IFC tract is in place. ***In FY23, Portland completed 17 IFC from 7 sites in VISN 20. IFC is the model by which MS care will ultimately reach every Veteran with MS, regardless of home location.***

Disease Modifying Therapy Use

Approximately 54% of Veterans with MS are currently prescribed a DMT with greater percentages in Veterans less than 60 years old, consistent with known greater efficacy of DMT at younger ages (**Clinical Care/Informatics Table 6**). Specific DMT use prescribed within the VA system is listed in **Clinical Care/Informatics Table 7**. Of those taking DMT, one-third are taking high-efficacy DMT. MSCoE works closely with VHA PBM to promote rapid adoption of generic medications, resulting in half of Veterans taking DMT taking a generic formulation. Cost savings from conversion of brand Betaseron® to lower cost Extavia® in FY21 saved \$548,310. Conversion of brand Tecfidera® to generic dimethyl fumarate saved \$24,450,887 between July 2021 and February 2022.

Clinical Care/Informatics Table 6: FY23 Percentage of Veterans with MS in the MSSR taking DMT by age group.

Age Group (yrs.)	Total MSSR Pts	% Each Age Group Over Total	MSSR Pts Ever Taking a DMT	% Each Age Group Ever Taken a DMT	MSSR Pts Currently Taking a DMT	% Each Age Group Currently Taking a DMT
All ages	3,300	100.00%	2,545	77.12%	1,766	53.5%
21-30	53	1.61%	45	84.91%	38	71.7%
31-40	338	10.24%	297	87.87%	256	75.7%
41-50	598	18.12%	533	89.13%	453	75.8%
51-60	829	25.12%	673	81.18%	519	62.6%
61-70	826	25.03%	599	72.52%	351	42.5%
71-80	544	16.48%	368	67.65%	141	25.9%
81+	111	3.36%	30	27.03%	8	7.2%

Clinical Care/Informatics Table 7: Unique prescriptions for Veterans with MS taking specific DMTs, by year FY19-23. Numbers do not reflect prescriptions provided to Veterans with MS receiving their MS care through the Office of Community Care. Not applicable (NA) is used when the year is prior to FDA-approval.

Medication Class	DMT Name	FY19	FY20	FY21	FY22	FY23
Oral & Injectables						
Glatiramer	Glatiramer Acetate (generic, Glatopa®, Copaxone®)	1,914	1,707	1,561	1,362	1,196
Interferons	Interferon Beta-1a (Avonex®, Rebif®)	1,131	979	836	708	576
	Peginterferon Beta-1a (Plegridy®)	43	41	2	4	30
	Interferon Beta-1b (Extavia®, Betaseron®)	270	226	195	162	125
Fumarates	Dimethyl Fumarate (generic, Tecfidera®)	2,084	1,973	1,967	1,832	1,691
	Diroximel Fumarate (Vumerity®)	0	3	26	35	36
	Monomethyl Fumarate (Bafiertam™)	NA	0	0	0	0
S1P inhibitors	Fingolimod (Gilenya®)	477	453	419	396	362
	Ozanimod (Zeposia®)	NA	2	9	19	41
	Ponesimod (Ponvory™)	NA	NA	1	1	2
	Siponimod (Mayzent®)	2	22	37	59	55
B cell depleting agents	Ofatumumab (Kesimpta®)	NA	NA	31	74	190
Other	Cladribine (Mavenclad®)	14	9	15	18	18
	Teriflunomide (Aubagio®)	468	562	611	620	640
Medication Class infusions	Total oral and injectable DMT	6,403	5,977	5,708	5,286	4,962
B cell depleting agents	Ocrelizumab (Ocrevus™)	651	1,098	1,279	1,489	1,849
	Rituximab (Rituxan®, biosimilar Truxima)	407	525	512	514	398
	Ublituximab (Briumvi™)	NA	NA	NA	NA	0
Other	Alemtuzumab (Lemtrada®)	27	51	1	0	56
	Natalizumab (Tysabri®)	335	270	217	190	155

Total Infusion DMT	Total Infusion DMT	1,420	1,944	2,008	2,193	2,458
Total DMT	Total DMT	7,823	7,921	7,716	7,479	7,420

Data source: Neurology Cube, MSSR

MSCoE Management of DMT

The MSCoE Clinical Core reviews the latest literature regarding DMT and symptomatic treatments for MS at quarterly meetings. MSCoE shares updates with the MSCoE Network via variety of academic (abstracts, manuscripts, invited lectures) and internal communications (patient and provider e-letters, podcasts, webinars, Network meetings). **In FY23, the Clinical Core partnered with VA PBM to update Veteran-focused DMT treatment guidance and a DMT comparison document** with plans to disseminate in FY24.

TELEHEALTH UTILIZATION

Telehealth is an essential method of providing MS care in the hub and spoke MSCoE Network. Telehealth utilization including video encounters and telephone encounters remained robust in FY23, despite lifting of COVID-19 pandemic in-person visit restrictions, highlighting the ongoing need for telehealth in MS care.

Clinical Care Informatics Table 8: Telehealth Utilization for FY21 - FY23.

Telehealth Variable	FY21 Veterans with MS Having At Least One of the Defined Encounters, n	FY21 Total Encounters, n (mean encounters per veteran)	FY22 Veterans with MS, n	FY22 Total Encounters, n (mean encounters per veteran)	FY23 Veterans with MS, n	FY23 Total Encounters, n (mean encounters per veteran)
Outpatient encounters	19,783	NA	19,172	742,402 (39)	18,619	725,010 (39)
Telehealth encounters	18,955	355,107 (19)	17,767	295,926 (17)	17,254	279,457 (16)
Telehealth encounters using video	10,440	76,068 (7)	9,875	67,558 (7)	9,625	61,036 (6)
Telehealth encounters using telephone	18,582	249,930 (14)	17,170	199,350 (12)	16,619	189,034 (11)

MS & COVID-19 CASES IN THE VA

Cumulative to the end of FY22, 3.2% of Veterans with MS had incident COVID-19. An additional 2.8% of Veterans with MS had a new case of COVID-19 in FY23. COVID-19 was the reason for hospitalization among 10.5% of all hospitalizations occurring in Veterans with MS through FY22, and for 15% of Veterans with MS in

FY23. COVID-19 was the reason for death for 12% of deaths in Veterans with MS through FY22 and 19% of deaths in FY23. Table 9 shows the breakdown between VISNs of these statistics. *Source: VA CDW*

Clinical Care/Informatics Table 9. MS Veterans with COVID-19 (COVID-MS) cumulative through end of FY22 and new cases in FY23 by VISN. Inpatient COVID-MS cases and deaths due to COVID in Veterans with MS are cumulative for both FY22 and FY23.

VISN	COVID-MS FY22 (n, % of all Veterans with MS)	COVID-MS FY23 (n, %)	Inpatient COVID-MS FY22 (n, % of all inpatient visits for Veterans with MS)	Inpatient COVID-MS FY23 (n, %)	COVID-MS Deaths FY22 (n, % of all deaths among Veterans with MS)	COVID-MS Deaths FY23 (n, %)
Total	627 (3.2%)	526 (2.8%)	195 (10.5%)	369 (15%)	74 (11.8%)	124 (19%)
1	33 (3.5%)	19 (2.3%)	7 (9.5%)	16 (19%)	4 (12.1%)	5 (23%)
2	54 (5.4%)	28 (3.2%)	23 (13.4%)	25 (14%)	11 (20.4%)	9 (30%)
4	41 (4.2%)	22 (2.2%)	10 (13.5%)	18 (12%)	3 (7.3%)	9 (23%)
5	30 (3.8%)	24 (3.1%)	5 (7.9%)	18 (20%)	2 (6.7%)	7 (27%)
6	51 (3.5%)	37 (2,7%)	8 (10.1%)	18 (13%)	4 (7.8%)	6 (14%)
7	56 (4.2%)	19 (1,4%)	11 (10.6%)	18 (14%)	5 (8.9%)	5 (15%)
8	103 (5.8%)	70 (4.1%)	22 (11.5%)	60 (21%)	4 (3.9%)	14 (25%)
9	38 (4.6%)	24 (3.1%)	4 (4.3%)	14 (15%)	1 (2.6%)	7 (21%)
10	69 (4.0%)	44 (2,7%)	16 (11.1%)	26 (16%)	12 (17.4%)	10 (15%)
12	40 (4.1%)	19 (2.1%)	5 (4.8%)	21 (14%)	3 (7.5%)	8 (21%)
15	34 (4.4%)	30 (4.1%)	9 (12.7%)	16 (15%)	3 (8.8%)	5 (23%)
16	52 (4.6%)	19 (1.7%)	15 (16.7%)	10 (8%)	3 (5.8%)	1 (3%)
17	28 (2.3%)	21 (1.8%)	8 (9.1%)	12 (13%)	3 (10.7%)	3 (15%)
19	42 (3.0%)	27 (2.1%)	8 (9.3%)	17 (14%)	2 (4.8%)	3 (8%)
20	31 (2.2%)	20 (1.6%)	11 (15.5%)	13 (13%)	1 (3.2%)	8 (17%)
21	37 (3.7%)	21 (2.3%)	8 (10.0%)	14 (11%)	2 (5.4%)	3 (12%)
22	86 (5.7%)	55 (3.9%)	17 (9.6%)	38 (15%)	8 (9.3%)	15 (29%)
23	54 (5.0%)	27 (2.7%)	8 (10.3%)	15 (11%)	3 (5.6%)	7 (23%)

Clinical Care/Informatics Table 10. FY23 Demographic and clinical characteristics of Veterans with MS and COVID-19.

Data are presented for all patients and by clinical outcome severity. Data source: VA CDW and MSSR.

