

Massachusetts Medicaid Challenge: Revolutionizing Home-Based Care

Organization Name

WellSense Health Plan Senior Care Option

Lead Contact's Name

Larry Lawhorne, MD

Organization Address

529 Main Street, Suite 500, Charlestown, MA 02129

Number of Full Time Employees (FTEs)

1074

Number of FTEs based in Massachusetts

1008

Number of members currently enrolled in your organization's Massachusetts-based SCO plans

2303

Number of total members in your SCO plans

2303

Please provide a breakdown of your Massachusetts-based SCO members by race and ethnicity

Summary Race:	Summary Ethnicity:	Dominican 10	Liberian 1
Alaska Native 7	Afghanistani 2	Ecuadorian 1	Lithuanian 1
American Indian 3	African American 74	English 6	Mexican American 2
Asian 42	Albanian 2	Eritrea 1	Namibian 1
Black/African American 1,123	American 131	Ethiopian 3	Nigerian 11
Declined 157	Arab 1	French 4	Not Defined 198
Hawaiian or Pacific Islander 5	Bangladeshi 1	Greek 1	Other African 1
Hispanic/Latino/ Black 10	Barbadian 1	Haitian 52	Other Spaniard 1
Hispanic/Latino/ White 26	Brazil 2	Honduran 4	Peruvian 3
Hispanic/Latino/Other 286	Bulgarian 1	India (Asian)3	Portuguese 8
Not Defined 198	Cambodian 4	Irish 3	Puerto Rican 34
Unknown 13	Cape Verdean 12	Israeli 1	Salvadoran 3
White/Caucasian 285	Colombian 2	Italian 2	Somalia 2
Total Members 2,155	Cuban 2	Jamaican 7	South American Indian 1
	Declined 200		Spanish 3
	Dominica Islander 22		Trinidadian 4
			Uganda 1
			Ukrainian 1
			Unlisted 1,319
			Vietnamese 2
			West Indian 3
			Total Members 2,155

Please provide a breakdown of the language data on your Massachusetts-based SCO members

Arabic 4; Cape Verdean Creole 19; Chinese 2; Declined 99; English 1,100; French 19; Greek 1; Haitian Creole 83; Hebrew 1; Hindi 1; Not Defined 198; Portuguese 8; Russian 1; Spanish 302; Unlisted 312; Vietnamese 4 Total members 2,155

List any specific patient populations and/or conditions you would like to target with the pilot program. Please indicate how you think these could be addressed with a remote patient monitoring solution.

The goal of this pilot project is to enhance our member-centric mission by working with the selected Sandbox to deploy internet connected sensors to conduct innovative remote patient monitoring of older adults who have behavioral and psychological symptoms of dementia (BPSD) and who are at risk for adverse health outcomes and inadequate access to healthcare because of racial, ethnic, or socioeconomic factors.

The emergence of a host of digital products (e.g., sensors, voice, assistive technologies, and financial/cognitive technologies among others) has the potential to benefit family caregivers of people with diverse medical or neuropsychiatric conditions.¹ People living with dementia (PLwD) and their informal caregivers, who are most often family members, are potential beneficiaries of such technologies. A major challenge in the care of PLwD is conducting ongoing, actionable in-home assessments of changes in their symptoms. Continuous assessment using internet connected sensors is an alternative approach to periodic outpatient assessments since the former allows objective, ecologically valid, and long-term follow-up.²

Remote monitoring can be deployed to track and alert users (e.g., professional staff and caregivers) to behaviors and challenging events that may presage severe BPSD and subsequent adverse health outcomes. Severe BPSD include behaviors such as extreme agitation, aggression, exit seeking and wandering into unsafe areas, etc. When these extreme behaviors occur, it is often difficult for caregivers, even with telephone assistance from health care professionals, to intervene effectively. Lack of timely effective intervention may lead to injury to self or others or an emergency department visit in an attempt to control behaviors. In an 18-month study of remote monitoring and system alerts, caregivers showed promise in being able to identify digital biomarkers associated with falls, wandering events, and

avoidable emergency room visits.³ Another study revealed that temporally dense data on motion can be utilized as a proxy for behavior, indicating high validity of using motion data to monitor behavior such as sleep disturbances, agitation and wandering; however, potential pitfalls included ethics, privacy and data security, and scalability.⁴

1. Lindeman DA, et al. Technology and Caregiving: Emerging Interventions and Directions for Research. *Gerontologist*. 2020 Feb 14; 60 (Suppl 1): S41-S49.
2. Piau A, et al. *J Med Internet Res*. 2019 Aug; 21(8): e12785.
3. Gaugler JE, et al. Outcomes of remote activity monitoring for persons living with dementia over an 18month period. *J Am Geriatr Soc*. 2022 Aug; 70 (8): 2439-2442.
4. Husebo BS, et al. Sensing Technology to Monitor Behavioral and Psychological Symptoms and to Assess Treatment Response in People with Dementia. A Systematic Review. *Front Pharmacol*. 2020 Feb 4; 10:1699.

Indicate the types of remote patient monitoring solutions you are most interested in piloting with your member population (e.g. wearables, passive monitoring, etc.)

