UC Irvine
UC Irvine Previously Published Works

Title

Feasibility and Acute Care Utilization Outcomes of a Post-Acute Transitional Telemonitoring Program for Underserved Heart Failure Patients

Permalink

https://escholarship.org/uc/item/7sz37391

Journal

Journal of Cardiac Failure, 20(8)

ISSN

1071-9164

Authors

Broad, Jason
Davis, Cecile
Bender, Miriam
et al.

Publication Date

2014-08-01

DOI

10.1016/j.cardfail.2014.06.328

Peer reviewed

using teach back. It is not clear whether any one of these interventions is more effective than the others. **Hypothesis:** A structured, electronic medical record (EMR)-based post-discharge phone call introduced as part of a suite of interventions to reduce HF readmissions will reduce readmissions independently of other interventions (medication reconciliation, early post discharge clinic follow-up, and patient education with teach back). **Methods:** A multidisciplinary team including physician, nurses, pharmacists and informaticists met weekly to develop and implement a set of interventions aimed at reducing readmissions for patients with a primary diagnosis of heart failure. These interventions were all instituted by January 2013, and were captured in the EMR in order to gauge their utilization and effectiveness. For the post-discharge phone call, we constructed a scripted template that contained smart text questions with discrete fields; these discrete fields can then be automatically extracted from the EMR and analyzed to determine gaps in care. A web-based HF dashboard captures process metrics of calls needed and completed, in addition to whether calls are completed within a targeted time frame. Patient issues or the call template itself may be communicated readily within the EMR to appropriate staff for timely follow-up. We analyzed the association between the interventions received by each patient and 30-day readmissions using a multivariate logistic regression model. **Results:** Over 14 months following full implementation of our program interventions, 83% of eligible patients received a post discharge phone call. 96% of patients received an (n=258) in phone follow up demonstrated they understood their discharge medications. Controlling for other interventions received by patients, the intervention of post discharge phone follow-up was associated with a significant reduction in the 30-day readmission rate (odds ratio = 0.26, p=0.001, 95% confidence interval = 0.12-0.58). **Conclusion:** As part of a multiple intervention approach to reducing heart failure readmissions, a structured, electronic medical record supported phone call reduces heart failure (HF) readmissions independent of other interventions.

296

Feasibility and Acute Care Utilization Outcomes of a Post-Acute Transitional Telemonitoring Program for Underserved Heart Failure Patients

Jason Broad[1], Cecile Davis[2], Miriam Bender[3], Tyler Smith[4]; [1]Sharp HealthCare, San Diego, CA; [2]Sharp HealthCare, San Diego, CA; [3]Sharp HealthCare, San Diego, CA; [4]National University, San Diego, CA

Background: Heart failure (HF) is a chronic disease imparting significant burden. Limited access to health services affects disease severity and functional status. Telemonitoring shows promise in reducing acute care utilization for HF patients, but evidence of benefit for underserved patients is limited. We evaluated the feasibility and acute care utilization outcomes of a post-acute 90-day transitional care program integrating telemonitoring technology for underserved HF patients. **Methods:** HF patients were enrolled into the program at two Sharp HealthCare hospitals with a large underserved population between 11/2010 and 11/2011. Primary outcomes were 30, 90 and 180-day ED use or all-cause readmission to any Sharp hospital (Sharp HealthCare is a large community based health system with 7 hospitals across San Diego County). We measured program satisfaction with a telemonitoring satisfaction questionnaire, and self maintenance at enrollment and discharge using the Self-care Heart Failure Index (SCHFI). The Masters-prepared RN program coordinator (PC) set up the telemonitoring equipment during the post-discharge initial home visit. Telemonitoring included daily patient weight and symptomology recording. Changes in status or lack of recording prompted a call from the telemonitoring RN or PC. Telemonitoring equipment was removed at 90 days by PC, along with administration of final questionnaires. **Results:** Control cohort was identified through Sharp HealthCare's electronic health record. Final N after propensity matching (3:1) on 18 demographic and clinical covariates was 49 program and 147 control patients. Patient satisfaction with program was 4.85 (1-5 scale). Average self-maintenance score was 50.25 (SD=19.68) pre, and 88.77 (SD=9.62) post, reflecting post-program self-activated behaviors (defined as score ≥70). There was no significant difference in ED utilization between cohorts. There was a clinically meaningful 22% difference in 30-day readmission rates between groups (18% vs. 14%, OR= 1.44 CI= 0.52, 4.02). There was no difference in 90 and 180-day readmission rates. **Conclusions:** Program implementation was feasible and satisfactory to patients. Participants reported clinically meaningful changes in their self maintenance, yet outcomes were not significantly different between groups at program end. This is in contrast to a subsequent study with underserved COPD patients, where program implementation resulted in a reduction in acute care utilization. Underserved HF patients have complex physiological care needs that may not have been adequately addressed with this study's telemonitoring technology, which did not monitor biomarkers such as blood pressure and heart rate. Further investigation is warranted to identify Telemonitoring functionality necessary to provide benefit for underserved HF patients.

