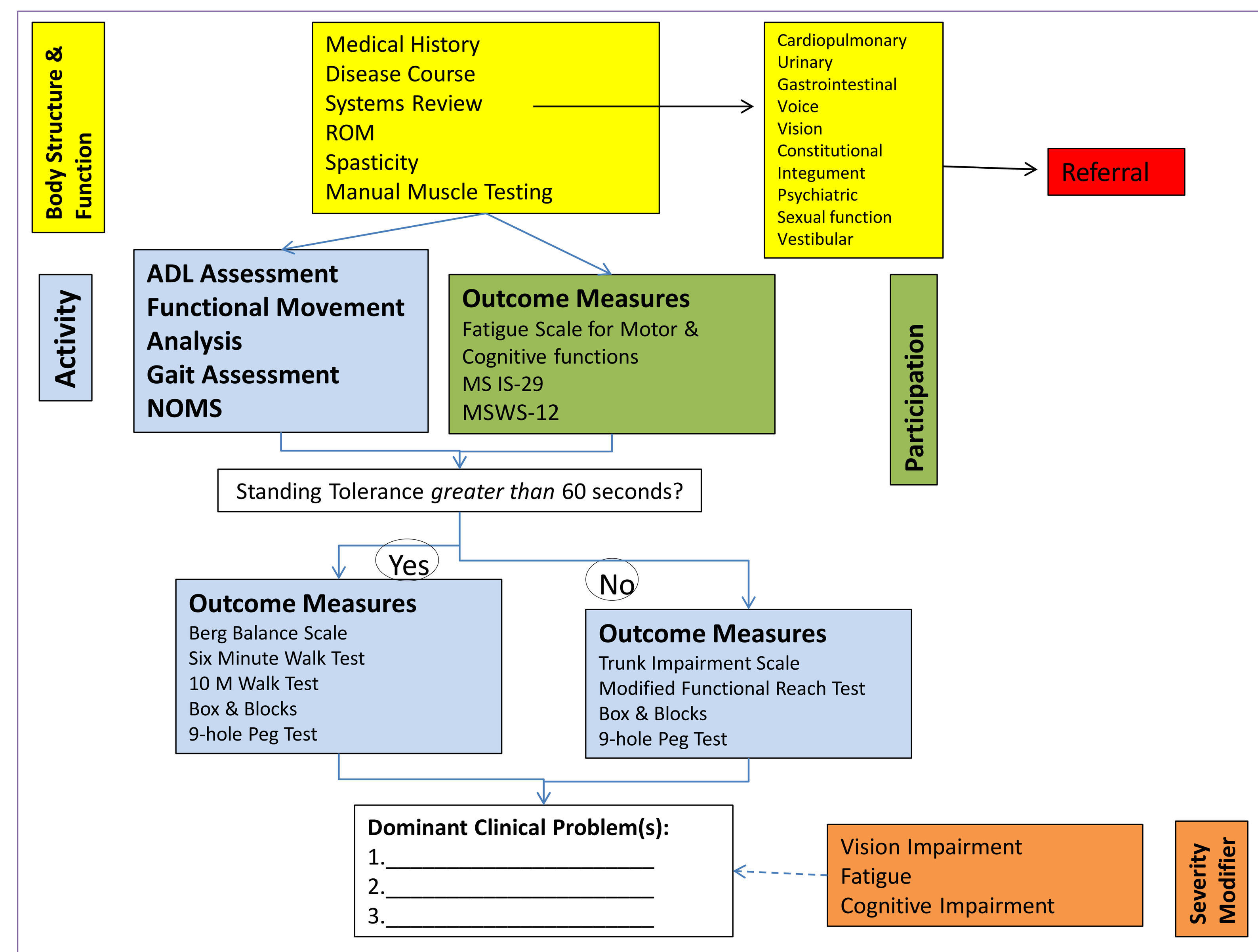
Clinical Outcomes Following Application of a Clinical Practice Guideline for Persons with Multiple Sclerosis in a Multi-Discipline Rehabilitation Facility

Kelli Doern PT, DPT, NCS, MSCS
Sheltering Arms Physical Rehabilitation Centers, Richmond, VA

