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August 20, 2021

Ms. Cathy Weiss
Program Manager
Center for Health Care Facilities Planning
and Development.
Maryland Health Care Commission
4160 Patterson Avenue
Baltimore, MD 21215

Via email (cathy.weiss@maryland.gov)

Re: Lorien Health Services' Comments on Draft Home Health Agency Quality Measures and Performance Requirements)

Dear Ms. Weiss;

I attach Lorien Health Services' Comments on the above referenced matter. Please advise if you have any questions or require any additional information.

Thank you for your kind assistance and your consideration of Lorien's views.

Very truly yours,

/s/ James A. Forsyth, Esq.

JAMES A. FORSYTH
Attorney for Lorien Health Services

JAF/met
Encl.

cc: Louis G. Grimmel, CEO, Lorien Health Services
J. Wayne Brannock, COO, Lorien Health Services
Andrew L. Solberg, A.L.S. Healthcare Consultant Services

LORIEN HEALTH SERVICES' COMMENTS
Draft Home Health Agency Quality Measures and Performance Requirements
August 20, 2021

A. Qualifying Nursing Home Applicants

1. *Recommended Performance Levels*

MHCC staff recommends using the CMS Five-Star Quality Rating System to determine the required performance level for qualifying nursing home CON applicants. Specifically, staff proposes that qualifying applicants achieve and maintain a score equal to or greater than the Maryland average for the CMS Care Compare Nursing Home Overall Star rating. In addition, ***all nursing homes*** with which the applicant has any common ownership must also have met and maintained the average for at least the three most recent years of operation.

Lorien Comments:

(a) Substitute the "70% standard" instead of "all nursing homes" - Lorien agrees with using the CMS Five-Star system to gauge required performance levels for qualifying nursing home CON applicants. *However, this standard should be revised so it takes the same consistent approach to commonly owned facilities that is used in CON Application reviews to establish or expand Comprehensive Care Facilities in the first place.*

Specifically, Lorien urges the Commission to utilize the **same "70% standard"** it uses regarding a Nursing Home applicant's commonly owned nursing homes in assessing Quality Ratings for Nursing Homes at COMAR 10.24.20.05A(8) which provides:

> "*(8) Quality Rating.*
>
> *(a) An applicant shall demonstrate, at the time of letter of intent submission, that* ***at least 70 percent of all the comprehensive care facilities owned or operated by the applicant or a related or affiliated entity for three years or more had an average overall CMS star rating of three or more stars in CMS's most recent five quarterly refreshes for which CMS data is reported.***
>
> *(i) If the applicant or a related or affiliated entity owns or operates one or more comprehensive care facilities in Maryland, the CMS star ratings for Maryland facilities shall be used.*
>
> *(ii) If the applicant or a related or affiliated entity does not own or operate comprehensive care facilities in Maryland, CMS star ratings for such facilities in the states in which it operates shall be used.*

(b) An applicant that is an existing Maryland comprehensive care facility shall document, at the time of letter of intent submission, that it had an average overall star Rating of three or more stars in CMS's most recent five quarterly refreshes for which CMS data is reported, unless the facility has been owned or operated by the applicant for fewer than three years."

Lorien believes that using this same Quality standard for Nursing Home HHA applicants is fairer and more logical since it avoids disqualifying an otherwise qualified CON applicant for the atypical performance rating of an 'outlier' facility. *Indeed, it seems arbitrary to impose a standard that treats the Quality ratings of an applicant's commonly owned nursing homes differently in Home Health Agency reviews than the way these same ratings are treated in Nursing Home reviews themselves.* ***Lorien must ask: why hold a multi – facility Nursing Home applicant to a different and stricter standard in a Home Health Agency review than is imposed in a Nursing Home review?***

(b) Allow Explanations; Use an Average Rating for all Commonly owned facilities - If Lorien's proposed change in (a) above, is rejected, Lorien disagrees that such a Nursing Home HHA applicant should be completely disqualified as a result of the failure of another commonly owned nursing home to meet and maintain the required rating average. In such cases, the Commission should allow the nursing home applicant to present evidence why the commonly owned nursing home failed to meet the state average, what steps have been taken to address the problems, what more recent ratings are, and whether the ***combined average 5 Star Overall Rating for all the commonly owned nursing homes meets or exceeds the required state average.*** It is not good public policy or equitable that an otherwise well - qualified Nursing Home HHA applicant should be disqualified because the local circumstances of another commonly owned facility in a different part of the state negatively impacted its 5 Star rating.

2. *Disqualification for Abuse*

MHCC staff recommends that a nursing home applicant be disqualified from applying if it has been cited for abuse.

Lorien Comments: Lorien, of course, condemns physical, psychological, emotional or sexual abuse of a resident. However, an otherwise qualified nursing home applicant should not be automatically disqualified from applying for a HHA CON as a result of an incident of abuse. In such cases, the nursing home should be allowed to present an explanation of the circumstances surrounding the incident, the steps it has taken to address the root cause, any applicable plans of correction, and reasons why the nursing home should not be disqualified.

3. *Maryland Nursing Home Experience of Care*

MHCC staff recommends the state average rating score on Maryland's EOC survey measure be used to determine a Maryland Nursing Home's additional performance - related qualification. Specifically, Maryland nursing home applicants must score the same as the state average rating or higher for this measure for all three consecutive years of the survey's available data, as follows: 8.1 in CY 2016; 7.7 in CY 2018, and 7.6 in CY 2019.

Lorien Comments: Lorien disagrees with staff's recommendation requiring nursing home applicants to meet the Maryland average results on the EOC Survey. Typically, these surveys have low return rates and may not be an appropriate measure of quality. If Lorien's proposed changes to the way the CMS Five-Star Quality Rating is applied are accepted, there is no need for this EOC docketing rule (*see* A.1. at pp. 1 – 2 above).

However, if the EOC rule is retained, Lorien proposes that it be revised to prevent a Nursing Home HHA applicant from being disqualified as a result of the failure of another non-applicant nursing home under common ownership to meet or exceed the required average EOC rating. In such cases, the Commission should allow the Nursing Home HHA applicant to present evidence as to why this requirement should be waived including but not limited to evidence explaining why the commonly owned nursing home(s) failed to meet the state average, what steps have been taken to address the problem(s), any other extenuating circumstances that affected the survey results, what historic or more recent scores have been, and **whether the *combined average EOC score for all the commonly owned nursing homes meets or exceeds the required state average.***

B. Qualifying RSA Applicants

1. Quality of Care Qualifications

Staff cites COMAR 10.24.16 and states that in order to demonstrate a track record in Providing good quality of care, a Maryland-licensed RSA must demonstrate that it

(a) has operated for at least three years;
(b) has provided skilled nursing services;
(c) has established a system for collecting data that includes systematic collection of process, outcome, and experience of care measures; and
(d) has maintained accreditation through a deeming authority recognized by the Maryland Department of Health (MDH) for at least the three most recent years of operation, consistent with COMAR 10.24.16.07D(1).

Lorien Comments:

Accreditation - Lorien disagrees with inclusion of the provision at (d) requiring prospective Maryland-licensed RSA applicants to have maintained accreditation with a deeming authority for at least the three most recent years of operation. Such accreditation is an expensive requirement that serves as a barrier to entry for new RSA HHA applicants and stifles competition. It should not be a mandatory requirement. Good Quality of Care can be and is ensured by other measures, as follows:

(a) Licensing and Other Quality Assurance - The Commission's concerns about Quality of Care should be satisfied by the requirements of (c) above regarding the systematic collection of process, outcome, and experience of care measures. Further, RSAs are licensed and overseen by MDH's Office of Health Care Quality as well as the licensing authorities of the RSA's licensed personnel, all of which ensure that quality of care is being provided. Finally, the RSA HHA applicants should be allowed to present evidence of an RSA's track record of participation in activities that support a finding that it is a provider of high quality services as proposed below.

(b) Other Measures in Lieu of Accreditation -- *Further, as referenced above, the Commission should include a substitute Quality of Care provision. The new provision would allow an RSA HHA applicant to establish that it is a high quality provider of services by presenting evidence of its track record of participating in residential health – related and other health care related programs and activities such as partnerships with Medicare Advantage Programs (University of Maryland Medical System Health Plans Inc.), MHCC Grant funded Telehealth Programs with UM UCHS and Gilchrist, and Remote Patient Monitoring programs.* (See, for example, Attachments describing such Lorien RSA programs and activities).

(c) Pending Application for Accreditation; CON Condition - Finally, if an accreditation requirement is to remain, the language should be modified to provide that a CON application filed by a currently unaccredited RSA may be docketed and is not precluded from CON approval provided that the applicant has filed a pending application for accreditation through a deeming authority recognized by MDH; or, alternatively, states its willingness to accept a condition of approval that it must apply for and secure accreditation within one year of CON approval and that it maintains a Quality Assurance Program.

C. **Proposed CON Exemption** – Lorien has offered the above comments on what Staff has proposed. Notwithstanding these comments, Lorien itself proposes that the Commission adopt a CON exemption provision applicable to existing Nursing Homes wishing to establish a new Home Health Agency (HHA) if they currently offer an onsite continuum of care which includes

a separately licensed assisted living facility. Providing this CON exemption would allow qualifying Nursing Homes to quickly establish HHAs without CON market entry barriers thereby extending their continuum of care, enhancing continuity of care, improving outcomes, and reducing the TCOC. Further, such an exemption would enhance competition, and would treat such Nursing Homes equally with CCRCs which have such a CON exemption. Finally, it would be consistent with prior practice that allowed Nursing Homes to offer HHA services as part of their licensure as Comprehensive care facilities without having to obtain a CON.

