Early detection and identification of Cardiovascular Disease (Arrhythmias & Heart Failure) within asymptomatic members

How to find them, and what to do about it.

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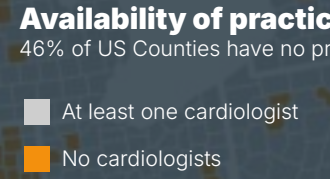
RISE

Cardiovascular disease is the **#1 cause of death** worldwide.



48% of Americans
suffer at least one cardiovascular condition.

$4 Billion
in annual costs.

31% of all deaths
Heart failure, arrhythmias and hypertensive heart cause the most deaths among all cardiovascular conditions

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Kazi et al. Forecasting the Economic Burden of Cardiovascular Disease and Stroke in the United States Through 2050: A Presidential Advisory From the American Heart Association. Circulation. 2024.

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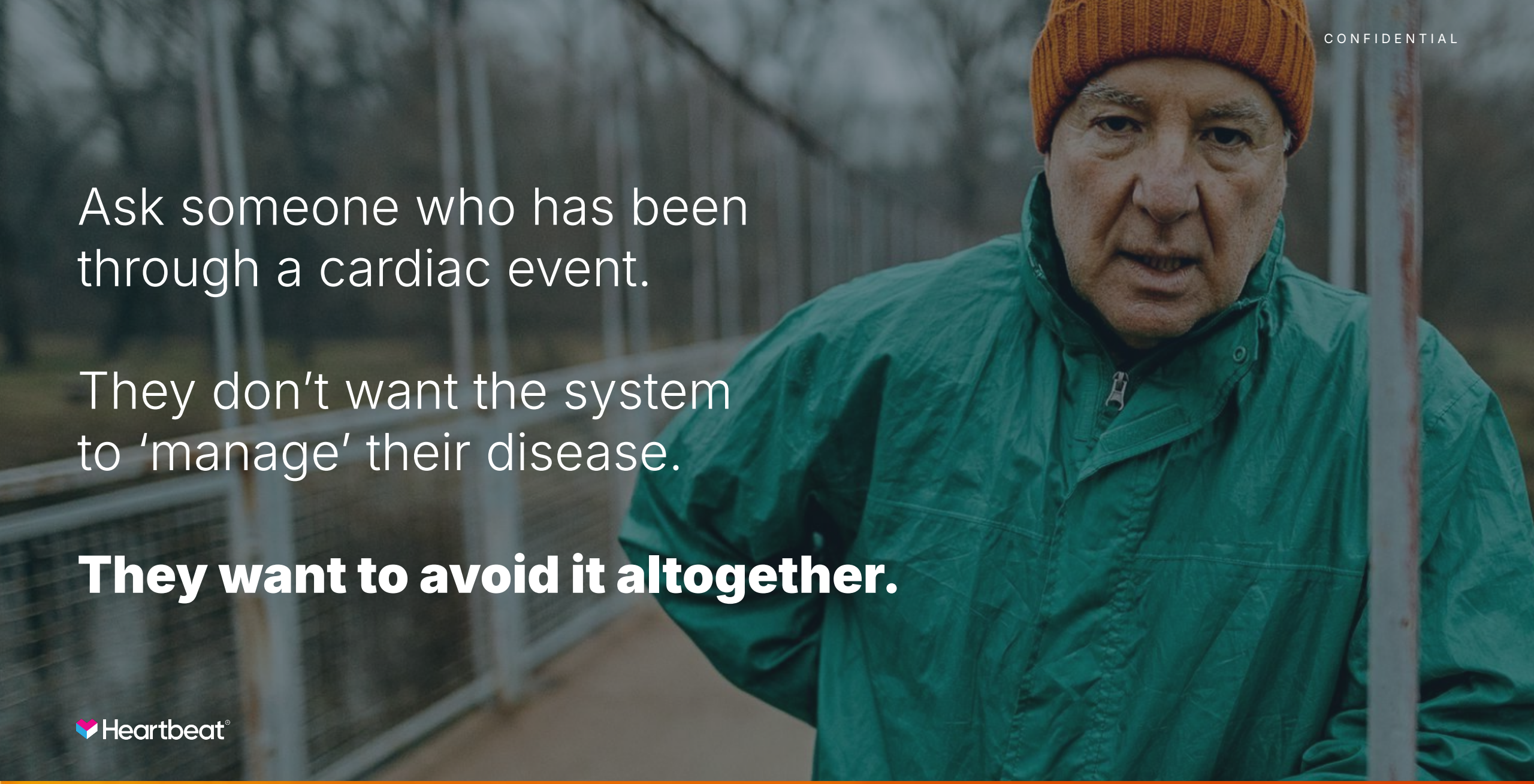

Ask someone who has been through a cardiac event.

