

The Impact of a Virtual Cardiology Program for Post-Discharge Patients with Cardiovascular Disease: A Randomized Clinical Trial

Aniket N. Zinzuwadia, Jana M. Goldberg, Lindsey Mandrayar, Stacey Pratt, Nayan Jain, Sarah Littleton, Hillari Levine, Keisha Prescott, Athena Doshi, Nandini Nayar, Hannah P. Truong, Jeffrey Wessler, **Heartbeat Health**, New York, NY

BACKGROUND

Hospital readmissions are a common and costly occurrence in patients with cardiovascular disease.

1 in 4

Heart failure patients are readmitted within 30 days of discharge

\$16,000

Average cost of a cardiovascular-related readmission

42%

of Medicare beneficiaries have at least 1 heart condition

RESEARCH QUESTION

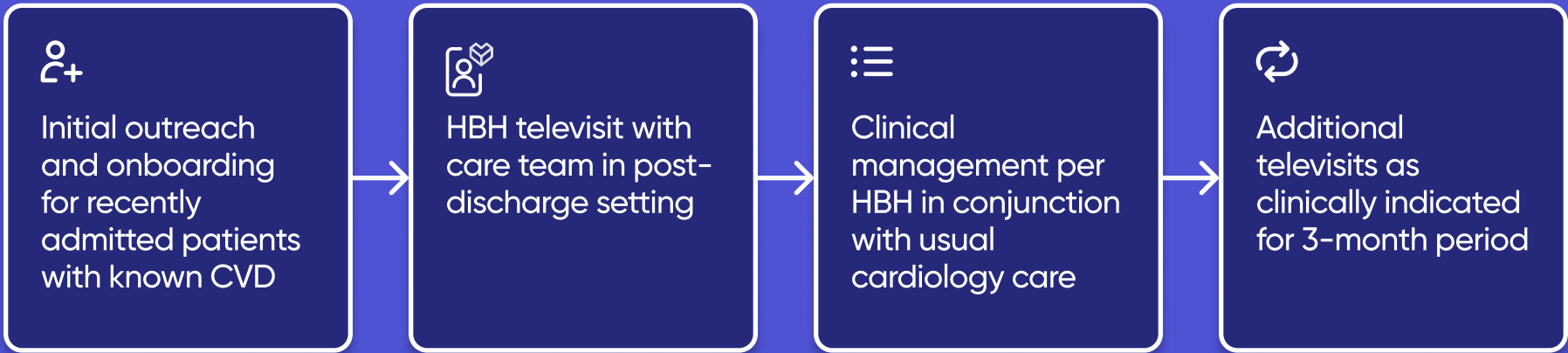
Could a virtual cardiovascular care program reduce the all-cause and cardiac readmission rates for patients with cardiovascular disease (CVD)?

STUDY DESIGN

Between February 2021 and May 2022, Heartbeat, a digital health company, conducted an open-label prospective randomized study evaluating a virtual care program focused on reducing hospital readmissions in the 3-month post-discharge period.

Patients continued visits with traditional, ambulatory cardiologist during a virtual care program.

Control patients received standard-of-care outpatient follow-up alone during study period.