ATTACHMENTS

(For electronic version - See attached pdf files)

1. Gilchrist.SOE._FinalReport(1)
2. Hourly Care Survey
3. LAH RPM FinalGrant Report FINAL
4. Telehealth Survey
5. UMHAPSummary.Final.Results.Report

Gilchrist Greater Living

About the Project

In June 2016, the MHCC awarded $56,000 for an 18-month period to Gilchrist Greater Living (Gilchrist) to implement telehealth.[1, 2] Gilchrist used telehealth to support case management and early intervention for patients enrolled in the Gilchrist Support our Elders (SOE) program.[3] SOE patients are typically home-bound, chronically ill seniors with multiple health conditions, who are high-utilizers of health care services, with frequent hospital ED visits and inpatient stays. At the conclusion of the grant, Gilchrist saw a reduction in hospital admissions, readmissions, and ED visits among SOE patients receiving telehealth services.

Gilchrist partnered with Lorien at Home[4] to increase access to care for about 20 participating SOE patients by providing remote monitoring services and prioritizing patients needing immediate care. The project utilized the Lorien Link telehealth system, a remote monitoring system to collect patient physiological data in real-time.[5] This information was monitored by a Registered Nurse (RN) Case Manager and used to facilitate home visits by a Nurse Practitioner (NP). When patients' clinical values were outside pre-established parameters[6], Lorien Link triggered an alert to the RN Case Manager who reviewed the clinical data and determined appropriate follow-up care. This included consulting with patients directly or their physician, and as needed, arranging video calls between physicians and patients.

Data Collection

- Information collected during the grant period: 1) ED visits; 2) hospital admissions; 3) hospital readmissions; 4) urgent home visits by NPs; 5) unscheduled patient call volume; and 6) patient satisfaction with the telehealth project[7]

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[1] A 2:1 financial match was required.
[2] The grant period was from June 2016 to December 2017.
[3] The SOE program was established in November 2014 with the aim of improving care for older adults with advanced illness by providing home-based primary care delivered by a Nurse Practitioner through comprehensive health assessments, health care management, and coordination of care to reduce avoidable emergency department visits and hospitalizations.
[4] Lorien at Home is a home care services organization part of Lorien Health Services, a skilled nursing facility and residential service agency whose goal is to provide patient-centered care utilizing the latest in healthcare technology that results in the finest outcomes for our residents. More information is available at: www.lorienhealth.com/maryland-senior-care/about-us/.
[5] The Lorien Link utilizes a tablet and peripherals (i.e., blood pressure cuff, pulse oximeter, glucometer, scale and thermometer) to collect physiological data (e.g., blood pressure, pulse oximetry, blood sugar, weight, and temperature).
[6] Clinical parameters for each patient were programmed into the telehealth system by a Registered Nurse Case Manager for each patient based on the information provided on the patient's telehealth monitoring request form.
[7] Information on the number of urgent home visits for the entire SOE patient population was reported throughout the grant to assess the impact of telehealth versus SOE alone.

- Information collected for 12-months prior to the grant period, which was used to establish a baseline for the project: 1) ED visits; 2) hospital admissions; 3) hospital readmissions[8]; and 4) patient call volume[9]

Outcomes

- Approximate reductions in ED visits 69 percent; hospital admissions 40 percent; and readmissions 45 percent[10]
- Fewer urgent home visits (about 1.9 percent less) as compared to all SOE patients[11]
- High patient satisfaction reported throughout the grant period and near 95 percent[12] at conclusion[13]
- Unscheduled patient call volume decreased by about 18 percent
- Preliminary cost savings (about $9,978) for telehealth patients from baseline[14]

Challenges

- Developing protocols to ensure harmonization and consistency in care delivery and clinical handoffs between clinicians
- Enhancing enrollment criteria to factor in acuity and social determinants of health to better assess patients who might benefit more from telehealth[15]

Solutions

- Identified a primary point person to lead care coordination efforts and project communications
- Implemented patient screening tool (i.e., General Adult Risk Score or GARS[16]) as part of the enrollment process to incorporate an assessment of both clinical and social determinants of health

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[8] Baseline data on readmissions was not available for telehealth patients. Gilchrist used readmission data for the entire SOE patient population for its baseline.
[9] Data was collected for the period of July 1, 2015 to June 30, 2016.
[10] ED visits and admissions were compared to telehealth patients at baseline. Readmissions were compared to all SOE patients since this information was not tracked prior to the grant.
[11] Rate for telehealth patients was 7.72 percent as compared to 9.63 percent for all SOE patients.
[12] Based on aggregated data for SOE patients participating in telehealth.
[13] Conclusion results are based on surveys conducted when a patient was dis-enrolled from telehealth or once the grant period for the project ended. Due to differing enrollment and dis-enrollment dates, duration of time for telehealth participants varies.
[14] Reduction in cost savings was calculated using the CRISP pre/post analysis, which utilizes the Health Services Cost and Review Commission Case Mix data to calculate each patient's clinical utilization 12 months prior to and 12 months after enrolling in the telehealth program. Information on the total SOE population is presented in the Gilchrist report; however, the entire SOE population does not serve as a comparison group due to differences between the two groups, including the size (20 telehealth vs, >200 SOE), risk scores, acuity, geography, etc.
[15] Initially, selection criteria only included patient's mental status, psychosocial needs, willingness to participate, and Internet access.

Project Observations

- Additional support provided to SOE patients through telehealth interventions increased patient engagement and enhanced care management
- Elderly patients were receptive to using telehealth technology and were highly satisfied with the telehealth services they received

Lessons Learned

- ***Implement telehealth in a practice setting using a phased in approach to support process improvements.*** Enroll a few patients initially and gradually increase enrollment to ensure project experience appropriately guides program modifications.
- ***Telehealth can be used as a means to foster elderly patient engagement with their provider.*** Elderly patients were active users of the technology to review their health information and expressed satisfaction with 24/7 access to their provider.
- ***Assess the telehealth intervention efficacy based on desired improvements in health outcomes as compared to investment costs***. Conduct an assessment that measures project performance compared to goals, considering project costs at least quarterly.

Sustainability

- Gilchrist secured funding to continue offering telehealth for six months beyond the grant period (through June 2018)
- The project team is continuing to gather and analyze data to assess outcomes and cost savings specifically attributed to telehealth interventions in the SOE program

[16] The GARS, available through Epic, in addition to the factors utilized by the LACE incorporates information on the social determinants of health to assess a patient's risk for readmission.

LORIEN AT HOME

Care forward.

Lorien at Home Satisfaction Survey- Hourly Care

Client Name: _____

1. Are you the person being cared for or a family member/ friend?

   Client Receiving Services Family Member/ Friend

2. Overall, how satisfied are you with the quality of care you received?

   Very Satisfied Satisfied Dissatisfied Very Dissatisfied

3. How satisfied are you that your Caregiver has the knowledge and skills needed to help you?

   Very Satisfied Satisfied Dissatisfied Very Dissatisfied

4. Do your Caregivers usually arrive at the scheduled time?

   Yes No

5. Do these services help improve your quality of life?

   Yes No

6. Overall, how satisfied are you with the services provided to you by Lorien at Home?

   Very Satisfied Satisfied Dissatisfied Very Dissatisfied

7. If applicable, how would you rate your transition home with Lorien at Home support?

   Excellent Good Fair Poor

8. How would you rate how helpful the Lorien at Home Care Managers are?

   Excellent Good Fair Poor

9. How would you rate how accessible the Lorien at Home Care Managers are?

   Excellent Good Fair Poor

10. Do you think you would still be living in your current living arrangement if you did not receive Lorien at Home services?

    Yes No

LORIEN AT HOME

Care forward.

11. Would you recommend Lorien at Home to others?

Yes No

12. Overall, how satisfied are you with the cost of your home care services?

Very Satisfied Satisfied Dissatisfied Very Dissatisfied

13. What do you like least about your Lorien at Home experience?

14. What do you like most about your Lorien at Home experience?

15. Other comments or suggestions

Lorien Health Systems

Remote Patient Monitoring (RPM) Telehealth Project

Final Report

(DRAFT)

Introduction

Reducing the cost of health care, improving outcomes and improving overall population health are the three dimensions of the triple aim approach to optimizing health system performance. Identifying and eliminating unnecessary care in the system can have a positive impact on each arm of the triple aim. Specifically, reducing hospital admission rates for patients with chronic conditions included in the hospital Prevention Quality Indicators is critical to both quality of care improvements and controlling health care spending.

Lorien Health System, through its Lorien at Home (a Residential Service Agency) program, partnered with GrandCare Systems (technology provider) to join care management services with telehealth monitoring and communication technology in order to eliminate unnecessary hospital admissions and re-admissions post discharge from the skilled nursing facility. The Lorien at Home RN Care Coaches utilized the technology hardware and new clinical information to proactively case manage clients in the community with chronic conditions and directed the appropriate and timely health care interventions in the most clinically appropriate and often least costly setting. Three specific PQI diagnoses were targeted for this project to include chronic heart failure, hypertension and uncontrolled diabetes.

The Lorien at Home program was established at Lorien Mays Chapel, a 93 bed skilled nursing facility in Timonium, Maryland. The program identified qualifying short-term stay skilled nursing residents that returned to the community to support their transition home and ongoing needs with tele-monitoring and care management services. 22 residents of the over 300 community discharges from Lorien Mays Chapel were selected and received services with lengths of stay ranging from 2 to 18 months.

