



**Heritage Provider Network, Inc.**

**Biometric remote telemonitoring to  
produce a healthy return on investment,  
decrease resource utilization, and  
improve care coordination**

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# **Biometric remote telemonitoring to produce a healthy return on investment, decrease resource utilization, and improve care coordination**

## **Background**

Heritage Provider Network, Inc. (HPN) Glendale Campus completed a 90 day trial to determine if high cost patients not well managed in traditional care coordination programs and traditional healthcare delivery systems can decrease cost of care and improve patient satisfaction through telemonitoring using CYTTA Connect Ecosystem and an intense case management process. Costs were decreased through reduced

- Hospital admissions
- Emergency Room Visits
- Urgent Care Visits
- Specialty Visits

## **Methodology**

Twenty (20) HPN Glendale patients were identified through claims analysis with frequent use of primary care and specialty visits, Emergency Room visits, Urgent Care visits, Hospital admissions, two (2) or more co-morbidities, and little to no adherence to their current medical treatment plan. Resource utilization for the 90 days prior to enrollment in this pilot program was compared to monthly resource utilization during this trial. Patient and Provider satisfaction surveys were sent at the completion of this trial. Interviews were completed with patients, care coordination staff, and physician providers who utilized the telemonitoring technology. Recommendations were formulated at the completion of the trial.

Since this was a voluntary program, patients were able to disenroll at any point during the trial. Patients who agreed to participate in the trial completed a 30 minute office orientation session to introduce the telemonitoring products and review the care coordination program. CYTTA provided technical resources and consultation to maintain device performance. All HIPPA requirements were incorporated into program design and care coordination processes. CYTTA provided all materials and services at no cost.

Patients participated in the trial from their home after completing the orientation session. Technology performance issues were resolved remotely and within the patient's home for 4 patients. Biometric measurements were available for blood glucose, blood pressure, weight, and pulse oximetry. Results were sent via Bluetooth technology through FDA approved devices and transmitted to the CYTTA Connect dashboard. Access to the dashboard and ability to send

care alerts were available to all members of the care coordination team, patients, and designated physicians/family members/caregivers.

Care coordination was provided by nurse and physician services through the existing complex case management employees. Alert programming was established by the Medical Director in association with discussions with primary care provider, specialty providers, and evidence based care guidelines. Alert prompts were sent to nurse care coordinators via email and texts. Nurse coordinators contacted patients in response to alert prompts and on a regular schedule during the trial. Face to face patient interaction with the care coordination team was not required but often transpired during the trial. Patients were able to participate remotely, through face to face interactions in the care coordination clinic, or through face to face home interactions.

## **Results**

Cost of care was reduced by \$37,430 for the 20 patients in this 90 day trial. This equates to an average of \$1,871 in cost reduction for each patient in the trial. Appendices 1-5 detail pre and post-trial costs of care and sites of utilization. Cost reductions were realized through reduced Emergency Room and Urgent Care visits, reduced specialty visits, and slight reductions in hospital inpatient bed days. The use of CYTTA Connect Ecosystem during this trial reduced hospital admission by 2, inpatient bed days by 10, Emergency Room visits by 5, urgent care visits by 2, specialty visits by 10, and primary care visits by 10. The average reimbursement for a hospital inpatient day was more than \$3,000 in Glendale during this trial, emergency room visits averaged \$1,200, specialty physician visits averaged \$125 while urgent care visits averaged \$90.

Value creation was identified in 4 areas during the trial:

1. Improved patient engagement and ability to self-manage care
2. Improved provider engagement
3. Patient loyalty
4. Improved care coordinating performance

Enrollment criteria identified patient who struggled to manage their health despite best available resources in our current healthcare environment. This trial demonstrated these patients were not able to self-manage their care. The patients struggled at home and visited the hospital, emergency room, and physician offices in search of a solution to their healthcare needs. Those efforts were previously costly and ineffective.

Trial participation and the use of the CYTTA Connect system discovered these patients were rarely engaged or knowledgeable in self-management of their healthcare needs. Repeated use

of available resources did little to address this deficit. The CYTTA Connect system in association with care coordination enabled the patient and team to identify and address barriers to self-management and adherence to evidence based guidelines. Barriers included knowledge deficits, outpatient monitoring deficits, absence of prompt and effective care plan revision when biometric guidelines were not met, and social factors.