	Overall (N 282)	Not Hospitalized (n = 192)	Hospitalization (n = 90)	ICU and/or ventilator support (n = 32)	Death (n = 12)
Female	71 (25%)	49 (26%)	22 (24%)	9 (28%)	1 (9%)
Male	211 (75%)	143 (74%)	67 (66%)	23 (72%)	11 (91%)
Age, Mean (SD), y	58.72 (13.41)	56.23 (13.26)	64.02 (12.18)	64.31 (10.97)	74.17(7.42)

	Overall (N 282)	Not Hospitalized (n = 192)	Hospitalization (n = 90)	ICU and/or ventilator support (n = 32)	Death (n = 12)
Race					
White	198	130	68	25	11
Black	77	55	22	7	1
Asian	3	3	0	0	0
Native American	2	2	0	0	0
Other	2	2	0	0	0
US Census Region					
Continental	44	24	20	7	4
Midwest	65	43	22	9	3
North Atlantic	61	48	13	6	3
Pacific	61	43	18	5	1
Southeast	51	34	17	5	1

CLINICAL DEMONSTRATION PROJECTS

Clinical Demonstration Projects focus efforts on pressing aspects of MS clinical care for Veterans.

FY23 Clinical Demonstration Projects	Met expectations	In progress	On hold	Description
1. Quality Indicators: MS diagnosis, MS subtype, discussion of DMT in clinical notes. Initiated FY21		X		FY21: A baseline evaluation based on a random sampling of 1,300 chart notes by the company Quality Insights® showed MS diagnosis in 97% of notes, MS subtype in 49% of notes, and DMT discussion in 71%. FY22: Education campaign including articles in newsletters, emailed quizzes, presentations at national meetings, and an instructional video was posted on the MSCoE website. FY23: Re-evaluation with marginal improvement. Clinical note templates for CPRS initiated FY23 with plan for deployment in FY24 and re-assessment in FY25.
2. Cerner clinical note templates and Order Sets. Initiated FY22			X	Templates created, but delay in Cerner prevents widespread use.

FY23 Clinical Demonstration Projects	Met expectations	In progress	On hold	Description
3. CPRS clinical note templates. Initiated FY23		X		Templates initiated. Plan to deploy in FY24 and assess uptake in FY25. (See #1)
4. Standardized MS MRI acquisition protocol. Initiated FY 22		X		FY22: Creation of a standardized MRI acquisition protocol by the Research Core. FY23: Completed meetings with 22 MSCoE and Network radiology department to share the protocol. FY24: Plan to disseminate protocol to additional 10-15 Network sites.
5. MSSR/COVID Project		X		FY22: COVID status added to MSSR. FY23: Veterans with MS and COVID were entered into MSSR by MSCoE and Network members. Interim analyses are presented in Clinical Care/Informatics Table 10. FY24: analysis and publications planned.

RESEARCH CORE

MSCOE RESEARCH CORE OBJECTIVES

- Conduct clinical science, health services, rehabilitation, and biomedical laboratory research relevant to the care of Veterans with MS.
- Disseminate research findings through publications, presentations, abstracts, and clinical practice guidelines.
- Enhance collaboration among VA medical facilities and increase the participation of Veterans in research activities.
- Provide research mentorship for the next generation of VA MS scientists.

ABOUT THE MSCOE RESEARCH CORE

The MSCoE Research Core strengths include: High-level of cooperation with monthly meeting between MSCoE-East and MSCoE-West and quarterly research meetings with other Network investigators. A large and heterogenous research portfolio that includes Biomedical Laboratory, Clinical Science, Health Service, and Rehabilitation services. High productivity as measured by objective national and international standards including (1) the number of publications in peer-reviewed journals, (2) the number of awarded grants, (3) the number of times any of the investigators or their fellows have presented their work in national and international conferences, (4) other research accolades such as special awards, (5) participation in grant peer-review committees such as NIH, VA and National MS Society, and (6) leadership roles in national and international conferences. MSCoE have academic affiliations that enhance MSCoE research accomplishments.

Accomplishments of the MSCoE Research Core are listed in the following appendices:

- [Appendix C](#). FY23 MSCoE Multi-site and FY23 MSCoE Single PI Research Projects
- [Appendix D](#). FY23 MSCoE Research Publications
- [Appendix E](#). FY23 MSCoE Research Posters
- [Appendix F](#). FY23 MSCoE Research Conference Presentations and Invited Talks.

FY23 highlighted research projects are:

FY23 achieved completion of a modified Delphi panel process to identify MS research priorities among Veterans with MS and MS providers and researchers within the VA system. Results were presented internally and will be published in FY24 (PI: L. Wooliscroft)

FY23 initiated participation in the multi-site CAFÉ-MS study, “Confirmatory Trial for Alleviating Fatigue with Elevida in Multiple Sclerosis (MS)”. MSCoE participating sites are Washington, DC, Baltimore, MD, Nashville, TN, Portland, OR, and Puget Sound, WA. This study is funded through the Department of Defense and is a partnership with Accelerated Cure Project and IConquer MS. The VA is expected to enroll approximately 750 Veterans with MS and fatigue (Lead VA PI M. Wallin, site PIs D. Harrison, F. Bagnato, C. Hollen, R. Spain, J. Haselkorn, A. Turner).

EDUCATION & TRAINING CORE

MSCOE EDUCATION & TRAINING CORE OBJECTIVES

- Provide a national program of MS education for HCPs, Veterans, and care partners to improve knowledge, enhance access to resources, and promote Veteran self-efficacy and treatment adherence.
- Collaborate with VSOs, MS organizations, and community healthcare institutes to increase educational opportunities, share knowledge, and expand participation.
- Utilize the MSCoE website to provide enduring educational programs, opportunities, and outreach.
- Coordinate physician and psychology fellowships to develop expertise in MS healthcare.

ABOUT THE MSCOE EDUCATION & TRAINING CORE

In alignment with the VA’s “Mission Act Implementation” and “Customer Service” priorities, MSCoE ensured educational content discussed the prominent needs of Veterans with MS as well as the many VA programs, services, and choices available to Veterans with MS. MSCoE education and training programs for HCPs focused on delivering content-rich curricula on neurology quality improvement initiatives, medication and symptom management, and multidisciplinary care practices. Veteran education and training focused on whole health, wellness, and accessing VA and community resources. MSCoE and our Network collaborated and partnered with many internal program offices and external organizations, as well as our affiliated Universities.

Accomplishments of the MSCoE Education & Training Core are listed in the following appendices:

- [Appendix G](#). FY23 MSCoE Health Care Professionals Conferences
- [Appendix H](#). FY23 MSCoE Health Care Professionals Grand Rounds Presentations
- [Appendix I](#). FY23 MSCoE Health Care Professionals Invited Lectures
- [Appendix J](#). FY23 VA Advanced Fellowship Program - MS
- [Appendix K](#). FY23 MSCoE Patient and Caregiver Programs
- [Appendix L](#). FY23 MSCoE Patient Support Groups

FY23 highlighted education projects:

Projects	Description & Highlights
Health Care Professionals	
MSCoE & National MS Society Current Topics in MS Webinars	4 live, virtual quarterly CME webinars for a multi-disciplinary audience of VA and non-VA providers. Each webinar is 1 hour, covering a variety of MS topics. The average attendance is 100, with a webinar on diet reaching over 400.

Projects	Description & Highlights
VA MS Extension for Community Health Outcomes (ECHO) Webinars	9 live, virtual monthly CME webinars for a multi-disciplinary audience of VA providers. Each webinar is 1 hour, discussing essentials of MS care including MS 101 and an introduction to DMTs. Webinars include case studies to apply the knowledge learned.
MSCoE Regional Directors Meeting	1 live, virtual half day (4.5 hours) CME conference targeted to MSCoE hub-and-spoke network members. Topics relate to MSCoE strategic objectives and improvement of MS care.
Consortium of MS Centers Annual Meeting	2 live, face-to-face CME sessions and 1 business MSCoE network meeting is coordinated in collaboration with the CMSC annual meeting. A booth in the expo area which is staffed and contains information on MSCoE and VA MS care. In addition to the 2 MSCoE sessions, hub-and-spoke network members were involved in 10 sessions.
Paralyzed Veterans of America Healthcare Summit + EXPO	10 live, face-to-face CME sessions were coordinated by MSCoE staff in collaboration with the PVA annual meeting. In addition to the sessions, 1 business meeting was organized as well as a booth in the expo area.
Grand Rounds & Other Invited Lectures	43 live, virtual CME presentations were provided in collaboration with local VA facilities, VA-affiliated Universities, and MS organizations. These collaborations expand our reach to MS providers, and highlight the amazing care of VA.
MSCoE Spotlight Electronic Newsletter	12 monthly electronic newsletters that reached over 45K people through GovDelivery were developed and distributed. Each issue has a clinical spotlight article written by a VA provider, VA research article, and information about MS care and education.
Fellowship Programs	3 fellowship programs were coordinated by MSCoE. The Baltimore and Portland VAs have fellowships for physicians through OAA. The Seattle VA has a fellowship for a research psychologist through a collaboration with the NMSS. Fellowships are for 2 years with a focus on clinical care and research.
Patient/Care Partner Education Programs	
MSCoE MS & Vets Podcast	12 recorded monthly podcasts on VA care and MS management were coordinated. Speakers are VA MS experts with each podcast touching on services within VA. The average play is 470, with several reaching over 600 plays.
MSCoE, National MS Society, & Paralyzed Veterans of America Webinar	1 annual webinar in collaboration with the NMSS and PVA. The webinar is recorded and then shared live, with the recording available for future viewing. The topic is VA focused with VA speakers.
Invited Lectures	10 live virtual presentations were provided through invites from Can Do MS, local facilities, VA affiliated Universities, and the NMSS.
MS Veteran Newsletter	4 quarterly electronic newsletters that reached over 50K people through GovDelivery. Each issue has 2-3 topics on managing MS and 1 story about a Veteran living with MS. The e-letter directs people to the MSCoE website for additional information.
VA Support Groups	6 live virtual educational support groups of various frequencies are coordinated. Most are monthly or held as a series that has a start and graduation point.

Projects	Description & Highlights
MS Education & Awareness Month	A national platform for MS Awareness was shared with public affairs officers, national communication offices, and hub-and-spoke network members. There was an article for the VA News, as well as posts on Facebook and Twitter.

