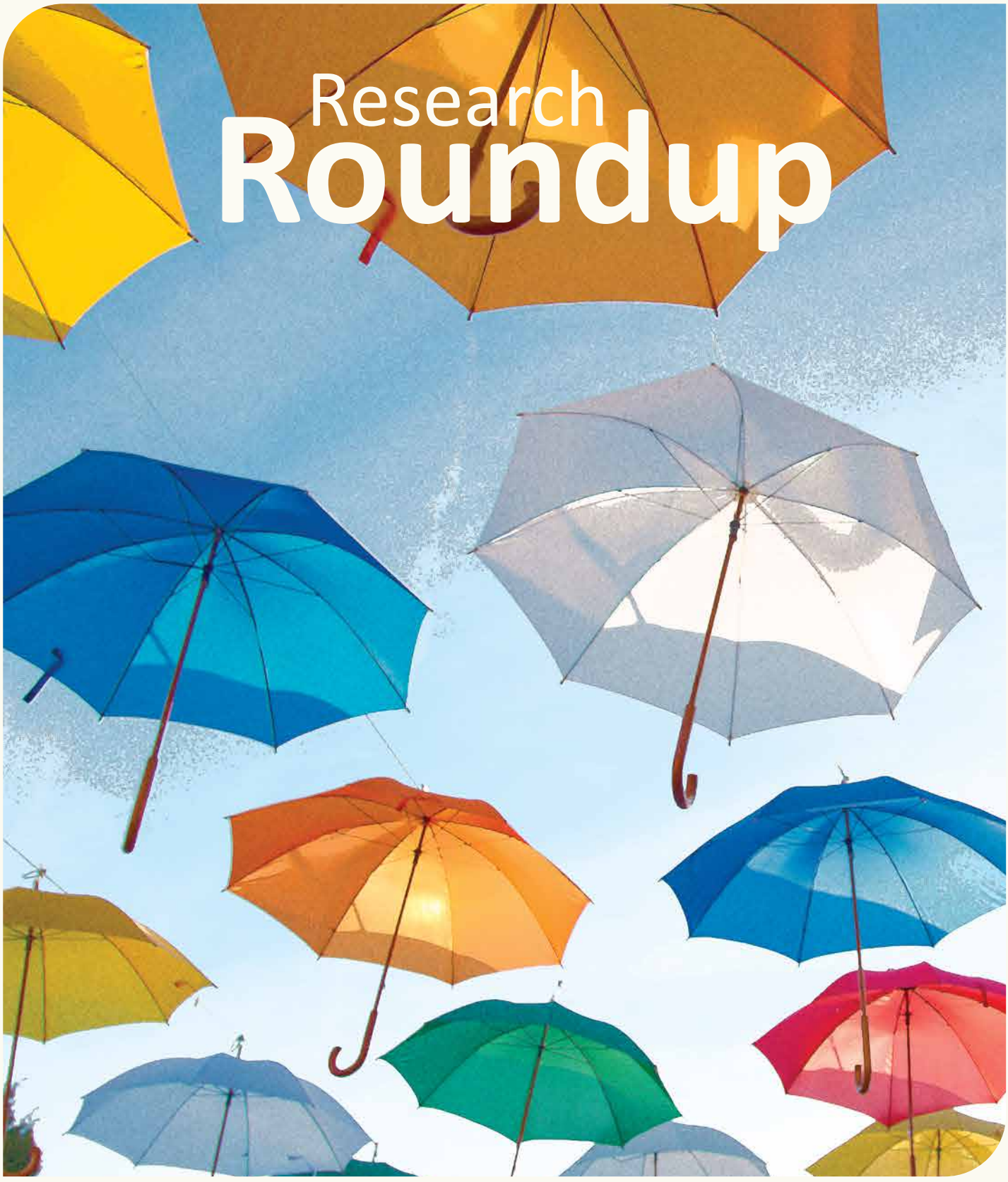
NARCOMS NOW

Summer 2017 www.narcoms.org Vol. 6, Issue 3

Research Roundup



Summer 2017 Contents

NARCOMS NOW

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A Letter from the Director - *Summer 2017*

Greetings,

As the Spring 2017 update survey comes to close, we want to thank you again for your continued participation. We are very glad that most of you liked the new format of the online survey! In case you have not completed a web-based NARCOMS survey recently, please note that the new format eliminates the need for user names and passwords and still provides a secure form of data collection. We are glad to receive so much positive feedback from you about the new format! Feel free to contact Michele at 1-800-253-7884 if you would like to give it a try next time around.

The spring is always a busy time for research meetings and conferences in MS. In this issue's "Feature Focus" we review results from several research studies that were presented at various national venues earlier this year. One of the reviews provides timely information about ocrelizumab, the recently approved drug for relapsing and progressive MS. Since it is the first FDA approved disease modifying therapy for progressive MS, it is creating a lot of "buzz" in the MS community and thus featured in various other sections of this issue of NARCOMS Now as well.

Dr. Robert Fox is the Managing Director of NARCOMS, the Medical Director at the Mellen Center for Multiple Sclerosis and a practicing neurologist at the Cleveland Clinic in Ohio.

The reviews also include some of the latest NARCOMS results published by our Scientific Director, Dr. Ruth Ann Marrie. The "MS News" section features additional results fresh off the press.

The "MS Reflections" section summarizes the research that NARCOMS Fellow, Dr. Kathryn Fitzgerald, has been working on. She discusses preliminary results based upon the Fall 2015 update survey that asked about diets and dietary habits. We are quite pleased that she has agreed to provide a sneak preview on some of her interesting findings. Kate's research on this important topic is ongoing – stay tuned!

Best,

Dr. Robert Fox
Managing Director, NARCOMS

NARCOMS INFORMATION CORNER

Have an idea?

We would love to hear from you!
Send us your questions,
comments & suggestions.