Physician providers who participated in the trial voiced tremendous support for biometric remote telemonitoring. Physicians noted many of the previously reported home biometric monitoring was inaccurate, fabricated, or absent. Patients, physicians, and care coordination team members confirmed that biometric results were rapidly available and accurate. Sampling error or erroneous results reporting was not a problem. Physicians and care coordination team members noted their level of engagement and effectiveness was tremendously improved with accurate, timely, and frequent reports of blood pressure, blood sugar, weight, and oxygenation status.

As patients participated in the trial and received customized care coordination they became more engaged in their healthcare management and frequently voiced the admiration for effective service delivery. Patients commonly noted their neighbors, family members, church members, and others were amazed by the service delivered and wanted access to the trial. Patients noted they were not only more satisfied with the service delivered by Heritage but also noted they would never consider switching health plans or medical groups because they feared they would lose access to CYTTA Connect system and care coordination.

The complex care coordination team noted their ability to effectively manage and their personal satisfaction was tremendously increased through trial participation. The team noted the absence of telephone tag with patients and absence of erroneous home biometric reports by patients. The team noted that the CYTTA Connect alerts required an active care plan which was clearly understood by the patient, the managing physicians, and the care coordination team. This was clearly absent prior to this trial. In addition, standing orders were required to promptly address care alerts so that blood pressure, blood sugars, weight, and oxygenation guidelines were met. The trial demonstrated the absence of effective, real time care plan and medication revision in existing care programs. The absence of timely care plan revision in addition to unclear care plans produced significant care team dissatisfaction. This trial and CYTTA Connect removed that dissatisfaction while improving care team performance.

## **Conclusions**

This trial demonstrated the ability to significantly reduce costs for high risk and need patients through use of the CYTTA Connect system. The trial demonstrated the ability to quickly achieve cost savings, decrease resource utilization, improve care coordination, and increase adherence

to evidence based guidelines. Adherence to evidence based guidelines is increasingly important as CMS 5 STAR ratings garner importance. CMS 5 STAR measures are structured on evidence based guidelines.

Care costs were reduced on average by \$1,871.00 for each trial participant. This trial did not specifically address long term cost of care. However, these patients were selected for the inabilities of the existing healthcare system and care coordination programs to cost effectively address their short or long term healthcare needs. One trial participant noted he realized more value and benefit in 2 months of trial participation compared to his previous 17 months of participation in the best available care coordination services. A quite handsome return on investment is present if the care coordination system is priced at less than \$2,000 per year.

This trial demonstrated home biometric monitoring using the CYTTA Connect Ecosystem can be easily introduced, dispensed and utilized in the home setting. Care team training was easily completed. CYTTA Connect was easy for patients and care coordinators to learn and effectively use. Technical troubleshooting was prompt and effective.

Improved patient engagement and ability to self-manage care will become increasingly important and require new resource allocation because CMS will soon require Stage II Readiness participation. Through repeated collection and review of biometric data patients learn how to titrate medications and adjust behaviors to achieve target goals which is a cornerstone of CMS 5 STAR performance and CMS Stage II Readiness. Patients and the care coordination team are prompted by alerts to evaluate and intervene real time. This produces a patient who is more engaged and prospectively aware of how they must modify behaviors and medications to meet target metrics through self-management. Additionally, improved achievement of target metrics produces significant provider and care team satisfaction. Efforts of both become both more effective and more efficient.

Effective use of the CYTTA Connect Ecosystem requires the managing physicians to develop and communicate care plans and standing orders to adjust medications to achieve target goal. Too often the goals of care and associated care plans including medication administration are poorly communicated or not present. Patients travel through various sites of service and levels of care without a clear understanding of the expected behaviors and medication usage to be executed in the home setting. CYTTA Connect in conjunction with care coordination resolves this deficit and allows for care plan and medication revision as the patient disease processes change in the home environment. Through repeated measurement and with focused care coordination the patient learns how to better manage their health care needs. This produces a patient who is more engaged and prospectively aware of how they must modify behaviors and medications to meet target metrics. This also produces a more satisfied patient, physician, and care coordination team.

This trial discovered patients view CTTA Connect and remote telemonitoring as a special benefit to patients who are encouraged to retain their relationship with Heritage to continue to access and build their personal health database. Patients develop a special relationship with their care coordination team. The patients viewed CTTA Connect and care coordination activities as a value rather than an intrusion because information and advice generated by the trial were specific to the patient and time sensitive.