VA ACRONYMS

ACPSD, Advisory Committee on Prosthetics and Special Disabilities	MoA, Memorandum of Agreement
ACTRIMS, Americas Committee for Treatment and Research in MS	MSSR, Multiple Sclerosis Surveillance Registry
AAN, American Academy of Neurology	MS, Multiple Sclerosis
CDA, Career Development Award	MSCoE or Centers, Multiple Sclerosis Centers of Excellence
CDW, Corporate Data Warehouse	NCAS, Veterans Health Administration Neurology Centers Advisory Subcommittee
CFU, Criteria for Use	Network, Multiple Sclerosis Regional and Support Programs
CME, Continuing Medical Education	NMSS, National Multiple Sclerosis Society
CMSC, Consortium of Multiple Sclerosis Centers	OAA, Office of Academic Affiliations
CPRS, Computerized Patient Record System	OCC, Office of Community Care
DMT, Disease Modifying Therapy	OCE, Office of Community Engagement
ECHO, Extension for Community Health Outcomes	ORH, Office of Rural Health
EES, Employee Education System	OHSU, Oregon Health & Science University
FAC, Federal Advisory Committee	OI&T, Office of Information and Technology
FY, Fiscal Year	PBM, Pharmacy Benefits Management
FTEE, Full-time employment equivalent	PTS, Patients
GAO, Government Accountability Office	PVA, Paralyzed Veterans of America
HAP, National Center for Healthcare Advancement and Partnerships	RRMS, Relapsing-Remitting Multiple Sclerosis
HCP, Healthcare Professional/Provider	R&D, Office of Research and Development
HCS, Healthcare System/Health Care System	Rx, Prescription
ICD, International Statistical Classification of Diseases and Related Health Problems	SCI-D, Spinal Cord Injuries and Disorders
IFC, Interfacility Consults	VA, Veterans Affairs
IOMSN, International Organization of Multiple Sclerosis Nurses	VACO, Veterans Affairs Central Office
IRB, Internal Review Boards	VHA, Veterans Health Administration
MINDS, MS Intervention and Development of Skills	VISN, Veterans Integrated Service Network
	VSO, Veterans Service Organization

APPENDIX A. FY23 VA NEUROLOGY CENTERS ADVISORY SUBCOMMITTEE (NCAS) MEMBERS

Name	Discipline	Organization	VA-affiliated	Title
Ernest Acheampong, RN	Nurse	SCI/MS	YES	Bronx VAMC
Kevin Alschuler, PhD	Psychology	University of Washington	NO	Associate Professor, Department of Rehabilitation Medicine, and Psychology
Natasha Antonovich, PharmD	Pharmacy	PBM	YES	VA Pharmacy Benefits Management
Timothy Besse	Veteran	Paralyzed Veterans of America	NO	Secretary, Paralyzed Veterans of America
Kathleen Burgess, MD, MS	Physical Medicine & Rehabilitation	Puget Sound VAMC	YES	Regional MS Director
John Duda, MD CHAIR	Neurology, Movement Disorders	PADRECC	YES	National Director, PADRECC
Glenn Graham, MD, PhD	Neurology, Stroke	VACO	YES	Deputy National Director for Neurology
June Halper, MSN, APN-C, MSCN, FAAN	MS	CMSC	NO	Executive Director, Consortium of MS Centers
Omar Khan, MD	Neurology, Epilepsy	Epilepsy CoE	YES	Baltimore VAMC
Vicki Kowal, MA, LPCC, NCC	MS	NMSS	NO	Senior Manager, Health Equipment Initiatives
Sharyl Martini, MD, PhD	Neurology, Stroke	VACO	YES	Acting Director of Neurology, SCS
Chuck Maynard, PhD, MSW, MA	Sociology	University of Washington	YES	Research Professor Emeritus, Department of Health Services
Shui-Lin (Stan) Niu, PhD	Neuroscientist	Department of Defense	NO	Program Manager for DOD CDMRP MS Research Program
Cheryl Vines, MS	MS	Paralyzed Veterans of America	NO	Director of Research and Education, Paralyzed Veterans of America

APPENDIX B. FY23 MSCOE MEMBERSHIPS IN NON-VA ADVISORY COMMITTEES

Name	Committee
Bagnato, Francesca	Member, NMSS National Medical Advisory Committee Member, NMSS HCP Engagement Council of Tennessee/Kentucky Lead Mentor, Vanderbilt Medical Student Mentorship Member, Vanderbilt Student Mentorship Planning Committee Member, Southeast Council Mental Health Project
Cameron, Michelle	Founding Member, International MS Fall Prevention Research Network (2014-present)
Haselkorn, Jodie	Member, NMSS MS Regional Summit Seattle Member, NMSS National Patient Engagement Committee in Research Member, NMSS National Telehealth Guidelines Work Team Team Physician, National Veterans Wheelchair Games (2002-present) Member, CMSC Continuing Professional Education Committee (2003-present) Member, CMSC Research Interest Group (2003-present) Member, PVA Education Committee (2003-present) Member, CMSC Board of Governors (2019-present)
Kazmierski, Maggie	Member, U of Maryland School of Social Work, Health Care Education and Leadership Scholars Selection Committee (2016-2022) Member, VA Maryland HCS, SW MSW Intern Committee (2019-2022) Chair, NMSS Maryland/DC/Virginia/West Virginia HCP Council (2009-2022) Member, VA Maryland HCS, Human Rights Commission in Research Committee (2017-2022)
Lee-Wilk, Terry	Co-chair, Mental Health Professionals Special Interest Group, CMSC (2020-present) Member, Giants in MS Steering Committee, CMSC (2021-present) Member, Health Advisory Committee, NMSS Greater DC-Maryland Chapter (2015-present) Member, MS Society Regional HCP Council (2018-present) Member, Annual Summit Program Planning Committee, PVA (2017-present)
Maloni, Heidi	Member, NMSS Fellowship Review Committee (2018-present) Member, PVA Education Board (2015-present) Member, PVA Summit Planning Committee (2010-present) Member, District of Columbia Primary Care Association (2000-present)
Mitchell, Lisa	VA Liaison, IOMSN Board (2019-present) Member, Clinical Advisory Board, Maryland Chapter, NMSS (2010-present) Member, NMSS Maryland/DC/Virginia/West Virginia HCP Council
Silbermann, Elizabeth	Member, American Neurological Association Governance Council (2021-present) Co-Leader, International Women in MS Neuro-Ophthalmology Group (2019-present) Board Member, American Neurological Association Board of Directors (2018-2021)

Name	Committee
Sloan, Alicia	Member, NMSS Greater Northwest HCP Council Member, PVA Summit Program Committee (2022-present) Member, Team Rubicon, Region 10, USA (2015-present)
Spain, Rebecca	Member, Oregon Governor's Oregon Prescription Drug Affordability Board (2022) Member, John Dystel Prize Committee, AAN (2021-present) Member, NMSS Nutrition Subcommittee (2019-current)
Turner, Aaron	Member, American Psychological Association Annual Convention, Division 22 Program Committee (2007-present) Member, American Psychological Association Awards Committee (2012-present) Member, American Board of Professional Psychology, Rehabilitation Psychology Practice Sample Review Board (2013-present) President, Academy of Rehabilitation Psychology (2019-present)
Wallin, Mitchell	Member, NMSS National Telehealth Guidelines Work Team
Wooliscroft, Lindsey	Member, Junior and Early Career Membership Committee, American Neurological Association (2020-present) Co-Leader, International Women in MS Neuro-Ophthalmology Group (2019-present) MSCoE Representative, VA Neurology Field Advisory Board (2021-present) Webinar Lead, Education Committee, American Neurological Association (2020-present)
Yadav, Vijayshree	Co-founder and Member Steering Committee, MS and Neuroimmunology National Fellowship Didactic Lecture Series hosted by ACTRIMS (2020-present)

APPENDIX C. FY23 MSCOE MULTI-SITE & FY23 MSCOE SINGLE PI RESEARCH PROJECTS

Goal: n=4 / Achievement: n=42 / Newly funded: n=9 / Unfunded active projects n=7

Multi-Site Research Projects

Project Title	Investigator(s)	Funding Source	\$	Years	Research Category
Lipoic Acid for the Treatment of Progressive MS	R. Spain (PI, Portland) J. Haselkorn (site PI, Puget Sound) M. Wallin (site PI, DC) P. Soldan (site PI, Salt Lake) O. Stuve (site PI, Dallas)	Merit	\$1,296,594	5/2018-6/2024	Clinical Science multi-site
Lipoic Acid for the Treatment of Progressive MS: Multi-Site Randomized Controlled Trial of Lipoic Acid	R. Spain (PI, Portland)	National MS Society	\$1,467,875	10/2017-6/2024	Clinical Science multi-site
Pooled Analysis of MS Findings on Multi-Site 7 Tesla MRI	D. Harrison (role, Baltimore)	R01	\$2,439,574	7/2020-6/2026	Clinical Science multi-site
A Multicenter Randomized Controlled Trial of Best Available Therapy versus Autologous Hematopoietic Stem Cell Transplant for Treatment-Resistant Relapsing MS	V. Yadav (site PI, Portland)	R01	\$1,622,430 per participant	12/2019-12/2028	Clinical science multi-site
ELEVIDA for MS Fatigue, CAFÉ-MS*	M. Wallin (co-I, DC) F. Bagnato (Site PI, Nashville) R. Spain/C. Hollen (site PI, Portland) J. Haselkorn (site PI, Puget Sound)	DoD	\$4,500,000	9/2023 – 8/2027	Clinical Science multi-site
Therapeutic Experience Program (TEP) Study Assessing Adherence to On-Label PoNS® Therapy for Improvement of Gait in People with MS in a Real-World Clinical Setting*	V. Yadav (site- PI, Portland) S. Shah (site-PI, Durham)	Helius	\$34,000	11/2022-11/2025	Clinical science multi-site
Modified Delphi panel for assessing					

Project Title	Investigator(s)	Funding Source	\$	Years	Research Category
Longitudinal Utilization of MS Disease-Modifying Therapies in two US healthcare systems: Department of Veteran Affairs and Medicare	D. Hartung (Co-I, OHSU) G. Graham (Co-I, Palo Alto) M. Wallin (Co-I, DC) S. Leipertz (Co-I, Puget Sound) N. Antonovich (Co-I, Orlando) R. Spain (PI, Portland)	MSCoE	N/A	2023-2024	Health Services

