Measuring Outcomes and Value: an Integrated, Novel Solution for Generating Insights in MS (MOVING-MS)

Elisa Sheng, PhD[1]; Kian Jalaleddin, PdD[1]; Tamara Shabi[2], Deanna Power, RN[1], Danielle Siniscalchi[1], Kelly Leyden[1], Ferhan Qureshi[1], Revere P. Kinkel MD[2], Melinda Thomas[1], Jennifer Graves, MD, PhD[2]
[1]Octave , Menlo Park, CA; [2]University of California San Diego, San Diego, CA

Introduction

Physicians face challenges in obtaining timely, reliable information about their patients in between office visits. The Octave Precision Care Solution aims to facilitate inter-visit data collection for treatment decision making, provide enhanced patient support, and promote early intervention in MS management. The solution includes biweekly interaction with an MS certified nurse, mobile application tracking of symptoms and medication adherence, quantified MRI results, and blood based biomarker measurement of MS activity. [Figure 1]

Objectives

To perform a randomized control trial to evaluate the impact of Octave's solution on unplanned & planned healthcare utilization, and physician and patient satisfaction. An interim analysis was performed to assess the continuation of the study.

Methods

- Eighty-six participants have been enrolled in a 12-month randomized waitlist controlled trial of the Octave solution.
- An interim analysis was pre-planned to evaluate case vs. wait-list control differences at the completion of the first 6 months in the study.
- Physician and patient clinical visit satisfaction was evaluated via multi-question surveys that rate positive experience on a scale from 1-10 at baseline and 6-months.
- To quantify healthcare utilization, hospital visits, office visits and communication triages (digital and phone) were recorded. Costs for each event type were estimated based on published data.
- Though randomization was applied, in the smaller interim sample size, covariates of interest were evaluated for balance across groups.
- Average survey scores at 6-months, annualized healthcare costs and event counts were compared via generalized linear regression models on an indicator for intervention, adjusted for baseline patient and physician covariates, as appropriate.
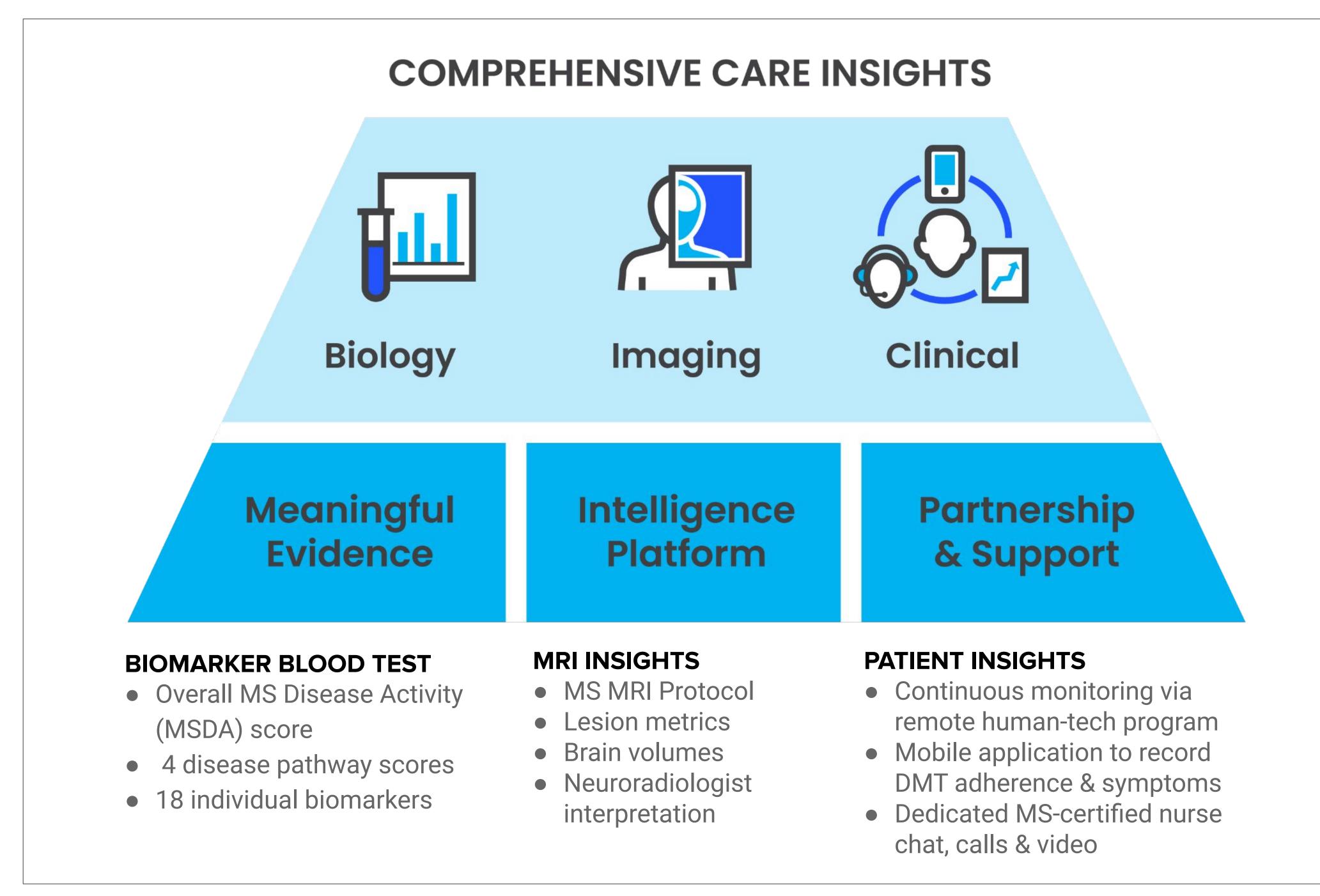