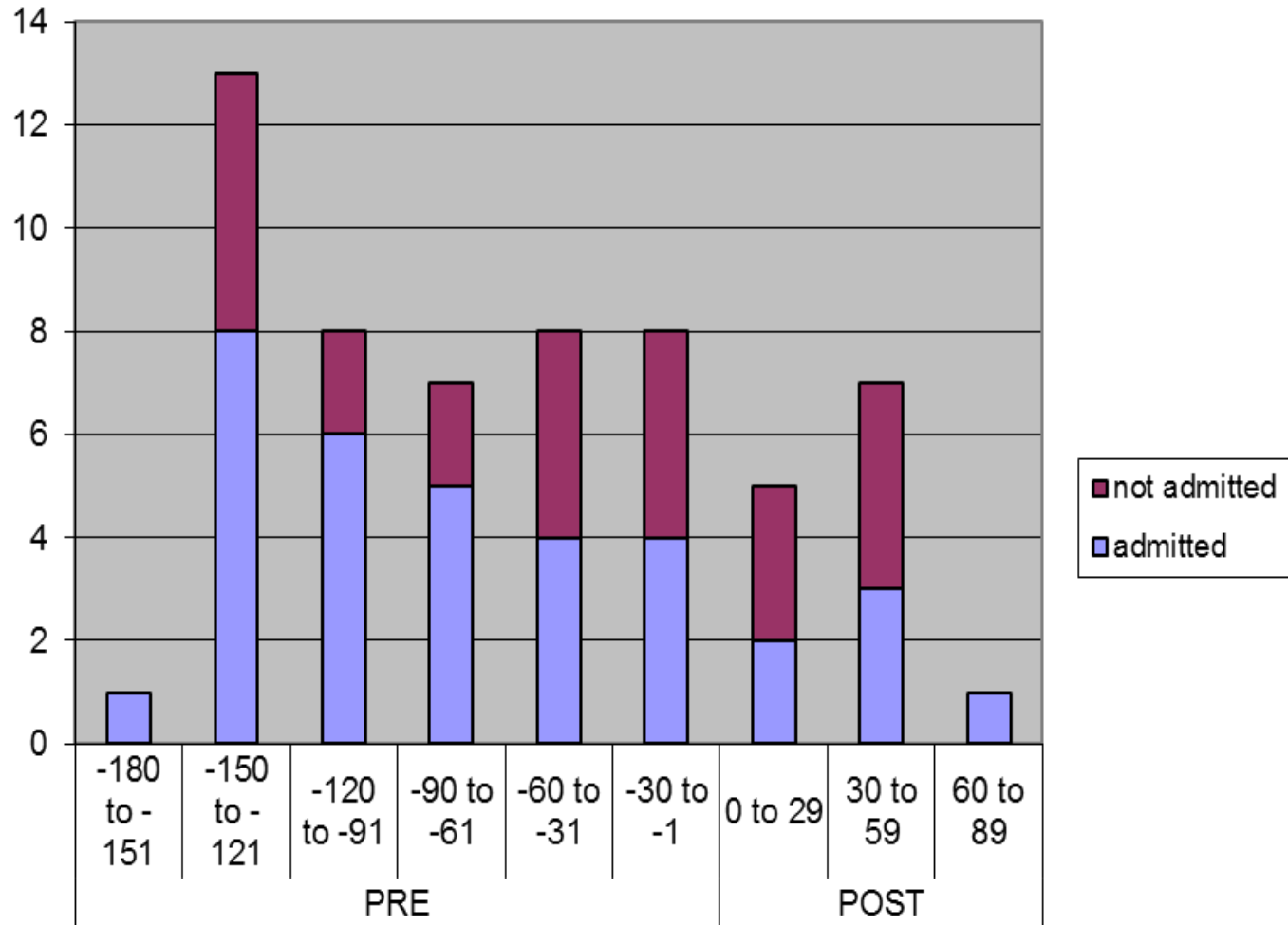
This trial enabled physicians and care coordinators to more effectively manage a larger number of patients. Current care coordination ratios can be expanded by 20% using biometric remote telemonitoring through reduced telephone tag and elimination of unfocused, subjective, generic discussions with patients. Instead specific biometric data, medication usage, review of the active care plan, and comparison to target metrics produces a focused discussion. Patients and care coordinators are taught through rapid cycle improvement to Plan, Do, Study, and ACT. Barriers to successful self-management are identified and addressed. Patients now learn how to revise and update their care management in the home setting rather than a physician office, emergency or hospital room followed by an attempt to translate and implement the care plan in their home setting upon discharge. Patient contacts have become value oriented with immediate return on investment to the care coordinators and patient.

