

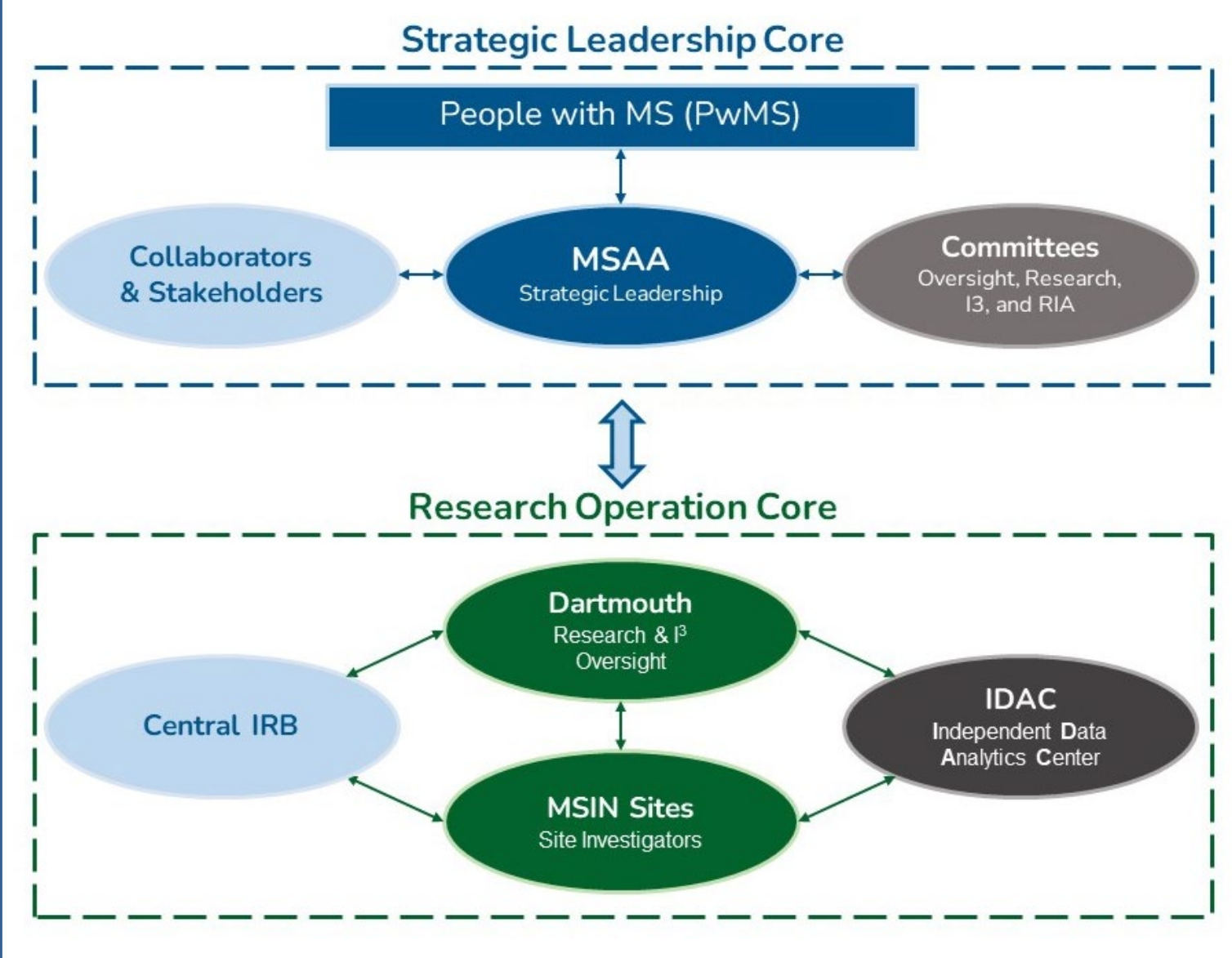
## Abstract

The MS Implementation Network (MSIN) is a learning health system collaborative and community of practice for improvement, innovation and implementation research to optimize health outcomes for people living with MS (PwMS). Co-designed by the Multiple Sclerosis Association and Dartmouth University, MSIN seeks to establish the first implementation science research network for multiple sclerosis.