They don’t want the system to ‘manage’ their disease.

They want to avoid it altogether.

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Prevention vs Longevity

	Prevention	Longevity
Goal	Avoid disease or catch it early	Extend healthy lifespan and delay biological aging
Focus	Risk reduction, early detection	Health optimization, life extension
Approach	Proactive based on pop risk and clinical guidelines	Personalized based on biomarkers, performance, and aging
Mindset	“Let’s not get sick”	“Let’s stay sharp, strong, and vibrant into old age.”

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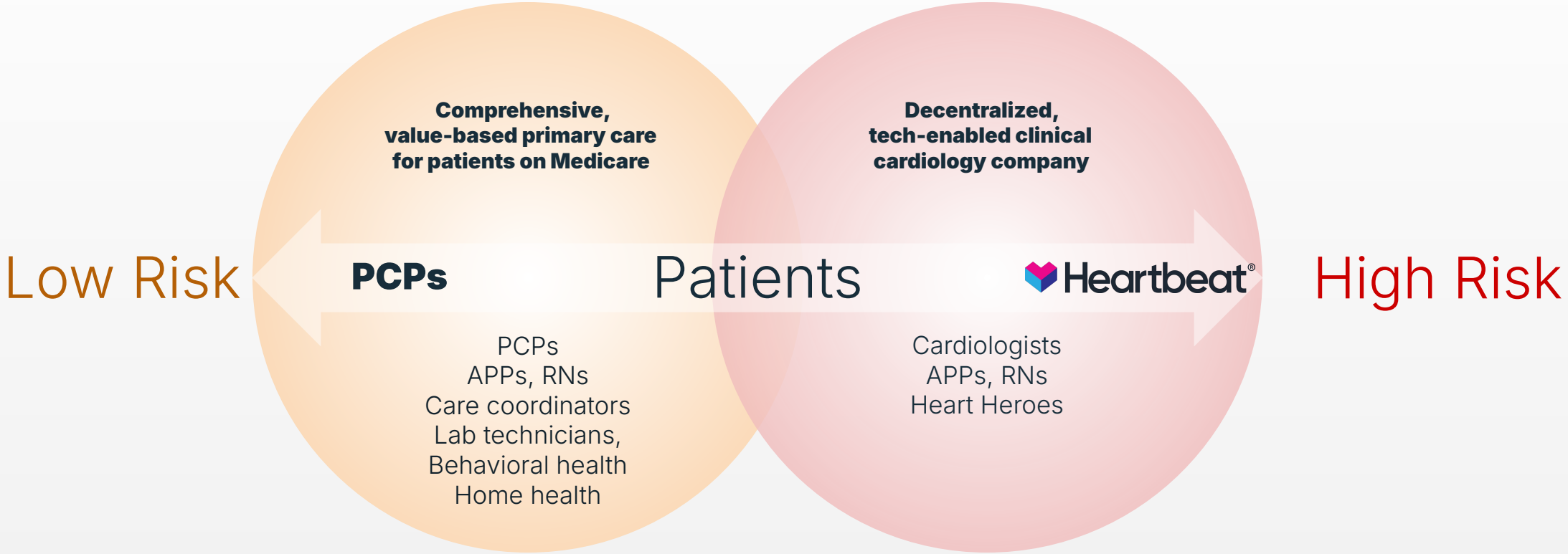
Collaborative Care Model



