HEARTLOGIC™
Heart Failure Diagnostic

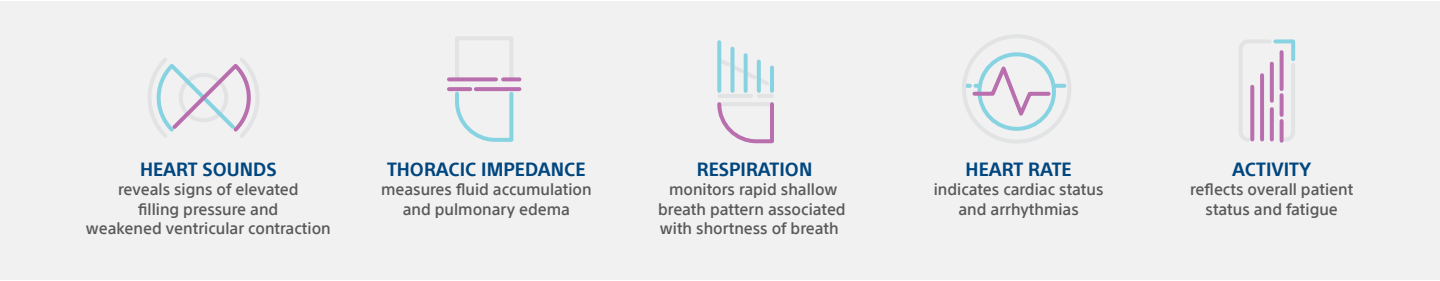
Boston Scientific
Advancing science for life™

# Results of the PREcision Event Monitoring for PatienTs with Heart Failure using HeartLogic Study (PREEMPT-HF)

More than one million patients are admitted annually with a primary diagnosis of heart failure (HF).[1] The HeartLogic Heart Failure Diagnostic has consistently demonstrated the ability to predict HF events weeks in advance with high sensitivity and low false alert rate.[2, 3] In prior analyses, the utilization of HeartLogic was associated with a 67-74% reduction in HF hospitalizations.[4, 5*]

For those patients who are hospitalized for HF, all-cause readmission rates remain high; real-world U.S. data suggests as many as 20% of these patients may be readmitted within 30 days and more than 30% may be readmitted within 90 days.[6, 7]

Strategies are needed to more effectively identify patients at risk for hospital readmission to better stratify resources and ultimately keep patients home.




## Objective

The PREEMPT-HF study objective was to evaluate the correlation between HeartLogic sensor data and the likelihood of readmission after hospitalization for heart failure.[8]

## Design

Global, single-arm, observational study. Investigators were blinded to the HeartLogic index.

- 2155 pts from 103 clinical sites
- 12 months of follow-up

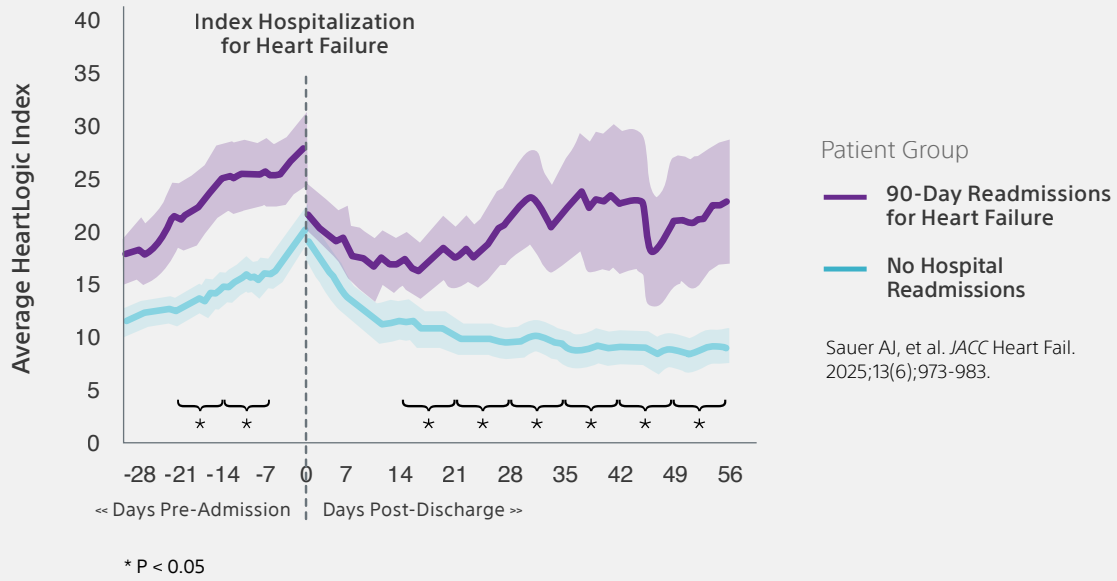
## Results

- **Patient Characteristics**: 53% NYHA Class II, 27% female, average age 67.3, 61% CRT-D/39% ICD
- **Diagnostic Performance**: 78.3% sensitivity for HF hospitalizations and outpatient visits, False Positive Rate (FPR) 1.18/patient-year, low overall alert rate of 1.25 per patient-year, median time from alert onset to HF event was 35 days
  - Sensitivity similar between CRT-D and ICD (76.8% and 80.2%)
  - FPR similar between CRT-D and ICD (1.19 vs. 1.18 per patient-year) and lower than MultiSENSE (1.56 per patient-year)