Call: **1-800-253-7884** (toll-free US)

Email: **narcomsnow@narcoms.org**
Online: **www.narcoms.org/contact**

Who you'll hear on the phone:

Michele

NARCOMS Promise

Your personal information is always confidential.

The NARCOMS Global MS Patient Registry facilitates multi-center research on multiple sclerosis, developing collaboration between MS centers of excellence throughout the world to increase knowledge, improve clinical care, and enhance the quality of life for persons with MS.

FACES of NARCOMS

Interested in sharing your story with other NARCOMS participants?
We are looking for contributions for the Faces of NARCOMS section.

Email: **MSRegistry@narcoms.org**

NEW MAILING ADDRESS

Here's ours:
The NARCOMS Registry
Washington University in St. Louis
School of Medicine
CB 8067
660 South Euclid Avenue
St. Louis, MO 63110

Remember, you can report email and address changes anytime to **MSRegistry@narcoms.org** or call **1-800-253-7884** (toll free US).

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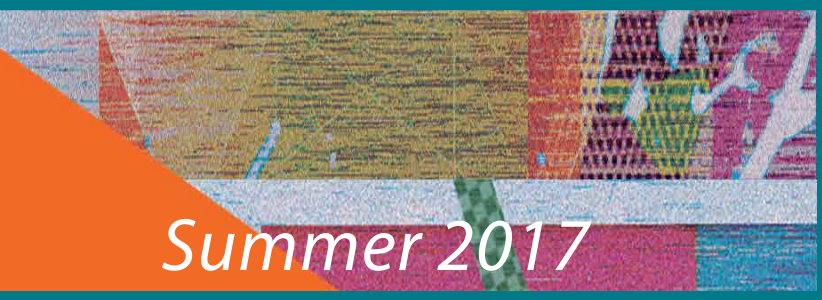
Reminder When Completing Paper Surveys:

If possible, please use pen rather than pencil when filling out NARCOMS paper surveys. Responses are scanned to electronic files for data capture and pen is easier to read. Thanks!



Summer 2017

FEATURE FOCUS

MS Research Roundup

Three major MS conferences take place between February and May every year. NARCOMS strives to be well represented at these important forums, both to learn more about the latest research findings and to present results from NARCOMS research. Below we will review some of the most prominent stories from these annual gatherings of great scientific minds.

Americas Committee for Treatment and Research in Multiple Sclerosis (ACTRIMS) – February 23-25, Orlando, FL

Ocrelizumab (Ocrevus; Genentech) is not linked to serious infection risk in MS, according to research presented by Jerry S. Wolinsky, MD, director of the MS Research Group at the University of Texas Health Science Center in Houston. His ACTRIMS poster was based on an analysis of study participants with relapsing MS (RMS) from both the OPERA 1 and 2 trials, (NCT01247324 and NCT01412333) and participants with primary progressive MS (PPMS) from the ORATORIO trial (NCT01194570). Participants with RMS on ocrelizumab experienced more colds and other upper respiratory tract infections than those on interferon beta-1a, but had fewer serious infections.

Another poster by Dr. Wolinsky focused on ORATORIO study participants only. It showed significantly reduced fatigue and higher mental well-being scores in those on ocrelizumab than those on placebo.

The main results from these three phase 3 trials were published in January in the New England Journal of Medicine and at the time of ACTRIMS had been submitted to the US Food and Drug Administration (FDA). On March 28, 2017 the FDA approved the treatment for use by RMS and PPMS patients in the US.

UPDATE: Since its approval, a single patient on ocrelizumab was reported to have progressive multifocal leukoencephalopathy (PML) on May 25. PML is an infection of the brain caused by JC Virus. JC virus is a common germ to which more than half of adults with MS have been exposed. PML can cause serious neurologic symptoms and death. Roche, the parent company of Genentech, reported that according to the treating physician, the case was a "carryover" from treatment with natalizumab

(Tysabri; Biogen), which is known to be associated with PML. It reports that the patient, who was JC virus positive, had been treated with natalizumab for three years, with the last infusion in February 2017. The patient then received one dose of ocrelizumab in April 2017.

"This case is not surprising, as clinical evidence of PML may be subtle and slow to develop," Edward Fox, MD, MS Clinic of Central Texas, Round Rock, commented on the case for Medscape Medical News. "Those patients currently on natalizumab with risk factors will be at risk for PML for several months after discontinuation of the drug, no matter what the next agent used might be. So, this is similar to other cases in the past with PML diagnosed following the transition of natalizumab to another agent."

The patient responded to treatment for both the PML and the immune reconsititution inflammatory syndrome (IRIS) that occurred after plasma exchange. IRIS can cause as much damage as PML, Ana Cristina Wing Marques des Santos, MD, of the University of Western Ontario in Canada, reported during a poster session at the Consortium of Multiple Sclerosis Centers annual meeting (see below).

In people with MS the brain decreases in size (atrophies) over time more quickly than in people without MS. Spinal cord gray matter atrophy, noted in magnetic resonance imaging (MRI), can be detected early on in MS. These changes occur even in the absence of white matter atrophy in the brain, and therefore could be an early sign of MS. This small observational study of 64 patients who experienced their first MS symptoms one year earlier found that those with relapsing MS (RMS) and progressive MS showed significant reductions in cervical spinal cord gray matter atrophy compared with healthy peers. Both groups of people with MS also showed reductions in thoracic spinal cord gray matter atrophy, but it was only significant for those with progressive MS.

The study's lead author, Regina Schlaeger, MD, University Hospital in Basel, Switzerland, presented the results during the "Cutting Edge Development in MS Research" presentation. Schlaeger reported to Medscape Medical News that, "although this could be a predictor for MS, we don't know that yet." She called the findings "a very promising biomarker."