After the client was identified and a care plan was established, GrandCare Systems technologies were installed in the home to allow for real time remote patient monitoring of required vital signs, physiological monitoring, video conferencing, care schedule coordination and call response. The new tools provided critical information to the Lorien Care Coaches to alert when a client was outside of prescribed ranges and was at risk for a hospital admission. With the combined disease specific protocols and monitoring information, the RN Care Coach was able to intervene and assist with access to needed care. The use of Grand Care System technology increased our ability to receive continuous real time monitoring and improved care coordination and resulted in fewer admissions to the hospital.

Technology Infrastructure

The heart of the GrandCare (GC) System is a large touchscreen in the home which provides the individual with social communications, instructions, reminders, medication prompts, and web-based entertainment. Lorien staff installed the equipment in the resident's home and connected to existing wireless internet access or utilized a cellular hotpot device. Optional wireless activity sensors, environmental sensors, and digital health devices selected for the individual application during the assessment were paired by the Lorien team during the installation. These devices were

used to notify designated caregivers by phone, email, or text if wellness readings fell out of parameters.

Lorien caregivers access the system by logging in to the online Care Portal. Caregivers log onto the Care Portal from any internet-connected device with their username and password. Caregivers can add Tasks, Calendar Events, Reminders, Medications, Personalized Content, and Communications to the touchscreen. Lorien caregivers also utilized video connections to place or answer calls to and from clients to provide support and education.

The Lorien team assessed several Remote Patient Monitoring systems before selecting GrandCare Systems as the technology provider. The product evaluation process focused on five primary requirements. (1) Connectivity: the GC System is always powered on and connected to the internet. The provider is alerted immediately to take action if connectivity is interrupted for any reason. (2) Ease of Use: For the client, the GC System does not require a username or password, the touchscreen view is customized to their level of ability, the icons and print are large and easy to read. (3) Comprehensive: The GC System includes many options for RPM devices from health reading to environmental and activity tools. (4) Flexibility: The GC System allows the client to receive equipment that is designed to meet the goals of their individual care plan. Flexibility also applies to the management of the alerts that can be pushed to care providers through a customizable combination of text messages, e-mails of phone calls. (5) Beyond Vital Signs: The GC System includes socialization tools facilitating client's access to information, resources, and their families through secure messaging, video calls and sharing of pictures and videos.

In order to complete a comprehensive home assessment, the Lorien at Home RN Care Coaches accessed Point Click Care (PCC), Lorien Mays Chapel's electronic medical record to obtain the most recent information on skilled nursing and hospital admissions and stays. Lorien at Home staff also utilized eRSP, a home care operations system to document and update plans of care and other components of the medical record. Grand Care also was utilized to collect, store, analyze and report health reading and alert data.

Especially useful in assuring that Lorien at Home RN Care Coaches maintained current and accurate awareness of health care utilization, Lorien worked with the Chesapeake Regional Information System for our Patients (CRISP) which is the regional health information exchange (HIE) for Maryland. To further enhance the ability to successfully care manage clients and create an optimal plan of care, Lorien clinicians utilized the CRISP query portal to complete assessment tools and understand the client's health care utilization patterns. Lorien clinicians also received real time information when clients accessed health care services through the CRISP Encounter Notification Service (ENS).

Prepared with information from CRISP, PCC and the in-person home assessment, the RN Care Coaches were able to design a patient-centered plan of care. From the plan, each GrandCare configuration and installation was customized to fit the client's needs. As the needs changed over time, the care plan was adjusted and the system was adjusted. Adjustments included changing alert parameters, adding or deleting specific health and activity monitoring devices, and adding educational and socialization resources. The GC System allowed our RN Care Coaches to support our clients efficiently and address a greater range of needs and approaches. The system integrated

what could be three different solutions for activity monitoring, another for health concerns, and a third for family connectivity.

Project Implementation Process

Upon notification of the grant award, Lorien began implementation of the project plan inclusive of established objectives for clinical protocols, workflow development, system training for providers and client/caregiver educations. A project team was established including clinical, operational and technology team members from Lorien At Home, Lorien Health Systems and GrandCare Systems. The project team co-developed the goals and timelines and proceeded to meet on a weekly basis both in-person and via video calls to address the workplan deliverables.

Name	Title	Organization
Jim Hummer	Project Manager, VP	Lorien Health Systems
Brian Bluedorn	Technical Consultant, CIO	Lorien Health Systems
Susan Carroll	Clinical Consultant, VP, RN	Lorien at Home
Tracy Carroll	Director of Operations	Lorien at Home
Charlie Hillman	CEO and Founder	GrandCare Systems

The team began by addressing the need for clinical protocols for the three selected chronic diseases of CHF, Hypertension and Uncontrolled Diabetes. With a full understanding of all of the capabilities of both the remote patient monitoring equipment and the Lorien at Home RN Care Coaches, the team developed disease specific protocols including objectives, assessment, tele-monitoring equipment, follow-up plan and expected outcomes. The common objective was to reduce hospital readmissions related to complications from the specific chronic disease. The assessment addressed eliminating or minimizing risk factors, self-care education, identifying care partners and collaboration with the client's primary care physician. Tele-monitoring equipment was designated for each condition. Multiple clients had more than one of the three selected chronic conditions and received corresponding equipment as detailed below.

		Tele-Monitoring Equipment		
Chronic Condition	**GC System**	**Blood Pressure Cuff**	**Weight Scale**	**Glucometer**
Hypertension	Yes	Yes		
CHF	Yes	Yes	Yes	
Uncontrolled Diabetes	Yes			Yes

Following the assessment a follow-up schedule was established with a minimum of weekly check in video calls and a re-assessment every 45 days. All clients received 24/7 monitoring of health readings, receiving video and telephone calls from the RN Care Coach when readings were out of established parameters. The client's primary care physicians and/or appropriate specialists were consulted in establishing health reading ranges for each of the monitored measures.

Workflow integration addressed the incorporation of the Lorien At Home RPM program into the existing admission and discharge planning process at the Mays Chapel SNF. A Lorien At Home Care

Coach participated in SNF individual patient care plan and utilization review meetings to identify potential clients and begin introducing them to the program as a possible component of their return to home discharge plan. A GC System was also placed in the rehabilitation department and incorporated into therapy sessions for individuals needing occupational therapy support administering their own tele-monitoring device readings or speech therapy for cognitive support in basic navigation of the GC System screens and icons.

Early introduction to the program while patients were residing at the SNF was specifically designed to increase acceptance and participant willingness and to reduce the learning curve when the program started in the home. Upon discharge, the Lorien At Home team finalized the in-home assessment and completed the installation and training of all equipment and services. The RN Care Coaches monitored compliance to established reading schedules through continuous monitoring and weekly connections with all clients.

The Lorien At Home team and members of the SNF interdisciplinary team received an introduction to the Tele-Monitoring equipment and follow-up in-services as the program began and clients started to enroll. The At Home team attended in-person training at the GrandCare offices and were also provided a help line and needed support with any technology questions. The team also reached out to and provided specific program information to clients primary care physicians.

To engage SNF clients and their families, information on the program was placed in the SNF admission packet. A Lorien At Home Care Coach met with potential clients within their first few days of the SNF stay. A GC System was available on a portable cart and was taken to client rooms for in-person hands on demonstration of the program. Once enrolled, client and family education began in advance of discharge. Post discharge and after equipment installation in the home, Care Coaches provided in-person and remote support to clients and family members as questions occurred. In addition to this one on one support, a weekly educational tip was distributed to all participants to continually provide education and reinforce training of specific features of the GC System.

Assessment Approach

The telehealth program was designed to reduce hospital re-admissions and admissions of clients with specific chronic conditions. To assess the program a thirty-day re-admission rate was tracked and calculated through the use of information from CRISP and the EMR Point Click Care. CRISP information was also utilized to obtain a LACE index score for each client when admitted to the program. The LACE index incorporates information on recent hospital stays, acuity upon admission, comorbidities and emergency department visits in order to predict the risk of unplanned readmission within 30 days after hospital discharge.[1] Additional assessment measures were incorporated to assess the status and trending of client specific chronic conditions to identify and address risk factors.

Baseline data was collected from client medical histories through interviews, primary care physicians and review of CRISP data. The most recent and historical A1C lab values were obtained on uncontrolled diabetic clients to establish a baseline. Though the course of the program new A1C lab values were obtained a minimum of quarterly for each client to measure increases or decreases to baseline. Daily blood glucose readings were monitored and addressed by the RN Care Coach.

Clients with chronic heart failure were assessed and scored upon admission and monthly based upon the New York Heart Association Functional Classification.[2] Client symptoms both reported and observed resulted in a classification score to measure improvements or declines in functional abilities to baseline. Daily blood pressures and weights were monitored and addressed by the RN Care Coach. Hypertensive clients were assessed upon admission and monthly to establish classification scores based on the Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (JNC7).[3] Daily blood pressure readings were monitored and addressed by the RN Care Coach.

The project team agreed that through the use of combined tele-monitoring and care coaching, the majority of the clients would maintain or improve upon their admission measurement for the specific chronic conditions. The team also expected a lower hospital re-admission rate and emergency department visit rate for the program clients.

Finally, to measure client satisfaction, the Care Coaches administered two surveys. The Lorien at Home Client Satisfaction Survey assessed overall client satisfaction with services provided. The Lorien at Home Technology Survey that was based on the Extended Technology Acceptance Model focused on client's feedback relating to the telehealth equipment.[4] Each survey was distributed and collected upon discharge or during the course of the program for longer lengths of stay.

Assessment Limitations

One significant limitation of the project was the small sample size. The program utilized fifteen GC Systems and provided services to a total of twenty two clients over the eighteen month assessment period. With the smaller number of clients, one occurrence of a clinical measure had a significant impact on the measurement calculations. Although we were caring for clients with chronic conditions included in hospital Prevention Quality Indicators, we were unable to compare our small sample to PQI data. Additionally, the program is primarily designed to be a long-term intervention to assist clients with aging safely in their homes. Although several clients were on the program for an extended period of time, a larger sample size and longer lengths of enrollment on the program would provide valuable additional data for analysis.