## **Next Steps**

I believe the success of this telemonitoring program on managing high risk patients can be replicated and offered to all Heritage provider groups through a Heritage sponsored program. Interested Heritage medical groups can request the telemonitoring and access this program through a structured program which is led by me, Dr. Terry Olson, M.D. The telemonitoring success requires careful patient selection, structured patient enrollment and focused care coordination which I have developed and tested. Ongoing success requires structured patient assessment, patient and provider engagement, alert parameter selection with provider input with standing orders in response to alerts. I will be leading the interactions between the providers and systems to introduce and educate on the use of the telemonitoring program to reduce ER and hospitalizations usage with increased patient involvement and increased positive outcomes in health self-management for high need members. I can identify Heritage high cost members and offer this program to non-high cost patients who are discharging from the hospital but at high risk for readmission due to their inability to effectively self-manage their care in the home setting.

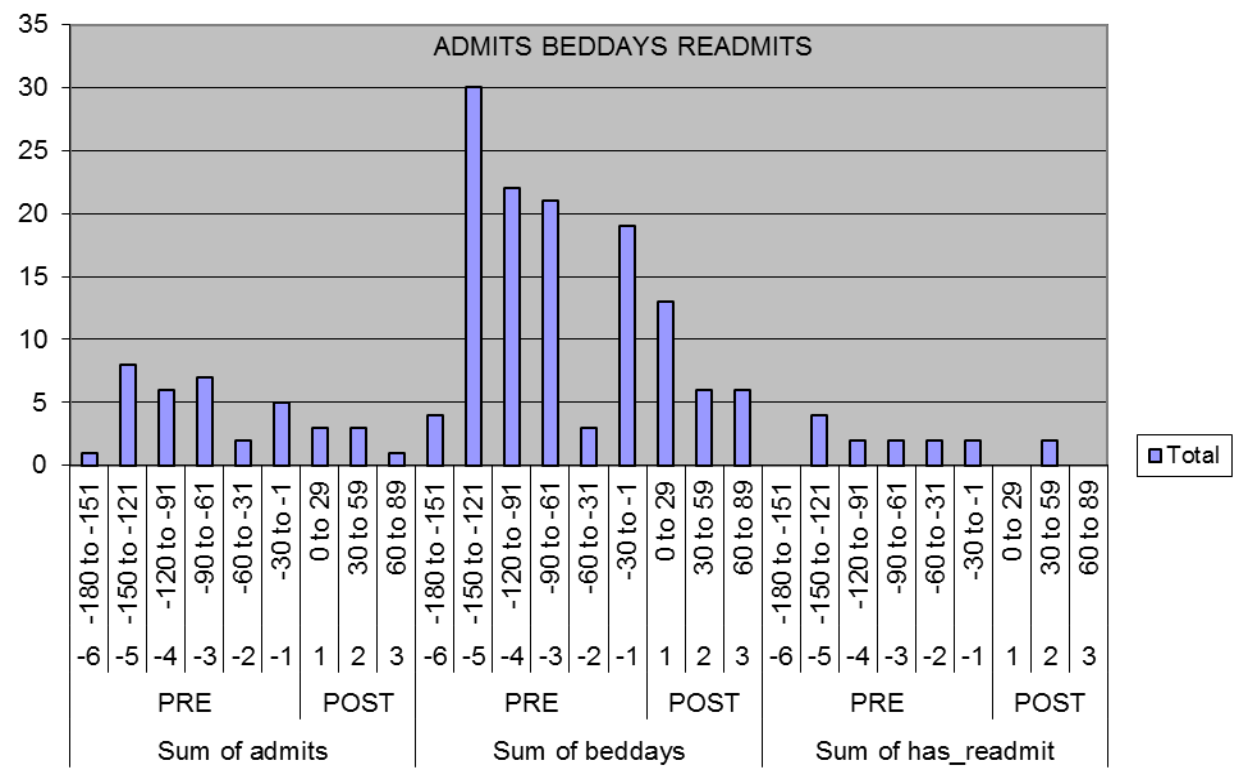
When compared to other remote telemonitoring services available, the CYTTA Connect Ecosystem is clearly the most cost effective, see Appendix 6.