Schlaeger and her colleagues sought to understand how early in the disease course SCGM atrophy could be detected. This type of data could help explain "how therapies may be working or not working, and this may potentially become a diagnostic biomarker for clinical trials," according to Andrew Goodman, MD, director of the MS Center at the University of Rochester Medical Center, New York, and co-chair of the ACTRIMS 2017 program. Abstracts CE1.3, LB199. Presented February 24, 2017

NARCOMS at ACTRIMS

CMSC/NARCOMS fellow Kate Fitzgerald, ScD, Johns Hopkins University School of Medicine, presented a poster on NARCOMS research, "Prevalence and User Characteristics of Specific Diets in People with Multiple Sclerosis," which was a finalist for a Best Poster Award.

Fitzgerald also presented NARCOMS research on "MS Risk Factors and Modifications" at the American Academy of Neurology (AAN) annual meeting (session S44—see below).

March 2017—Press Release on Physician-Assisted Death in MS Patients: A NARCOMS Survey

Between the ACTRIMS and AAN conferences, the Consortium of Multiple Sclerosis Centers (CMSC) issued a press release on the results of a survey of NARCOMS participants on attitudes about physician-assisted death, led by Ruth Ann Marrie, MD, PhD, University of Manitoba, Winnipeg. The findings were published in the journal Neurology online in March, with subsequent commentary in the April issue of Neurology Today.

A survey of participants in the NARCOMS registry regarding physician-assisted death (PAD) revealed a high potential interest among people living with MS. A significant proportion of the survey's 7,534 responders said they would consider PAD given specific hypothetical situations such as unbearable pain (65%) or if they were unable to enjoy anything that made life worth living (50%). Depression and lack of social support were strongly associated with considering PAD.

"Our findings suggest that untreated or undertreated depression likely plays a significant role in increased consideration of physician-assisted death. Unfortunately, neurologists do not get enough training in recognizing or treating depression, and many do not ask patients about symptoms," Marrie told Neurology Today.

"As clinicians, we are not going far enough to identify and adequately treat depression in our MS patients or to educate them about potential symptoms. Patients also may feel uncomfortable asking about depression or accepting treatment because there is still a stigma attached to mental health issues."

The AAN has stated it is in the process of developing a policy to address the issue.

Consortium of Multiple Sclerosis Centers (CMSC) – May 24–27, New Orleans, LA

The 31st annual meeting of the CMSC focused on mental health and well-being with MS.

One study showed that the drug alemtuzumab (Lemtrada; Sanofi) may have an edge over ocrelizumab (Ocrevus; Genentech) in the number of relapsing MS patients who need to be treated (NNT) for one person to benefit. The study by Sanofi was a post-hoc analysis of data from the phase 3 clinical trials of both drugs. Aaron Boster, MD, of OhioHealth in Columbus, Ohio, reported the results. He said that they could compare the NNT between the two drugs because studies of both drugs used interferon beta-1a (Rebif; EMD Serono) as a comparator. Boster and colleagues assessed data on 786 patients from CAMMS223/CARE-MS I; 628 patients from CARE-MS II; 821 patients from OPERA I; and 835 patients from OPERA II clinical trial. They calculated the NNT to prevent one relapse, to prevent one patient from experiencing relapse, and to prevent confirmed disability worsening. Overall, they found that the

alemtuzumab trials offered a lower NNT for all three outcomes compared with ocrelizumab. To prevent one relapse, the NNT in CARE-MS I and II was 5 and 4 and for both OPERA trials the NNT was 8.

Another study on alemtuzumab showed the drug may prevent MRI lesions for six years after treatment in patients with highly active disease. The lasting effects could be the result of lymphocyte repopulation following treatment with alemtuzumab, which may lead to a rebalancing of the immune system, according to a presentation by Anthony Traboulsee, MD, Associate Professor of Neurology at the University of British Columbia, Vancouver. He stated that additional studies are needed to test that theory.

Traboulsee and colleagues analyzed data from the CARE-MS I trial, in which researchers randomized patients with active relapsing-remitting MS who were drug-naïve at baseline to alemtuzumab or interferon beta-1a (Rebif; EMD Serono). After two years, patients who received alemtuzumab showed improved clinical and MRI outcomes, including brain loss volume, compared with patients who received interferon beta-1a. In addition, significantly more of these participants had no evidence of disease activity, compared with participants treated with interferon beta1-a.

A phase 2 study of an oral peroxisome proliferator activated receptor (PPAR) gamma modulator decreased inflammatory brain lesions and cortical atrophy in people with MS, researchers reported at CMSC meeting. Treatment with 3 mg daily of CHS-131 reduced contrast-enhancing lesions by 52 % over a six-month period compared with placebo. Researcher David Weinstein, MD, PhD, of the drug's developer, InteKrin Therapeutics of Redwood City, California, presented the data in a poster.

Among the 69 evaluable participants with RRMS who were assigned to placebo there was an average of 7.8 new contrast-enhancing lesions. Among the 70 participants with RRMS assigned to the 1 mg dose of CHS-131, there was an average of 7.6 new contrast-enhancing lesions; and among the 70 RRMS patients assigned to CHS-131 at the 3 mg dose there was an average of 4.2 new lesions (P=0.003). The study also showed that in cortical brain volume loss from baseline, the reduction after 6 months was 1.1% among patients on placebo and 0.7% among those on CHS-131, which amounted to a 34.2% reduction. The extent of atrophy loss between placebo and the 1-mg dose was not significantly different.

Weinstein stated his company will continue to study the drug and hopes to do so in higher doses. The study was conducted in Russia, and all of the participants were vitamin D deficient. Vitamin D and PPAR interact, according to the researchers. "I suspect that if this were done in the United States and you were supplementing vitamin D that the results would be even more efficacious," said Michael Racke, MD, of the Ohio State University in Columbus, who has a relationship with the drug's developer but was not involved in the study.