Results of Telehealth Intervention

A total of 22 clients were enrolled in the program and provided services in their private homes. The length of stay on the program ranged for 60 days to the entire 18 months of the program measurement period. The clients were comprised of 15 females and 7 males with an average age of 83.6. The average LACE score for clients was 12.0. LACE scores equal to or greater than 9 indicate a High Risk of re-admission to acute care. Regarding the three focus chronic conditions, 7 clients had an existing diagnosis of uncontrolled diabetes, 11 with chronic heart failure and all 22 were diagnosed with hypertension. The average number of chronic conditions for each client was 4 utilizing the 15 chronic diagnoses included in the CMS Chronic Conditions Among Medicare Beneficiaries Chartbook.[5] Through CRISP, client's primary care physicians and client/family interviews, staff were able to account for the number of acute care admissions in the 12 months prior to admission into the telehealth program for an average of 2.3 per client.

Client Information									
Number of Clients	Female	Male	Average Age	Lace	Clients with Diabetes	Clients with CHF	Clients with Hypertension	Average Chronic Conditions per client	Average Number of Acute Admissions in 12 months prior to program
22	15	7	83.6	12	7	11	22	4	2.3

The telehealth project collected client specific clinical measurements and hospital activity through the use of an initial RN assessment, every 45 days re-assessments, communication with client's primary care physician and family members and through the use of CRISP. Upon the initial assessment, individual client baselines were established in order to compare and track ongoing clinical and utilization measurements.

To evaluate the 7 clients with uncontrolled diabetes, client's latest A1C lab value was obtained as well available medical history. An individual client baseline was established and compared to ongoing A1C results. Each client received RN Care Coaching as well as telehealth tools to obtain blood glucose readings as directed. The results were instantly communicated to the RN Care Coach who would take action depending on the results. 7 clients were on the program for a total of 72 months. Two clients had an increase from their A1C baseline for one month each. For 70 months or 97% of the total months on program, the clients were able to maintain and/or improve their A1C lab values.

			Client's Stayed the Same or Improved																		
Measure	Numerator/Denominator	Goal	6/15	7/15	8/15	9/15	10/15	11/15	12/15	1/16	2/16	3/16	4/16	5/16	6/16	7/16	8/16	9/16	10/16	11/16	*Total*
UNCONTROLLED DIABETICS: Percent change in the number of Uncontrolled Diabetic patients that do not increase their baseline Glycohemoglobin A1c.	Number of Uncontrolled Diabetic patients in the pilot that did not increase their baseline Glycohemoglobin A1c.		2	5	5	4	4	4	5	4	2	3	4	4	4	4	4	4	4	4	*70*
	Total number of patients in the pilot with Uncontrolled Diabetes.		2	5	5	4	4	4	5	5	3	3	4	4	4	4	4	4	4	4	*72*
	Percent	**95%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**80%**	**67%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**97.2%**

For 38 of the 72 months on program (52.8%), clients not only maintained their baseline but had A1C values below their baseline demonstrating improvements.

			Clients Improved																		
Measure	Numerator/Denominator	Goal	6/15	7/15	8/15	9/15	10/15	11/15	12/15	1/16	2/16	3/16	4/16	5/16	6/16	7/16	8/16	9/16	10/16	11/16	Total
UNCONTROLLED DIABETICS: Percent change in the number of Uncontrolled Diabetic patients that do not increase their baseline Glycohemoglobin A1c.	Number of Uncontrolled Diabetic patients in the pilot that did not increase their baseline Glycohemoglobin A1c.		0	0	0	1	2	3	3	2	1	2	3	3	3	3	3	3	3	3	38
	Total number of patients in the pilot with Uncontrolled Diabetes.		2	5	5	4	4	4	5	5	3	3	4	4	4	4	4	4	4	4	72
	Percent	**40%**	**0%**	**0%**	**0%**	**25%**	**50%**	**75%**	**60%**	**40%**	**33%**	**67%**	**75%**	**75%**	**75%**	**75%**	**75%**	**75%**	**75%**	**75%**	**52.8%**

A total of 11 clients with the diagnosis of CHF received RN Care Coaching and telehealth tools inclusive of a blood pressure cuff and weight scale. Parameters were established for both readings for individual clients based on medical history. The RN Care Coach was immediately alerted and responded when a reading was outside of expected ranges. Each of the clients were evaluated and

scored by the RN Care Coach in the Classes of Heart Failure (NYHA) to establish a baseline. The clients were re-assessed each month to obtain an updated classification score. The 11 clients were on the program for a total of 87 months. For 84 months of the total 87 months (96.5%) on program clients maintained or improved upon their baseline classification score. One client increased their classification score for a two month period and later returned to baseline. A second client's classification increased as they transitioned to hospice services and off of the telehealth program.

			Client's Stayed the Same or Improved																		
Measure	Numerator/Denominator	Goal	6/15	7/15	8/15	9/15	10/15	11/15	12/15	1/16	2/16	3/16	4/16	5/16	6/16	7/16	8/16	9/16	10/16	11/16	*Total*
CHF: Percent change of patients with CHF as classification by NYHA Functional Classification System that not have increased their score.	Number of patients in the pilot with CHF as classification by NYHA Functional Classification System that have not increased their score.		1	4	5	3	4	5	6	7	6	6	7	7	6	4	4	3	3	3	84
	Total number of patients in the pilot with CHF as classified by NYHA Functional Classification System.		1	4	5	4	5	5	7	7	6	6	7	7	6	4	4	3	3	3	87
	Percent	**95%**	**100%**	**100%**	**100%**	**75%**	**80%**	**100%**	**86%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**96.6%**

The third clinical goal measured clients with the diagnosis of hypertension. These clients received telehealth tools inclusive of a blood pressure cuff. The RN Care Coach established BP alert ranges as well as scored the client upon initial assessment and review of medical history based on the four classifications for blood pressure as defined by (JNC7). 22 clients with hypertension were on the program and measured for a total of 212 months. For 179 of the 212 month (84%) on program clients were able to maintain or improve upon their classification score. For 67 of the 212 months (32%) on program clients improved upon their baseline blood pressure scores. For the clients scoring declines, four declined and then returned to baseline. 5 clients declined and have not returned to baseline including two clients that transitioned to hospice services.

			Client's Stayed the Same or Improved																		
Measure	Numerator/Denominator	Goal	6/15	7/15	8/15	9/15	10/15	11/15	12/15	1/16	2/16	3/16	4/16	5/16	6/16	7/16	8/16	9/16	10/16	11/16	*Total*
HYPERTENSION: Percent change of patients that are diagnosed with Hypertension as defined by the Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (JNC7)	Number of patients in the pilot that are diagnosed with hypertension as defined by (JNC7) that have not increased their score.		4	9	10	8	10	11	12	14	11	11	13	13	11	9	9	8	8	8	179
	Total number of pateints in the pilot that are diagnosed with hypertension as defined by (JNC7).		4	9	12	11	14	14	15	15	14	14	15	15	13	10	10	9	9	9	212
	Percent	**95%**	**100%**	**100%**	**83%**	**73%**	**71%**	**79%**	**80%**	**93%**	**79%**	**79%**	**87%**	**87%**	**85%**	**90%**	**90%**	**89%**	**89%**	**89%**	**84%**

All clients in the program were monitored for acute care admissions during and after their time on the telehealth program. During the course of the program, no clients were re-admitted to acute care within 30 days of discharge for a condition related to the telehealth monitored diagnoses of diabetes, CHF or hypertension. The related cause 30-day readmission rate was 0%. Additionally, a total of two clients experienced hospital admissions while on program related to their telehealth diagnosis beyond 30 days.

			Hospital Activity																		
Measure	Numerator/Denominator	Goal	6/15	7/15	8/15	9/15	10/15	11/15	12/15	1/16	2/16	3/16	4/16	5/16	6/16	7/16	8/16	9/16	10/16	11/16	*Total*
ACUTE ADMISSIONS: Percent change in diagnosis RELATED hospital admission rate for patients with Uncontrolled Diabetes, CHF and	Number of patients in the pilot not admitted to hospital related to primary diagnosis.		3	10	12	12	15	13	15	15	14	14	15	15	13	10	10	9	9	9	213
	Number of pilot program patients.		3	10	12	12	15	14	15	15	15	14	15	15	13	10	10	9	9	9	215
	Percent	**92%**	**100%**	**100%**	**100%**	**100%**	**100%**	**93%**	**100%**	**100%**	**93%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**99%**

One client on program experienced a 30-day acute readmission for a condition unrelated to their telehealth diagnosis. The all-cause 30-day readmission rate was 1 of 22 (4.5%). CMS data provides the most recent unadjusted Medicare hospital readmission rates for Maryland in CY 2015 at 15.95%.

			Hospital Activity																		
Measure	Numerator/Denominator	Goal	6/15	7/15	8/15	9/15	10/15	11/15	12/15	1/16	2/16	3/16	4/16	5/16	6/16	7/16	8/16	9/16	10/16	11/16	*Total*
ACUTE ADMISSIONS: Percent change in UNRELATED hospital admission rate for patients with Uncontrolled Diabetes, CHF and	Number of patients in the pilot admitted to Hospital unrelated to primary diagnosis.		0	0	1	3	1	0	1	3	1	1	0	3	0	0	0	1	0	0	15
	Number of pilot program patients.		3	10	12	12	15	14	15	15	15	14	15	15	13	10	10	9	9	9	215
	Percent	**12%**	**0%**	**0%**	**8%**	**25%**	**7%**	**0%**	**7%**	**20%**	**7%**	**7%**	**0%**	**20%**	**0%**	**0%**	**0%**	**11%**	**0%**	**0%**	**7%**

In total, clients were on the telehealth program for a total of 215 months and experienced 17 acute care admissions. Adjusting for an average length of stay of 9.77 months, the average hospital admission rate was .95 admissions per year per client compared to the baseline average of 2.27 per year per client.