### ED VISITS



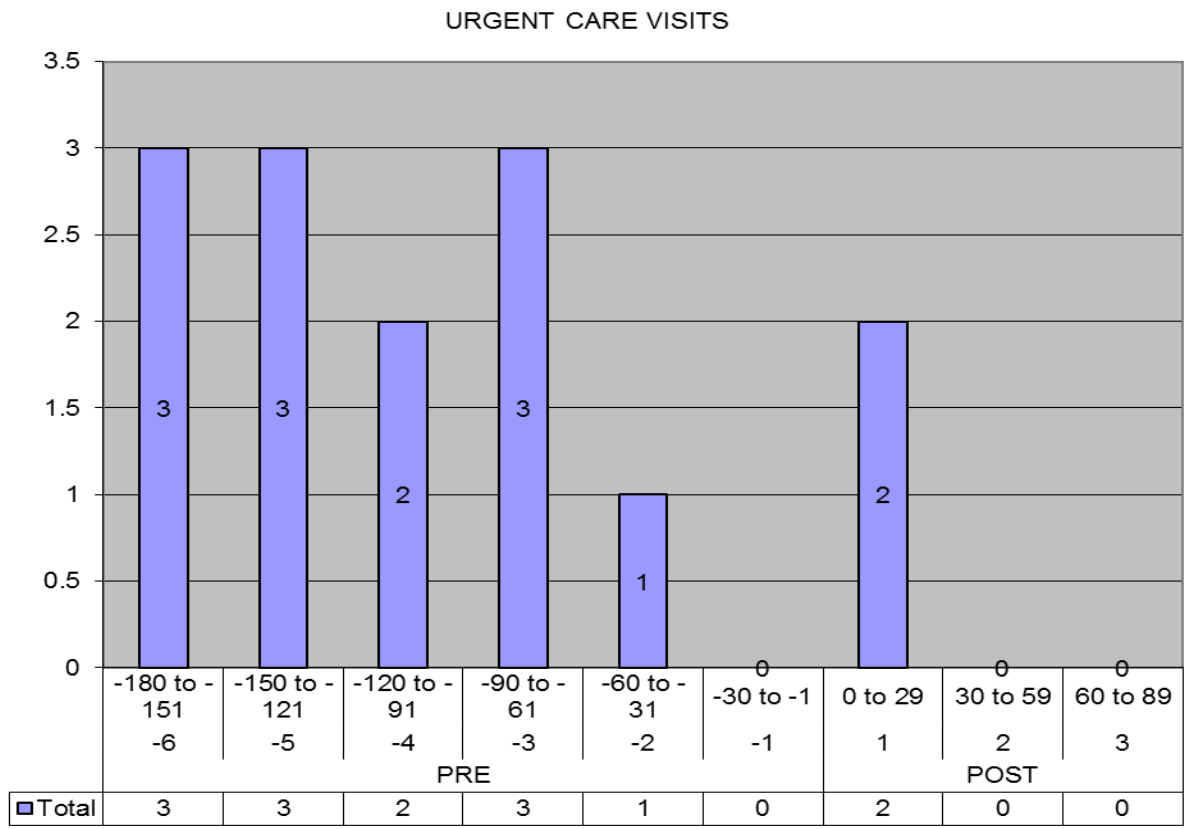
not admitted		5	2	2	4	4	3	4	
admitted	1	8	6	5	4	4	2	3	1