A study asking whether some MS patients should stop disease-modifying therapies (DMT) generated discussion and some dissent. Researcher Devyn Parsons of the University of British Columbia reported on a literature review that suggested certain patients may be candidates for stopping therapy, saying further

investigation is needed. Potential candidates are those with secondary progressive MS (SPMS) who have shown no disease activity in at least one year, and those with RRMS ages 65 years and older whose disease has not been active in one year or more. Parsons stated that the review is not meant to be used as a guideline and commented on the "poor quality" of the literature on this topic.

Parsons noted that there is sufficient evidence to justify a trial on the hypothesis in a low-risk population, such as the one John Corboy, MD, University of Colorado in Denver is leading. The Patient-Centered Outcomes Resource Institute (PCORI)–funded study will evaluate the discontinuation of DMTs in MS patients, ages 55 years and older, who have had no relapses or brain MRI scan changes for at least 5 years, while continuously taking MS DMTs, and will involve dozens of MS centers across the US.

The Multiple Sclerosis Association of America recently published its 2017 Research Update, a comprehensive overview of the study results on many experimental MS treatments, as well as directions for future MS research.
To read the full overview

Click Here!

As NARCOMS looks at the information provided to us by registry participants on an ongoing basis, we will continue to report on the resulting data as well as the latest news and information on MS research. Thank you for your continued participation in and support of NARCOMS!

SURVEY 101 ////

Spring 2017 Update

The Spring 2017 survey is wrapping up. Thank you for making it a success: we had over 7,000 survey responses! Based on your comments, we think the upgrade to a new website for online survey data collection went well for most participants. We are already starting to prepare the Fall 2017 survey. We look forward to your continued participation in NARCOMS.

Waist Circumference

Our NARCOMS fellow, Kate Fitzgerald, is interested in the effects of obesity and metabolic disorders on the disease course in people with MS. In the Fall 2017 update survey we will ask about your waist circumference (this is the measure around your waist) and clothing sizes. Information on body dimension is a very important element in the upcoming analysis.
Read about some of Kate's current work in MS Reflections (see page 9).

Questions or Comments: Please contact us by email, MSRegistry@narcoms.org, or by phone, at 1-800-253-7884 (toll free US). Our hours are 8:00 am- 5:00 pm Central Time, Monday-Friday.

MS Messenger

Thanks to your feedback there is a new look for the question about disease-modifying therapies (DMTs)!

As you know, the number of DMTs for MS has increased considerably over the past decade. Likewise, the list of DMTs to choose from in each update survey has grown longer and longer.

Based on your feedback, we have changed the order of the therapies in question #24 to make it easier to locate the name of the DMT you are looking for. The DMTs are now grouped by the method of administration (e.g. injection, oral or infusion). Within each group they are listed in alphabetical order. Please note that we ask about alemtuzumab (Campath®, Lemtrada ®) use in a separate question because the dosing schedule is different from the other DMTs.

	→ **IF Yes:** Please mark with an "X" the drug(s) you have **taken** in the Last 6 Months. (® Brand Name Therapies)		How many months of the last 6 months have you taken this drug? **Circle One**	Are you currently taking this? "X"	In total, how many years and months have you taken this?
Injectable	Daclizumab (Zenapax®, Zinbryta™)	☐	0 1 2 3 4 5 6	☐	___yrs ___mths
Injectable	Glatiramer Acetate 40mg (Copaxone®, Glatopa ®)	☐	0 1 2 3 4 5 6	☐	___yrs ___mths
Injectable	Glatiramer Acetate 20mg (Copaxone®)	☐	0 1 2 3 4 5 6	☐	___yrs ___mths
Injectable	Interferon Beta-1a (Avonex®)	☐	0 1 2 3 4 5 6	☐	___yrs ___mths
Injectable	Interferon Beta-1a (Rebif®)	☐	0 1 2 3 4 5 6	☐	___yrs ___mths
Injectable	Interferon Beta-1b (Extavia ®, Betaseron/Betaferon®)	☐	0 1 2 3 4 5 6	☐	___yrs ___mths
Injectable	Peginterferon beta-1a (Plegridy®)	☐	0 1 2 3 4 5 6	☐	___yrs ___mths
Oral	Dimethyl Fumarate (Tecfidera®, BG-12)	☐	0 1 2 3 4 5 6	☐	___yrs ___mths
Oral	Fingolimod (FTY-720, Gilenya®)	☐	0 1 2 3 4 5 6	☐	___yrs ___mths
Oral	Laquinomod	☐	0 1 2 3 4 5 6	☐	___yrs ___mths
Oral	Minocycline	☐	0 1 2 3 4 5 6	☐	___yrs ___mths
Oral	Teriflunomide (Aubagio®)	☐	0 1 2 3 4 5 6	☐	___yrs ___mths
Oral	Methotrexate (Trexall®, Rheumatrex®, Matrex®)	☐	0 1 2 3 4 5 6	☐	___yrs ___mths
Oral	Azathioprine (Imuran®, Azasan®)	☐	0 1 2 3 4 5 6	☐	___yrs ___mths
Infusion	Cladribine (Leustatin®)	☐	0 1 2 3 4 5 6	☐	___yrs ___mths
Infusion	Cyclophosphamide (Cytoxan®)	☐	0 1 2 3 4 5 6	☐	___yrs ___mths
Infusion	Gamma Globulin (IVIG)	☐	0 1 2 3 4 5 6	☐	___yrs ___mths
Infusion	Mitoxantrone (Novantrone)	☐	0 1 2 3 4 5 6	☐	___yrs ___mths
Infusion	Natalizumab (Tysabri®)	☐	0 1 2 3 4 5 6	☐	___yrs ___mths
Infusion	Ocrelizumab (Ocrevus™)	☐	0 1 2 3 4 5 6	☐	___yrs ___mths
Infusion	Plasmapheresis / Plasma Exchange	☐	0 1 2 3 4 5 6	☐	___yrs ___mths
Infusion	Rituximab (Rituxan®)	☐	0 1 2 3 4 5 6	☐	___yrs ___mths

Otherwise the format of the main DMT question remains the same as before. You are asked to mark each of the DMTs that you have used during the past 6 months and then circle the number of months that you were on that therapy. Check the next column if you are still using that therapy. Lastly, report the total time that you have been on that particular therapy, whether or not the use has been continuous. For instance, 2 years sometime earlier and 1 year 3 months most recently should be entered as 3 years 3 months.