Single PI Research Projects

Project Title	Investigator(s)	Mechanism	Amount	Years	Research Category
Veteran Health Administration (n=9, *1 newly funded)					
BLR&D Research Career Scientist Award	A. Vandenbark, Portland	Career Scientist	\$1,270,911	5/2018-9/2025	Biomedical Laboratory
A Pilot Trial to Study the Effects of Oral MitoQ on Fatigue in MS	V. Yadav (PI), Portland	Merit	\$387,160	10/2019-3/2024	Clinical Science
Immunoregulation of Myelin-Specific T Lymphocytes	A. Vandenbark (PI), Portland	Merit	\$710,000	4/2016-12/2024	Biomedical Laboratory
Preclinical Translational Studies with DRH	A. Vandenbark (PI), Portland	Merit	\$880,000	4/2020-3/2024	Biomedical Laboratory
Improving the Assessment of Myelin and Axonal Integrity in Early MS	F. Bagnato (PI), Nashville	Merit	\$945,462	7/2021-6/2025	Clinical Science
Retinal Microvasculature as a Predictor of Neurodegeneration in MS	E. Silbermann (PI), Portland	CDA2	\$1,382,087	10/2020-9/2025	Clinical Science
Tunable Assembly of Regulatory Immune Signals to Promote Myelin-specific Tolerance	M. Wallin (co-I), DC	Merit	\$1,202,339	4/2022-3/2026	Biomedical Laboratory
Biomaterials-Enabled Delivery of Immunometabolic Modulators to Improve Treatment Options for MS in Veterans*	M. Wallin (co-I), DC	CDA	\$1,009,579	01/2023-12/2027	Biomedical Laboratory
National MS Society (n=10, *1 newly funded)					
Mentor-based Fellowship in Rehabilitation Research: The Seattle Collaborative Fellowship	J. Haselkorn (Co-I), Puget Sound	Mentor-based post-doctoral fellowship	\$401,426	7/2018-6/2023	Rehabilitation

Project Title	Investigator(s)	Mechanism	Amount	Years	Research Category
	A. Turner (Co-I), Puget Sound			(NCE 2025)	
A Randomized Controlled Trial of a Multicomponent Walking Aid Program for People with MS	L. Hugos (PI), Portland M. Cameron (Co-I), Portland	Research Grant	\$624,956	10/2019- 7/2024	Rehabilitation
7T-rings as biomarker of disease severity	F. Bagnato (PI), Nashville	Research Grant	\$763,804	10/2019- 9/2023	Clinical Science
Risk Factors for Preclinical MS-The ENGEMS Project	M. Wallin (co-I), Nashville	Research Grant	\$300,000	9/2021- 9/2023	Clinical Science
7T-Rings as Biomarker of Disease Severity (extension) *	F. Bagnato (PI), Nashville	Research Grant	\$150,000	10/2023- 9/2024	Clinical Science
Oregon Health & Science University Institutional Clinical Training Award	V. Yadav (PI), Portland M. Cameron (Co-I), Portland	Institutional Clinical Training Award	\$584,375	7/2020- 6/2025	Clinical Science
The Development of a Convolutional Neural Network for MRI Prediction of Progression and Treatment Response in Progressive Forms of MS	D. Harrison (PI), Baltimore	Research Grant	\$586,820	5/2022- 4/2025	Clinical Science
Development and Feasibility of a Fatigue Self-Management mHealth Program for Persons with MS	J. Haselkorn (Co-I), Puget Sound A. Turner (Co-I), Puget Sound	Research Grant	\$700,429	7/2021- 06/2026	Clinical Science
US MS Prevalence Project	M. Wallin (PI), DC	Research Grant	\$1,100,000	9/2015- 12/2023	Clinical Science
NIH (n=9, *1 newly funded)					
In Vivo Assessment of Meningeal Inflammation and its Clinical Impact in MS by 7 Tesla MRI	D. Harrison (PI), Baltimore	R01	\$1,796,000	2/2018- 6/2023	Clinical Science
Development of DR α 1-MOG-35-55 for Treatment of DR2-Negative MS Subjects	A. Vandembark (Co-PI), Portland	R44	\$998,486	4/2020- 3/2024	Biomedical Laboratory
Longitudinal Measurement of Neurodegeneration in a Mouse Model of Progressive MS: a Clinical and Histopathologic Validation	F. Bagnato (Co-PI), Nashville	R21	\$451,598	10/2020- 11/2022	Biomedical Laboratory

Project Title	Investigator(s)	Mechanism	Amount	Years	Research Category
Compensatory Mechanisms of Estrogen Mediated Protection from EAE in IL-10 KO Mice	H. Offner (PI), Portland	R21	\$450,000	9/2020-8/2023	Biomedical Laboratory
Aerobic Exercise to Improve Mobility in MS: Optimizing Design and Execution for a Full-Scale Multimodal Remyelination Clinical Trial	L. Wooliscroft (PI), Portland	Loan Repayment Program	\$100,000 in student loan repayment	9/2021-8/2023	Rehabilitation
Aerobic Exercise to Improve Mobility in MS: Optimizing Design and Execution for a Full-Scale Multimodal Remyelination Clinical Trial (Renewal) *	L. Wooliscroft (PI), Portland	Loan Repayment Program	\$100,000 in student loan repayment	9/2023-8/2025	Rehabilitation
Aerobic Exercise to Improve Mobility in MS: Optimizing Design and Execution for a Full-Scale Multimodal Remyelination Clinical Trial	L. Wooliscroft (PI), Portland	K23	\$638,916	7/2020-6/2025	Rehabilitation
Others (n=14, *6 newly funded)					
Establishment of the OHSU MS Center Lifestyle MS Cohort	V. Yadav (PI), Portland	OHSU Faculty Initiative Pool Grant	\$38,000	1/2022–12/2022	Clinical Science
Assessing Aerobic Exercise as a Remyelination Therapy in MS	L. Wooliscroft (PI), Portland	Medical Research Foundation	\$49,400	2/2021-1/2023	Rehabilitation
American Registry for Care in MS	D. Harrison (Co-I), Baltimore	Foundation of the Consortium of MS Centers	\$195,250	3/2018–2/2023	Clinical Science
Novel Biomarkers of Neural Repair in MS	L. Wooliscroft (PI), Portland	Myelin Repair Foundation	\$24,964	11/2020-6/2025	Rehabilitation
The Effects of Aerobic Exercise on Structural, Functional, and Blood Biomarkers of Remyelination and Neural Repair in MS	W. Rooney (PI), Portland L. Wooliscroft (Co-I), Portland	Myelin Repair Foundation and EMD Serono	\$49,840	8/2021-7/2025	Rehabilitation
The Adaptive Optics Retinal Imaging in Multiple Sclerosis	D. Harrison (PI), Baltimore	Department of Defense	\$905,006	9/2022-9/2025	Clinical Science
The Effect of Natalizumab on Blood Brain Barrier Permeability	F. Bagnato (PI), Nashville	Biogen Idec	\$172,181	1/2020 - 11/2022	Clinical Science

Project Title	Investigator(s)	Mechanism	Amount	Years	Research Category
Cladribine Tablets: Observational Evaluation of Effectiveness and Patient-Reported Outcomes in Sub Optimally Controlled Patients Previously Taking Oral or Infusion Disease Modifying Drugs (DMDs) for Relapsing Forms of MS (MASTERS-2)	F. Bagnato (Site PI), Nashville	EMD Serono	\$83,018	8/2020 – 8/2026	Clinical Science
Identification of Protein Pathways and Novel Biomarkers in Pre- and Early Clinical MS*	M. Wallin (co-I), DC	DoD	\$250,000	4/2023 – 3/2024	Biomedical Laboratory
Using Advanced Dynamic Susceptibility Contrast MR Perfusion to Quantify Microvascular Dysfunction in MS*	E. Silbermann (PI), Portland	OHSU Laura Fund	\$70,000	6/2023 – 6/2025	Clinical Science
Dietary Intervention as a Treatment of Fatigue and its Effects on Metabolomics and Gut Microbiome in Multiple Sclerosis*	V. Yadav (PI), Portland	OHSU Foundation	\$30,000 person months per budget period	10/2022-9/2023	Clinical Science
A CME Course to Educate Health Care Providers About the Latest in Advances in the Field of MS and CNS Neuroimmunological Disorders*	V. Yadav (PI), Portland	Paralyzed Veterans of America Foundation	\$15,000- person months per budget period	7/2023 - 7/2025	Education

APPENDIX D. FY23 MSCOE RESEARCH PUBLICATIONS

Goal: n=25 /**Achievement:** n=38 (Impact Factor (IF) with CiteScore listed)