	Acute Admissions Rates	
	Prior to Telehealth Program	On Telehealth Program
Number of Clients	22	22
Number of Acute Admissions	50	17
Measurement Period – months	12.0	9.8
Annualized factor	0%	81%
Acute Admission Rate Per Year Per Client	2.27	.95
		58% decline

Following are examples of the RPM program client experiences that assisted in reducing the acute care admission rate for clients on program.

<u>Prevented likely hospital encounter by monitoring readings:</u>

Client with primary diagnosis of diabetes was being cared for by son while his wife was away on vacation. RN Care Coach alerted to blood glucose reading of 560 and promptly contacted family. Son responded that he had forgotten to check reading or give insulin to client. Insulin was immediately provided. Nurse confirmed client was not experiencing symptoms of hyperglycemia and confirmed that blood glucose returned to normal parameters.

Prevented likely hospital encounter by collaborating with PCP:

Client was on program for primary diagnosis of hypertension. RN Care Coach received several alert notifications for low blood pressure and assessed increase in dizziness and weakness in this client who lives alone. RN communicated with PCP and faxed recent monitor readings. PCP altered BP medication dosing with immediate improvement in client's symptoms.

Prevented likely hospital encounter with on-call home visit:

Client with primary diagnosis of CHF and COPD began to experience increasing symptoms of shortness of breath and anxiety. RN Care Manager noted changes in monitor readings and scheduled home visit immediately. Nurse provided client education including reinforcement of deep breathing, repositioned client and made calls to PCP and pulmonologist with adjustments made to oxygen and medication dosing. Client's breathing improved significantly and she did not seek treatment in emergency department.

In order to assess client and caregiver satisfaction, two surveys were administered after 60 and 120 days on the program. A Lorien At Home Client Satisfaction Survey was administered and results collected for all clients on the program. Utilizing a scale of 1-5, overall client and caregiver satisfaction scored 4.78. Recommendation of Lorien at Home services scored 5.0 with clients and caregivers.

To further and specifically access the technology features of the program, a second survey was administered based on the Extended Technology Acceptance Model.[4] Utilizing a scale of 1-5, clients provided the following feedback on select questions:

Question 1.	I intend to use the system.	4.875
Question 4.	Using the system improves my health.	4.875
Question 6.	I find it easy to get the system to do what I want it to do.	4.625
Question 9.	I have no difficulty telling others about the benefits of the system.	5.000

Other benefits of the program include socialization features allowing clients to communicate with family members and friends through secure messaging. Access is also provided to social media websites such as Facebook. Games, music, photos and videos are also all accessible and specifically assigned based on client preferences to address possible client depression.

Other anticipated longer-term impacts for the target population and broader community include RPM program support allowing clients to successfully reside in their private residences. The home support program can delay or eliminate not only hospital admissions, but also possible needs for assisted living or nursing home care resulting in cost savings to the clients and entitlement programs.

Project Implementation Challenges

The implementation of the project encountered several challenges which did require adjustments to original plans. However, the Lorien At Home team had prior experience and a working knowledge of the Grand Care equipment and program. This experience reduced implementation challenges as staff were able to anticipate issues and set realistic client installation goals for the

launch of the program. Additionally, members of the Lorien team attended a three-day training course at the Grand Care office for additional in-depth training on all features and aspects of the program.

One anticipated challenge of the program was the client's acceptance of technology in their home. Several clients did have reservations about their ability to operate the equipment and comply with self-administered wellness reading instructions. The more time spent introducing and demonstrating the equipment prior to the home installation lead to significantly higher acceptance and engagement by the client and the caregivers. For most clients, the introduction and education took place with clients and family members while a resident of the SNF.

The GC System performs best with a broadband Ethernet or Wi-Fi connection. Several client homes did not have internet service which required the installation of cellular hotspots. In several cases that required cellular hotspots due to the lack of an internet service provider, cellular connectivity signal strength impeded the use of video calls and periodically created challenges with automated program updates. Additionally, clients did not always have information on their internet service provider passwords and codes which on occasion resulted in more challenging and lengthier set up times than anticipated.

Workflow processes and protocols initially in place with start of program had to be adjusted and expanded upon as our client volume increased and lessons were learned from the initial clients started on the program. For example, as RPM alerts can be received through text message, e-mail or telephone. The protocol and call tree for how to manage the type of RPM alert and which method to utilize to direct the alert to the on-call RN Care Coach and how to effectively escalate the alert notifications required several adjustments to find the most effective and efficient model.

A second example of protocol adjustments for the program included establishing effective RPM notification ranges for the different wellness readings. RN Care Coaches were initially inundated with alerts for new clients until parameters were more effectively set and managed as they learned the clients' patterns were able to provide education both remotely and in-person and how to take proper reading in order to receive accurate and actionable results to clients and their caregivers when applicable.

The Lorien at Home team worked to engage the client's community primary care physician with varied success. The team provided information on the overall program process and goals and also sought guidance with setting health reading ranges based on specific client history. Several PCPs and physician specialists were receptive to receiving calls from the RN Care Coach upon implementation and on-going as the clients condition changed and/or health issues occurred. Overall, primary care engagement and acceptance was sporadic based on the provider's willingness to understand and accept the role and relationship of the RN Care Coach, the RPM program and their patient.

The utilization of CRISP was an implementation challenge and later a significant success. Initial CRISP access and set up was time consuming and required multiple follow up conversations as well

as establishing a system to provide RN Care Coaches access to the query portal and the ability to receive encounter notifications for clients on program. Several of the clients' PCPs did not participate with CRISP thus preventing a compressive view of the client's history.

Lessons Learned

The experience with program implementation emphasized the need to have sufficient planning and resources related to initial client engagement. The length of time needed to ensure clients effective use of technology was aided by introducing the telehealth equipment and program early and on multiple occasions during a client's SNF stay prior to discharge home. The program was incorporated into the discharge planning process with the interdisciplinary team at the SNF. After several introductions and initial education, clients and caregivers were able to gain a comfort level and acceptance of technology. Once in the home, continuous encouragement and education was often necessary to keep clients engaged with the equipment and using the wellness devices.

As the program can be configured to be active for a client who is able to independently interact with the technology and self-administer wellness devices, the system can also be passive for the client and allow a caregiver or family member the ability to assist with wellness readings and interact with all features provided. Initial and repetitive education for clients and their caregivers regarding benefits and functionality of the RPM system was critical. Caregiver and family involvement from the very beginning helped to ensure acceptance and use of the technology and ultimately the success of the program.

The program also emphasized the value of the relationship between client and RN Care Coach. The technology enabled the RN Care Coach and client to successfully manage their wellness remotely, however, it was the relationship and trust that developed between the two that helped solidify a sense of security in living independently at home. The design of the program assured a consistent assignment of Care Coach to client to support a rapport between the individuals. When viewed as a resource, the RN Care Coaches would be alerted to or consulted with additional health concerns or questions that may have not been picked up by a wellness reading, but were identified through a video call observation.

The significant value of real-time alerts and subsequent interventions was continually reinforced. Numerous examples of the clinician's opportunity to effectively manage and intervene in a client's care prior to an acute change that could have resulted in an emergency department or hospital admission were captured. In order to manage and respond to real-time alerts 24 hours per day, 7 days per week, 365 days per year, the program required full-time and on-call RN Care Coaches that were familiar with their clients on program and able to effectively engage and respond to client needs. Communication between RN Care Coaches was supported by a weekly utilization review meeting and on-call shift reports for all activity. All staff had access to the Grand Care system to review past well readings and to conduct video assessments. Access to the clients EMR was also provided to all staff assisting with the management and intervention of client care.

An additional lesson learned was to assure that back up supplies and tools were readily available during home installations in order to prevent delays or extend the needed time in the home. On occasion a wellness device would not pair through the bloothooth connection which then required the vendor's helpdesk to correct the issue. Having additional devices on hand allowed the installation to continue. Proactively obtaining information on the clients ISP including usernames, passwords and Wi-Fi codes also assisted with the installation. In homes that lacked internet service, the installer would bring cellular hotspots from multiple carriers in order to access which device acquired and maintained the strongest signal. Cellular booster antennas were also available as needed to again ensure all features of the system would function properly.

Cost Effectiveness

The RPM program as described in this report including equipment, licensing fees, supplies and staff costs for installation, assessments, 24/7 alert monitoring and response costs approximately $300 per month per client or $3,600 annually. Additional costs can also be incurred for required in-person RN visits as determined to be clinically necessary or requested. The cost also does not include fees for internet access at the client's home.

The program has demonstrated a reduction in the all-cause 30 day readmission rate as compared to the state average of 15.95% to 4.5% for all clients on program. For the total 22 clients on program, there were 2.5 fewer re-admissions. Using the average Medicare cost of an acute care admission of $10,352 the program savings were $25,880 for re-admissions as compared to the cost of the program for the 22 clients at $300 per month or $6,600.[6]

Clients on program also reduced their average annual hospital admission rate from 2.27 to .95 per year or a reduction of 58%. Using the same average cost of a Medicare admission, the savings for this group was 36 fewer acute admissions for a total of $372,672 as compared to the cost to provide the service to 22 clients for 215 months at $300 per month totaling $64,500.