Thank you very much for those of you who have commented on the DMT question – Your suggestions help us make the survey easier for everyone!

As always, if you would like assistance in answering the DMT or any other survey question, feel free to contact us at 1-800-253-7884 or MSregistry@NARCOMS.org

Diet in the NARCOMS Population

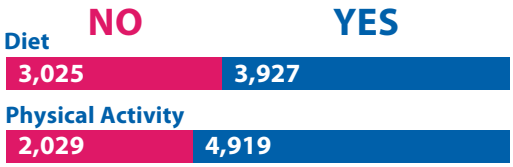
We have already learned quite a bit about the importance of lifestyle choices from previous NARCOMS research studies led by our scientific director Dr. Ruth Ann Marrie. For example, people with MS who have other conditions, such as diabetes or high blood pressure, often have much worse outcomes than people who do not have them. Being overweight increases your risk for developing these diseases. Diet can affect your weight. It can also affect some of the underlying biological processes thought to be important in MS, such as immune function.

The fall 2015 update survey focused on learning about diet among NARCOMS participants. We also asked about conversations with healthcare professionals relating to diet and physical activity. The survey included questions about 19 different diets that participants might have tried, why they tried them and whether they thought the diets were effective. Also included was a questionnaire asking how often the participants typically ate any of the 26 common food and drink items each week. Nearly 7000 participants completed the survey and provided information on their dietary habits. In this first analysis we evaluated how aspects of diet were related to responders' sociodemographic and clinical characteristics. Responders were on average 59 years old, 80% were female and 65% reported being currently married. They had predominantly relapsing-remitting MS (55%) and almost 2 out of 3 responders (65%) reported that they were currently taking a disease modifying therapy. The full results of associations between diet and MS symptoms will be available later in 2017, but we provide a few highlights below:

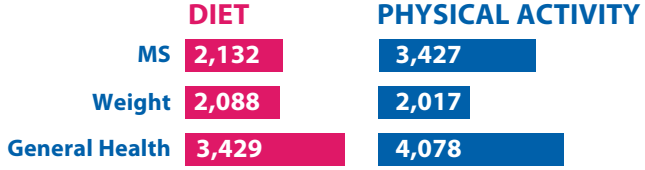
Do you talk with your healthcare professional about diet and exercise?

Most responders reported talking with their doctor or healthcare professional about either diet or physical activity. Conversations about physical activity were more common (70%) than conversations about diet (56%). About half of the responders reported discussions on both of these topics, while 23% had not discussed either physical activity or diet. Conversations relating to diet and physical activity were largely centered on general health. MS was more often cited as a reason when discussing physical activity than for conversations on diet.

Does your healthcare professional talk with you about that in physical activity?



Reasons why your doctor or healthcare professional discussed these with you?



How do dietary habits of NARCOMS responders compare to recommended intakes from the dietary reference guidelines?

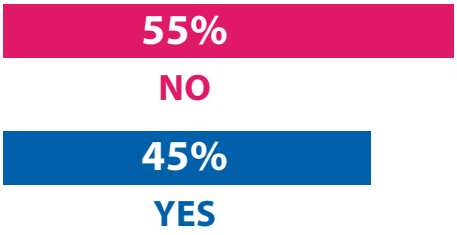
Overall, responders to the NARCOMS survey tended to consume fewer servings of fruits and vegetables per day than recommended for healthy American-style diets. Intakes of whole grains and intakes of dairy foods were also lower than recommended. Intake of red meat was higher than the recommendations.

The blue dot shows the amount that US dietary guidelines recommend you have per day if you eat on average 2000 kcal/day diet.
The orange dot shows the amount that US dietary guidelines recommend you have per day if you eat on average 1600 kcal/day diet.

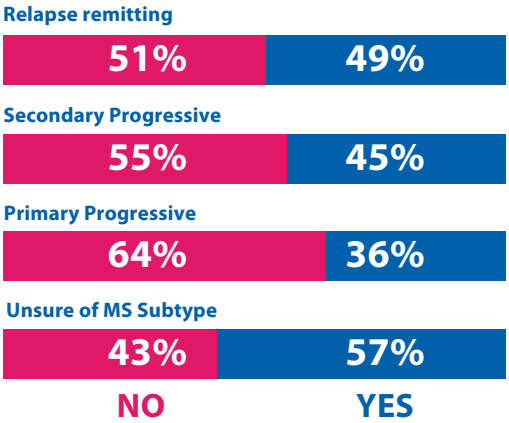
Have you tried to follow a specific diet since being diagnosed with MS?

Of the 6990 responders, over 3000 (45%) reported trying a special diet since being diagnosed with MS. Trying a specialized diet was more common in people with relapsing-remitting MS and less common in those with primary progressive MS. As of now we still don't know if there's a best diet for people with MS, and it remains a very active area of research.

Tried a special diet?