Background

The Multiple Sclerosis (MS) clinical practice guideline (CPG) was created to assist the rehabilitation clinician in performing a thorough evaluation and develop an evidence-based plan of care. The development of a CPG was conducted to fit the unique mission, situation, and needs of Sheltering Arms Rehabilitation Hospital, its employees, and the community. The development and assimilation of this information represents a significant commitment to excellence in serving individuals living with MS across the rehabilitation across a spectrum of care, for a multitude of services. Persons with MS have varying disability levels and can present to rehabilitation services in acute care, home health, inpatient rehab, outpatient rehab and recreational fitness. The CPG was intended to provide the clinician in each setting with guidance on a thorough assessment and evidence-based plan of care, including an appropriate transition through the rehabilitation spectrum, into a long-term fitness program.



Objective

A retrospective analysis of clinical outcomes related to outpatient Physical Therapy (PT), Occupational Therapy (OT) and Speech Language Pathology (SLP), following implementation of a MS CPG.

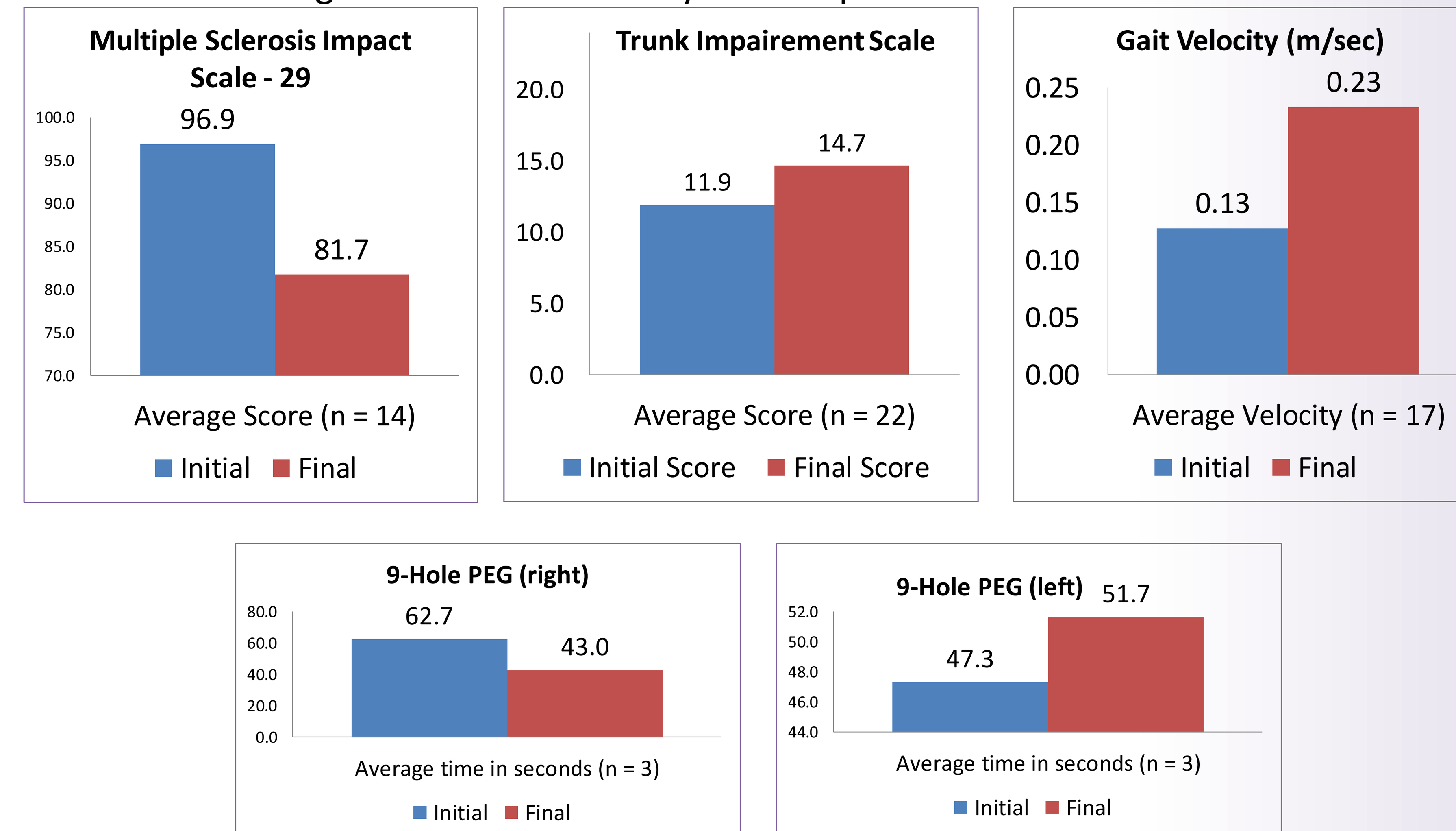
Methods

Patient data were first grouped by gait velocity; Group 1: 0 – 0.39 m/sec, Group 2: >0.4 m/sec. Analysis of outcome measures were then performed within these groups. Group 1 outcome measures included: Trunk Impairment Scale, gait velocity, Multiple Sclerosis Impact Scale-29, 9-Hole PEG test. Group 2 outcome measures included: Berg Balance Scale, gait velocity, Multiple Sclerosis Impact Scale-29, 9-Hole PEG test, 6-minute walk test. National Outcomes Measurement System (NOMS) was analyzed as a single group.

Results

A total of 94 patients with a primary diagnosis of MS were evaluated and treated within the Sheltering Arms Rehabilitation continuum between October, 2016 and December, 2017. A majority of the patients (n=37) were seen in out-patient Physical Therapy (PT) services, however 30 persons were also treated in Occupational Therapy (OT) and 27 persons in Speech Language Pathology (SLP). Finally, for the retrospective chart review some data points were missing, therefore the n-value is reported for each outcome measure.

