



PILOT SUMMARY AND REPORT

USE OF FIELD-BASED CERTIFIED NURSING ASSISTANTS TO FACILITATE VIRTUAL CLINICAL VISITS BETWEEN FRAIL PATIENTS WITH FUNCTIONAL LIMITATIONS AND HOME-BASED PRIMARY CARE PHYSICIANS

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For more information about this pilot and its participants visit:

www.SeniorHelpers.com/KC

www.curavihealth.com

www.capcoordinated.com



Introduction:

A pilot study was conducted to examine the costs and complexity of using certified nursing assistants (CNAs) as “telepresenters” – a field-based role designed to initiate and support telemedicine visits between frail patients and physicians that are part of home-based primary care practices.

It was theorized that this model would:

- Be comparatively less expensive when compared to the operational cost of an in-home visit by a primary care physician.
- Reduce technical risks associated with telemedicine visits that may otherwise go unresolved if that visit was initiated by the patient alone.
- Reveal new opportunities to scale the benefits of telemedicine visits to greater numbers of frail (often homebound) patients.

The study was conducted with 33 patients in Washington, DC and its surrounding areas from February to May 2019. All patients were associated with Capital Coordinated Medicine (CCM), a home-based primary care (HBPC) practice based in Kensington Maryland.

Telepresenter visits were available to patients that had first requested an in-home visit by a CCM physician. If that physician was not able to respond to this request within 24 hours the telepresenter was sent to the patient home as an on-site member of the CCM team.

After arrival, the telepresenter set up telemedicine equipment provided by Curavi Health, informed the CCM physician on patient disposition, “presented” the patient to the physician, managed the cameras and performed other activities as directed by the physician to complete the exam. The telemedicine equipment included a Windows tablet with HIPPA-compliant software called CuraviCare, a tablet stand, a hand-held camera with a light, and equipment to capture basic vital sign information.

Initial conclusions were positive and suggest the need for further/expanded study.

Executive Summary:

The telepresenter model was found to be useful in connecting high-need patients to physicians if that physician was unable to make a home visit on an urgent basis, following a triage process indicating the need for that visit within 24 - 48 hours.

After arrival at the patient home, telepresenters were effective in supporting in-home consults for the cohort of patients studied. Patients cited ‘being seen sooner’ as the primary benefit of the model and did not report any issues of significance with the experience post-visit. Overall, physicians did not report significant barriers with the model that would have impacted disposition, though technical difficulty with cellular connection in the patient home had to be remediated during some visits.

From a cost perspective, the telepresenter model reflected as much as a 44 percent savings when compared to the operational cost of an in-home, urgent-care visit by a primary care physician. Savings were primarily associated with the avoidance of travel time by the physician.



The telepresenter model was observed to be useful in supporting decisions around care escalation. Seven patients seen with the telepresenter model (21 percent) would have otherwise been sent to an emergency department if the attending physician only had information from the initial patient telephone call to work with.

Lastly, it was observed that the presence and quality of Wi-Fi and cellular connections within patient homes was variable. The availability of the telepresenter before and during the consult, combined with the independent cellular connectivity included with the telemedicine technology used in the pilot, were significant in addressing this variance and securing reliable connection with the remote physician.

Such findings are encouraging given the significant interest in accessing and serving patients with functional limitations with home-based primary care (HBPC) services. Functional limitation often challenges a patient's ability to attend regular primary care appointments and correlates highly with cost. It is estimated that 5 percent of U.S. patients consume 50 percent of all healthcare spending. Within this group, nearly two-thirds have some form of functional limitation and nearly one-third have limitations significant enough to require help with Activities of Daily Living such as dressing and bathingⁱ.

However, the ability of HBPC to scale is limited by shortages in qualified medical professionals to conduct home visits. Thus, HBPC practices may see value in the telepresenter model to scale their reach, or to better assign resources against levels of triage. Patients with lower levels of acuity may be served through the telepresenter model and those of higher acuity may receive an in-home visit by a physician.