Appendix 2

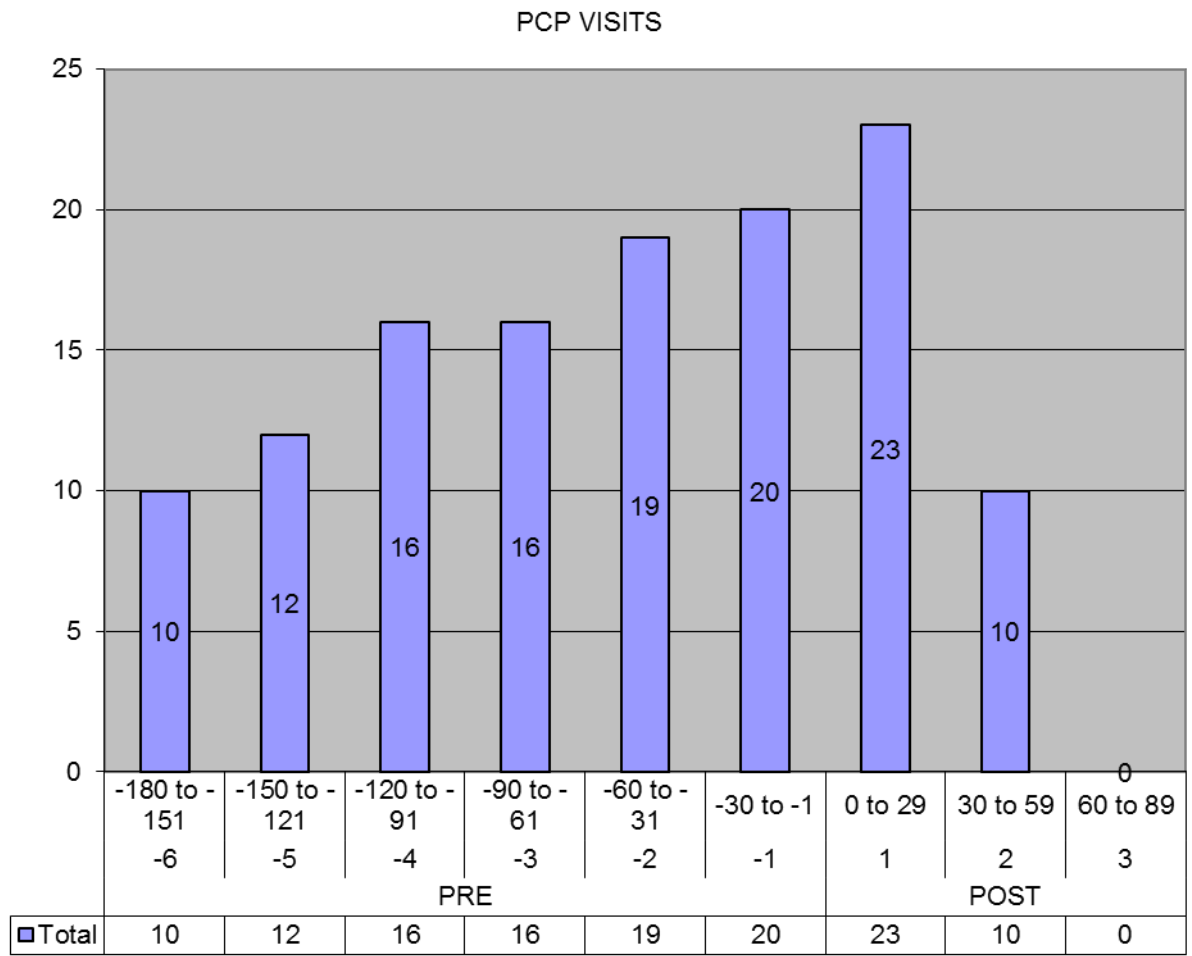




Appendix 3



Appendix 4



**Telemonitoring Trial Analysis**

<b>UTILIZATION</b>	<b>TOTAL #</b>	<b>PRE-TRIAL 90 DAYS BEFORE</b>	<b>%</b>	<b>TRIAL PERIOD 90+ DAYS</b>	<b>%</b>	<b>SAVINGS</b>	<b>COST SAVINGS (approximate)</b>	<b># of Bed Days</b>
Acute Admits	28	15	54%	13	46%	<b>8%</b>	<b>\$18,000.00</b>	<b>3</b>
Bed days	106	52	49%	54	51%	<b>-2%</b>	<b>-\$6,000.00</b>	<b>2</b>
Readmits	7	4	57%	3	43%	<b>14%</b>		
SNF Admits	7	4	57%	3	43%	<b>14%</b>		
Bed days	83	55	66%	28	34%	<b>32%</b>	<b>\$9,855.00</b>	<b>27</b>
Readmits	3	2	50%	1	50%	<b>50%</b>		
All ED Vests	43	25	58%	18	42%	<b>16%</b>		
No Hospital Admits	19	11	58%	8	42%	<b>16%</b>	<b>\$3,600.00</b>	
ED Admits	24	14	58%	10	42%	<b>16%</b>	<b>\$12,000.00</b>	<b>4</b>
UC Visits	7	4	57%	3	43%	<b>14%</b>	<b>\$90.00</b>	
PCP Visits	108	60	56%	48	44%	<b>12%</b>	<b>Capped</b>	
SCP Visits	111	65	59%	46	41%	<b>18%</b>	<b>\$2,375.00</b>	
								<b>36</b>
						<b>TOTAL</b>	<b>\$39,920.00</b>	