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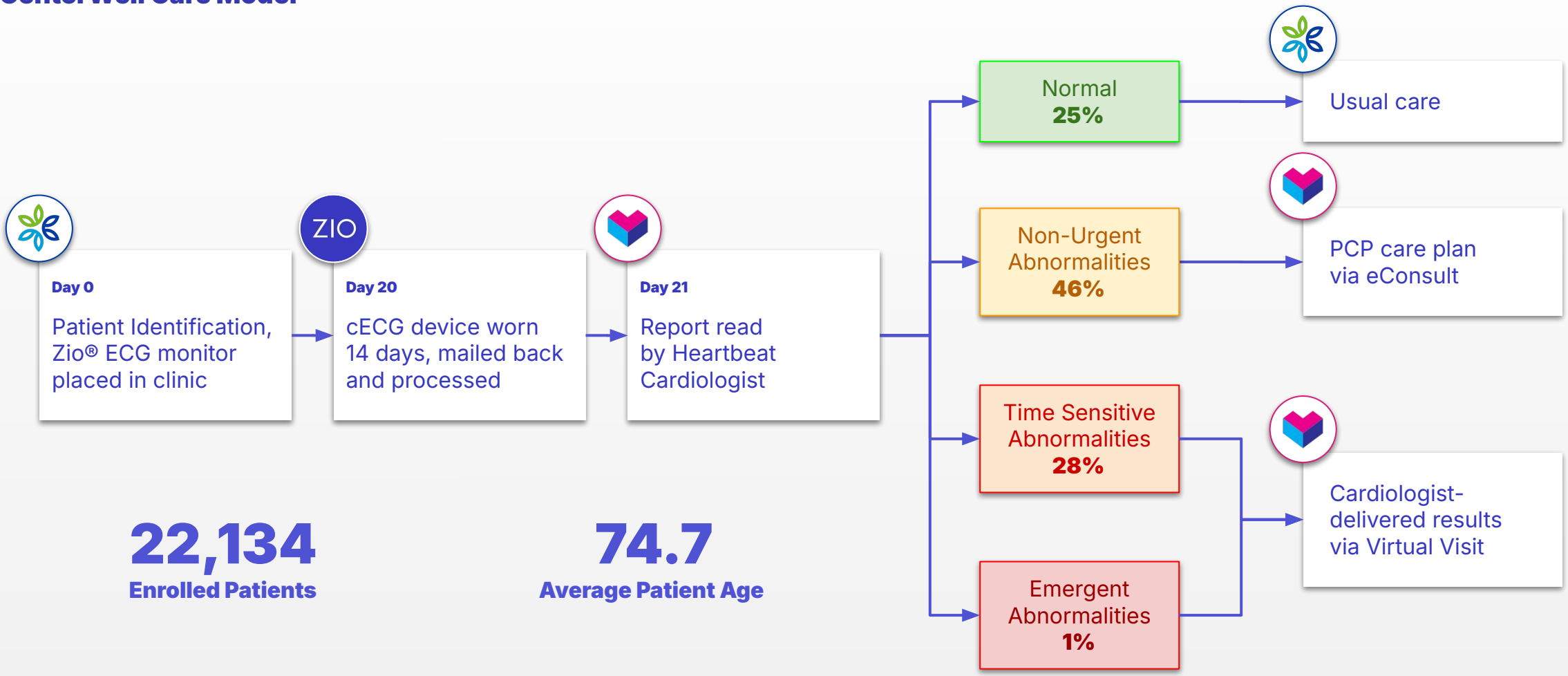
Adapted from Casale et al. Aligning care and payment for chronic cardiovascular conditions. JACC. 2021. 78(23) 2377-2381.

CenterWell Care Model



22,134
Enrolled Patients

74.7
Average Patient Age

Sample Patient Journey: **Virtual Visit Pathway**

Dec 20 — 82 year old female identified as high risk through PCP EHR, patched in clinic with a cECG monitor