1. Schilling, K. G., Fadnavis, S., Batson, J., Visagie, M., Combes, A. J., McKnight, C. D., ... **Bagnato, F.** ... & O'Grady, K. P. (2023). Denoising of diffusion MRI in the cervical spinal cord—effects of denoising strategy and acquisition on intra-cord contrast, signal modeling, and feature conspicuity. *Neuroimage*, 266, 119826. (IF=10.6)
2. Barter, K., & **Bagnato, F.** (2023). Olfactory Hallucinations Following COVID-19 Vaccination. *Federal Practitioner*, 40(9), 1. (IF=0.7)
3. Koch C, **Bagnato F**, Laule C, Gauthier SA. Editorial: Measuring progression in Multiple Sclerosis: Progressing beyond the ordinary. *Front Hum Neurosci*. 2022 Nov 22;16:1095208. doi: 10.3389/fnhum.2022.1095208. PMID: 36483634; PMCID: PMC9723981. (IF=3.4)
4. Chapman, W. D., Herink, M. C., **Cameron, M. H.**, & Bourdette, D. (2023). Polypharmacy in Multiple Sclerosis: Prevalence, Risks, and Mitigation Strategies. *Current Neurology and Neuroscience Reports*, 1-9. doi: 10.1007/s11910-023-01289-9. (IF=5.6)
5. **Cameron, M. H.**, Bethoux, F., Field-Fote, E., Lenderking, W. R., Zaiser, E., Cutts, K. N., ... & Steinerman, J. R. (2023). Development of an integrated conceptual model of multiple sclerosis spasticity. *Disability and Rehabilitation*, 1-11. doi: 10.1080/09638288.2023.2237403 (IF=4.4)
6. Mañago, M. M., Cohen, E. T., **Cameron, M. H.**, Christiansen, C. L., & Bade, M. (2023). Reliability, Validity, and Responsiveness of the Patient-Specific Functional Scale for Measuring Mobility-Related Goals in People With Multiple Sclerosis. *Journal of Neurologic Physical Therapy*, 10-1097. doi:10.1097/NPT.0000000000000439. (IF=5.8)
7. **Wooliscroft, L.**, McCoy, S., Hildebrand, A., Rooney, W., Oken, B. S., **Spain, R. I.**, ... & **Cameron, M.** (2023). Protocol for an exploratory, randomised, single-blind clinical trial of aerobic exercise to promote remyelination in multiple sclerosis. *BMJ open*, 13(1), e061539. doi: 10.1136/bmjopen-2022-061539. (IF=4.4)
8. Magid, H. S. A., Jin, S., **Culpepper, W. J.**, Nelson, L. M., & **Wallin, M.** (2022). Telemedicine Utilization Among Patients With Multiple Sclerosis in the US Veterans Health Administration, 2010–2020. *Neurology: Clinical Practice*, 12(6), e133-e142. doi: 10.1212/CPJ.0000000000200078. (IF=2.2)
9. Hittle, M., **Culpepper, W. J.**, Langer-Gould, A., Marrie, R. A., Cutter, G. R., Kaye, W. E., ... & **Wallin, M. T.** (2023). Population-Based Estimates for the Prevalence of Multiple Sclerosis in the United States by Race, Ethnicity, Age, Sex, and Geographic Region. *JAMA neurology*. doi: 10.1001/jamaneurol.2023.1135 (IF=34.1)
10. **Spain, R.**, Hildebrand, A., Waslow, C., Emmons, J., Paz Soldan, M., Repovic, P., Solomon, A., Rinker, J., **Wallin, M.**, **Haselkorn, J.K.**, Stuve, O., Gross, R., & **Turner, A.P.** (2023). Processing speed and memory tests differ in associated brain volumes in progressive multiple sclerosis. *Frontiers in Neurology*, 8, 14:1188124. doi: 10.3389/fneur.2023.1188124. PMID: 37360346 (IF=4.8)
11. Gromisch, E.S., Raskin, S.A., Neto, L.O., **Haselkorn, J.K.**, & **Turner, A.P.** (2023). Appointment attendance behaviors in multiple sclerosis: Understanding the factors that differ between no shows, short notice cancellations and attended appointments. *Multiple Sclerosis and Related Disorders*. Feb;70:104509. doi:

- 10.1016/j.msard.2023.104509. PMID: 36638769 (IF=5.6)
12. **Turner, A.P.**, Arewasikporn, A., Hawkins, E.J., Suri, P., Burns, S.P., **Leipertz, S.L.**, & **Haselkorn, J.K.** (In Press). Risk factors for chronic prescription opioid use in multiple sclerosis. *Archives of Physical Medicine and Rehabilitation*. (IF=6.0)
 13. Gromisch, E.S. Ehde, D.M., Neto, L.O., **Haselkorn, J.K.**, Agresta, T., Gokhale, S.S., **Turner, A.P.** (2023). Using participatory action research to develop a new self-management program: Results from the design stage of Managing MS My Way. *Multiple Sclerosis and Related Disorders*. Jun;74:104720. doi: 10.1016/j.msard.2023.104720. PMID: 37084496 (IF=5.6)
 14. Roth, E. G., Minden, S. L., **Maloni, H. W.**, Miles, Z. J., & **Wallin, M. T.** (2022). A Qualitative, Multiperspective Inquiry of Multiple Sclerosis Telemedicine in the United States. *International Journal of MS Care*, 24(6), 275-281. doi: 10.7224/1537-2073.2021-117. (IF=3.1)
 15. Mañago, M. M., Seamon, B. A., Boncella, K. L., **Wallin, M. T.**, **Maloni, H.**, Hoover, B., ... & Harris-Love, M. O. (2023). Ultrasound measures of muscle morphology in people with multiple sclerosis are associated with muscle performance and functional mobility. *Multiple Sclerosis and Related Disorders*, 75, 104759. doi: 10.1016/j.msard.2023.104759 (IF=5.6)
 16. Keszler, P., **Maloni, H.**, Miles, Z., Jin, S., & **Wallin, M.** (2022). Telemedicine and multiple sclerosis: a survey of health care providers before and during the COVID-19 pandemic. *International Journal of MS Care*, 24(6), 266-270. doi: 10.7224/1537-2073.2021-103. (IF=3.1)
 17. **Offner, H.**, Lockwood, D., Meza-Romero, R., & **Vandenbark, A. A.** (2023). PD-L1 is required for estrogen-induced protection against severe EAE in IL-10 deficient mice¹. *Metabolic brain disease*, 38(2), 589-599. doi: 10.1007/s11011-022-01129-8. PMID: 36454506; PMCID: PMC9976593. (IF=5.7)
 18. Kohs, T. C., Fallon, M. E., Oseas, E. C., Healy, L. D., Tucker, E. I., Gailani, D., McCarty O. J. T., **Vandenbark A. A.**, **Offner H.**, & Verbut, N. G. (2023). Pharmacological targeting of coagulation factor XI attenuates experimental autoimmune encephalomyelitis in mice. *Metabolic Brain Disease*, 1-9. doi: 10.1007/s11011-023-01251-1. (IF=5.7)
 19. Zerimech, S., Nguyen, H., **Vandenbark, A. A.**, **Offner, H.**, & Baltan, S. Novel therapeutic for multiple sclerosis protects white matter function in EAE mouse model. *Frontiers in Molecular Medicine*, 3, 1237078. doi: 10.3389/fmmed.2023.1237078 (IF=4.8)
 20. **Spain, R. I.**, Piccio, L., & Langer-Gould, A. M. (2023). The Role of Diet in Multiple Sclerosis: Food for Thought. *Neurology*, 100(4), 167-168. (IF=9.6)
 21. Hollen, C., Neilson, L. E., Barajas Jr, R. F., Greenhouse, I., & **Spain, R. I.** (2023). Oxidative stress in multiple sclerosis—Emerging imaging techniques. *Frontiers in Neurology*, 13, 1025659. doi:10.3389/fneur.2022.1025659 (IF=4.8)
 22. Gromisch, E.S., **Turner, A.P.**, Neto, L.O, Ruiz, J.A., Lo, A.C., Agresta, T., & Foley, F.W. (2023). Establishing the test-retest reliability and minimal detectable change of the Multiple Sclerosis Resiliency Scale (MSRS). *The International Journal of MS Care*, 25(1), 15-19. doi:10.7224/1537-2073.2021-126. PMID: 36711223. (IF=3.1)
 23. Sumner, L., Schmidt, H., Minden, S., Falkenberg, N., Sun, L., McBurney, R., ... & **Wallin, M.** (2023). Use of

Telemedicine Among People with Multiple Sclerosis Before and During the COVID-19 Pandemic. *Telemedicine and e-Health*, 29(8), 1152-1163. doi: 10.1089/tmj.2022.0284. (IF=6.6)

24. Harel, T., Gorman, E. F., & **Wallin, M. T.** (2023). New onset or relapsing neuromyelitis optica temporally associated with SARS-CoV-2 infection and COVID-19 vaccination: A systematic review. *Frontiers in Neurology*, 14, 1099758. doi: 10.3389/fneur.2023.1099758. (IF=4.8)
25. Buttolph, L., **Wooliscroft, L.**, Bradley, R., & Zwickey, H. (2023). Participant Perspectives on Community Qigong for People with Multiple Sclerosis. *Integrative Medicine Reports*, 2(1), 26-34. (No IF found)
26. Sammi, M. K., Fryman, A., Baker, E., Moloney, B., Powers, K., West, R., ... & **Yadav, V.** (2023). Vascular disease risk factors in multiple sclerosis: Effect on metabolism and brain volumes. *Multiple sclerosis and related disorders*, 74, 104675. doi: 10.1016/j.msard.2023.104675. (IF=5.6)
27. Peters, J., Cohen, J. A., Corboy, J. R., Hopkins, S. E., Hua, L. H., Kakara, M., ... **Yadav V.**, & Longbrake, E. E. (2022). Virtual Didactics as a Tool for Harmonizing Education About Rare Topics in Neuroimmunology. *Neurology: Education*, 1(1). doi:10.1212/NE9.000000000200008 (IF=9.6)
28. Stienstra, N., Horton, J., Lane, M., Kumthekar, A., Sathe, N., Sunny, C., ... **Yadav V.**, & Deodhar, A. (2022). Demyelinating Disease After Exposure to Tumor Necrosis Factor α Inhibitors: A Case Series in a Tertiary Care Center. *JCR: Journal of Clinical Rheumatology*, 28(2), e638-e641. doi:10.1097/RHU.0000000000001789. (IF=3.4)
29. Corboy, J. R., Fox, R. J., Kister, I., Cutter, G. R., Morgan, C. J., Seale, R., ... & Bowen, J. on behalf of the DISCOMS investigators (**Yadav V.**) (2023). Risk of new disease activity in patients with multiple sclerosis who continue or discontinue disease-modifying therapies (DISCOMS): a multicentre, randomised, single-blind, phase 4, non-inferiority trial. *The Lancet Neurology*, 22(7), 568-577. (IF=48)
30. Sutton, P., Lutz, M. W., Hartsell, F. L., Kimbrough, D., Tagg, N. T., Skeen, M., ... & **Shah, S.** (2022). Myelin oligodendrocyte glycoprotein (MOG) antibody-associated disease: Presentation and outcomes of adults at a single center. *Journal of neuroimmunology*, 373, 577987. (IF=3.3)
31. Masha, N., Kimbrough, D. J., Eckstein, C. P., Hudak, N. M., Skeen, M. B., Hartsell, F. L., ... & **Shah, S.** (2023). Neuromyelitis optica: Clinical course and potential prognostic indicators. *Multiple Sclerosis and Related Disorders*, 69, 104414. (IF=5.6)
32. Lackey, E., Shen, J., Veal, K., Paredes, D., Masha, N., **Shah, S.**, & Eckstein, C. (2023). Steroid-induced weight gain in the treatment of neurosarcoidosis. *Multiple Sclerosis and Related Disorders*, 71, 104587. (IF=5.6)
33. Shen, J., Lackey, E., & **Shah, S.** (2023). Neurosarcoidosis: Diagnostic Challenges and Mimics A Review. *Current Allergy and Asthma Reports*, 1-12. (IF=8.2)
34. Lackey, E., Shen, J., Veal, K., **Shah, S.**, & Eckstein, C. (2023). Neurosarcoidosis causing hydrocephalus: A case series. *Journal of Neuroimmunology*, 578120. (IF=3.3)
35. Polick, C. S., Rubenstein, D., **Shah, S.**, Beckham, J. C., Calhoun, P. S., & Noonan, D. (2023). Addressing smoking in persons with Multiple Sclerosis: State of the science and need for a targeted intervention. *Nicotine and Tobacco Research*, ntad159. (IF=6.9)
36. Choi, S., Lake, S., & **Harrison, D. M.** (2023). Evaluation of the Blood-Brain Barrier, Demyelination, and Neurodegeneration in Paramagnetic Rim Lesions in Multiple Sclerosis on 7 Tesla MRI. *Journal of Magnetic*