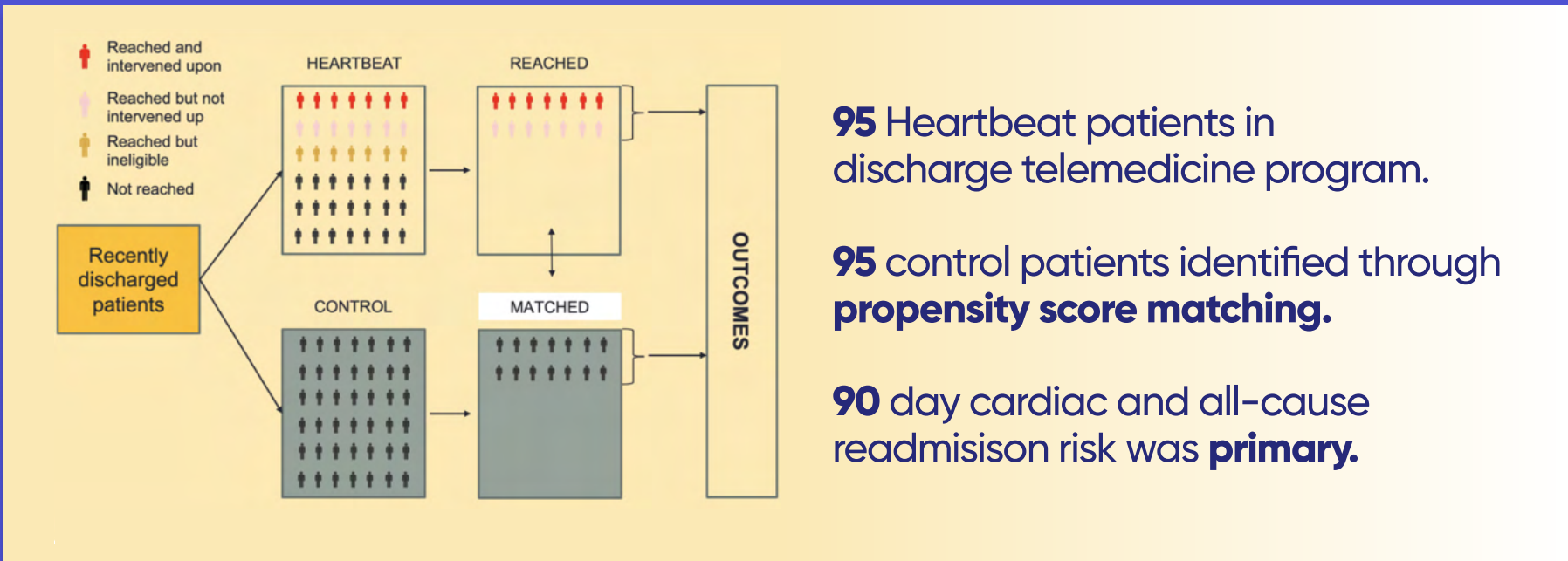
INCLUSION CRITERIA

- Recent hospital discharge
- Age ≥ 18 and < 89 years
- Established clinical care relationship with outpatient cardiologist
- Enrolled and onboarded within 30 days after discharge

EXCLUSION CRITERIA

- Unable or unwilling to consent to treatment
- Living in a rehabilitation or long-term care facility
- Lack of a smartphone
- Not fluent in English
- Receiving palliative care
- In-hospice care

Figure 1. Schematic for Propensity Score Matching



A virtual cardiology program led to a reduction in all-cause (44%) and cardiac (53%) readmissions.

Improvements in patient education, functional status, and blood pressure were noted in intervention group.

Robust randomized controlled trials are necessary to define the role of telehealth in high-risk and costly transitions of care.



www.heartbeathealth.com
aniket.zinzuwadia@heartbeathealth.com
@heartbeat
@AniketZin



Results

BASELINE CHARACTERISTICS

	INTERVENTION (N=95)	CONTROL (N=95)
Age (in years)	68.6 (11.1)	69.6 (12.1)
Gender (Female)	43 (45.3)	42 (44.2)
HFpEF	31 (32.6)	36 (37.9)
HFrEF	30 (31.2)	21 (22.1)
HTN	77 (81.1)	86 (90.5)
CAD	56 (58.9)	56 (58.9)
Diabetes	38 (40.0)	38 (40.0)
CKD	24 (25.3)	24 (25.3)
All Cause 90 Day Readmission	15 (15.8)	27 (28.4)
Cardiac 90 Day Readmission	8 (8.4)	17 (17.9)
Medication changes	4.1 (3.8)	N/A
Number of televisits	10.3 (1.8)	N/A

Mean (SD) or N (%)

Figure 2. Cox proportional hazard survival functions for cardiac and all-cause readmission plotted against a 90 day period for treatment and control groups. Log rank test was used to calculate significance.