↓

Jan 2 — cECG mailed back and processed

↓

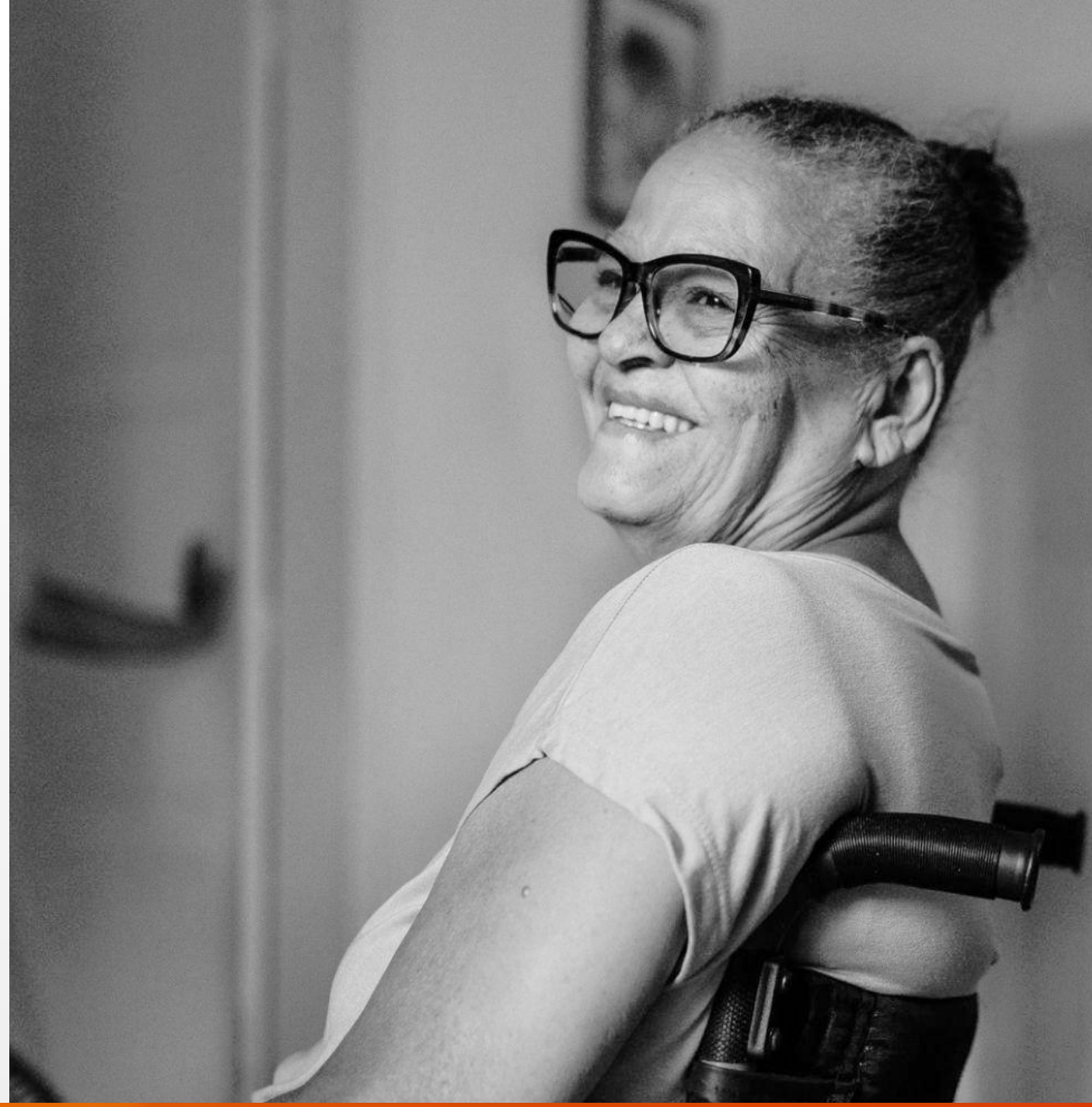
Jan 9 — Heartbeat cardiologist interpreted results and found her to have newly diagnosed atrial fibrillation (stroke risk 10% per year)

↓

Jan 10 — Triggered virtual visit scheduling with cardiologist

↓

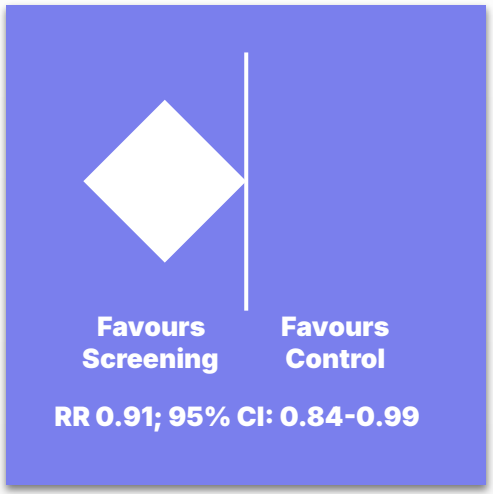
Jan 14 — Virtual visit completed, recommendations made on stroke prevention therapy, heart rate control, and repeat cECG in 3 months