The telepresenter model may also be useful in acclimating patients to telemedicine technology. Despite efforts by industry and government to support its growth, only three percent of Medicare patients reported having any virtual engagement with a medical professional within a prior six-month periodⁱⁱ. Initial introduction of the technology using telepresenter models may help patients to manage subsequent visits on their own.

Background:

Telemedicine is the use of information and telecommunications technology to provide or support healthcare across time and/or distance. It is a frequently cited solution for engaging and managing care for patients that have functional limitations that challenge their ability to attend regular outside primary care appointments. Functional limitation also correlates strongly with cost. It is estimated that 5 percent of patients (considered 'high-cost') consume 50 percent of all healthcare spending. Within this group, nearly two-thirds have some form of functional limitation and nearly one-third have limitations significant enough to require help with Activities of Daily Living such as dressing and bathingⁱⁱⁱ.

Home-based primary care (HBPC) has been recognized as an effective model for managing these patients with in-home visits by primary care doctors growing from under one million in 1996 to more than 2.2 million in 2016.^{iv} However, for many HBPC practices, constraints in time and labor often limit the number of patients that can be attended to.

Cost and time efficiencies offered by telemedicine have potential to scale the benefits of regular primary care visits to more and more high-cost patients. But associated challenges with reimbursement, infrastructure and patient experience has limited its potential. For instance, when surveyed, less than three percent^v of Medicare patients reported any virtual visit with a physician (including online, by phone or via video) in the previous six months.



From the regulatory perspective, much is being done to clear hurdles related to the adoption of telemedicine. The Creating High-Quality Results and Outcomes Necessary to Improve Chronic (CHRONIC) Care Act was significant in expanding telehealth and remote patient monitoring in Medicare. This created a critical legislative foundation for the exploration and expansion of use of telemedicine solutions. For example, in April 2019, CMS finalized an October 2018 proposed rule that would designate a patient home as an 'originating site' for telemedicine for Medicare Advantage Plans.

Such support is encouraging and provides license for exploring new models of supporting telemedicine consults that show promise for effectiveness and scale.

Study Objectives:

1. Measure and compare the unit economics of an in-home telepresenter visit to in-home visits performed by a primary care physician.
2. Observe how patients engaged with the model and felt about the telepresenter experience.
3. Identify limitations with the telepresenter model that could impact decisions in care.
4. Identify limitations with the telepresenter model that may challenge its opportunity for scale.
5. Understand the current state of reimbursement options for telemedicine and with other fee for service reimbursements that may be relevant to the telepresenter model.

Key Findings:

1. Cost Savings and Value:

- The primary value created by the telepresenter solution was the avoidance of travel time by the physician. The cost of the telepresenter service presented as much as a 44 percent cost savings over the operational cost of a home-based primary care physician.
- Cost savings were chiefly driven by the hourly cost of labor. The hourly cost of the telepresenter (including case management by Senior Helpers) was approximately one-fourth that of a primary care physician.
- Variances in cost of visit from patient home to patient home were driven by:
 - o Total time in transit. For this pilot 66 percent of total visit time was spent in travel to and from patient homes, or one hour and forty minutes on average.
 - o Time in patient home. An average of 50 minutes was spent in the patient's home. 30 of those 50 minutes were spent on the patient consult. The remaining time was spent managing the telemedicine equipment and its connectivity.
- Cost savings improved with experience. When setup and takedown time was reduced from 20 minutes to 10 minutes, savings improved from 28 percent to 44 percent.



- Cost savings also improved with travel distance. It is estimated that in-home visits with travel times of 15 minutes or less would not see cost savings through use of this model.

2. Patient Experience:

- Patients reacted positively to the telepresenter visit with no reported issues or feelings of discomfort when asked during post-visit follow-up calls.
- Patients cited 'being seen sooner' as the primary motivator to accept the telepresenter visit.
- For those offered the telepresenter visit, three patients refused, though none related to the concept or structure of the telepresenter model.