Resonance Imaging. (IF=4.2)

37. Patel, L. D., Raghavan, P., Tang, S., Choi, S., & **Harrison, D. M.** (2023). Imaging of the meningeal lymphatic network in healthy adults: A 7T MRI study. *Journal of Neuroradiology*, 50(4), 369-376. (IF=6.7)
38. Filippi, M., Preziosa, P., Arnold, D. L., Barkhof, F., **Harrison, D. M.**, Maggi, P., ... & Rocca, M. A. (2023). Present and future of the diagnostic work-up of multiple sclerosis: the imaging perspective. *Journal of Neurology*, 270(3), 1286-1299. (IF=6.0)

APPENDIX E. FY23 MSCOE RESEARCH POSTERS

Goal: n =4 /Achievement: n=32

European Committee for Treatment & Research in MS (ECTRIMS) Annual Meeting (Amsterdam, Netherlands – October 2022)

1. Veal K, Lackey E, Eckstein CP, **Shah S**. Differences in prescribing patterns for the treatment of multiple sclerosis between neuroimmunology subspecialists and other providers at duke university hospital. Poster.
2. Lackey E, Veal K, **Shah S**, Eckstein CP. Socioeconomic Influence on DMT Prescribing Strategies. Poster.
3. **Silbermann E, Spain R**, Chase E, Huang D, and Bourdette D. Using Optical Coherence Tomography Angiography to Capture Dynamic Retinal Vascular Changes in Early Demyelinating Disease: 6 months follow up. Poster.
4. **Spain R**, Kundu P, Yasuhara K, Brandes M, Neff C, Kessler K, Matsumoto S, Soumyanath A, Raber J, Sherman LS, Grey N. Centella asiatica benefits oxidative respiration, antioxidant gene expression, and spinal cord inflammation in experimental autoimmune encephalomyelitis. Poster.

American Epilepsy Society Annual Meeting (Nashville, TN – December 2022)

5. Subei MO, Paredes DP, Shah Y, **Shah S**, Parikh P. Seizure Recurrence and Management in Antibody Positive Autoimmune Encephalitis. Poster.
6. Hernandez B, Kazimuddin HF, Wang J, Clarke MA, Vinarsky T, Taylor S, O'Grady KP, McKnight C, Smith SA, Oguz I, **Bagnato F**. Using phase patterns to differentiate lesion severity in multiple sclerosis. Poster.
7. Harel T, **Wallin M**. Outcomes and Risk Factors Associated With SARS-CoV-2 Infection
8. in military Veterans with Multiple Sclerosis. Poster.
9. Chakravarty D, Dandekar R, Abdelhak A, Alvarenga B, Sowa GM, Zamecnik CR, Zorn KC, Cree BA, Green AJ, DeRisi JL, Hauser SL, **Wallin M**, Wilson MR. Serum pan-viral antibody profiles before and after Multiple Sclerosis onset. Poster.
10. Paredes D, Lackey E, **Shah S**. Reasons for readmission for patients with MS. Poster.
11. Choi S, **Harrison DM**. Performance Evaluation of Ensemble Algorithms Coupled with 7T MRI and Clinical Features for Predicting Multiple Sclerosis Progression. Poster.
12. Choi S, Zeng Y, Allette Y, Dahal S, **Harrison DM**. No Association Between Paramagnetic Rim Lesions and Meningeal Enhancement on 7T MRI in Multiple Sclerosis. Poster.
13. Dahal S, Allette YM, Naunton K, **Harrison DM**. A Pilot Trial of Ocrelizumab for Modulation of Meningeal Enhancement in Multiple Sclerosis. Poster.
14. Allette YM, Dahal S, Zeng Y, Choi S, **Harrison DM**. Analysis of meningeal contrast enhancement volume on 7T MRI in multiple sclerosis. Poster.
15. Kovalick K, Liu Z, Chen C, Saeedi O, Hammer DX, **Harrison DM**. In Vivo Quantification of Retinal Macrophages in Multiple Sclerosis with Adaptive Optics - Optical Coherence Tomography. Poster.

Association for Research in Vision & Ophthalmology (New Orleans, LA – April 2023)

16. Yeh P-H, White E, Tan O, Choi D, Chen A, Ing E, **Silbermann E**, Huang D. Differentiating Multiple Sclerosis and Glaucoma with Partial Least Squares Discriminant Analysis of Peripapillary Retinal Nerve Fiber Layer Thickness Patterns. *Poster*.

American Academy of Neurology Annual Meeting (Boston, MA – April 2023)

17. **Bagnato F**, Sati P, Hemond C, Elliott C, Gauthier S, Harrison D, Mainero C, Oh J, Pitt D, Shinohara S, Smith S, Bruce T, Azevedo C, Calabresi P, Henry R, Laule C, Ontaneda D, Rooney W, Sicotte N, Reich D, Absinta M. Imaging Chronic Active Lesions in Multiple Sclerosis: a Consensus Statement from the North America Imaging in Multiple Sclerosis Cooperative. *Poster*.
18. **Bagnato F**, Scalfari A, Oh J, Airas L, Bittner S, Calabrese M, Garcia Dominguez JM, Granziera C, Greenberg C, Hellwig K, Laszlo Illes Z, Lycke J, Traboulsee A, Popescu V, Giovannoni G. International Consensus on Smoldering Disease in Multiple Sclerosis using the Delphi Method. *Poster*.
19. **Cameron M**, Hildebrand A, Serdar A, Schlimgen J, Hugos C. Multiple sclerosis rehabilitation research during the COVID pandemic: Participant and Therapist Satisfaction. *Poster*.
20. Chen V, Chase E, Lane M, **Wooliscroft L**, Adams C, Srikanth P, **Silbermann E**, Rice J, Hollen C, Fryman A, Martin K, Vong C, Orban A, Khan A, Horgan A, **Yadav V**. A randomized, controlled trial of low-fat diet for fatigue in multiple sclerosis. *Poster*.
21. Garcia Garcia C, Crowson C, Angappan D, Chen V, **Yadav V**. GABA-A Receptor Meningoencephalitis presenting with New Onset Refractory Status Epilepticus and Reversible Vasculopathy. *Poster*.
22. Martin K, Srikanth P, Angappan, D Srikanth A, Kanwar A, Mazmanyant T, Falardeau J, Pettersson D, **Yadav V**. Clinical and Radiologic Features of a Cohort of Adult and Pediatric Patients in the Pacific Northwest with Myelin Oligodendrocyte Glycoprotein Antibody-Associated Disease (MOGAD). *Poster*.
23. Lackey E, Veal K, **Shah S**, Eckstein C. Rise of the Biologics: Shifting Prescribing Patterns in Neurosarcoidosis. *Poster*.

Consortium of MS Centers (Aurora, CO – May/June 2023)

24. **Bagnato F**. Implementation of MRI guidelines within the VA system. *Invited oral presentation*.
25. Gangi, A., Raskin, S.A., **Turner, A.P.**, Foley, F.W., Neto, L.A., Gromisch, E.S. Expanding the connection between cognition and illness intrusiveness in multiple sclerosis: The contributions of objective versus subjective resilience as a moderator. *Poster*.
26. Gromisch, E.S., **Turner, A.P.**, Neto, L.O., **Haselkorn, J.K.**, Raskin, S.A. Using visual imagery and implementation intentions to improve prospective memory in multiple sclerosis: Preliminary results from a telehealth feasibility trial. *Poster*.
27. Gromisch, E.S., **Turner, A.P.**, Neto, L.O., Raskin, S.A. Understanding prospective memory in multiple sclerosis: How are objective and subjective measures related and who experiences problems. *Poster*.

28. Gromisch, E.S., **Turner, A.P.**, Neto, L.O., DelMastro, H.M., Ruiz, J.A., Lo, A.C., Agresta, T., Foley, F.W. Further validation of the multiple sclerosis resiliency scale. Poster.
29. Gomes KE, Riegler KE, Ruiz JA, DelMastro, H.M., **Turner, A.P.**, Neto, L.O. Gromisch, E.S. Are psychosocial factors associated with physical therapy goal accomplishment in multiple sclerosis? Poster.
30. Chen V, Hildebrand A, **Cameron M.** Validation of the self-assessed Dynamic Gait Index in people with multiple sclerosis. Poster.
31. Chase E, Lane M, **Wooliscroft L**, Adams C, Srikanth P, **Silbermann E**, Rice J, Hollen C, Fryman A, Chen V, Martin K, Vong C, Orban A, **Yadav V.** A randomized, Controlled Trial of Low-Fat Diet for Fatigue in Multiple Sclerosis. Poster.