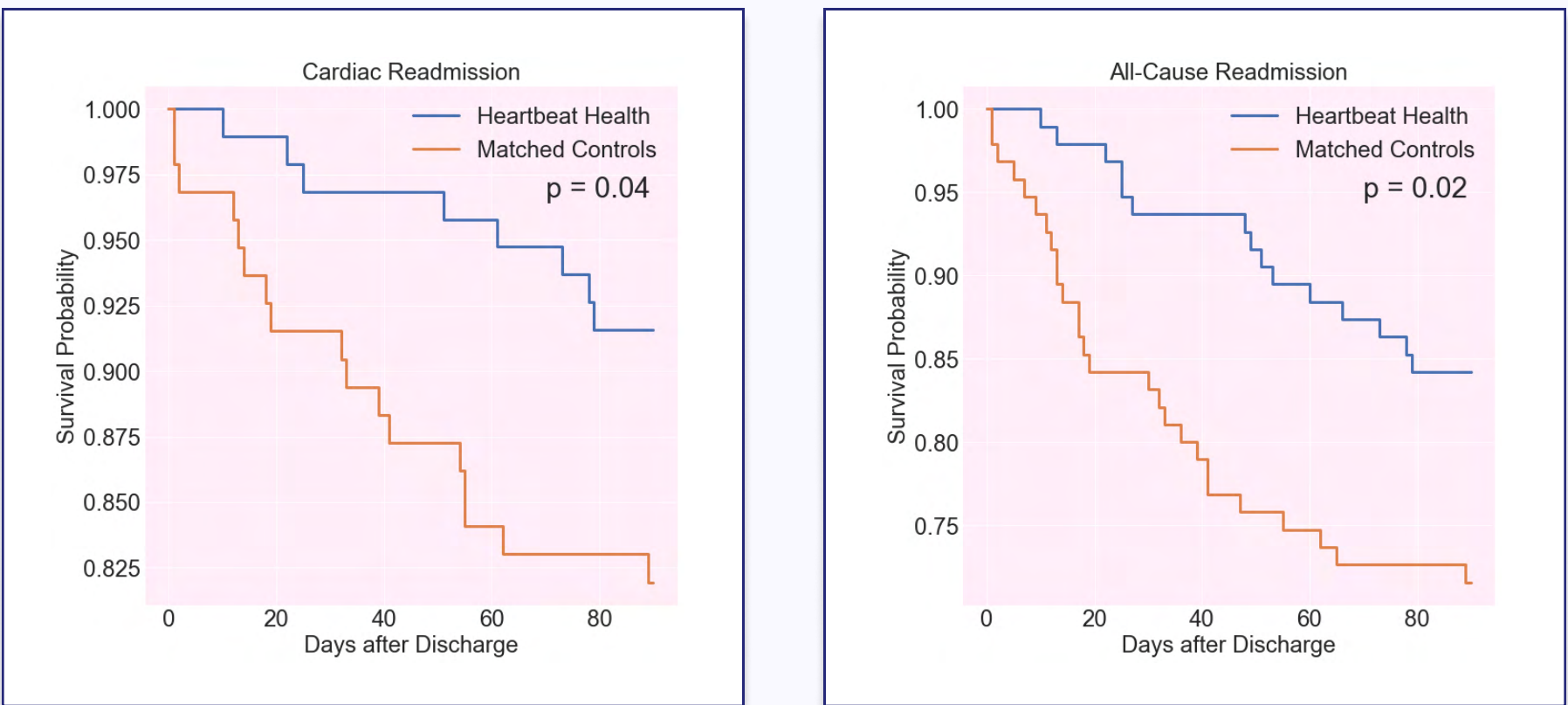
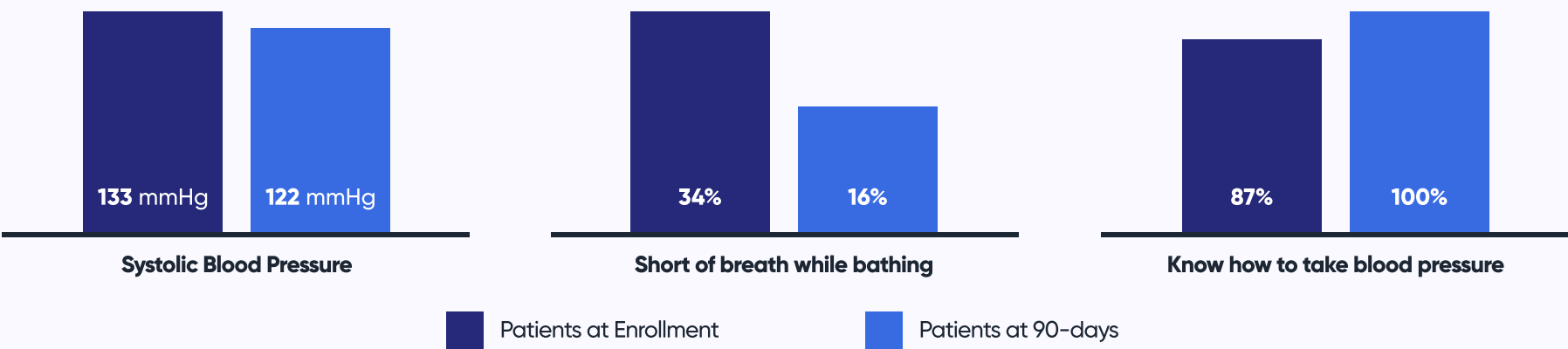


Figure 3. Subset of pre- and post-survey and vital sign data in the intervention groups. Reported results were significant (p < 0.001). Significance was evaluated with a paired t-test for numerical data and McNemar's test for categorical variables.



Conclusion

We demonstrate that a virtual care management program can effectively reduce readmission risk in patients with cardiovascular disease.

Patient with high-frequency telemedicine visits had 90-day improvement in functional status, blood pressure control, and patient education.

Additional randomized trials are necessary to quantify the impact on secondary outcome measures.

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