Screening for Atrial Fibrillation to Prevent Stroke: A Meta-Analysis of Randomized Trials

Systematic Search For Published Randomized Trials On Atrial Fibrillation Screening Reporting Stroke Outcomes with Heterogeneous Definitions

4 Published Trials Identified
35,836 Participants
Heterogenous Interventions



Combined Estimate Favours Stroke Reduction With Screening

International Research Effort To Combine and Evaluate Individual Participant Data from Published and Ongoing Trials

McIntyre WF et al. Screening for atrial fibrillation to prevent stroke: a meta-analysis. European Heart Journal (2022) 2, 1-5

What do the guidelines say?

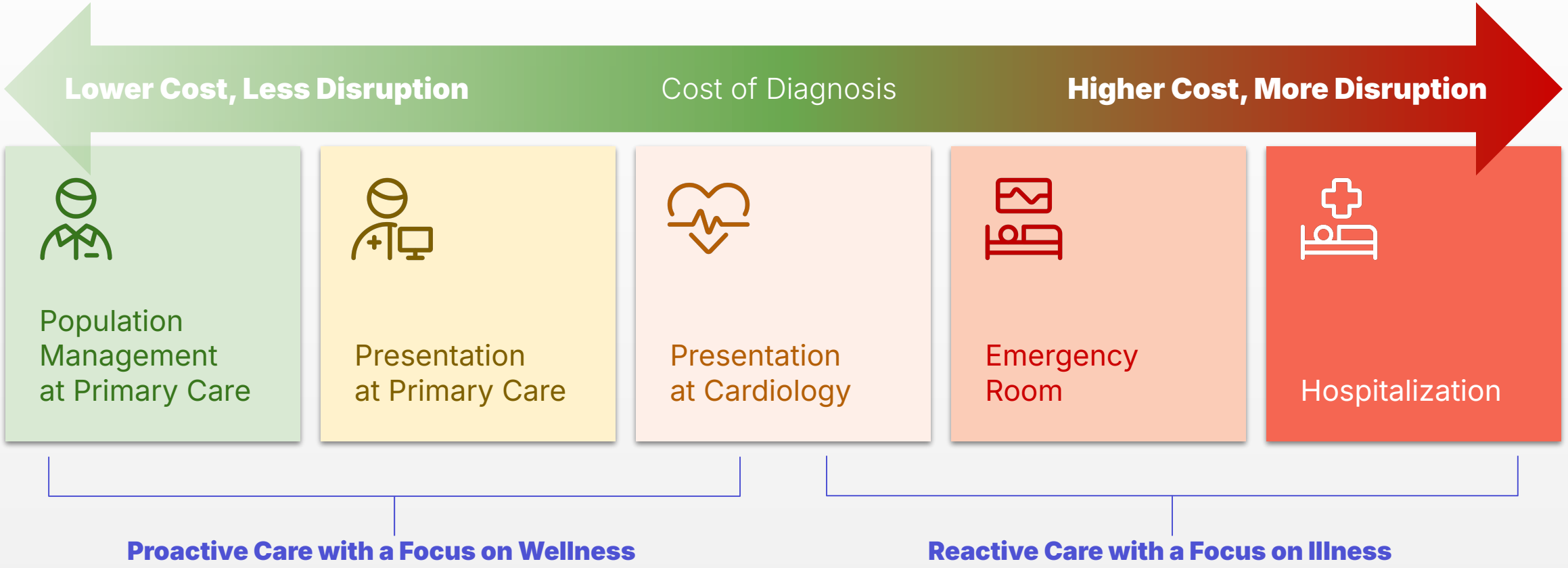
Recommendation Table 31
Recommendations for screening for AF
(see also Evidence Table 31)

Recommendations	Class[a]	Level[b]
Review of an ECG (12-lead, single, or multiple leads) by a physician is recommended to provide a definite diagnosis of AF and commence appropriate management.[1091,1121–1123,1125]	I	B
Routine heart rhythm assessment during healthcare contact is recommended in all individuals aged ≥65 years for earlier detection of AF.	I	C
Population-based screening for AF using a prolonged non-invasive ECG-based approach should be considered in individuals aged ≥75 years, or ≥65 years with additional CHA_2DS_2-VA risk factors to	IIa	B

Class IIa	Weight of evidence/opinion is in favour of usefulness/efficacy.
Level of evidence B	Data derived from a single randomized clinical trial or large non-randomized studies.