31st Congress of the International Society on Thrombosis and Haemostasis, 2023 (Montreal, CA – June 2023)

32. Kohs TCL, Fallon ME, Oseas EC, Healy L, Lorentz CU, Tucker EI, McCarty OJT, Gailani D, **Offner H**, Verbout NG. Pharmacological targeting of the contact pathway attenuates experimental autoimmune encephalomyelitis in mice. Poster.

APPENDIX F. FY23 MSCOE RESEARCH CONFERENCE PRESENTATIONS & INVITED TALKS

Goal: n=4 / Achievement: n=32 / *refers to a platform presentation: n=5

American Committee for Treatment & Research in MS (ACTRIMS) Annual Meeting (San Diego, CA – February 2023)

1. **Bagnato F.** Human post-mortem ultra-high field imaging-histology correlations. *Invited oral presentation* (NAIMS workshop held within ACTRIMS).
2. White E, Yeh P-H, Tan O, Choi D, Chen A, Ing E, **Silbermann E**, Huang D. Classifying subjects with glaucoma and multiple sclerosis using gradient boosting machines. Poster.

American Society for Neurochemistry Annual Meeting (Lexington, KY – March 2023)

3. Zerimech S, Nguyen H, **Offner H**, Baltan S. DRhQ treatment alleviates axonal injury in two white matter tracts in EAE. (recipient of Jean de Vellis memorial prize).
4. **Bagnato F.** Clinical Imaging of Neurodegeneration. *Invited Oral Presentation*.
5. **Cameron M, Yadav V**, Knowles L, Allette Y, **Maloni H**. Building the MS workforce of the future: Recruitment, retention, and succession planning. Invited presentation. *
6. **Yadav V.** State of the Art Diet Research in MS: Current and Future Directions. Presenter. *
7. **Yadav V.** MS Fellowship Development & Optimization. Presenter. *

Paralyzed Veterans of America Healthcare Summit + Expo (Orlando, FL – August 2023)

8. **Haselkorn JK** with **Wallin M**, Chanpimol S, **Maloni H**. Getting out of your silo: Interdisciplinary Case Discussion. Presentation. *
9. **Haselkorn JK** with **Wallin M**. Veterans with MS: How close do they live to specialty care services. Presentation. *

APPENDIX G. FY23 MSCOE HEALTH CARE PROFESSIONALS CONFERENCES

FY	Date	Program	Collaboration	Title	Presenter(s)
FY23	Jul-23	MSCoE West Regional Meeting	VA ILead	VACO Updates and Veteran Care	Haselkorn J
FY23	Jul-23	MSCoE West Regional Meeting	VA ILead	Telemedicine Utilization and a Novel Nationwide Platform for MS Care	Bevan C (network)
FY23	Jul-23	MSCoE West Regional Meeting	VA ILead	Clinical Quality Measures	Spain R
FY23	Jul-23	MSCoE West Regional Meeting	VA ILead	DMT Update	Antonovich N (network)
FY23	Sep-23	MS and CNS Neuroimmunology Symposium	OHSU	Overtreat, Undertreat and Other Controversies in MS Treatment	Langer Gould A (non-VA)
FY23	Sep-23	MS and CNS Neuroimmunology Symposium	OHSU	Rehabilitation Technology: Current State and Future Promise	Schlimgen J (non-VA), Lochala C (non-VA)
FY23	Sep-23	MS and CNS Neuroimmunology Symposium	OHSU	Emerging Treatment Options for Myasthenia Gravis	Leavell Y (VA)
FY23	Sep-23	MS and CNS Neuroimmunology Symposium	OHSU	GABAA Receptor Antibody-Associated Encephalitis Diagnosis and Treatment: A Case-Based Presentation	Crowson C (fellow)
FY23	Sep-23	MS and CNS Neuroimmunology Symposium	OHSU	New Therapies for Neuromyelitis Optica Spectrum Disorders: A Case-Based Presentation	Garcia Garcia C (fellow)
FY23	May-23	CMSC Annual Meeting	CMSC	MSCoE/VA Reception	MSCoE
FY23	May-23	CMSC Annual Meeting	CMSC	MSCoE/VA Business Meeting	MSCoE
FY23	Aug-23	PVA Summit	PVA	MSCoE Business Meeting	MSCoE
FY23	Apr-23	AAN Annual Meeting	AAN	MSCoE West-Portland and OHSU Fellowship Poster and Presentation	Cameron M, Chen V (fellow)

APPENDIX H. FY23 MSCOE HEALTH CARE PROFESSIONALS GRAND ROUNDS PRESENTATIONS

FY	Date	Program	Collaboration	Title	Presenter(s)
FY23	Oct-22	Neurology Grand Rounds	OHSU	Postinfectious Neuroimmunology	Lane M
FY23	Oct-22	Neurology Grand Rounds	Duke U	MOG Antibody Disease, A Clinical Update	Shah S
FY23	Nov-22	Neurology Grand Rounds	OHSU	Effects of the COVID-19 Pandemic on People with Neurologic Disease and Other Disabilities	Wooliscroft L
FY23	Nov-22	VAMHCS Neuropsychology Rounds	Baltimore VAMC	MS Basics, Frameworks, and Considerations for Assessment	Lee-Wilk T, Dux MC (VA)
FY23	Jan-23	Neurology Grand Rounds	U of Maryland	Interesting Case Conference, Influenza Associated Acute Necrotizing Encephalopathy	Harel T (fellow)
FY23	Feb-23	Neurology Grand Rounds	OHSU	Microvascular Changes in Neurologic Disease	Silbermann E
FY23	Mar-23	Mercy Grand Rounds	Mercy	Neurologic Manifestations of Systemic Autoimmunity	Fredrich S
FY23	Mar-23	Neurology Grand Rounds	OHSU	Genetics in Autoimmune CNS inflammatory Diseases	Chen V (fellow)
FY23	May-23	Internal Medicine Grand Rounds	Baltimore VAMC	Evolving Management of MS in the Era of COVID-19	Harel T (fellow)
FY23	May-23	Nairobi MS Conference	Kenya	Update on the Global Burden of MS	Wallin M

APPENDIX I. FY23 MSCOE HEALTH CARE PROFESSIONALS INVITED LECTURES

FY	Date	Product: Program	Collaboration	Title	Presenter(s)
FY23	Nov-22	Workshop: Design and Implementation of Clinical Trials	Robert A Winn Diversity in Clinical Trials Award Program	Clinical Trial Design: Asking Important Questions That Impact Our Patients: Autoimmune Diseases	Yadav V
FY23	Nov-22	Conference: Race to Erase MS Forum	Race to Erase MS	COVID-19 Update: Preventive and Curative Treatments	Yadav V
FY23	Nov-22	Conference: High Field MRI Seminar	Kennedy Krieger Institute	Insights into Multiple Sclerosis from 7T MRI	Harrison D
FY23	Nov-22	Conference: Race to Erase MS Forum	Race to Erase MS	Low-Fat Diet Improves MS Fatigue in a Randomized, Controlled Trial	Yadav V
FY23	Nov-22	Conference: Design and Implementation of Clinical Trials Workshop	Robert A Winn Diversity in Clinical Trials Award Program	Special Considerations in the Design of Immunotherapy Studies: Autoimmune Diseases	Yadav V
FY23	Nov-22	Interview Panel	Undark	Scientists debate the role of a virus in MS	Wooliscroft L
FY23	Dec-22	Lecture: ACTRIMS Didactic Webinar Series	ACTRIMS	Dietary Interventions in MS	Yadav V
FY23	Dec-22	Lecture: Annual Conference	American Association of Neuroscience Nurses	Increasing Confidence in Interpreting Magnetic Resonance Imaging in MS and an Update on Recommendations for the Use of MRI in MS	Maloni H
FY23	Dec-22	Lecture: Good Samaritan Internal Medicine Residency Program	Good Sam Hospital	Overview of MS and Neuroimmunology Disorders	Crowson C (fellow)
FY23	Feb-23	Lecture: ACTRIMS Annual Meeting	ACTRIMS	Analysis of Leptomeningeal Enhancement Volume on 7T MRI	Allette Y (fellow), Harrison D
FY23	Feb-23	Lecture: Neuropsychology Department Lectures	DC VAMC	MS 101 for the Neuropsychologist	Maloni H

FY	Date	Product: Program	Collaboration	Title	Presenter(s)
FY23	Feb-23	Lecture: Neuropsychology Department Lectures	DC VAMC	MS and cognitive impairment; Case studies Part II	Maloni H
FY23	Feb-23	Workshop: NAIMS Workshop 2024	North American Imaging in MS Cooperative	Multi-center 7T MRI Studies in MS	Harrison D
FY23	Feb-23	Lecture: ACTRIMS Didactic Webinar Series	ACTRIMS	Neurologic Complications of Cancer Immunotherapy	Shah S
FY23	Feb-23	Lecture: ACTRIMS Annual Meeting	ACTRIMS	New onset or relapsing neuromyelitis optica temporally associated with SARS-CoV-2 infection and COVID-19 vaccination: A systemic review.	Harel T (fellow), Wallin M, Gorman E (VA)
FY23	Feb-23	Lecture: ACTRIMS Annual Meeting	ACTRIMS	Outcomes and risk factors associated with SARS-CoV-2 infection in VA patients with MS	Harel T (fellow), Wallin M
FY23	Feb-23	Conference: North Carolina Neurologic Society Annual Meeting	Neurologic Society	Women's Health and MS	Shah S
FY23	Mar-23	Lecture: Annual Neuroscience Conference	Penn State	Post-Covid Neurological Complications and Immune Compromised Patients	Maloni H
FY23	Mar-23	Conference: NMSS Policy Conference	NMSS	Update on MS Research	Wallin M
FY23	Mar-23	Conference: OHSU-Bangkok Dusit Medical Services Joint Neurology Conference	Bangkok Dusit Medical Services	Microvasculature in Neurologic Disease (virtually presented at multiple medical centers in Bangkok, Thailand)	Silbermann E
FY23	Apr-23	Lecture: AAN Annual Meeting	AAN	A randomized, controlled trial of low-fat diet for fatigue in multiple sclerosis	Chen V (fellow), Yadav V
FY23	Apr-23	Lecture: AAN Annual Meeting	AAN	Clinical and Radiologic Features of a Cohort of Adult and Pediatric Patients in the Pacific Northwest with Myelin Oligodendrocyte Glycoprotein Antibody-Associated Disease	Garcia, Yadav V