3. Clinical Experience:

- Seven (21 percent) patients that were seen by the telepresenter would have otherwise been sent to the emergency room if the telepresenter service was not available.
- When applied within the selected patient cohort, participating clinicians reported confidence with their ability to make a disposition plan using the telepresenter model.
- When asked about limitations, clinicians mentioned the absence of "hands-on" stimuli such as those experienced with direct examination, using a stethoscope, and the ability to fully observe the patient home environment.

4. Technology:

- Though steps were taken to survey cellular connectivity within the test area, and despite using the best-available cellular provider in the market, connectivity issues were experienced in several homes. This took time to remediate, requiring the pilot to pause for a short time.
- Technology issues were primary contributors to non-clinical time in-home. Visits that encountered technology issues extended time in-home by 20 percent (10 minutes) on average.

5. Reimbursements and Policy:

- As of May 2019, costs associated with providing in-home telemedicine visits are not fully reimbursable within the Medicare fee for service program.
- Revenue is available however, for related rendered and documented services. Practices should confirm the policies of their Medicare Administrative Contractor (MAC).
- Examples of current fee-for-service billing codes that may be applicable to the telepresenter model is found in Exhibit A of this report.



Pilot Participants:

1. **Capital Coordinated Medicine** – Capital Coordinated Medicine is a home-based primary care practice based in Kensington, Maryland. Their patient census weighs heavily to patients with multiple chronic conditions and functional limitations. CCM was responsible for identifying and recruiting patients to participate in the pilot study, conducting and overseeing the primary care visit and completing all clinical documentation.
2. **Curavi Health** – Curavi is a Pittsburgh, PA-based provider of telemedicine solutions and specialty trained geriatric providers for the post-acute and long-term care settings. Curavi was founded through a CMS Innovation Award grant awarded to the University of Pittsburgh Medical Center to develop telemedicine technology that could reduce potentially avoidable hospitalizations. Curavi lent “CuraviGo”, a portable telemedicine solution, for the pilot and provided training and ongoing support during the pilot period.
3. **Senior Helpers** – Senior Helpers is a national provider of non-medical in-home care services including personal care, companion care, and specialty services for chronic conditions such as dementia. Senior Helpers initiated the pilot and was responsible for tasking and overseeing the work of the telepresenter in the field.

Patient Population:

Patients were selected for the pilot study if they met the following criteria:

- Medicare eligible.
- Having functional or other limitations that may challenge the ability to attend outside clinical visits.
- An in-home visit by a physician was not available within 24 hours of the initial visit request.
- Patient has previously had a face-to-face visit by a practice provider in their home.
- Patient lives within a service territory covered by the participating Senior Helpers location.
- Initial patient triage from phone intake ranges from likely low to sub-acute.
- Patient does not refuse offer of telemedicine visit when presented.

Operational Model:

Pre-Launch Training:

- All pilot participants received training on the use of the CuraviGo telemedicine solution.
- A telepresenter was selected from a pool of staff from the participating Senior Helpers office location.
- As a Senior Helpers care provider, the telepresenter was already trained on (and had experience with) engaging frail patients in the home setting. This includes specialized training on dementia care.
- Role play was conducted between the telepresenter, the Senior Helpers case manager, the doctor, and doctor’s staff to support the tasking, management and reporting of visits.
- Role play was conducted with the telepresenter to support the initial engagement with the patient in-home. A priority was placed on making the patient feel comfortable before the virtual visit was initiated.



Initial Patient Engagement:

- Practice staff triaged incoming patient calls for acuity and other selection criteria to identify those that would be offered the telepresenter visit.
- The patient was invited to accept a telepresenter visit in lieu of in-home visit by a physician. The service was carefully explained, and patients were offered the option to wait for an in-home visit by a primary care physician that would happen more than 24 hours after the initial visit request.
- If patient refused the telepresenter visit, the reason for refusal was asked and the response was documented.
- If the patient accepted, an in-home visit is scheduled for the same day at a time convenient to the patient.
- A 'knocking protocol' was established with the patient for use when the telepresenter arrives at the home so they can be cleared for safe entry. This ranged from a standard 'knock on the door' to a confirming phone call upon arrival.