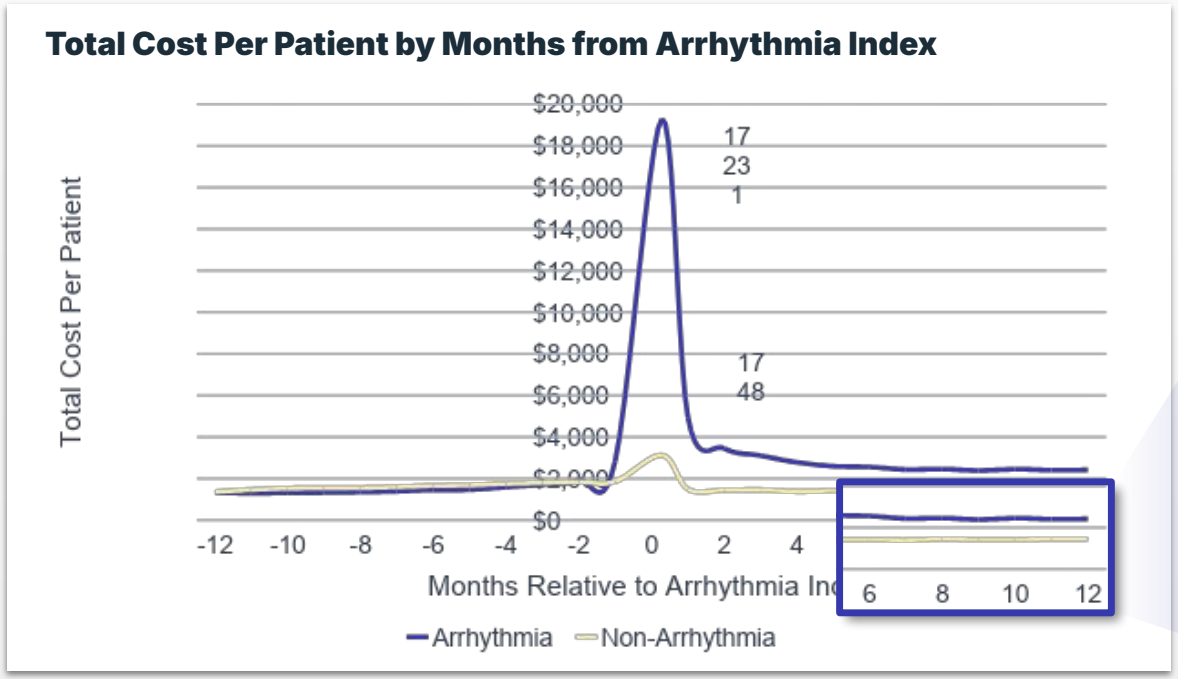
ESC Guidelines for the management of atrial fibrillation developed in collaboration with the European Association for Cardio-Thoracic Surgery (EACTS)European Heart Journal (2024) 45, 3314–3414

When and where a condition is diagnosed matters.



What is the difference in costs before and after arrhythmia?

The total cost per patient was calculated for each month one year before and after arrhythmia for both the arrhythmia and non-arrhythmia cohorts.



Insights

There are parallel trends for total cost in individual months between the arrhythmia and non-arrhythmia cohorts prior to arrhythmia index.

While there is a spike in total cost in months closer to the arrhythmia index, these costs return to parallel trends approximately 5 months after index, with arrhythmia patients having a relatively consistent difference of ~$1,000 higher total cost per patient per month.