Beyond the financial benefits, the program demonstrated the ability to keep the clients in their homes by coordinating the support of the RN Care Coach, caregivers, family members, PCPs and other physician specialists to avoid acute care admissions. Care Coaches also collaborated with home health providers and DME providers to assure available benefits were accessed for needed equipment and services. Clients were provided more options to access service in often a lower cost of care setting and experiencing fewer transports to receive health care services.

Sustainability

Upon completion of the grant, several of the clients continued on the program paying privately for the monthly services. In addition to continued recruitment efforts under a private fee for service model, Lorien at Home is also engaged in another RPM grant and is in the application process for a third grant opportunity. Lorien at Home also secured a contract for the RPM program with a managed care organization to provide service to targeted clients living at home and managing multiple chronic conditions.

The cost savings achieved by this grant demonstrate that an effective RPM program inclusive of 24/7 support is an effective and efficient model and support service. The program can improve

quality and decrease costs by allowing clients to age in place in their private homes. With coordinated efforts from client insurance carriers, clients engaged in the RPM program could also be directly admitted to SNFs for nursing and rehabilitation care without first requiring a hospital stay when Care Coaches identify a change in condition requiring continual services and observation.

Closing

The success of the RPM program was supported by the client engagement partnership with the Lorien Mays Chapel interdisciplinary team to effectively identify appropriate candidates. Building upon this partnership, RN Care Coaches were able to establish relationships with clients and caregivers during the introduction and educational client meetings at the SNF. As the program progressed and clients were monitored and supported in the home setting, the Care Coach relationships continued to strengthen.

Clients consistently expressed the importance of the relationship with the RN Care Coach and their ability to support clients remotely as making a significant difference in their ability to successfully remain in their homes. Care Coaches consistently responded that the information obtained from the wellness readings and additional technology tools allowed the Care Coach to provide an elevated level of support remotely 24/7. The programs successfully achieved its goal of integrating technology and care to better serve our clients.

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Appendices

1. CHF Protocol
2. Hypertension Protocol
3. Uncontrolled Diabetes Protocol
4. Lorien at Home Client Satisfaction Survey
5. Lorien at Home Technology Survey
6. Client Selection Flow Chart

CHF Protocol

Definition: Clients with congestive heart failure are at risk for complications related to congestive heart failure and have an increased risk for hospital readmission related to these complications.
Symptoms of CHF include: dyspnea, orthopnea, cough, edema, and changes in vital signs- BP, HR, RR; rales or "crackles" in the lungs, peripheral edema, and ascites.

Objective: To reduce hospital readmissions related to CHF through the use of telehealth monitoring

Assessment:

1. Initial health history to include assessment of baseline, symptoms, lung assessment, medications, mobility, deconditioned status, cognition and psychosocial support system.
2. Sensory impairments: vision, hearing

Care Strategies

1. Eliminate or minimize risk factors:
    a. Medication reconciliation/monitor medication use/provide medication reminders
    b. Daily weights
    c. Blood pressure monitoring as indicated
    d. Fluid restriction (as appropriate)
    e. Use sensory aids as appropriate
    f. Regulate bowel/bladder function
    g. Smoking cessation
2. Provide self-care education with maintenance and management strategies
    a. Activity recommendations
    b. Assess fall status and safety of environment
    c. Emphasize purpose and importance of daily weights
    d. Maximize ability
    e. Communicate clearly; provide explanations
    f. Dietician referral if needed
3. Identify care partners
    a. Foster care support of family/friends
    b. Assess willingness and ability of care partner to assist with self-care; dietary (sodium restriction); daily weight, symptom recognition and medical follow-up
4. Collaborate with PCP to monitor and manage symptoms

Telemonitoring equipment: Lorien Link, blood pressure cuff, weight scale
Follow-up:

1. Weekly nurse follow-up via phone or home visit
2. RN will monitor readings through telehealth system and contact client/family as needed
3. Reassess every 3 months or sooner if indicated

Expected Outcomes:

1. Early identification of worsening CHF symptoms
2. Decrease hospital readmissions for CHF
3. Increase client quality of life

Resources:
http://www.guideline.gov/content.aspx?id=43926
American Heart Association= http://www.heart.org
Disclaimer: For the purposes of the grant, Lorien At Home will assess and develop a care plan based on the diagnosis of CHF, however, we will also employee a holistic approach to our care keeping other comorbid conditions in mind that could contribute to re-hospitalization and decline in status.

Hypertension Protocol

Definition: Complications from uncontrolled hypertension include stroke and heart attack. Clients with uncontrolled diabetes are at risk for hospital readmission related to these complications.

Objective: To reduce hospital readmissions related to complications from uncontrolled hypertension.

Assessment:

1. Initial health history to include assessment of baseline, symptoms, mobility, cognition and psychosocial support system.
2. Sensory impairments: vision
3. Daily habits (recent sodium intake, fluids)

Care Strategies:

1. Eliminate or minimize risk factors:
    a. Medication reconciliation/monitor medication use/provide medication reminders
    b. Daily blood pressure monitoring
    c. Fluid restriction (as appropriate)
    d. Use sensory aids as appropriate
    e. Regulate bowel/bladder function
    f. Smoking cessation
    g. Eliminate or reduce alcohol intake
    h. Encourage weight loss
2. Provide self-care education with maintenance and management strategies
    a. Activity recommendations
    b. Assess fall status and safety of environment
    c. Emphasize purpose and importance of daily blood pressure monitoring
    d. Maximize ability
    e. Communicate clearly; provide explanations
    f. Encourage heart healthy diet
3. Identify care partners
    a. Foster care support of family/friends
    b. Assess willingness and ability of care partner to assist with self-care; heart healthy diet; daily blood pressure monitoring, symptom recognition and medical follow-up
4. Collaborate with PCP to monitor and manage symptoms

Telemonitoring Equipment: Lorien Link, blood pressure cuff

Follow-up:

1. Weekly nurse follow-up via phone or home visit
2. RN will monitor readings through telehealth system and contact client as needed
3. Reassess every 3 months or sooner if indicated

Expected Outcomes:

1. Improved blood pressure control through collaboration with PCP and the above interventions
2. Improved client/family knowledge related to symptoms and symptom management
3. Reduced readmission rate for complications from uncontrolled hypertension

Resources:
http://www.heart.org
Disclaimer: For the purposes of the grant, Lorien At Home will assess and develop a care plan based on the diagnosis of CHF, however, we will also employee a holistic approach to our care keeping other comorbid conditions in mind that could contribute to re-hospitalization and decline in status.

Uncontrolled Diabetes Protocol

Definition: Clients with uncontrolled diabetes are at risk for complications related to diabetes leading to hospital readmissions.

Objective: To prevent hospital re-admissions due to uncontrolled diabetes.

Assessment:

1. Initial health history to include assessment of baseline, symptoms, medications, mobility, deconditioned status, cognition and psychosocial support system.
2. Sensory impairments: vision, hearing
3. Daily habits

Care Strategies:

1. Eliminate or minimize risk factors:
    a. Medication reconciliation/monitor medication use/provide medication reminders
    b. Daily blood sugar monitoring
    c. Blood pressure monitoring as indicated
    d. Eliminate or reduce alcohol intake
    e. Smoking cessation
    f. Encourage weight loss as appropriate
2. Provide self-care education with maintenance and management strategies
    a. Activity recommendations
    b. Assess fall status and safety of environment
    c. Emphasize purpose and importance of daily blood sugar monitoring and taking medications
    d. Encourage twice weekly foot checks
    e. Maximize ability
    f. Communicate clearly; provide explanations
    g. Encourage a healthy diet –dietician referral if needed
3. Identify care partners
    a. Foster care support of family/friends
    b. Assess willingness and ability of care partner to assist with self-care; healthy diet, exercise, daily blood sugar monitoring, symptom recognition and medical follow-up
4. Collaborate with PCP to monitor and manage symptoms

Telemonitoring equipment: Lorien Link, glucometer

Follow-up:

1. Weekly nurse follow-up via phone or home visit
2. RN will monitor readings through telehealth system and contact client as needed
3. Reassess every 3 months or sooner if indicated

Expected Outcomes:

1. Improved control of blood sugars
2. Decreased complications related to uncontrolled diabetes
3. Decreased hospital re-admissions related to diabetes complications

Resources:
http://www.diabetes.org
Disclaimer: For the purposes of the grant, Lorien At Home will assess and develop a care plan based on the diagnosis of Uncontrolled Diabetes, however, we will also employee a holistic approach to our care keeping other comorbid conditions in mind that could contribute to re-hospitalization and decline in status.