Visit Protocol:

- All telepresenter visits were coordinated through the participating Senior Helpers office who was responsible for scheduling and tasking of that telepresenter.
- The telepresenter confirmed both her departure time from the Senior Helpers office and the arrival time at the patient home with the pilot team via text message.
- Once at the patient home, the telepresenter performed the knocking protocol and texted the physician to confirm that they had access to the patient.
- The telepresenter then set up the CuraviGo equipment and explained to the patient how the visit will work.
- Once set-up the telepresenter texted the physician to confirm that the visit could be initiated.
- The visit is conducted.
- Post-visit, the physician contacted the telepresenter via phone or text for any follow-up if required.
- The telepresenter confirms departure time from the patient home and return time to the Senior Helpers office via text message. Mileage was also documented.

Observations and Findings

1. Patient Experience

Thirty-six patients were presented the opportunity to have an in-home telemedicine visit with their primary care physician using the assistive telepresenter model. Of this, 33 patients accepted and three declined.

- The three patients that declined did so for the following reasons:
 - Language/cultural issue.
 - Patient initially agreed to the visit but then decided to seek immediate help at an urgent care clinic after the request was made.
 - Patient initially agreed to a visit during a request made during the evening but asked for a confirmation in the morning. The patient could not be re-engaged on the phone in the morning to confirm the visit.
- No patients expressed issues with the in-home service or virtual consult.



- Patient reactions were largely positive. Reactions included:
 - o “I feel like I’m part of the future!” – 83-year-old female
 - o “I can’t believe the doctor is on the TV!” – 78-year-old male
 - o “I’m so glad you have this, so you can see me more quickly” – 85-year-old female
- Patients did express overall preference for a face-to-face visit but felt that the virtual visit was an adequate replacement given the alternative of waiting for an in-home visit by the physician.

2. Operations and Costs

Table 1 - Time Metrics (Average):

Total Visit Time*	Average Time of Patient Consult	Average Setup & Take-Down Time	Average Roundtrip Travel Time	Average Travel Distance
2.5 Hours	0.5 Hours	0.34 Hours	1.6 Hours	43 miles

*includes round trip travel time, setup and takedown time and patient consult time.

Table 2 - Costs:

Hourly Rate- Telepresenter (Incl. Senior Helpers Case Management)	Hourly Rate- Primary Care Physician*	Hourly Rate- Nurse Practitioner*	Mileage Reimbursement**
\$25.00	\$96.00	\$51.00	\$0.545/mile

*Source: salary.com **IRS

- The average total cost of the in-home telemedicine visits was \$162.50. This was inclusive of:
 - o Total telepresenter time in travel
 - o Total telepresenter time in-home
 - o Senior Helpers management of the telepresenter
 - o Time spent by the primary care physician during the virtual visit
 - o Mileage reimbursement

Average cost reduced to \$126.50 when in-home setup and take down time was managed to under 10 minutes.
- The most significant variations in costs were represented by:
 - o Total time in transit
 - o The readiness of the physician to start the visit once connectivity was established
 - o Setup and takedown time for the telemedicine equipment
 - o Connectivity issues and time taken to remediate



- Cost savings improved with experience. On average, telepresenters spent 20 minutes in-home managing the setup and takedown of equipment and establishing connectivity with the practice. Under this scenario the use of a field-based telepresenter represented a 28 percent savings over that of a home-based primary care physician. When this time was reduced to 10 minutes, cost savings increased from 28 percent to 44 percent.
- The model was also compared to the use of home-based primary care nurse practitioner (NP) whose hourly rate was calculated at one half that of a primary care physician. Under this scenario no significant cost savings were found though costs above and beyond the hourly wage (recruitment, training, benefits) were not included as part of this analysis.
- The telepresenter model was also examined under a 'real world pricing scenario' where a practice employs a third party – like Senior Helpers – to supply the labor and oversight to facilitate the visits versus employing the telepresenter directly. Using the assumption of a \$100 fee for each visit – direct cost savings from use of the model decreased from 44 percent to 34 percent.
- An exercise was done to better understand the relation between travel time and cost savings under the efficient visit scenario. It was determined that patient visits that averaged travel times of 15 minutes or less not see direct cost savings from use of this model. (Table 3)