Months from Index	Arrhythmia Average Patient Cost	Non-Arrhythmia Average Patient Cost	Difference
5	$2,596	$1,423	**$1,174**
6	$2,556	$1,427	**$1,129**
7	$2,436	$1,409	**$1,028**
8	$2,457	$1,449	**$1,007**
9	$2,388	$1,419	**$970**
10	$2,452	$1,424	**$1,028**
11	$2,409	$1,443	**$965**
12	$2,420	$1,442	**$978**
Average	$2,464	$1,430	**$1,035**

By diagnosis related group (DRG) – Average cost

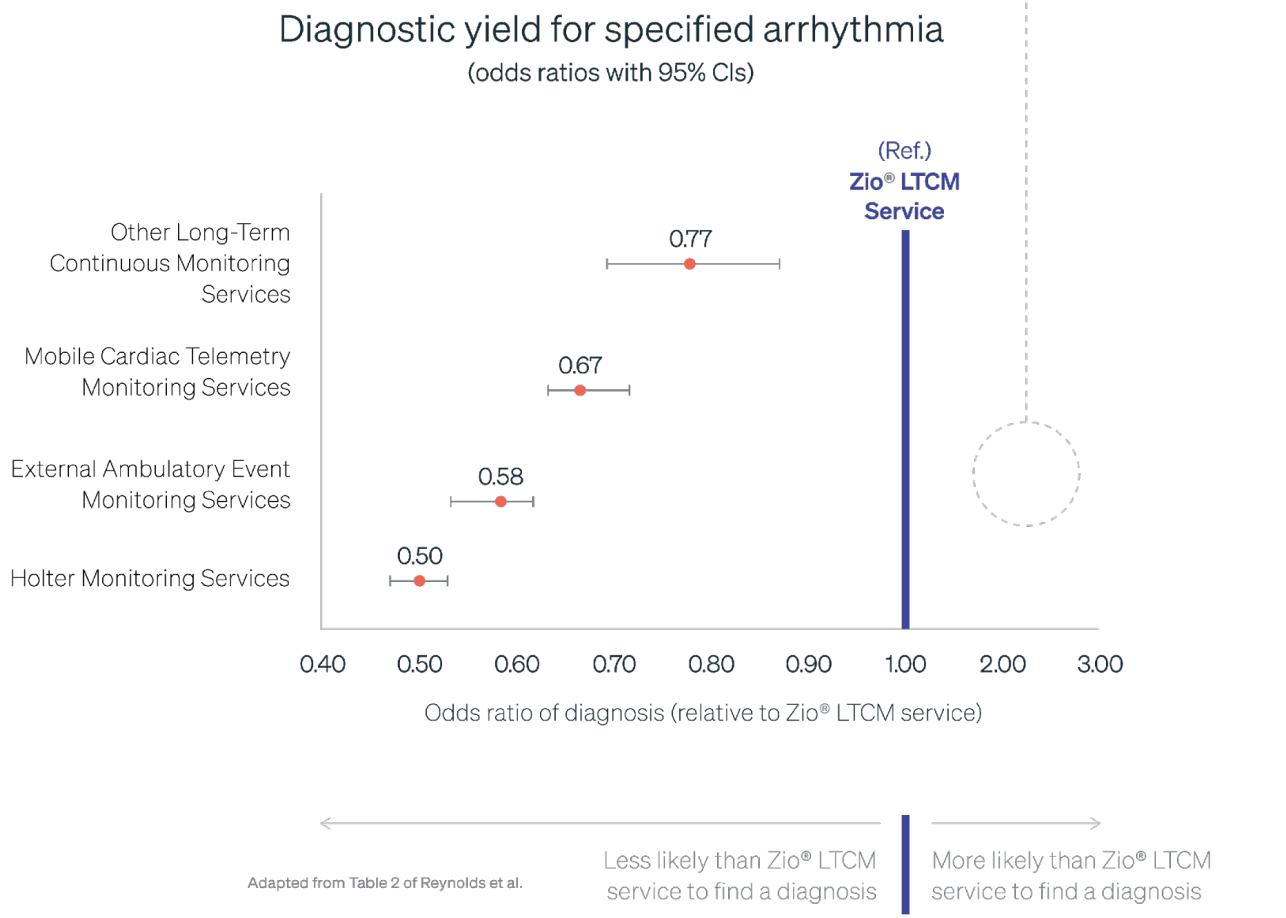
Coronary Bypass with Cardiac Catheterization and Cardiac Arrhythmia, and Conduction Disorders are the largest cost drivers of arrhythmia post 30 days.

