Use of a device-based remote management heart failure care pathway is associated with reduced hospitalization and improved patient outcomes: TriageHF Plus real-world evaluation

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Background: Heart failure (HF) is a leading cause of hospital admission. However, prompt identification of worsening HF using implantable device data and proactive intervention may reduce hospitalizations.
The validated TriageHF algorithm in enabled ICD/CRT devices uses sensor data to risk stratify patients for HF hospitalization in the next 30 days. TriageHF Plus is a novel device-based HF care pathway (DHFP) that uses "high" risk status as the trigger for remote intervention (see Figure 1 for pathway overview). Outcomes after DHFP implementation in a clinical setting have not been examined.
Purpose: To evaluate the impact of TriageHF Plus clinical pathway on hospitalisation rates.
Methods: A prospective, multi-center evaluation comparing monthly hospitalization rates for patients enrolled in a DHFP with a concurrent standard of care (SoC) cohort and characterizing staffing resources necessary to implement the DHFP. The DHFP cohort received telephonic assessment and guideline-directed clinical care upon transition to high-risk status. Propensity scores (PS) were applied to DHFP and SoC cohorts to allow unbiased comparison. A negative binomial model was fitted to the monthly number of all-cause hospitalizations with treatment group (DHFP vs. SoC) as a covariate, using PS as weights.
Results: Between 09/11/2019 and 06/24/2021, 758 patients were included in the study (443 DHFP, 315 SoC). Proportion CRT 76%/ 89% and LVEF <50% 78%/ 66% for DHFP/ SoC, respectively.
196 high risk transmissions prompted telephone assessment, with successful contact in 182; of which, 79 (43%) identified an explanatory acute medical issue. A secondary intervention was undertaken in 44/79 (56%). High risk transmissions took on average 19 minutes per clinical assessment (initial telephone triage and 30 day follow up). The rate of hospitalizations was 58% lower in the DHFP group, compared with SoC, after PS adjustment (IRR 0.42, 95% CI: 0.23, 0.76, p=0.004), see Figure 2. Sensitivity analyses showed Covid-19 had little effect on results.
Conclusions: This is the first prospective, real-world evaluation of a device-based HF care pathway to report a reduction in hospitalizations and does so with minimal staffing time. Integrated into existing HF services, device-based remote monitoring of HF patients can improve outcomes.

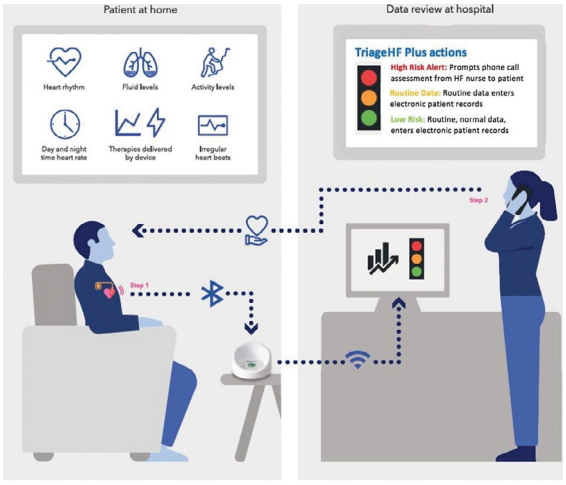
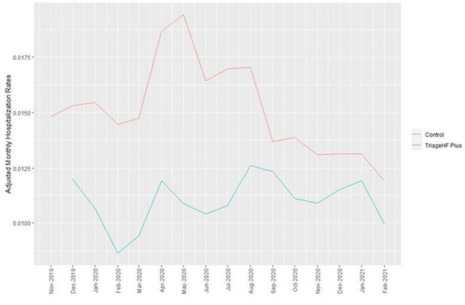


Figure 1. TriageHF Plus pathway: High-risk status transmission triggers remote intervention (structured telephone assessment & guideline-directed clinical care) aimed at trying to stabilise or optimise the patient's clinical condition.

Figure 1. Pathway Overview

TriageHF Plus Pathway (DHFP)	Total *(N=443)*
High-Risk Status transmissions n	196
Initial Contact	
Contact made, n (%)	182/196 (93%)
Time to contact (days), median (IQR)	3 (0 – 5)
Acute medical issue identified, n (%) • Acute HF issue identified, n (%) • Recent intervention/hospital admission, n (%) • Intervention administered[1], n (%)	79/182 (43%) *50/79 (63%)* *42/79 (53%)* *44/79 (56%)*
No acute issue identified, n (%) • Recent intervention/hospital admission, n (%)	103/182 (57%) *5/103 (5%)*
30-day FU	
Eligible Assessments[2], n	163
Attempted contact, n (%)	152/163 (93%)
Contact made, n (%)	136/163 (83%)
… + Improved patient reported outcomes, n (%)	39 / 66 (59%)
Call lengths	
Initial contact call time (mins)*, median (IQR)	10 (6 - 15)
30-day FU call time (mins)*, median (IQR)	9 (6 – 13)



Left panel: Initial and 30-day device-based HF pathway outcomes for high risk status transmissions
Right panel: Adjusted monthly hospitalisation rate, across SoC (control) and TriageHF Plus
[1] Medication change, HF appointment arranged/escalated, referral, advised to attend A&E, lifestyle changes, long-term care management, investigations.
[2] At least 33 days within study prior to data extraction after initial contact

Figure 2. Outcomes