Lorien at Home Client Satisfaction Survey

1. Are you the person being cared for or a family member/friend?
□ Client Receiving Services □ Family Member/Friend □ Name (Optional)

2. Did you get hourly services?
□ Yes □ No

Lorien Select Hourly Care
3. I am satisfied with the quality of care received.
□ Strongly Agree □ Agree □ Neutral □ Disagree □ Strongly Disagree

4. The caregiver had the knowledge & skills needed to help you.
□ Strongly Agree □ Agree □ Neutral □ Disagree □ Strongly Disagree

5. The caregivers arrived at the scheduled time.
□ Strongly Agree □ Agree □ Neutral □ Disagree □ Strongly Disagree

6. The services helped to improve your quality of life.
□ Strongly Agree □ Agree □ Neutral □ Disagree □ Strongly Disagree

7. Did you use telehealth services? (Lorien Link)
□ Yes □ No

Living Lorien Telehealth
8. The Lorien at Home Nurses responded to alerts in a timely manner.
□ Strongly Agree □ Agree □ Neutral □ Disagree □ Strongly Disagree

9. The Lorien Link Touch Screen performed as expected.
□ Strongly Agree □ Agree □ Neutral □ Disagree □ Strongly Disagree

10. The Touch Screen product met your requirements and expectations.
□ Strongly Agree □ Agree □ Neutral □ Disagree □ Strongly Disagree

11. What features on the Touch Screen did you find most useful? Check all that apply (list).

□ News
□ Today's Schedule
□ Videos
□ Messages
□ Caller ID
□ Calendar
□ Photos
□ Letters
□ Games
□ Websites
□ Music Programs
□ Medication
□ Medication Instructions
□ Caregiving
□ Wellness
□ Diabetes Information
□ Diabetes Assessment
□ Heart Health Assessment

12. Did you communicate with friends or family with the Touch Screen?
□ Yes □ No

13. The alerts for medications and vital signs were important.
□ Strongly Agree □ Agree □ Neutral □ Disagree □ Strongly Disagree

14. The vital sign monitoring devices were useful.
□ Strongly Agree □ Agree □ Neutral □ Disagree □ Strongly Disagree

15. Suggestions or comments relating to the equipment

General

16. Overall, you were satisfied with the services provided to you by Lorien at Home.
□ Strongly Agree □ Agree □ Neutral □ Disagree □ Strongly Disagree

17. You were satisfied with your transition to home with Lorien at Home support.
□ Strongly Agree □ Agree □ Neutral □ Disagree □ Strongly Disagree

18. The Lorien at Home Nurses were helpful.
□ Strongly Agree □ Agree □ Neutral □ Disagree □ Strongly Disagree

19. The Lorien at Home Nurses were accessible.
□ Strongly Agree □ Agree □ Neutral □ Disagree □ Strongly Disagree

20. You would still be living in your current living arrangement if you did not receive Lorien at Home services.
□ Strongly Agree □ Agree □ Neutral □ Disagree □ Strongly Disagree

21. You would recommend Lorien at Home to others.
□ Strongly Agree □ Agree □ Neutral □ Disagree □ Strongly Disagree

22. You are satisfied with the cost of your home care services.
□ Strongly Agree □ Agree □ Neutral □ Disagree □ Strongly Disagree

23. What did you like least about your Lorien At Home experience?

24. What did you like most about your Lorien At Home experience?

25. Other comments or suggestions

Technology Survey

Instructions: Consider each item separately and rate each item independently to all others. Circle the rating that indicates the extent to which you agree with each statement. Please do not skip any rating. If you do not know about a particular area, please circle N/A.

5 = Strongly Agree	4 = Generally Agree	3= Neutral (acceptable)	2= Generally Disagree	1 = Strongly Disagree	N/A

A. Intention to Use

1. Assuming that I have access to the system, I intend to use it.
   5 4 3 2 1 N/A

B. Perceived Usefulness:

2. Using the Lorien at Home system saves time and makes it easier to take care of myself.
   5 4 3 2 1 N/A
3. Using the system enhances my ability to interact with others.
   5 4 3 2 1 N/A
4. Using Lorien at Home improves my health.
   5 4 3 2 1 N/A

C. Perceived Ease of Use

5. I find the system to be easy to use.
   5 4 3 2 1 N/A
6. I find it easy to get the system to do what I want it to do.
   5 4 3 2 1 N/A

D. Subjective Norm

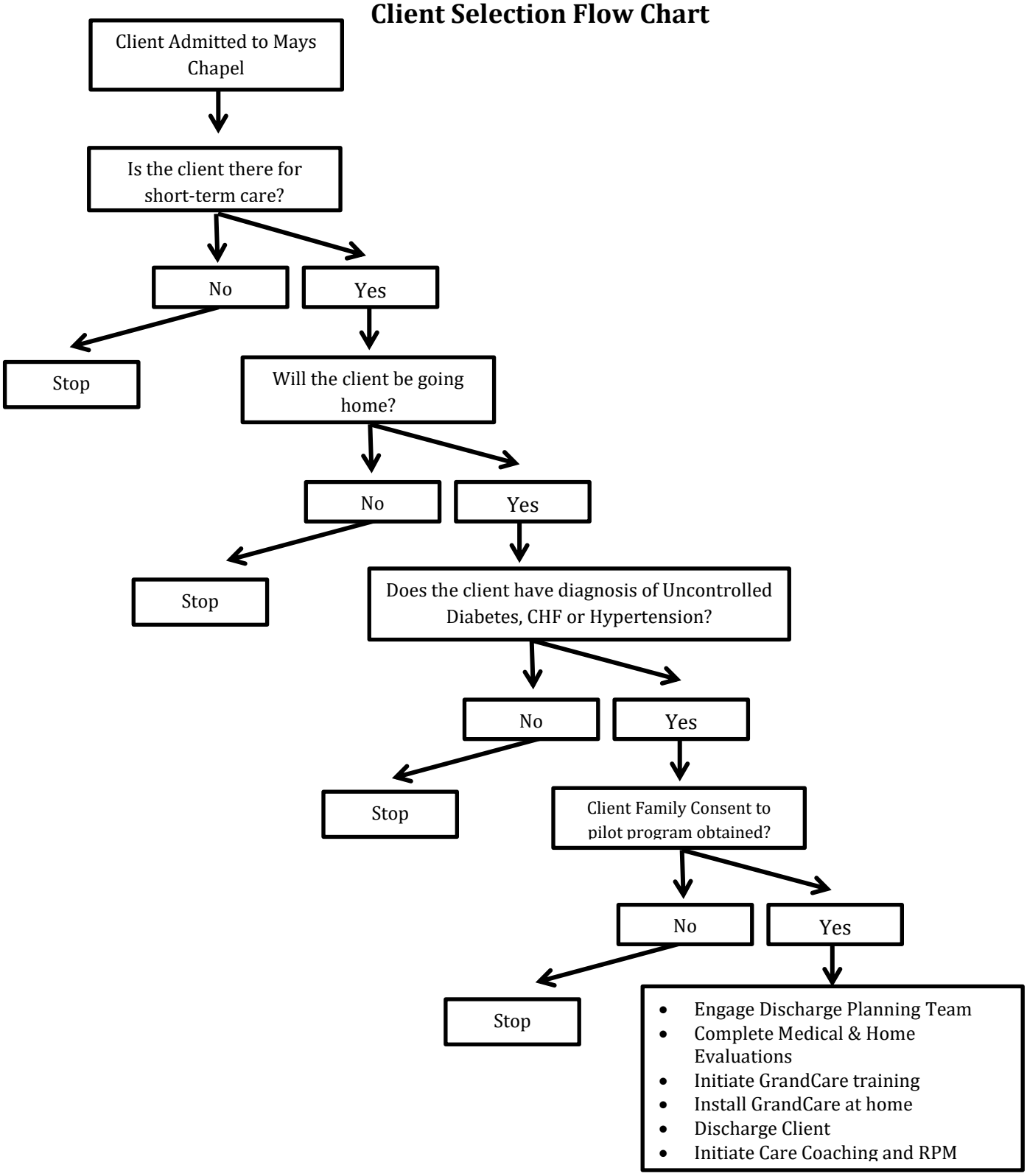
7. People who are important to me think I should use the system.
   5 4 3 2 1 N/A

E. Output Quality

8. The quality of information I get from the system is high.
   5 4 3 2 1 N/A
9. I have no difficulty telling others about the benefits of the system.
   5 4 3 2 1 N/A
10. The benefits of the system are apparent to me.
    5 4 3 2 1 N/A

[1]Venkatesh, V., Davis, F.D., (2000) A Theoretical Extension of the Technology Acceptance Model: Four Longitudinal Field Studies. Management Science. 200046(2): 186-204.
3http://pubsonline.informs.org/doi/abs/10.1287/mnsc.46.2.186.11926

Client Selection Flow Chart



LORIEN AT HOME

Care forward.

Lorien at Home Satisfaction Survey- Telehealth

Client's Name: _____

1. Are you the person being cared for or a family member/ friend?

   Client Receiving Services Family Member/ Friend

2. Did you use telehealth services?

   Yes No

3. How would you rate how the Lorien at Home Nurses did with responding to alerts in a timely manner?

   Excellent Good Fair Poor

4. Overall, how well did the Lorien Link perform?

   Excellent Good Fair Poor

5. How well did the Lorien Link product meet your requirements and expectations?

   Excellent Good Fair Poor

6. How important were the alerts for medications and/ or wellness readings?

   Very Important Important Unimportant Very Unimportant

7. How useful were the wellness monitoring devices?

   Very Useful Useful Not useful

8. How useful were the surveys?

   Very Useful Useful Not useful

9. How useful were the videos provided?

   Very Useful Useful Not useful

10. Please provide any feedback related to the telemonitor and/ or wellness devices.

11. Overall, how satisfied are you with the services provided to you by Lorien at Home?

LORIEN AT HOME

Care forward.

Very Satisfied Satisfied Dissatisfied Very Dissatisfied

12. If applicable, how would you rate your transition home with Lorien at Home support?

Excellent Good Fair Poor

13. How would you rate how helpful the Lorien at Home Care Managers are?

Excellent Good Fair Poor

14. How would you rate how accessible the Lorien at Home Care Managers are?

Excellent Good Fair Poor

15. Do you think you would still be living in your current living arrangement if you did not receive Lorien at Home services?

Yes No

16. Would you recommend Lorien at Home to others?

Yes No

17. Overall, how satisfied are you with the cost of your telehealth services?

Very Satisfied Satisfied Dissatisfied Very Dissatisfied

18. What did you like least about your Lorien at Home experience?

19. What did you like most about your Lorien at Home experience?

20. Other comments or suggestions

University of Maryland Medical System Health Plans Inc.
and
Lorien Health Services llc.
Lorien At Home llc.