COMPREHENSIVE CARE INSIGHTS

Biology — Imaging — Clinical

Meaningful Evidence — Intelligence Platform — Partnership & Support

BIOMARKER BLOOD TEST
- Overall MS Disease Activity (MSDA) score
- 4 disease pathway scores
- 18 individual biomarkers

MRI INSIGHTS
- MS MRI Protocol
- Lesion metrics
- Brain volumes
- Neuroradiologist interpretation

PATIENT INSIGHTS
- Continuous monitoring via remote human-tech program
- Mobile application to record DMT adherence & symptoms
- Dedicated MS-certified nurse chat, calls & video

Figure 1. Representation of the Octave Precision Care Solution. The solution is comprised of multimodal data collection, curation, and interpretation to provide a comprehensive view of an individual patient with MS to the treating Neurologist.
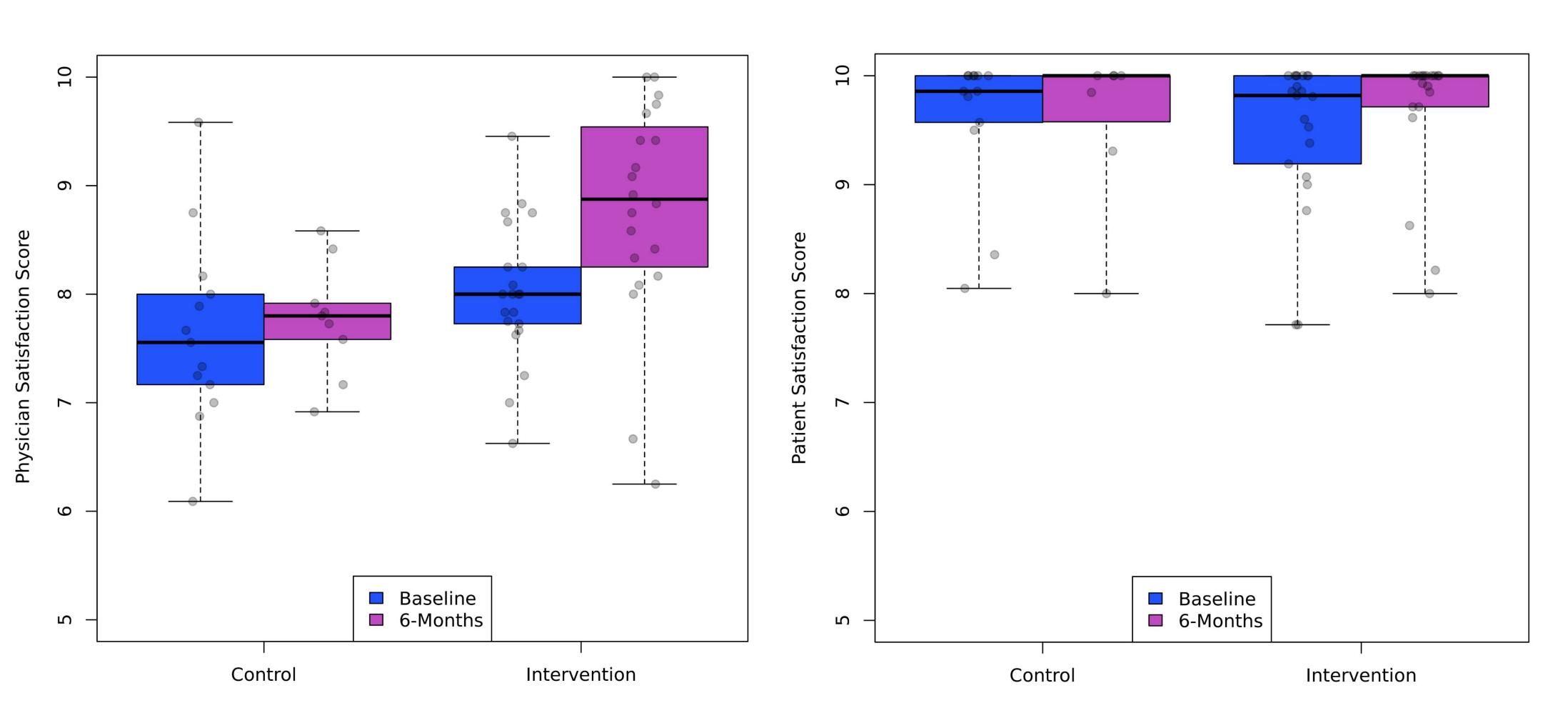

Figure 2. Boxplots of physician satisfaction score, the average response over the 11 physician satisfaction survey items, by intervention group and time point.

Figure 3. Boxplots of patient satisfaction score, the average response over the 21 patient satisfaction survey items, by intervention group and time point.
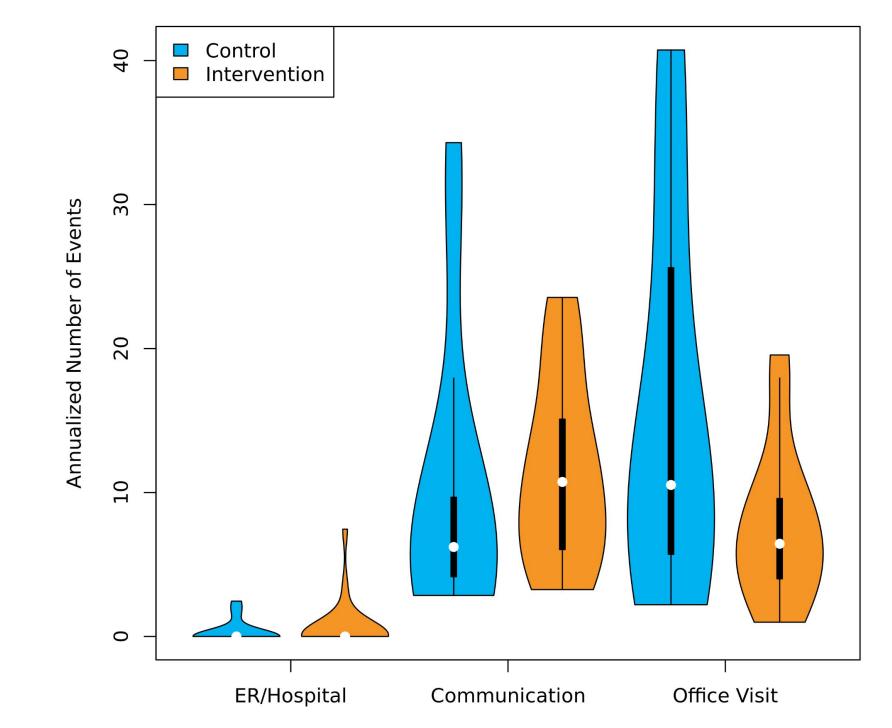
Results