History of specialized diets by subtype of MS



Summary:

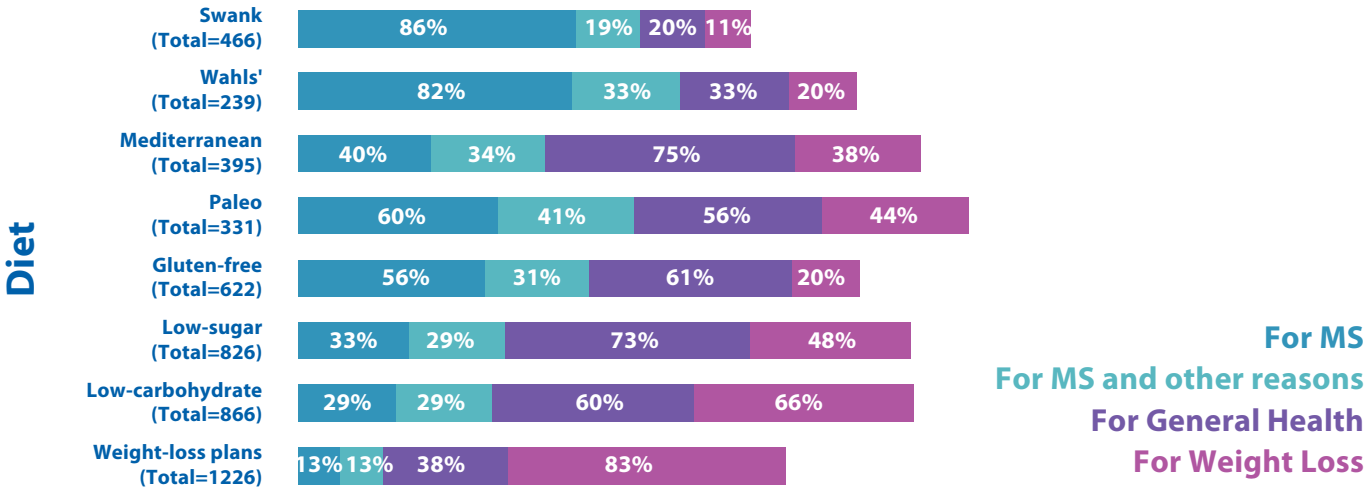
In this large survey, most participants reported talking with their doctor or healthcare professional about either diet or physical activity or both. Nevertheless, almost one out of 4 had not yet asked their doctor or healthcare professional about these important topics. Nearly half of responders reported trying a specialized diet since being diagnosed with MS. The specific diet and reasons for following the diet varied. Preliminary results suggest that NARCOMS responders on average may be consuming fewer servings of fruits and vegetables, whole grains and dairy foods than recommended by the US dietary guidelines. Next we plan to look at whether specific diets are associated with symptoms and severity of MS. We hope that this information can help researchers to design future studies to tell us whether better diets may help with MS.

Kathryn Fitzgerald, ScD

SnapShot

Common diets and why participants followed them:

The fall 2015 update also asked about on the common diets tried participants and the reasons for trying them. Of the specialized diets, the most common diet ever tried was a weight loss-plan diet (Nutrisystem or Jenny Craig type of diet). Other common diets included a low-carbohydrate diet, a low-sugar diet or a gluten-free diet. Responders said they were following specific diets for different reasons. For example, people that had followed the Swank diet (a very low fat diet) said MS was a primary reason for following the diet. Other people who followed the Mediterranean style diet said they were doing so for general health.



FDA Approves Ocrelizumab, First-Ever Disease-Modifying Treatment for Progressive MS

On March 28, 2017, the US Food & Drug Administration approved Ocrevus® (ocrelizumab; Genentech) to treat adults with relapsing forms of multiple sclerosis and primary progressive multiple sclerosis (PPMS). This makes it the first FDA-approved drug for PPMS. Ocrevus is given intravenously twice a year by a health care professional.

"This is a real game changer," said Cindy Zagieboylo, President and CEO, National Multiple Sclerosis Society.
Ocrevus' efficacy for treating relapsing forms of MS was shown in two clinical trials (OPERA 1 and 2). Collectively, 1,656 participants were treated with Ocrevus for 96 weeks. Both studies compared Ocrevus to another MS drug, Rebif® (interferon beta-1a). In both studies, participants who received Ocrevus had reduced relapse rates and reduced worsening of disability compared to those who received Rebif.

The ORATORIO study enrolled 732 participants who were treated for at least 120 weeks. This study compared Ocrevus to placebo (inactive treatment). Participants who received Ocrevus had slower worsening of disability compared to participants who received placebo.

The most common side effects associated with Ocrevus in all Phase III studies included infusion reactions and upper respiratory tract infections (common cold). These side effects were mostly mild to moderate in severity. Results from these three Phase III studies were recently published in the January 19, 2017 issue of the New England Journal of Medicine (NEJM).

"This is an exciting day for everyone touched by MS, a disease that strikes in the prime of a person's life when she or he may be starting a career or family," said June Halper, MSN, APN-C, MSCN, FAAN, chief executive officer at the Consortium of MS Centers in a press release by Genentech. "We have eagerly awaited the FDA approval of Ocrevus because it not only offers a new, highly efficacious treatment option for people with relapsing multiple sclerosis, but it is also the first disease-modifying therapy indicated for primary progressive multiple sclerosis, a highly disabling type of this chronic disease. For many people living with MS, this FDA approval is a source of hope."

Ocrevus is now available to people in the U.S. at an annual cost of $65,000 when not factoring in insurance coverage of the treatment. Patients can call 1-844-OCREVUS for more information. For people who qualify, Genentech plans to offer patient assistance programs through Genentech Access Solutions. More information is also available at (866) 4ACCESS/(866) 422-2377 or http://www.Genentech-Access.com.

Positive Results of Phase III Clinical Trial for Ozanimod Continue to Show Benefits in RRMS

Ozanimod is a new oral DMT that selectively blocks the S1PR1 and S1PR5 receptors. These receptors are involved in immune cells' response to inflammation as well as the activation of a specific subset of cells in the

brain and spinal cord. Ozanimod manufacturer Celgene updated results of its Phase III RADIANCE trial on May 22, 2017.