Tele-Health Program

April 1st, 2018 – October 31st, 2019

Summary

Through a partnership between UMMS Health Plans and Lorien at Home, UM Medicare Advantage Plan members living in the community were provided additional services in effort to support successful aging in place. The installation of tele-health technologies supported by RN Care Coaches aimed to support members in their homes and reduce avoidable visits to the Emergency Department and potential Acute Care admissions. By closely monitoring Members health readings through 24/7 alert response and care coaching, the team was able to reduce Acute Care admissions by 58.5% and ED visits by 11.8%.

This Acute Care activity reduction resulted in the Plan experiencing estimated cost savings, net the expense of the tele-health program, of $5,321 per member per year. The plan savings were achieved by adding to the services available to its Members living in the community and managing multiple chronic conditions. Member surveys were complete post program and reported high levels of satisfaction with the overall program (95%).

Program

University of Maryland Medical System Health Plans (Plan) and Lorien at Home (Provider) collaborated to develop and provide a Tele-Health and Care Coaching Program (Program) aimed at reducing avoidable emergency department visits and acute care admissions for select Plan members. Upon identifying program enrollment criteria, members were offered the opportunity to participate in the new program.

The Program provided members with tele-health equipment including a Lorien Link and appropriate Blue Tooth enabled peripheral equipment which was installed in member's home that could include: Pulse Oximeter, Blood Pressure, Glucometer, Weight Scale, and Action Button Pendant. The assignment of specific peripheral devices was determined by the members RN in-home assessment which identified which chronic conditions were supported with remote patient monitoring. In addition to the tele-health equipment, members received Care Coaching from Provider Registered Nurses included a comprehensive in-home assessment, (24/7) call and tele-health alert monitoring and response, Member/family education, medication reminders, coordination with physicians and outpatient health services and socialization resources.

Pre-Launch Activities:

Leadership from the Plan and Provider collaborated to develop all necessary Program documents and tools including: Telehealth Program Patient Flier, Telehealth Program Patient Letter, Tele-Health Program Equipment List, Eligibility Criteria for Telehealth Program, Provider Monthly Results Template, identification of point-person for each organization for communication and coordination, and marketing Program Announcement. The Plan then applied Admission Criteria to identify Plan Members eligible for the new Program.

Program enrollment criteria included the below items:

- Member is a high utilizer of Hospital Emergency Department and/or other health care resources
- Member has multiple chronic conditions and/or comorbidities
- Member lives at home in the community
- Member is willing to participate Tele-Health Program
- Member and/or caregiver has the ability to secure, utilize and interact with telehealth equipment
- Member has home Wi-Fi service (preferred)
- Member lives within designated service area consisting of (10) mile radius from Lorien Communities or within the same county as Lorien Communities

Launch

Based on Member eligibility, the Plan completed a mailer to targeted Plan members. Provider team contacted Members to enroll members and receive consent. Providers visited the members home to complete the RN Home Assessment followed by tele-health equipment installed in home. During the Assessment, connectivity was assured via Wi-Fi and/or cellular hotspot and member/caregiver education was conducted. Members were approved for sixty (60) days of program service and reviewed every (60) days for potential (60) day renewal periods. Members were provided a (30) day notice of discontinuation of the Program when ending and were offered the opportunity to continue the Program with Lorien At Home with private pay funds.

Reporting and Communication

The Provider prepared and submitted a monthly report to the Plan consisting of enrollment data as well as member statistics on number of tele-health alerts and touch points from Provider staff. Individual Member data was produced and shared with Plan Case Manager every (60) days, at the end of the approved program period. Included in the individual report was a recommendation for continuation or discontinuation of the Program for the specific Member.

The Program staff also tracked enrolled Member visits to the Emergency Department and Acute Care admissions through communication with the Member and caregivers as well as receipt of CRISP Encounter Notification Service and review of CRISP Clinical Query Portal. Program staff supported Members by collecting and providing tele-health data to Member's primary care physicians in advance of office visits.

Program Metrics

Tele-health equipment was installed in the Member's home and utilized as directed to record specific daily health readings. Alert parameters were established during the RN Assessment and when available, in coordination with the Members primary care physician. Peripheral devices were assigned based upon the Members chronic conditions. Thirty-nine (39) health devices were installed as well as twenty-one (21) Action Pendants which allowed the Member to easily call their Care Coach for support. In total, the devices alerted Care Coaches (11.9) times PMPM (per member per month) for out-of-parameter readings and calls for assistance.

Tele-Health Alerts:

	Blood Pressure	Weight Scale	Pulse Oximeter	Glucometer	Action Pendant	Total
Members Assigned Device	21	3	15	1	21	
Alerts PMPM	10.3	3.1	.5	5.4	.5	11.9

Care Coaches responded to all out-of-parameter alerts and calls for assistance with a telephone call, video chat and/or a RN in-home visit. Members received an average of (11.9) touch points from Provider Care Coaches PMPM in response to alerts. Additionally, Care Coaches averaged (.3) interventions PMPM. An intervention was recorded as an event requiring the RN Care Coach to take specific actions in effort to support the Member and decrease the possibility of required ED visit or Acute Care admission.

Examples of interventions were:

- Assistance with securing new prescriptions or medications
- Expediting primary care visits
- Medical appointment transportation assistance
- Home visits for medical assistance and medication management
- Referrals to community based programs for behavioral health and financial assistance for medications and utility expenses.
- Educational support to family members on recognizing and managing specific chronic conditions.

Touch Points:

	Tele and Video Calls	Home Visits	Interventions	Total
Contacts PMPM	11.1	.8	.3	12.2

Program Results

Members on Program experienced a (58.5%) reduction in their Acute Care admission rate and an (11.8%) reduction their Emergency Department visit rate. Assuming a ($10,000) cost per Acute Admission and a ($1,500) cost per ED visit, the Plans savings, including the cost of the Program was ($5,231) per member per year.

Activity Results

Reduction in Acute Care Admission Rate	**58.5%**
Reduction in ED Visit Rate	**11.8%**

Member Activity Year Prior to Program - (Acute Care and ED Visit data provided by Plan)

Clients	**21**
Member days prior year (21 x 365)	7,665
Acute Admissions	25
Acute Admission Rate per 1,000	3.262
ED Visits	49
ED Visit Rate per 1,000	6.393

Member Activity On Program - (Acute Care and ED Visit data provided by Plan)

Clients	**21**
Member days on Program	4,433
Acute Admissions	6
Acute Admission Rate per 1,000	1.353
ED Visits	25
ED Visit Rate per 1,000	5.640

ROI

Annual Estimated Expense Reductions to Plan	**(58.5%) 15 less Acute Admissions per year at cost of $10,000**
	(11.8) 6 less ED Visits per year at cost of $1,500
	Plan Costs Avoided $159,000
Annual Costs of Program	21 Members X 12 Months = 252 Months
	252 Months * $195 PMPM **Program cost = $49,140**
Annual Net Cost Savings to Plan	**$109,860** ($5,231 per member annually)

Member Satisfaction

All Member Program participants were provided a Satisfaction Survey to measure their responses to their tele-health equipment and service experience. Additional comments were also collected and are included in Exhibit A. Total Member Satisfaction results scored 3.8 on a scale of 4 or 95% for returned surveys. Overall, satisfaction was very high for all items including the use of the tele-health equipment. This result is a validation of the Program's provision of hands-on education to Members from Care Coaches and requiring return demonstration for all installed devices. At times this required multiple educational visits and support calls until proficiency was achieved.

How would you rate timeliness of RNs alert response?	**3.9**	**98%**
How well did the Lorien Link perform?	3.6	91%
How well did the Lorien Link product meet your requirements and expectations?	3.7	93%
How would you rate the helpfulness of the Lorien at Home Care Managers?	3.8	95%

How would you rate the accessibility of the Lorien at Home Care Managers?	3.8	95%
How important were the alerts for medications and/or wellness readings?	3.6	91%
How useful were the wellness monitoring devices?	3.8	95%
Overall, how satisfied are with the services provided to you by Lorien at Home?	4.0	100%
Do you think you would living in your current living arrangement if you did not receive Lorien at Home services?	3.7	93%
Would you recommend Lorien at Home to others?	4.0	100%
Average Score	**3.8**	**95%**

Attachments:

Exhibit A - Member Satisfaction Survey Comments

Exhibit A

Member Satisfaction Survey Comments

I enjoyed the photos on the telemonitor, and I learned things looking at the description.
I paid more attention to my blood pressure because of the monitor.
I could depend on the monitor and my nurses to know my health status.
Lorien at Home should pick up more insurance companies, so more people can take advantage of this services.
The nurses are very dependable and made my sister and I feel better knowing we always have someone there to help.
Everything was fine.
It helped me a lot.
The telemonitor gave me instant response.
They treat you with respect.
Everyone was great, thank everyone for me.
I enjoyed the telemonitor very much, it was educational and imperative.
I liked taking my blood pressure and seeing it.
The staff with Lorien at Home was very personable, and I felt comfortable with them.
Everyone is so wonderful and I just love everyone.
I love the blood pressure to take and nurses called me back to make sure I was okay.
I just love everything about this program. Don't change anything with your program. I just loved the people that worked with me, and the nurses were wonderful.
You girls do a good job.
It (the Link) did not always work. You girls had to come out here a couple of times to fix it. I don't mind, but I hate to put you girls out.
Knowing there was extra support if I needed it
Thank you for all your service.
I really don't have any suggestions except I wish that I could have remained as a client with the services.
I truly enjoyed the service- it was so beneficial to me.
The nurses and staff were so caring and very professional and understanding.
I want to thank Lorien at Home for taking the time to help me control my blood pressure and helping me to do what was right for my health.