- Thirty-five patient participants (mean age 44, 91% female) were included in the interim analysis. [Table 1]
- The average physician visit satisfaction survey score was significantly improved at 6 months (beta=1.3, 95%CI=[0.73, 1.9], p-value=0.0001) for the intervention vs. control group. [Figure 2]
- The baseline patient visit satisfaction score was high in both groups (median=9.8/9.9 for intervention/control), leaving little room for improvement at follow up. [Figure 3]
- Annualized, total healthcare utilization costs were $3403 higher (95%CI=[-9237, 16043], p=0.59) for patients in the wait-list control group compared to the intervention group. [Figure 4]
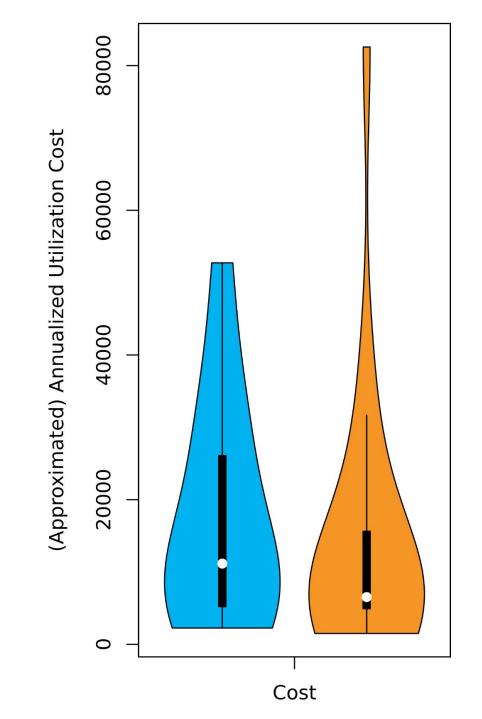
	Intervention (N=22)		Control (N=13)	
	mean	SD	mean	SD
Age (years)	44.7	10.1	44.0	9.5
Disease Duration (years)	8.5	6.9	4.5	4.9
	count	%	count	%
Sex: Female	18	85.7	13	100.0
Male	3	14.3	0	0.0
Race: White	15	68.2	12	92.3
Native American	2	9.1	0	0.0
Black	1	4.5	0	0.0
Asian	1	4.5	0	0.0
Other	3	13.6	1	7.7
Ethnicity: Hispanic	2	9.5	2	15.4
Non-Hispanic	19	90.5	11	84.6

Table 1. Interim analysis participant demographics, grouped by intervention vs. control group. Data is subject to change with updates past the interim analysis.

Figure 4. Distribution of annualized event counts by category and intervention group (Left). Distribution of approximate annualized utilization cost by intervention group (Right). Two intervention participants had multiple high cost events not related to MS (e.g., cancer screening) that can be seen in the ER/Hospital and Cost columns.

Conclusions

In this interim analysis we demonstrated a significantly improved physician satisfaction score when patients were receiving the Octave solution. There were fiscally significant differences in healthcare utilization costs between the groups. Though these did not reach statistical significance in this interim evaluation, these are highly encouraging results support trial continuation and the Octave platform.