| | PREEMPT-HF[8] | | | Post Approval Study[3] | MultiSENSE[2] |
|---|---|---|---|---|---|
| | Overall | CRT-D | ICD | | |
| Sensitivity (%) | 78.3% | 76.8% | 80.2% | 74.5%† | 70% |
| FPR (per pt-yr) | 1.18 | 1.19 | 1.18 | 1.48† | 1.56 |

*Based on observational pre-post comparisons.
† Observed sensitivity and FPR.

- **Association with Readmission**
  - Patients in HeartLogic alert state at 1 or 2 weeks prior to index HF hospitalization had more than double the risk of 90-day readmission for HF compared to those not in alert (HR = 2.77 or 2.72, respectively).
  - Patients in HeartLogic alert state 14 days after hospital discharge had triple the risk of 90-day readmission for HF compared to those not in alert (HR = 3.08).
  - HeartLogic index was also higher before index HF admission and after discharge in patients readmitted for HF at 30 or 90 days. The same was true for 90 day all-cause readmissions.




Sauer AJ, et al. *JACC* Heart Fail. 2025;13(6);973-983.

## Conclusion

The HeartLogic index was significantly higher before HF hospitalization and after discharge for patients who were readmitted for HF. These trends suggest a sustained worsening of the patient's condition and/or insufficient intervention during the initial hospitalization for HF.

## Clinical Relevance

In addition to accurately predicting HF events, this study shows how HeartLogic may provide valuable insight into which patients could be at risk for a hospital readmission. The results point to the potential utility of HeartLogic data to guide prioritization of follow-up, particularly in the vulnerable period after a HF hospitalization.


**References**

1. Martin SS et al. 2025 Heart Disease and Stroke Statistics: A Report of US and Global Data Rom the American Heart Association. Circulation. 2025;151(8):e41-e660. https://doi.org/10.1161/CIR.0000000000001303
2. Boehmer JP et al. A multisensory algorithm predicts heart failure events in patients with implanted devices: Results from the MultiSENSE study. JACC-HF 2017;5(3):216-225. http://dx.doi.org/10.1016/j.jchf.2016.12.011
3. Singh JP, Wariar R, Ruble S et al. Prediction of heart failure events with the HeartLogic algorithm: Real world validation. JCF 2023;30(3)509-512. https://doi.org/10.1016/j.cardfail.2023.10.478
4. Hernandez A, Albert N, Allen L et al. Multiple cardiac sensors for management of heart failure (MANAGE-HF) Phase I results. Abstract presented/published at: ESC-HF 2021. June 29-July 1, 2021. Virtual. https://onlinelibrary.wiley.com/doi/epdf/10.1002/ejhf.2297(Pg 159)
5. Treskes RW et al. Clinical and economic impact of HeartLogic™ compared with standard care in heart failure patients. ESC-HF 2021;8(2):1541-1551. https://doi.org/10.1002/ehf2.13252
6. Centers for Medicare & Medicaid Services. Condition-Specific Measures Updates and Specifications Report: Acute Myocardial Infarction (AMI), Heart Failure (HF), and Chronic Obstructive Pulmonary Disease (COPD), and Pneumonia. 2023. https://qualitynet.cms.gov/files/645062ef9920e9001651f241?filename=2023_CSR_AUS_Report_v1.0.pdf (Page 45) (Accessed 1/8/2024)
7. Khan MS, Sreenivasan J, Butler J et al. Trends in 30-and 90-day readmissions for heart failure. Circ Heart Failure 2021;14:e008335 https://doi.org/10.1161/CIRCHEARTFAILURE.121.008335
8. Sauer AJ et al. Results of the precision event monitoring for patients with heart failure using HeartLogic (PREEMPT-HF). JACC Heart Fail. 2025;13(6):973-983. https://doi.org/10.1016/j.jchf.2025.01.028

RESONATE™HF, RESONATE™, RESONATE™X4, VIGILANT™, VIGILANT™X4, MOMENTUM™, MOMENTUM™ X4 Indications, Safety and Warnings

ICD Systems – RESONATE™ HF, RESONATE™ EL, PERCIVA™ HF, PERCIVA™, VIGILANT™ EL, MOMENTUM™ EL Indications, Safety and Warnings

Boston Scientific

Advancing science for life™

**Cardiology**
300 Boston Scientific Way
Marlborough, MA 01752-1234
**www.bostonscientific.com**

*Medical Professionals:*
*1.800.CARDIAC (227.3422)*
*Customer Service:*
*1.888.272.1001*



CRM-2197311-AA