For **Group 1** (initial gait velocity 0-0.39 m/sec) outcomes, the average final scores were improved compared to the initial values. The average change on the MSIS-29 was a decrease of 15.2 points. The average change on the Trunk Impairment Scale was 2.8 points. The average change in gait velocity was an improvement of 0.1 m/sec which reaches clinical significance proposed in the literature. Three of the seventeen individuals demonstrated gait velocity improvement which moved them from the household mobility category to limited community ambulator category (0.33 – 0.75 m/sec, 0.35 – 0.59 m/sec, and 0.1-0.76 me/sec) which is a potentially significant impact on functional mobility. The average change on the 9-hole PEG test was a decrease of 19.7 seconds on the right hand, and an increase of 4.4 seconds on the left hand. All the individuals were right-handed which may have impacted these results.



For **Group 2** (initial gait velocity greater than or equal to 0.4 m/sec) outcomes, the average final scores were improved compared to the initial values. The average change on the MSIS-29 was a decrease of 11.6 points. The average change on the Berg Balance Scale was an improvement of 4.5 points. This change does not reach the MCID established in MS (6-point change) however the change did cross the fall-risk threshold of 45/56. The average change in gait velocity was an improvement of 0.1 m/second, which reaches clinical significance proposed in the literature. Furthermore, the group average increased from limited-community ambulator category to community ambulator category, a potentially significant impact on functional mobility. The average change on the 6-Minute Walk test was 108 feet. This change did not meet the MDIC of 180 feet.

NOMS are reported as a whole group and not based on initial walking velocity. NOMS – Memory (n = 6) average initial score of 4.8 and final score of 6.0. NOMS-Attention (n = 2) average initial score of 4.5 and final score of 5.5. NOMS-Motor Speech (n=3) average initial score of 6 and final score of 7. NOMS-Spoken language (n = 1) initial score of 6 and final score of 7. NOMS-Swallow (n = 2) average initial score of 4.5 and final score of 5.

Discussion

There are many limitations to this retrospective analysis. The MS CPG has been implemented across two In-patient hospital locations and four Out-patient clinics within Sheltering Arms Rehabilitation. The majority of patients were assessed with the recommended outcome measures at the initial evaluation, however multiple data points are missing at discharge. For the data points that are available, improvements in trunk stability, gait speed, and balance are seen consistently.

Conclusions

Through the application of a CPG, the patients reviewed received excellent outcomes. Even with a heterogeneous patient population, consistency of practice and continuum of care is important in overall health and well-being of persons living with MS.