297

Characterization of the Clinical Spectrum in Patients Admitted for Acute Decompensated Heart Failure: Pilot Observations from a Single-Center Contemporary Real-World Experience

Meghana Halkar, Justin L. Grodin, Suresh Keshavamurthy, W.H. Wilson Tang; Cleveland Clinic, Cleveland, OH

Background: Acute decompensated heart failure (ADHF) is associated with high morbidity, mortality and cost with a favored trend toward hospitalization for

intravenous diuretic therapy. However, the clinical spectrum of acute decompensated heart failure patients presenting to the emergency room varies widely in severity and acuity. Reliable identification of low acuity patients may pave the way for a more gentle and sub-acute diuretic approach with a possible opportunity for outpatient therapy. Given the limited data available on the feasibility of this approach, we sought to study acuity levels of ADHF patients presenting to the emergency department. **Method:** We retrospectively reviewed consecutive patients who presented to our major community hospital's emergency department with shortness of breath between September and December 2013, and further studied those who presented with ADHF. Among them we identified and characterized clinically stable patients with ADHF based on absence of high-risk features such as respiratory distress (respiratory rate >24 breaths/min), hemodynamic instability (heart rate >110 bpm and systolic blood pressure <100 mmHg), or renal insufficiency (serum creatinine >3 mg/dL). **Results:** In our study cohort (n=313), 19% (n=61) of patients were admitted to the hospital for ADHF, with the median age 83[77, 90] years, 45.9% being male. The median serum creatinine was 1.16[0.89, 2.03] mg/dL and NT-proBNP 4,704[2,486, 7,934] pg/mL. Among these patients 10% (n=6) presented with respiratory distress, 10% (n=6) with hemodynamic instability and 10 %(n=6) had a serum creatinine >3 mg/dL constituting high risk features. The remaining 43 (70%) were stable patients, of which 70 % (n=30) were on home loop diuretics and 30 %(n=13) were not. Comparison of both groups showed the high risk feature group had younger patients (p=0.003), predominantly males (p=0.049), higher serum creatinine (p=0.001) and higher NT-proBNP (p=0.049) at admission. (Table) **Conclusion:** In our contemporary single-center series, majority of ADHF patients had advanced age and were clinically stable based on absence of high-risk features when presenting to the Emergency Department with shortness of breath. Further studies to test a more sub-acute approach to decongestive therapy in acute decompensated heart failure are therefore highly feasible.

Table. Comparison of groups, Continuous variables analyzed using Wilcoxon rank sum

Presenting characteristics	High Risk features	No High risk features	p value
Age*	81[65,83]	85[80,91]	0.003
Male	66.7	37.2	0.049
Respiratory Rare	20[18,27]	20[18,22]	0.14
Systolic Blood Pressure	143[107,189]	150[134,172]	0.67
Heart Rate	77[65,87]	78[66,97]	0.89
Serum Creatinine	2.1[1.1,3.4]	1.1(0.9,1.5]	0.001
NT-Pro-BNP	7.215[3,479, 11,430]	4.058[2,149, 6,243]	0.049

*Chi square test for categorized variable.

298

Heart Rate Control in Patients with Heart Failure and Left Ventricular Systolic Dysfunction, a Tertiary Center Experience

Haissam Haddad[1], Ali Pourdjabbar[1], Girish Dwivedi[1], Anthony Saikali[2], Ruba Haddad[1], Lisa Mielniczuk[1], Ellamae Stadnick[1]; [1]University of Ottawa Heart Institute, Ottawa, ON, Canada; [2]Dalhousie University, Halifax, NS, Canada

Objectives: Heart failure patients with elevated heart rate (HR) are at an increased risk of mortality and hospitalization. Novel therapies have recently shown promising results when used in addition to guideline-recommended therapies in patients with elevated HR (>70 beats per minutes (bpm)) despite appropriate medical therapy. The objective of this study was to identify the prevalence of suboptimal HR control amongst patients followed chronically at the heart function clinic, on maximal tolerated medical therapy clinic and to identify the potential role for further HR reducing therapyamongst this patient population. **Methods and Results:** We screened 300 consecutive patients,followed for at least one year in our clinic and identified 189 patients with reduced left ventricular ejection fraction (LVEF<40%). The patients were divided into two groups based on their HR, documented at their last clinic visit. Amongst the identified cohort36.5% of patients (n=69) had HR >70bpm despite

Table 1.

	HR <70 (n=120)	HR >70 (n=69)	P value
Age (mean ± SD)	66 ± 10	66 ± 14	0.3
Female (%)	25 (21%)	21 (30%)	0.13
Ejection Fraction (mean ± SD)	29.1 ± 8	28.6 ± 8	0.7
HR (mean ± SD)	63 ± 7	80 ± 13	<0.0001
On Beta blockers (%)	113 (94%)	66 (96%)	0.66
At target dose of beta -blockers (%)	31 (26%)	20 (29%)	0.63
On Digoxin (%)	20 (17%)	21 (30%)	0.02
On ACEi/ARB (%)	105 (88%)	62 (90%)	0.63
On Spironolactone	30 (25%)	25 (36%)	0.10
NYHA Class (%)			
I	19 (16%)	13 (19%)	0.62
II	63 (52.5%)	38 (55%)	0.73
III	38 (31.5%)	18 (26%)	0.41