Top 10 Diagnosis Related Group*	Arrythmia Patients (N = 213,226)			
	# Patients	# Claims	Total Cost	Average Cost by DRG
Coronary Bypass With Cardiac Catheterization	2,329	2,333	$ 225,394,513	$ 96,777
Cardiac Arrhythmia And Conduction Disorders	10,430	10,617	$ 135,711,204	$ 13,012
Ecmo Or Tracheostomy With Mv >96 Hours Or Pdx Except Face, Mouth And Neck With Major O.R. Procedure	231	233	$ 110,642,327	$ 478,971
Cardiac Valve And Other Major Cardiothoracic Procedures With Cardiac Catheterization	792	793	$ 102,306,510	$ 129,175
Major Hip And Knee Joint Replacement Or Reattachment Of Lower Extremity	2,894	2,897	$ 97,889,072	$ 33,825
Coronary Bypass Without Cardiac Catheterization	886	887	$ 82,748,448	$ 93,396
Permanent Cardiac Pacemaker Implant	1,938	1,943	$ 81,426,195	$ 42,016
Percutaneous Cardiovascular Procedures With Drug-Eluting Stent	2,020	2,044	$ 80,917,178	$ 40,058
Cardiac Valve And Other Major Cardiothoracic Procedures Without Cardiac Catheterization	604	607	$ 77,568,570	$ 128,425
Septicemia Or Severe Sepsis Without Mv >96 Hours	2,207	2,250	$ 75,936,956	$ 34,407

*The top 10 categories are sorted by total cost in descending order

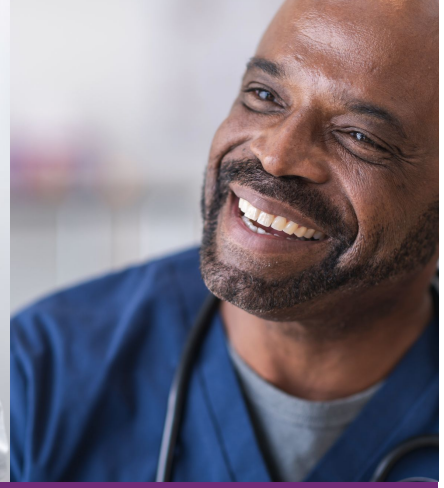
Which monitoring service was associated with the highest diagnostic yield?

Zio® long-term continuous monitoring (LTCM) service had the highest yield of specified arrhythmia diagnosis than all other monitoring services.[1-4]



1. Reynolds et al. Comparative effectiveness and healthcare utilization for ambulatory cardiac monitoring strategies in Medicare beneficiaries. Am Heart J. 2024;269:25–34. Accessed January 2, 2024. https://doi.org/10.1016/j.ahj.2023.12.002
2. A specified arrhythmia refers to an arrhythmia encounter diagnosis as per Hierarchical Condition Categories (HCC) 96.
3. Based on previous generation Zio XT device data. Zio monitor utilizes the same operating principles and ECG algorithm. Additional data on file.
4. Zio LTCM service refers to Zio XT and Zio monitor service.

Cardiovascular Disease
Interventional Cardiology
Echocardiography
Nuclear Cardiology
Vascular (RPVI)
Cardiac MRI & CT
Electrophysiology
Heart Failure
Internal Medicine
Sleep Medicine
Critical Care Medicine
Pulmonary Disease



Heartbeat is among the most desirable destinations for cardiology professionals in the U.S., boasting a bench comprised of hundreds of clinicians from leading institutions.

Clinical team
730

Active provider licenses
>1K

Heartbeat offers decentralized cardiovascular care.

Heartbeat Medical Group is comprised of experienced, high-quality cardiologists, advanced practitioners, RNs and Heart Heroes, ensuring coverage in all 50 states.

Heart Heroes embody the spirit of Heartbeat.

Our team of medical assistants and care coordinators work tirelessly to deliver the care every patient deserves.

We deploy evidence-based guidelines with remote diagnostics to identify and close gaps in care.

This approach has achieved efficiency at scale, and most importantly, improved outcomes for high-risk populations.

HEART HEROES Heartbeat

*Clinical team includes MD, DO, NP, PA, RNs, sonographers and Heart Heroes (care coordinators).


Thank you.
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