

Motivation

Blood tests are the gold standard for predicting disease progression in heart failure (HF).

They are also:

- time consuming
- expensive
- painful



What if your smartwatch could tell you when important blood biomarkers change?

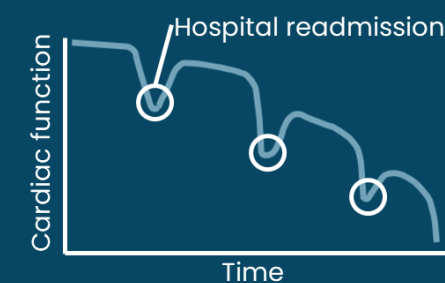
The unmet need & opportunity

Without monitoring, patients are under-medicated

<1%

of HF patients are on optimal medication levels
(Greene 2018)

Without optimal medication patients cycle downward



25%

Of HF patients are readmitted within 1 month

Most HF patients lack access to high quality monitoring

cardiomems

ENDOTRONIX

Limited access due to implant, regulatory, & reimbursement

NYHA I
20%

NYHA II
60%

NYHA III / IV
20%

Opportunity

>80% of HF patients lack clinically-validated remote monitoring

5M US patients

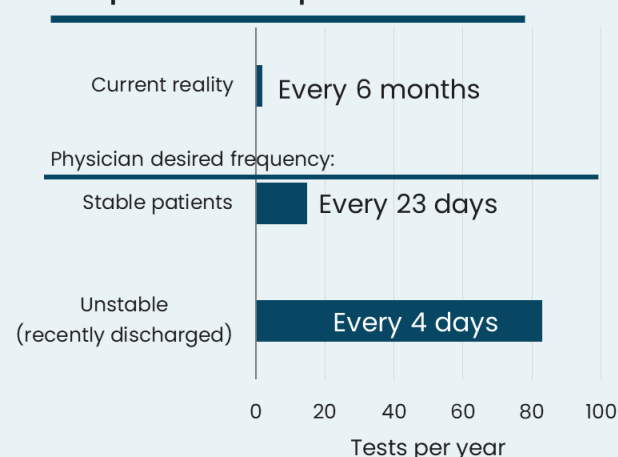
\$10B TAM

Market research

NT-proBNP is the single most important measure of HF patient condition and has received a Class I recommendation in HF guidelines.

Our survey of 154 heart failure physicians revealed that despite reviewing patient NT-proBNP levels every 6 months, they preferred much more frequent access to NT-proBNP levels to assess patient condition more effectively.

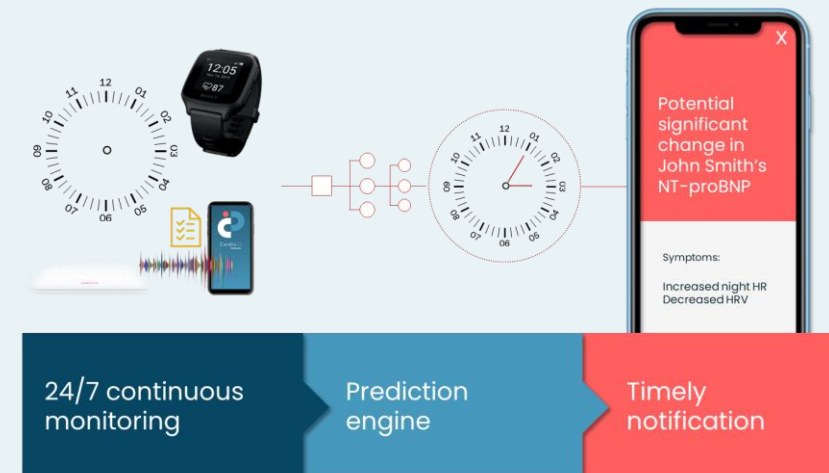
Current & desired frequency of NT-proBNP for HF patients



Proposed solution

NT-proBNP tests are expensive and burdensome, requiring a clinic visit.

CardioID delivers valuable continuous NT-proBNP information to clinicians by combining the collection of non-invasive biomarkers and Bloodless Blood Test algorithms.



How CardioID works



HF patients simply wear the **CardioID** smartwatch and periodically interact with the app. The collected digital biomarker data is scanned by Bloodless Blood Test algorithms to identify spikes in NT-proBNP. When a spike is predicted, this is an early sign of a worsening condition, and the clinician is notified to intervene to potentially avoid a hospitalization.

Bloodless Blood Test algorithms were trained on GPx's proprietary database of paired digital and blood biomarkers from HF patients spanning over 15 patient-years.

Clinical research

GPx is currently running clinical studies to further refine and validate the Bloodless Blood Test algorithms. The TRIBE-HF 2 study is live and recruiting up to 150 heart failure patients to monitor for 6 months.

Done

TRIBE-HF 1

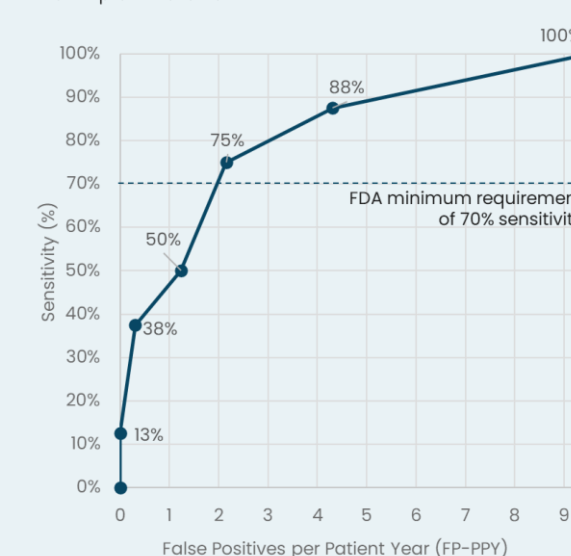
Usability validation
N = 10

LIVE

TRIBE-HF 2

Algorithm training & validation
N = 150

ROC performance curve
>50% NT-proBNP events



Early versions of the Bloodless Blood Test algorithms have shown encouraging performance in predicting >50% spikes in NT-proBNP in NYHA Class 3 HF patients. With an AUC of 0.81, and 2 false positives per patient-yr at a sensitivity of 75%, the performance exceeds FDA requirements and approaches the performance of implanted devices.

Project team

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Narayana Health
Health for all. All for health.

IDEO

SONY