Table 3 - Time/Cost Sensitivity

Average Travel Time	Cost Savings
1 hours	32%
1/2 hour	15%
15 minutes	0%
Study: 1.68 hours	44%

3. Clinical Feedback and Experience:

- Patients that were managed with the telepresenter service initially presented with the following complaints:
 - o 18% - Respiratory
 - o 18% - Pain
 - o 15% - Skin/Rash
 - o 12% - Psychiatric (e.g. anxiety, depression)
 - o 9% - Edema



- o 9% - Chest Pain
- o 9% - Urinary Tract Infection
- o 6% - Fever
- o 13% - Other

- Within the patient group, seven (21 percent) would have been sent emergency room based on information from the initial patient phone call if the telepresenter service was not available.
- Within the patient group, four (12 percent) were escalated to emergency care after the in-home consult.
- Seven (21 percent) of patient visits involved advanced care planning discussions.
- For the cases seen, participating clinicians reported that telepresenter visits did not present overly significant barriers that would have impacted disposition.
- Limitations with the telepresenter model were reported as follows:
 - o Loss of data points from face-to-face interaction with patient that included an ability to fully examine the patient, such as listening to the heart, lungs and abdomen, the loss of tactile inputs such as temperature of skin, or the ability to measure amount of edema.
 - o Loss of data points associated with assessment of social determinants of health such as observation of home environment and associated safety risks.
 - o Loss of the nuanced reactions and inputs from often sensitive discussions about end-of-life or disposition choices.
- Clinicians did not recommend the use of the telepresenter service with high-need patients unless that patient had previously been seen in-home by that practice prior to the virtual consult.

4. Technology:

- All pilot participants were trained on the use of CuraviGo. There were no significant training issues and users easily acclimated to using the system.
- The pilot geography was pre-screened with Verizon Wireless to confirm that there was adequate cellular coverage. However, even with these checks, connectivity was unreliable in approximately 20 percent of patient homes. Troubleshooting with the devices and with Verizon identified pathways to solving these issues.
- The telepresenter had no issues operating the hand-held camera and vital signs equipment while on-site in the patient home.
- Connectivity issues did appear during some visits on the doctor's side. Pixelization and slowness were experienced when the tablets were moved during the examination in low bandwidth environments. The problem was reduced when tablet stands were introduced.



5. Reimbursement:

An examination of the current and potential future reimbursement structures for assistive telemedicine visits was conducted during the study. It was concluded that:

- Current Medicare fee for service coverage and payment for telehealth is nascent and is not likely to provide enough revenue to cover the costs of assisted telepresenter services.
- Medicare Part B coverage and payment is generally limited to telehealth services that support beneficiaries in areas with a shortage of health professionals. Most suburban/urban areas do not qualify as not medically underserved.
- Medicare Advantage plans wishing to offer telehealth services under Medicare Part C provide them internally or establish contractual relationships with medical practices to deliver them.
- While telehealth services are included in several CMS demonstration projects, coverage and payment models are too variable to project the ability to fully cover the cost of service.
- There is opportunity to make use of Medicare's increased coverage and payment for non-face-to-face care management services and of remote communication and patient monitoring.

These service and payment opportunities are summarized in Appendix A to this report.

Practices should confirm coverage and payment with their Medicare Administrative Contractor (MAC).