During the past 2 years, SCO has discussed a variety of sensors to be considered if we collaborate with the Boston University Alzheimer's Disease Research Center (ADRC) to study continuous assessment of PLwD using internet connected sensors as an alternative approach to periodic outpatient assessments. All of the following have been discussed in detail, but Alphind and Verisense (or possibly the Oura Ring) used in combination may have advantages over the others in the SCO population.

- SOLO: Facial feature recording software that looks at various measures of emotionality through 5-10 second clips at multiple points over the course of the day. Data is inputted into a dashboard that allows team to see mood swings over the course of the day and, if done longitudinally, the effect of interventions.
- Caveat: requires active engagement throughout the day.
- FitBit: Wrist wearable that collects data across physical activity, sleep, and heart rate at up to 10-second intervals. Battery life of 7 days, rechargeable, commercial use that includes affiliated app.
- Oura Ring: Ring wearable that measures sleep, physical activity, temperature, and heart rate. Potentially more comfortable for participants than a wrist worn wearable. Insights from the data are in real-time.
- Caveat: requires iPhone or android app
- Alphind: Home-based sensor that can track real-time movement patterns in rooms where device is set up. Respiration and sleep patterns collected if placed in the bedroom. Detects falls, seizure, and breathing patterns. Caveat: Constraints on living situation; privacy concerns.
- Hume AI: Software to lay over voice recordings enabling detection of mood disturbances. Requires 15 seconds of audio recording or short verbal and facial expressions. Retroactive insights.
- Verisense: Wrist wearable that uses an accelerometer and gyroscope to collect physical activity data. Also collects time-in-bed and sleep efficiency. Do not need to access the app to upload data if there is internet connection. Research grade with FDA approval. Caveat: Not as precise in measuring sleep compared to alternatives.

Describe ways your SCO plan has previously used or investigated use of remote patient monitoring solutions with your SCO plan members. Please indicate if care managers have a workflow to incorporate RPM tracking into overall care for the member.

There is both clinical and public health pressure to develop and implement effective strategies to support PLwD who are at home and want to stay there. RPM is one such strategy that can supplement extensive, unpaid assistance from family members and others and prevent or delay negative health events. RPM solutions can potentially help PLwD remain in the community longer and more safely. Approximately 2 years ago, the WellSense SCO Medical Director (Larry Lawhorne) started discussions with the digital core team (Rhoda Au and Spencer Low) at the BU ADRC around a mutual interest in the use of internet connected sensors to enhance care for PLwD. Team members from the ADRC have made two in-person presentations to SCO RN and SW care managers and Care Coordination Specialists regarding the use of RPM for PLwD. Care management team members subsequently discussed the process of incorporating this intervention into their workflow. Last year, the SCO Medical Director presented the concept of RPM to the plan's Member Community Advisory Board and learned about several members who "felt so alone" as they cared for a loved one with dementia. Prior to becoming SCO Medical Director in April 2021, Dr. Lawhorne was involved in several sensor studies (see NIH Biosketch).

Provide a description of how you would recruit members for the pilot. Would you limit recruitment to Massachusetts members? If not, please indicate other service areas that would be included in your recruitment.

Only Massachusetts members will be recruited for this pilot project. We currently envision several recruitment pathways:

1. One pathway is to offer participation to family caregivers whose loved one has had recurrent ED visits or hospitalizations / readmissions that seem to be driven at least in part by symptoms of dementia. Members in this pathway are identified most often by our Transition of Care Nurse and discussed during established Thursday morning SCO rounds.
2. A second pathway is to offer participation to family caregivers of members who are struggling to manage their loved one's behavioral and psychological symptoms, including agitation, resistiveness, abusiveness, pacing, wandering, etc.
3. Another pathway is a referral from the SCO / BMC General Internal Medicine Clinic project to enhance integrated care by strengthening the SCO / PCP relationship. The findings from this project were presented at the November 8th MassHealth Medical Directors Forum.

Recruitment of potential participants from this vulnerable population must be done with great care. Most of the PLwD will not be able to consent; therefore, the member's legally authorized representative must do so. However, as the project progresses, ongoing assent from each participant member must be confirmed. Given that SCO members fit criteria for a vulnerable population, IRB approval should be obtained.

What outcomes would you like to measure through the pilot? For example: member satisfaction, SCO care manager satisfaction, reduction in ER visits, total cost of care etc.

Undertaking a project such as this is as challenging as it is urgently needed. While inclusion criteria will require the caregiver(s) to have some proficiency with smartphones, the ability to interpret alerts from the internet connected sensors and keep a log of the member's behaviors, even with support from SCO care management, will be difficult. Therefore, the initial outcomes are rudimentary:

- Caregiver's ability to use a smartphone to receive and interpret alerts
- Caregiver's ability to keep a log of the member's symptoms of dementia
- Caregiver's satisfaction with the process
- SCO team members satisfaction with the process
- SCO care management team's ability to work with the Sandbox team to:
 - Identify patterns from sensors (heart rate variability, steps, sleep, etc.) that precede severe episodes BPSD.
 - Determine the time interval between the predictive physiologic pattern and the behavioral disturbance.
- Determining the time interval between the predictive physiologic patterns and the behavioral disturbance is fundamental for later outcome measures such as
 - Successful interventions to prevent or mitigate full blown BPSD
 - Emergency department visits
 - Hospital admissions / readmissions
 - Nursing facility admissions
 - Use of LTSS