The RADIANCE study evaluated two doses (0.5 mg and 1 mg) of oral ozanimod, with participants treated for two years. The trial enrolled 1,313 people with RRMS in 21 countries. Compared to Avonex R (interferon beta-1a; Biogen), both ozanimod 0.5 mg and 1 mg doses showed reductions in the annualized relapse rate and the number of new or enlarging T2 MRI lesions over 24 months of treatment. The number of gadolinium-enhancing MRI lesions after 24 months of treatment was also lower in the ozanimod-treated groups compared to the Avonex-treated group.

A very low rate of disability progression was observed across the three treatment groups in an analysis of the time to confirmed disability progression in both the RADIANCE and SUNBEAM phase III trials. Ozanimod did not reach statistical significance compared to Avonex®. Also, both doses of ozanimod demonstrated statistically significant reductions in brain atrophy compared to Avonex® in each phase III trial.

The overall safety and tolerability of ozanimod was consistent with results from the recently completed phase III SUNBEAM RMS trial (reported in NARCOMS Now in Spring 2017) and previously reported phase II trials.

“The results of the phase III RADIANCE trial confirm the data observed in SUNBEAM and are consistent with the long-term phase II RADIANCE trial," said Bruce Cree, MD, Ph.D., Associate Professor of Neurology, Multiple Sclerosis Center, University of California, San Francisco. "The significant effects seen with ozanimod on relapse and MRI outcomes, including brain volume loss, coupled with the safety and tolerability profile observed in the two phase III trials, represent an exciting advancement for a disease which needs additional oral therapies with favorable benefit-risk profiles.”

TEVA Ends CONCERTO Study in RRMS; Continues in Progressive MS

Experimental oral therapy laquinimod was tested in a phase III clinical trial. It did not meet the primary endpoint of slowing progression better than inactive placebo among more than 2000 people with relapsing-remitting MS. Teva Pharmaceuticals announced these results of the CONCERTO study in a May 5, 2017 press release.

Laquinimod is an immune-modulating compound believed to affect the immune attack on the brain and spinal cord in MS. In the CONCERTO study, some secondary and exploratory endpoints did improve, including slowed brain atrophy (shrinkage), increased time to first relapse, and reduced relapse rates and disease activity on MRI scans. Side events in the laquinimod group included headache, nasal inflammation, back pain, and joint pain. Complete data from the trial will be presented at a future medical meeting and published in a scientific journal.

Teva announced that it has no plans to study this drug further in relapsing-remitting MS, but a study is still ongoing in primary progressive MS.

Clinical Trials in MS *Summer 2017*

These clinical trials are designed to study new pharmaceuticals for the treatment of relapsing-remitting and progressive multiple sclerosis.

Study of High-Dose Biotin (MD1003) in Progressive MS

ClinicalTrials.gov ID: NCT02936037

Purpose: Investigators worldwide are conducting a clinical trial testing high-dose biotin (MD1003, MedDay Pharmaceuticals SA) versus inactive placebo in 600 people with secondary or primary progressive MS to show improvement in disability after 15 months.

Primary Outcome Measures:
The primary outcome being measured is the proportion of participants who improve on either the EDSS scale that measures disability or the timed 25 foot walk, a test that measures mobility. Other outcomes being measured include cognitive function, quality of life, and activity on MRI scans.

Study Design: Participants will be randomized to receive either the investigational drug or placebo for at least 15 months. Afterward participants will be treated with the investigational drug during an open-label extension phase for up to 12 months.

Eligibility: Participants between the ages of 18-65 years old with a diagnosis of primary or secondary progressive MS. Participants can remain on existing disease-modifying treatments (such as ocrelizumab), if treatment has been stable for at least 90 days before enrollment.

Sponsor: MedDay Pharmaceuticals

Contact: To learn more about the enrollment criteria and to find out if you are eligible to participate, visit www.spi2study.com or call Dr. Robert Lasser at 617-378-8701.

Study to Explore the Mechanism of Action of Ocrelizumab and B-Cell Biology in Participants With Relapsing Multiple Sclerosis (RMS) or Primary Progressive Multiple Sclerosis (PPMS)

ClinicalTrials.gov ID: NCT02688985

Purpose: Investigators are recruiting 88 people with relapsing MS and 16 people with primary progressive MS for a study to explore the way ocrelizumab works and how it affects immune cells.

Primary Outcome Measures:
The primary objective is to understand the impact of ocrelizumab treatment on a biomarker of nerve cell damage that is found in spinal fluid, and to assess the number of specific B and T cells in the spinal fluid before and after treatment.

Study Design: Participants will receive three doses of ocrelizumab (by infusion into the vein) over one year. They will be followed for 48 weeks after the last infusion of ocrelizumab. Participants will receive a lumbar puncture (also known as a spinal tap) before treatment and afterward.

Eligibility: Participants aged 18 to 55 years, and diagnosed with relapsing or primary progressive MS. Further details on enrollment criteria are available from the contact below.

Sponsor: Genentech

Contact: To learn more about the enrollment criteria for this study, and to find out if you are eligible to participate, please call 1-888-662-6728, or email global.rochegenentechtrials@roche.com. Please use Reference Study ID Number: ML29966.

For more information go to www.clinicaltrials.gov and search for "Multiple Sclerosis."

MS APPS (& BLOGS)

Healthcare providers and researchers are constantly looking for new ways to engage participants in clinical trials. Pew Research statistics show more than half of Americans have a mobile phone, making this a viable tool to reach potential research participants.

Apps can assist patients, healthcare providers, and researchers in several ways. They can help make it simpler for patients to search and find trials fitting their needs. Apps can help participants enrolled in trials to manage their treatment schedules, appointments, exercise routines, and more. They also allow researchers to gather real-time information from participants, eliminating the need for surveys with pencil and paper.