Conclusions

- Telepresenter visits, as an adjunct to a primary care practice, show promising direct cost savings when compared to the cost of an in-home physician. This creates opportunity for home based primary care practices to use the model to scale services to larger cohorts of frail patients.
- Home based primary care practices may also see value by applying this model when patients are triaged. Lower acuity patients could be engaged via the telepresenter and those of higher acuity could be engaged with an in-home visit by a primary care physician.
- The value of the telepresenter model scales positively with travel distance and negatively with operational time. Travel distances of 15 minutes or less do not show cost efficiency when compared to an in-home visit by a primary care physician. Reducing setup and takedown time in-home from 20 to 10 minutes improved comparative cost savings from 28 percent to 44 percent.
- The telepresenter model can be effective in informing decisions in care escalation. More than 20 percent of patients seen would have otherwise been referred to emergency care based on information received during the initial phone consult if the telepresenter was not available.
- Patients had a positive experience with telepresenter visits. Many patients were impressed with the technology though none expressed a preference for this experience versus a face-to-face visit with a physician.



- Technology providers should recognize the often-significant variability of connectivity for both Wi-Fi and cellular enabled devices from home to home. Redundancies such as dual carrier functionality should be incorporated into product design.
- The telepresenter themselves are significant contributing factors to visit quality. Telepresenters should:
 - o Have reliable transportation
 - o Have comfort with technology
 - o Possess effective 'soft skills' such as the ability to take and follow direction
 - o Have the motivation and attitude to effectively engage patients and make them feel comfortable with the telemedicine visit.
- Other contributing factors to quality include:
 - o Quality of training and ease of use of telemedicine equipment.
 - o Reliability of telemedicine equipment in home (connectivity, hardware, software)
 - o Responsiveness of clinicians to prompted telemedicine visits and their comfort with the virtual experience.
- Value-based, risk-based, or accountable care models are the most relevant application for assistive telemedicine. Examples include:
 - o In-home consults with high need patients recently discharged from hospital or post-acute care. It is estimated that 38 percent of avoidable readmissions are influenced by a patient's inability to attend follow-up primary care appointments or otherwise manage post-discharge symptoms.^{vi}
 - o Preventative consults in-between scheduled office or in-home primary care visits based on assessed high-need status and/or hospitalization risk.

Recommendations

- Conclusions are directional in nature given the size of the patient population (N=33). An expanded pilot study should be conducted to validate learnings.
- Future studies should consider the inclusion of home safety evaluations and other observations related to social determinants of health to further support and inform decisions in care. For instance, a trained telepresenter could "walk the clinician through the home," and/or conduct basic home safety assessments.
- Future studies should also measure the impact of trained caregivers as partners in care. Trained caregivers can be both family members and employees of third-party home care physicians. In addition to providing functional, behavioral and emotional support, caregivers can also be trained to recognize and escalate observed changes in patient condition before they become more serious.
- Certain changes in regulatory statute would be beneficial to establishing and scaling the benefits of the telepresenter model namely:
 - o Removing geographic restrictions that limit in-home telemedicine visits to those in rural/underserved markets. There are policy recommendations for this regulatory change from organizations such as the American Academy of Home Care Medicine, the American Medical Association and the Medical Group Management Association.



- o Allowing service delivery through contracted third-party providers versus the current limitation to individuals that are part of the billing practice. There is precedence for this, such as Medicare coverage and payment for chronic care management and behavioral health integration. There are policy recommendations for this regulatory change.
- o Lifting state level restrictions on telemedicine and remote patient monitoring (RPM). Various states have policy recommendations for this change.

ENDNOTES

ⁱ The Concentration of Health Care Spending, NIHCM Foundation Data Brief – July 2012

ⁱⁱ The Advisory Board, 2017 Virtual Visits Consumer Choice Survey.

ⁱⁱⁱ The Concentration of Health Care Spending, NIHCM Foundation Data Brief – July 2012

^{iv} The Resurgence of Home-Based Primary Care Models in the United States – Geriatrics, July 16, 2018.

^{vii} JAMA Preventability and Causes of Readmissions in a National Cohort of General Medicine Patients – April 2016.