



Overview

1 in 5 individuals diagnosed with MS are eventually determined not to have the disease. While widely relied upon for their clinical availability and non-invasiveness, routine MRI techniques have low specificity for MS.

CAVS-MS is an NIH-funded, prospective, multi-center study designed to assess the Central Vein Sign as a highly specific new MRI biomarker of MS lesions that can help to address these diagnostic challenges.

The Challenge

The CAVS-MS study is collecting clinical and neuroimaging data from over 400 patients across 11 sites with a 24 month follow-up. This multi-site, multi-timepoint, multi-sequence approach requires a centralized and integrated data storage, management and analysis solution.

Additionally, in light of the widely acknowledged inferior sensitivity of 3T versus 7T imaging for detecting the central vein, specialized post-processing methods are under development to improve detection using only routine clinical sequences. The required solution must expertly implement customized workflows and deliver outputs seamlessly to neuroradiologists for assessment.

Partnership

The Cleveland Clinic is a non-profit academic medical center which runs one of the largest and most comprehensive programs for MS research worldwide. In collaboration with the North American Imaging in MS Cooperative, they selected QMENTA to deliver the software infrastructure and technical expertise essential to realizing the project.

The Solution

QMENTA's cloud-based all-in-one platform offers centralized study management, scientific support and quantitative data analysis via a custom-built workflow for Central Vein Sign detection.

- Each participating site securely and privately contributes data to a central repository.
- Automatic imaging data anonymization and modality recognition.
- Data quality checks include imaging protocol adherence, thereby reducing delays and promoting data harmonization.
- Deep learning model for MS white matter lesion segmentation improves efficacy and reproducibility compared to manual methods.
- Bespoke algorithm developed by QMENTA's scientific experts optimizes and standardizes Central Vein Sign visualization for all raters.
- Configurable roles assign different tasks to different readers, including central image quality review and lesion annotation.
- Rich visual reporting and easy sharing of results via PDF and CSV files.

Results



> **1000 individual MRI sessions** hosted on QMENTA Platform



Semi-automated imaging analysis workflow combined with 23 custom eCRFs



Joint publications now include **incorporation of Central Vein Sign into proposed 2024 McDonald Criteria** for MS Diagnosis

75%
Time Savings

66%
Cost Savings

“ The QMENTA team provided real-time support for all study activities. Database changes and modifications were requested and the team was extremely responsive to all requests. The customer support and engineering support has been phenomenal and the best I have encountered in this industry space. We look forward to working in ongoing projects and new projects with the QMENTA team

Daniel Ontaneda, MD, PhD, Co-principal Investigator, Cleveland Clinic Mellen Center for Multiple Sclerosis