MS is a complex, chronic and costly (“3C”) condition that is among the most common and disabling neurological disease in adults.<sup>1</sup> MS affects nearly one million Americans with a prevalence of 309 per 100,000 adults<sup>ii</sup> and generates substantial burden on PwMS, the healthcare system, and society as a whole,<sup>iii</sup> with an estimated annual individual cost to a PwMS of \$8,528-\$54,244.<sup>iv, v, vi</sup> While MS has been investigated at the basic science, individual and population levels of analysis, including large data registry initiatives, this study will establish the first multi-center implementation science research network for MS to evaluate system and population-level variation in process and outcomes, evaluate implementation feasibility, acceptability, utility and effectiveness while also informing best practices in how patient advocacy organizations, healthcare centers, and research institutes can work collaboratively to improve outcomes and quality of life for PwMS.

## Introduction

The MSIN is founded in partnership between the Multiple Sclerosis Association of America (MSAA) and the Chronic Health Improvement Research Program (CHIRP) at Dartmouth. Founded in 1970, MSAA is a leading MS patient advocacy organization dedicated to improving lives through vital services and support and driving a patient-centric future for MS care and research. CHIRP at Dartmouth is an academic leader in improvement, implementation and innovation science. MSAA and CHIRP at Dartmouth have come together to develop a patient-centric implementation research collaborative for multiple sclerosis. The MSIN is a multi-stakeholder collaborative, leveraging all partners who are part of the MS care continuum and community while keeping the patient at the center of all that we do.



## Objectives

The MSIN will establish a multi-center learning health network that incorporates a community of practice, a learning collaborative, a learning health system data infrastructure, and an improvement and implementation training academy.

### Specific MSIN Aims include:

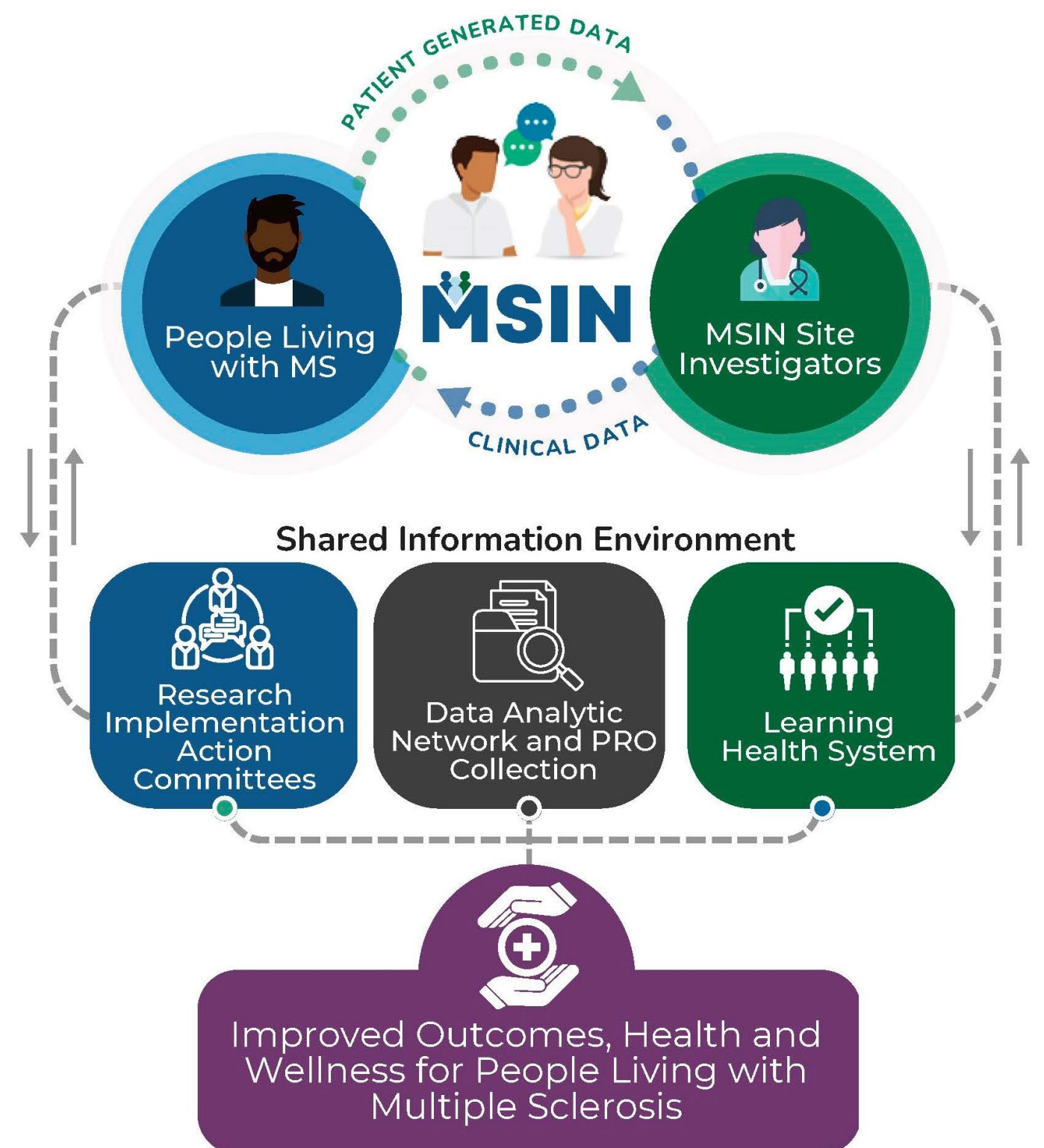
- Use improvement, co-design and agile design methods to establish and develop a scalable registry-enabled MS implementation Learning Health System collaborative and stakeholder-driven community of practice network
- Study the current state and experience of MS treatment patterns, and outcomes across participating MS centers, and use data transparency, visualization, and benchmarking approaches to help demonstrate practice variation and identify opportunities for improvement and standardization
- Facilitate a prospective cluster randomized system-level study to evaluate the implementation of an intervention to improve DMT treatment decision support and decision quality to improve patient activation, increase appropriate utilization of high efficacy DMT treatment, and optimize related health, experience, and wellness outcomes