FY	Date	Product: Program	Collaboration	Title	Presenter(s)
FY23	Apr-23	Lecture: AAN Annual Meeting	AAN	GABA-A Receptor Meningoencephalitis presenting with New Onset Refractory Status Epilepticus and Reversible Vasculopathy	Martin K (fellow), Yadav Y
FY23	May-23	Conference: CMSC Annual Meeting	CMSC	Assessment of Cognitive and Psychological Symptoms in People with MS: A Whole Health Approach	Lee-Wilk T, Dux MC (VA)
FY23	May-23	Conference: CMSC Annual Meeting	CMSC	Building the Workforce of the Future: Recruitment, Retention and Succession Planning: MS Fellows' Goals and Needs	Knowles L (fellow), Allette Y (fellow)
FY23	May-23	Conference: CMSC Annual Meeting	CMSC	Building the Workforce of the Future: Recruitment, Retention and Succession Planning: MS Fellowship Development and Optimization	Yadav V
FY23	May-23	Conference: CMSC Annual Meeting	CMSC	Building the Workforce of the Future: Recruitment, Retention and Succession Planning: MS Workforce Needs: Evidence Based Recruitment, Retention and Succession Planning	Cameron M
FY23	May-23	Conference: CMSC Annual Meeting	CMSC	Building the Workforce of the Future: Recruitment, Retention and Succession Planning: Succession Planning, Nurse Recruitment and Retention	Maloni H
FY23	May-23	Conference: CMSC Annual Meeting	CMSC	Current Therapies, Wellness with Integrative Medicine, a Practical Approach to Symptoms, Care of the Male with MS, Co-Morbidities and Cultural Sensitivity: Approaches to DMT in MS	Rinker J
FY23	May-23	Conference: CMSC Annual Meeting	CMSC	Current Therapies, Wellness with Integrative Medicine, a Practical Approach to Symptoms, Care of the Male with MS, Co-Morbidities and Cultural Sensitivity: Cultural Competence and Sensitivity for the MS Clinician	Mitchell L

FY	Date	Product: Program	Collaboration	Title	Presenter(s)
FY23	May-23	Conference: CMSC Annual Meeting	CMSC	Imaging Veterans with MS: Imaging Veterans in the Community	Mitchell L
FY23	May-23	Conference: CMSC Annual Meeting	CMSC	Imaging Veterans with MS: Implementation of the MRI Guidelines Within the VA System	Bagnato F
FY23	May-23	Conference: CMSC Annual Meeting	CMSC	Imaging Veterans with MS: The Role of Leptomeningeal Enhancement in MS	Allette Y (fellow)
FY23	May-23	Conference: CMSC Annual Meeting	CMSC	Imaging Veterans with MS: The Role of Paramagnetic Rim Lesions in MS	Graham B (VA resident)
FY23	May-23	Conference: VISN-2 Clinical Updates in SCI/D	VISN 2	Managing Mental Health for People with MS: A Whole Health Approach	Lee-Wilk T, Dux MC (VA)
FY23	May-23	Conference: CMSC Annual Meeting	CMSC	State of the Art Diet Research and Practice in MS: Current and Future Directions: The Current State of Diet Research in MS	Yadav V
FY23	Jun-23	Lecture: Research Forum, Division of MS and Neuroimmunology.	U of Maryland	Global Burden of MS	Wallin M
FY23	Jun-23	Series: Medical Student Mentorship Program	NMSS	MS Overview	Shah S
FY23	Jun-23	Conference: Lehmann Day Symposium	U. Washington Department of Rehabilitation Medicine	Taking the long view of MS Care: Partnering with patients to promote health and wellness.	Turner A
FY23	Aug-23	Conference: PVA Summit	PVA	Building a Successful Regional Program within the MSCoE	Rinker J, Bevan C (network)
FY23	Aug-23	Conference: PVA Summit	PVA	Get out of your Silo: Interdisciplinary Case Discussion	Sloan A, White K (VA)
FY23	Aug-23	Conference: PVA Summit	PVA	John M. Whitaker Memorial Lecture: The Healthcare Workforce for the Future	Maloni H
FY23	Aug-23	Conference: PVA Summit	PVA	Learning the System: A New Comprehensive VA MS Social Work Assessment within the New HER	Sloan A, Spangenberg K (VA)

FY	Date	Product: Program	Collaboration	Title	Presenter(s)
FY23	Aug-23	Conference: PVA Summit	PVA	MS and Infections: Screening, Prevention and Monitoring	Wallin M, Smith B (VA)
FY23	Aug-23	Conference: PVA Summit	PVA	Review of Current and Future MS Disease Modifying Drugs	Maloni H, Wallin M
FY23	Aug-23	Conference: PVA Summit	PVA	Telemedicine in Providing Care to Veterans with MS Utilization and a Novel Nationwide Platform	Bevan C Wallin M
FY23	Aug-23	Conference: PVA Summit	PVA	The Nuts and Bolts: SCI, MS, ALS	White K (VA), (VA), Shah S
FY23	Aug-23	Conference: PVA Summit	PVA	Unique Considerations for Clinical Care in MS	Shah S, Rinker J
FY23	Aug-23	Conference: PVA Summit	PVA	Veterans with MS: How Close Do They Live to VA MS Specialty Services?	Haselkorn J, Wallin M
FY23	Sep-23	Conference: Making Connections	A MS and Neuroimmunology Community Education Symposium	Update on MS Epidemiology in the US	Wallin M

APPENDIX J. FY23 MSCOE FELLOWSHIP PROGRAM

Years	Name, Discipline	Training Location	Fellowship Funding Source	Position After Graduation, Organization	City/State	VA Position Y/N
2021-2022	McFaul, Derek, DO	Portland	NMSS	MS Neurologist, Oregon Neurology Associates	Springfield, OR	N
2021-2023	Chen, Vicky, MD	Portland	VA OAA	MS Regional Program Director, Mathur VAMC	Sacramento, CA	Y
2021-2023	Martin, Kayla, MD	Portland	VA OAA	MS Neurologist, Kaiser Health System	Denver, CO	N
2021-2023	Harel, Tamar, MD	Baltimore	VA OAA	Director, Neuroimmunology and MS at MedStar Union Memorial Hospital,	Baltimore, MD	N
2021-2023	Allette, Yohance, MD	Baltimore	VA OAA	Neurology Specialist at Penn State Health Medical Group and Neuroscience Institute	Hersey, PA	N
2022-2023	Chapman, William, DO, PharmD	Portland	NMSS	Assistant Professor, University of Cincinnati	Cincinnati, OH	N
2022-current	Crowson, Cole, MD	Portland	VA OAA			
2022-current	Garcia, Carolina, DO, MS	Portland	VA OAA			
2023-current	Enriquez-Gonzalez, Yesenia, MD	Baltimore	VA OAA			
2023-current	Mistretta, Erin, PhD	Puget Sound	NMSS			
2023-current	Wu, Helen	Portland	NMSS			
2023-current	Perlman, Jacob	Portland	VA OAA			

APPENDIX K. FY23 MSCOE PATIENT AND CAREGIVER PROGRAMS

FY	Date	Program	Collaboration	Title	Speaker(s)
FY23	Oct-22	Webinar: Ask an MS Expert	NMSS	Managing Spasticity in MS	Cameron M
FY23	Mar-23	Webinar: Ask an MS Expert	NMSS, PVA	MS Risk, Prevalence, and Service Connection	Wallin M, Culpepper J (network)
FY23	Apr-23	Lecture: DC VA MS and SCI Support Group	DC VAMC	Because You Asked	Maloni H
FY23	Jun-23	Conference: MS 2023: At the Frontier and Beyond	OHSU	Celebrating 40 years of the MS Center	Bourdette D (non-VA)
FY23	Jun-23	Conference: MS 2023: At the Frontier and Beyond	OHSU	Stress and Autoimmunology	Xiang X (non-VA)
FY23	Jun-23	Conference: MS 2023: At the Frontier and Beyond	OHSU	Rehabilitation Options for MS	Schlimgen J (non-VA)
FY23	Jun-23	Conference: MS 2023: At the Frontier and Beyond	OHSU	Treatment Update in MS	Garcia Garcia C (fellow)
FY23	Jun-23	Conference: MS 2023: At the Frontier and Beyond	OHSU	Research Update in MS	Yadav V
FY23	Jul-23	Webinar: Can Do MS Webinar	Can Do MS	Shared decision making	Shah S
FY23	Jul-23	Lecture: Rehab Care Services, MS Patient Virtual Support Group	VA Puget Sound HCS	Hot Tips: VA Benefits and Resources	Sloan A

APPENDIX L. FY23 MSCOE PATIENT SUPPORT GROUPS

Frequency	Duration	Target Audience	Modality	Location	Title	Coordinator(s)
Annually, as needed	60 min.	Veterans	Virtual	Baltimore, MD (national)	Master MINDS (MINDS 2.0), advanced cognitive rehabilitation	Lee-Wilk T
Annually, Bi-Weekly as needed	60 min.	Veterans	Virtual	Baltimore, MD (national)	MS Intervention and Development of Skills (Open MINDS) - Minds for Women with MS, for people who identify as women with MS - Mr. MINDS, for people who identify as men with MS - Caring MINDS, for managing the challenges of parenting with MS	Lee-Wilk T
Monthly	60 min.	Veterans	Virtual	Portland, OR	MS Support Group	Strauss L (VA)
Bi-monthly	90 min.	Caregivers	Virtual	Seattle, WA	Physical Rehabilitation Care Services Telehealth Caregiver Support Group	Sloan A, Ryan-Coy S (VA)
Monthly	60 min.	Veterans	Virtual	Seattle, WA	MS Support Group	Werhane M (VA), Anderson D (VA)
Monthly	60 min.	Veterans	Virtual	Washington, DC	MS Support Group	Allen-Wooten M (VA)