GENDER:	9 Women	10 Men		Diseases/Conditions	#	# Of Co-Morbidities	#
AGE:				CHF	12	2	6
85-90 yrs. old	3	1		Diabetes	9	3	9
84-84	2	0		COPD	8	4 or More	4
75-80	1	1		HTN	16		
71-74	1	2		CKD	6		
65-70	1	2		Afib			
61-64	0	1					
55-60	1	0		2 Expired - 6/2012			
45-50	0	1					
20-30	0	2					
Admission Information:							
Last Name	First Name	DOB	Member ID#	POST_ACUTE_ADMITS	POST_ACUTE_DATES	ENTRIES: Indicated reason(s) for admission.	RED A = Avoidable U = Unavoidable
A	A	3/16/1934	7310057-01	2	06-04-2012 (6) (U) PNA/Chest Pain/COPD Exacerbation. 06-21-2012 (4) (U) Leukocytosis/Anemia (transfused 3 Units)		
A	S	4/19/1932	0089221-01	1	06-25-2012 (2) (U) Decompensated CHF/Cardiomyopathy		
D	P	8/12/1945	391A5497730	1	06-14-2012 (6) (U) Hypokalemia		
N	D	12/28/1948	6324167-01	1	04-25-2012 (2) (U) V-Fib Arrest/ Syncope/Collapse		
S	P	7/20/1962	6828773-01	4	05-07-2012 (4) (U) Severe Abd.. Pain/Renal Stones 05-13-2012 (1) (U) Severe Anemia (transfused) 05-16-2012 (1) (U) Infected Dialysis Graft 09-2012 (3) (U) Hyperpotassemia/ Hyperkalemia	07-	
V	J	12/1/1989	HFH00695403	2	04-22-2012 (9) (U) Infected LVAD 06-07-2012 (11) (U) Infected LVAD		
W	M	10/25/1922	7695768-01	1	06-18-2012 (3) (U) Infarct. (expired)		
W	J	8/29/1941	1637784-01	1	04-20-2012 (2) (U) GI Bleed		

## COMPARISON OF TELEMONITORING SYSTEMS

		COMPANY OF INTEREST												
		CyttaConnect (HPN DIRECTED)	Med Apps	Numera	Ideallife	Bosch Health Buddy	CardioCom	Honeywell HomMed	Philips	QualComm	ACS /Aetna(Xerox)	Optum/United (Esync)	CareCycle Solutions (uses Honeywell) OUT OF STATE	Touch Point Care
AREAS OF INTEREST FOR USE	Licensing Fees	NONE to HPN unlimited users	Yes for each user	Yes for each user	Yes for each user	Yes for each user	Yes for each user	Yes for each user	Yes for each user	Yes for each user	Yes for each user	Yes for each user	Yes for each user	Yes for each user
	Data only/ mo	\$30 PMPM (Data, Voice, text) with phone	\$90	\$45-75	\$25	\$40-60	\$38 TO \$60	\$15	UNK	UKN	Varies	Varies	\$25-40	UNK
	Connection Costs	1 time/member pairing fee of \$25.00	\$30/Mbr	Landline Needed	Landline Needed	Landline Needed	Data Views	\$3000 base radio system	DSL or Cell SVC	DSL or Cell SVC	DSL or Cell SVC	DSL or Cell SVC	\$3000 base radio system	Landline Needed
	Proprietary Items	Dashboard	Handset	HUB	HUB & DEVICES	HUB	HUB & DEVICES	RADIO BASE STATION	HUB & DEVICES	HUB	HUB	HUB & DEVICES	RADIO BASE STATION	HUB
	Cell Phone	Smartphones	NO	NO	NO	NO	NO	NO	NO	YES	YES	YES	NO	NO
	Computer Tablet allowing Tele-Med as well	YES	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
	Portability	YES	LIMITED	NO	NO	NO	NO	NO	NO	LIMITED	LIMITED	LIMITED	NO	LIMITED
	Wireless	YES	YES/LIMITED	NO/HUB	YES/HUB	YES/HUB	YES/LIMITED	YES/HUB	YES/LIMITED	YES/LIMITED	YES/LIMITED	YES/LIMITED	YES/HUB	YES/HUB
	Alerts/ Reminders	YES/ OPEN	NO	YES/ Controlled	YES/ Controlled	NO	NO	NO	LIMITED	LIMITED	LIMITED	LIMITED	NO	NO
	Two-Way Communication	YES (voice, text, email)	NO	NO	NO	NO	LIMITED TO TEXT	NO	LIMITED TO TEXT	LIMITED TO TEXT	LIMITED TO TEXT	LIMITED TO TEXT	NO	NO
DATA VIEWS	YES INCLUDED	YES/ CHARGES	YES/ Proprietary	YES/ Proprietary	YES/ Proprietary	YES/ Proprietary	YES/ Proprietary	YES/ Proprietary	YES/ Proprietary	YES/ Proprietary	YES/ Proprietary	YES/ Proprietary	YES/ Proprietary	