Here are just a few clinical trials–related apps you may wish to try:

Clinical Trial Seek (Apple)

Novartis Pharmaceuticals Corporation

This app developed by drug manufacturer Novartis uses the National Institutes of Health (NIH) database, ClinicalTrials.gov and provides an easy-to-use, extensive search function to make it simple to find, navigate, and share clinical trial information.

Clinical Research Trials (Apple)

iHealth Ventures LLC

Find information on current clinical trials by searching by medical condition, therapeutic area, and more, and get notified of new trials that may be of interest. Includes federal and privately supported clinical trials conducted in the US and worldwide listed in ClinicalTrials.gov.

Many of the apps are disease-specific, targeting cancer trials and treatment for now, but could serve as models for other clinical trial management apps. Examples include:

Medocity Clinical Trials (Apple)

Medocity, Inc.

Billed as "your virtual nurse and companion," this blog is designed to assist cancer patients in managing their care, including a tracking system for medications, symptoms and treatment plans. Medications. It allows for the sharing of progress reports with doctors via email, and can integrate with Bluetooth-powered personal health devices such as FitBit to collect data. It also offers live video and messaging to allow for connections to your care team.

Cleveland Clinic Cancer Clinical Trials

Cleveland Clinic Innovations

This app allows users to search a real-time database for trials by disease, phase, physician or hospital location. It includes the option to browse information on each trial's objective, eligibility criteria, stage(s) and more. Finally, you can connect to the clinic's Cancer Answer Line for additional information about a trial or to enroll patients.

We'd be remiss if we failed to list ClinicalTrials.org and ResearchMatch as two of the main ways to search for clinical trial opportunities online. The first is the National Institutes of Health's database of clinical trial worldwide, both industry sponsored and federally funded. ResearchMatch is a web portal with the goal of bringing together people trying to find research studies and researchers looking for people to participate in their studies. It is a free and secure registry that has been developed by major academic institutions across the country who want to involve you in the mission of helping today's studies make a real difference for everyone's health in the future.

My Journey with MS

One morning back in 1996 while walking to the bus stop [I] felt the sensation of being pulled backwards—it wasn't my book bag weighing me down. Shortly after, I starting missing a lot of school from dizziness to the point where I was falling, vomiting, and running into things.

One night I had just gone to bed when out of nowhere the most horrible, painful feeling I've ever had hit the base of my skull. I went to the emergency room, and the pain had my blood pressure sky high. This was the beginning of my nightmare. A week later I was partially paralyzed on my left side.

I finally visited an ENT who suspected Multiple Sclerosis, not an inner ear problem, stroke, or lyme disease. I went to see a neurologist, got brain scans and a lumbar puncture (spinal tap) which was supposed to be painful, however I sat there feeling like pressure had been relieved from my spine.

Fast forward to all my tests coming back, confirming Multiple Sclerosis. I gathered all the information I could. It took a good week to study it all. Meanwhile I was also being home schooled, and I graduated early, determined to get my diploma. It took me two years to finally get on a medication, Avonex. I had severe side effects from it but stuck with it.

I couldn't handle the injection anymore, it was so painful. I was too anxiety ridden to want to be on a different injection. We went to a M.S. specialist, I took all my tests and she did her own. I got really nervous sitting in her office I thought it was taking too long. She [told me that] by time I turn 30 I would be on a ventilator because my brain stem is covered with lesions (I was 22 at time). I couldn't accept that. I started researching everything; I was determined to live.

A year later I was due for another MRI, and I was so scared to see how the MS had progressed. Again I was in an office waiting when multiple doctors came in. They put my MRIs up so I could see them and, amazingly, the lesions that I had seen on my brain stem were GONE! All of them! The doctors couldn't explain it, they were at a loss for words. I said, "See I told you there is power in prayer!" They called it a "medical miracle". That was a great day.

It's been almost 18 years since my diagnosis. I have RRMS but I'm never symptom free. I always have chronic pain, migraines, nystagmus, and fatigue. I still get nervous about going to sleep and waking up blind, deaf, mute, paralyzed, or in a vegetative state, but those thoughts happen less and less as the years pass. I remind myself to laugh as much as I can, love unconditionally, and dance because my legs still allow me to.

Submitted by a NARCOMS registry participant

Editors Note: Not all treatments work the same for every patient. Consult your healthcare provider about what treatment, if any, is right for you and your MS.

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S T Q C H A X M D E G Z Q L B W
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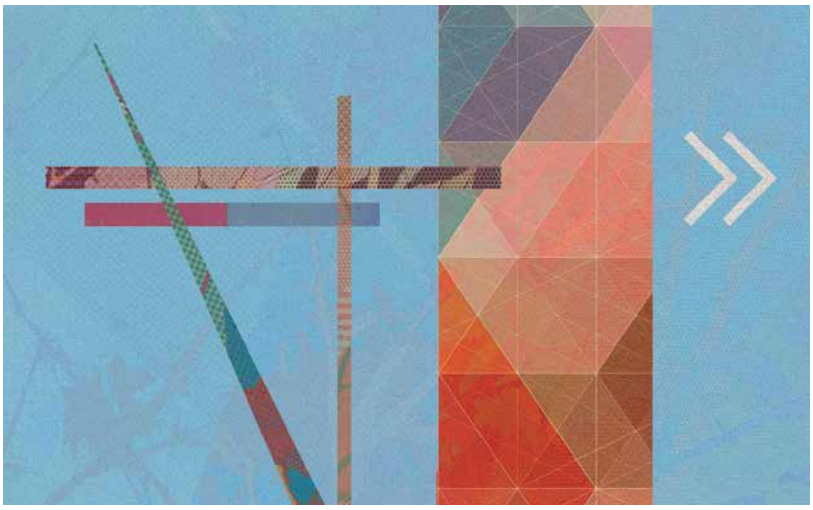

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