
CONFERENCE ABSTRACT

Effectiveness of telehealth for heart failure management in routine practice

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Purpose: To assess the effect of routine use of home telemonitoring on the risk of re-admission to hospital amongst patients with heart failure.

Context: Heart failure is a common reason for hospitalizations, which often recur. Telemonitoring might detect early decompensation allowing intervention to prevent re-admission. A systematic review concluded that telehealth reduced heart failure related hospitalizations by almost 30 % [1]. In Europe, the use of telehealth has primarily been limited to studies, pilots and small programs; it has not yet become routine in clinical practice. Accordingly, we assessed the effects of a telemonitoring service on unplanned re-admissions to hospital at 90 days and one year.

Methods: OPERA-HF is an ongoing prospective observational study, enrolling patients hospitalized with worsening heart failure to the Hull & East Yorkshire Hospitals NHS Trust, UK. All patients enrolled in the study are followed subsequent to discharge. The primary outcome for this analysis was unplanned all-cause readmission. Patients were referred to telehealth by the hospital discharge team if aged >18 years and registered with a Hull-based primary care physician. To remove imbalances in baseline characteristics between patients on telehealth and those not, propensity matching was used to estimate effectiveness. A logistic regression model was used to determine the propensity score (probability of being selected for telehealth) for each patient. The calculated propensity scores were applied to a weighted logistic regression to account for selection assignment differences between patients on telehealth and on standard care. Propensity scores were calculated by controlling for age, number of severe comorbidities, New York Heart Association (NYHA) class at admission, emergency heart failure hospitalizations in prior 6 months, total daily pill count, heart rate and NT-proBNP at discharge.

Results and discussion: Of 546 patients enrolled, 89 received telehealth. Table 1 shows their baseline characteristics. Patients selected for telehealth had fewer unplanned readmissions at both 90 days (OR: 0.66; 95% CI: 0.45 to 0.97; P < 0.05) and one year (OR: 0.68; 95% CI: 0.46 to 0.99; P < 0.05) than those who were not. In a routine care setting, patients with heart failure receiving telehealth after discharge have fewer unplanned readmissions compared with those without telehealth.

Characteristic	w/o Telehealth (N=457)		with Telehealth (N=89)		All (N= 546)	
	Valid N	Summary	Valid N	Summary	Valid N	Summary
Age, year	457	77 [68 – 83]	89	73 [66 – 80]	546	76 [68 – 82]
Number of severe comorbidities, sum	457	1 [1 -2]	89	2 [1 -2]	546	1 [1 - 2]
More than one unplanned HF hospitalizations in prior 6 months, yes	457	70 (15%)	89	14 (16%)	546	84 (15%)
Total daily pill count at discharge, sum	386	11 [9 -16]	84	13 [9 -16]	470	12 [9 - 16]
NYHA at admission: Class I/II, yes	307	40 (13%)	80	7 (9%)	387	47 (12%)
NYHA at admission: Class III, yes		199 (65%)		52 (65%)		251 (65%)
NYHA at admission: Class IV, yes		68 (22%)		21 (26%)		89 (23%)
Heart Rate at discharge, bpm	283	75 [66 – 89]	68	75 [68 – 82]	351	75 [67 – 88]
NT-proBNP at discharge, pg/mL	340	4828[1972-10710]	67	5097 [2930 - 8714]	407	4891 [2112 - 10500]
90 day unplanned readmission, yes	457	151 (33%)	89	25 (28%)	546	176 (32%)
1 year unplanned readmission, yes	396	221 (56%)	78	41 (53%)	474	262 (55%)

Table 1 Baseline characteristics stratified by being on Tele health or not. Characteristics are summarized by their count and fraction (N (%)) for categorical or their median and interquartile range (Median [25th – 75th]) for continuous variables, respectively

References:

[1] Inglis SC, Clark RA, Dierckx R, Prieto-Merino D, Cleland JGF et al., 2015, Structured telephone support or non-invasive telemonitoring for patients with heart failure, COCHRANE DATABASE OF SYSTEMATIC REVIEWS, ISSN: 1469-493X

Keywords: telehealth; assessment of the effectiveness of telehealth; heart failure; readmissions