	<b>Open Ecosystem</b>	YES	Proprietary	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Proprietary	Proprietary	Proprietary	Not Available	Not Available	
	<b>Optional Services</b>	Voice Air time, Text (\$5, \$15 pkgs)	None	None	None	None	None	None	None	None	None	None	None	None	
	<b>Mold to Us</b>	YES	LIMITED	NO	NO	NO	NO	NO	NO	LIMITED	NO	NO	NO	NO	
	<b>Pt Ease of Use</b>	YES - Mobility for Patients	Pt has to go to device	Pt has to go to device	Pt has to go to device	Pt has to go to device	Pt has to go to device	Pt has to go to device	Pt has to go to device	Pt has to go to device	YES - Mobility for Patients	Pt has to go to device	YES - Mobility for Patients	Pt has to go to device	YES - Mobility for Patients
	<b>Devices Double FDA Approved</b>	YES	LIMITED	LIMITED	LIMITED	LIMITED	LIMITED	LIMITED	LIMITED	LIMITED	LIMITED	LIMITED	LIMITED	LIMITED	LIMITED
	<b>COMPANY OF INTEREST</b>														
		CyttaConnect (HPN DIRECTED)	Med Apps	Numerica	IdealLife	Bosch Health Buddy	CardioCom	Honeywell HomMed	Philips	QualComm	ACS /Aetna(Xerox)	Optum/United (Esync)	CareCycle Solutions (uses Honeywell) OUT OF STATE	Touch Point Care	
	<b>Ownership of devices</b>	Patients through LCS CAP	Group would need to maintain and store equipment (HPN)	Numerica	IdealLife	Bosch Health Buddy	CardioCom	Honeywell HomMed	Philips	QualComm	ACS /Aetna(Xerox)	Optum/United (Esync)	CareCycle Solutions (uses Honeywell) OUT OF STATE	Touch Point Care	
<b>AREAS OF INTEREST FOR USE</b>	<b>Maintenance of Devices</b>	LCS	HPN	Numerica	IdealLife	Bosch Health Buddy	CardioCom	Honeywell HomMed	Philips	QualComm	ACS /Aetna(Xerox)	Optum/United (Esync)	CareCycle Solutions (uses Honeywell) OUT OF STATE	Touch Point Care	

	NextGen Interface Available	YES	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
	500+ Units available in short time(rampup)	WITHIN 10 DAYS	NO	WITHIN 10 DAYS	WITHIN 10 DAYS	WITHIN 10 DAYS	WITHIN 10 DAYS	NO	NO	POSSIBLE	NO	NO	NO	NO
	Time frame to obtain additional devices	1-2 DAYS DEPENDINGMON NEEDS.	2-5 DAYS	Varies	Varies	Varies	Varies	Varies	Varies	Varies	Varies	Varies	Varies	Varies

*\*All companies researched and information obtained from these companies via telephone inquires or internet searches. Some companies declined to give costs for their services and availability for units for ramp up. All have been check, via internet bi-monthly for any updates to technology. This grid is current as of June 2012 end of month.*