## Conclusions

By developing a multi-center system-level registry-enabled learning health system for MS, then we can create a patient-centric implementation science research network for MS that can study variation in system-level performance and related population outcomes.

Through this work, we will then be able to test the implementation of evidence-based interventions and in real time work to improve the quality of MS care and outcomes for PwMS. This research may also lead to improvements in healthcare systems and better inform policy makers and best practices in MS care and treatment.

## Methods & Design



Adapted with permission from the Dartmouth coproduction LHS model: <https://sites.dartmouth.edu/coproduction/our-model/>

The MSIN design is based on the Dartmouth Institute for Health Policy & Clinical Practice (TDI) Coproduction Learning Health System model and a prior multicenter pilot study (MS-CQI, 2017-2020), and includes:

- Feed-forward clinical and patient reported data
- Feedback data for transparency, benchmarking, informing improvement, and hypothesis generation
- Data visualization: Dashboards and reporting
- Aggregated data for implementation and population health research
- Learning collaborative, community of practice structure

The study will enroll twelve sites in Year 1, with sites selected to represent diversity in the following areas: 1) geographic diversity; 2) the diversity of practice (i.e., general neurologist vs comprehensive MS center with an MS specialist); and 3) demographic diversity of PwMS served at a site.

Clinical trial sites will be responsible for recruiting PwMS and will be involved in implementation interventions and participate in improvement measures through coaching. Sites will also be part of the MSIN Learning Collaborative and expected to attend monthly webinar meetings and periodic MSIN community of practice meetings and can also be included in MSIN Advisory Boards and play an essential role in how the research is disseminated within the broader MS community.

### Layer 1: Community of Practice with Learning Health System Informed Improvement Collaborative

All sites get the Learning Health System (Baseline/Control), Improvement Collaborative, Community of Practice, and Core Measures

### Layer 2: Implementation Research Network

12 Week Initial Implementation Study of “SDM + Support Intervention”:  
Prospective, 2:1 cluster randomized, Pre/Post

- Participants: People with MS starting a DMT or eligible for DMT treatment change
- Intervention: Exposure to MSAA Ultimate Treatment Guide + Peer Support Interaction
- Activities: Enrollment, Randomization > Intervention/Usual Care > DMT treatment decision with clinician
- Primary Outcomes (Pre/Post): Collaborate, PAM
- Secondary Outcomes (Post): Experience (Feasibility, Acceptability, Utility)
- Exploratory Outcomes: DMT type (Hi vs. Low efficacy, etc.)

## Key Outcomes

### Information sources will include:

- Longitudinal data registry including clinical data
- Patient reported outcomes
- Claims data
- Qualitative data

### Anticipated outcomes include:

- Improved quality of care and clinical outcomes for people with MS.
- Improved levels of resilience (lower burnout) and improved processes and outcomes performance for clinical trial sites as compared to the ‘usual care’ control group

## References

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- <sup>vi</sup> Pyenson M, Fredericks M, Berrios M, Mastroianni M, Han F. Multiple Sclerosis: New perspectives on the patient journey. *Milliman Inc*. Published online 2016:40.