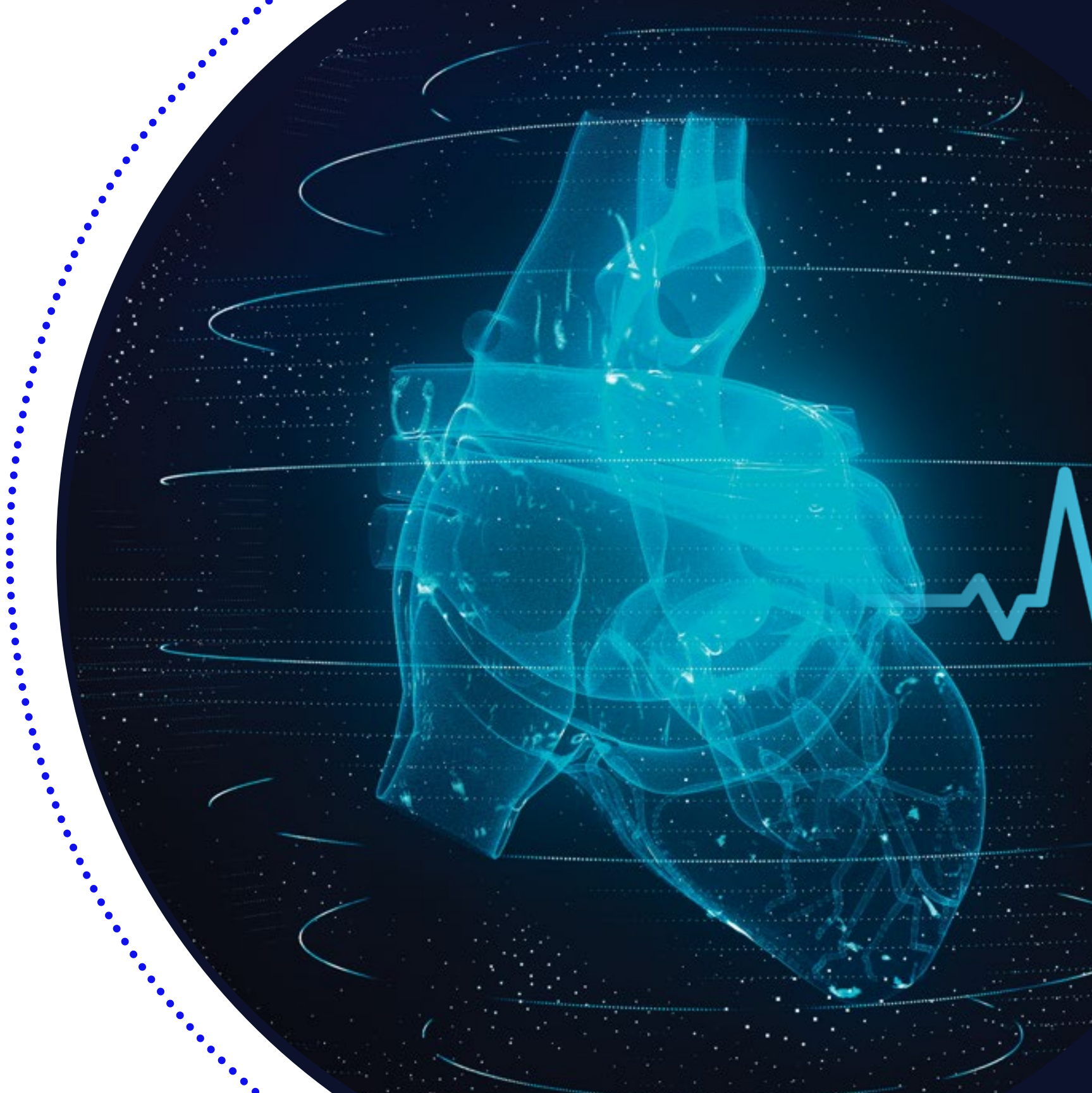


Medtronic

Cardiac Diagnostics

Trieste, June 2023
Marko Perković



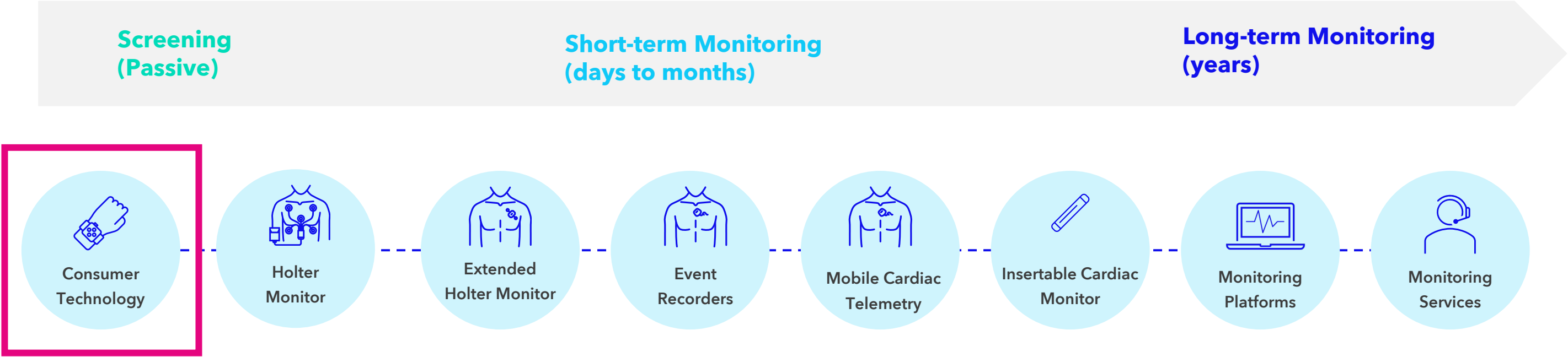
Why do I need cardiac monitoring?

SYNCOPE

STROKE

Cardiac Monitoring

Categories



Consumer Technology Overview

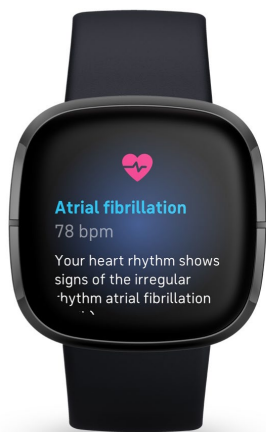


Wrist-Worn with spot readings

Monitors patients pulse rate through Photoplethysmography (PPG) sensors and irregular rhythm alerts user when to take an ECG reading with watch



Apple Watch, 46%¹



Fitbit, 38%¹



Samsung, 16%¹
*Does not currently have PPG
sensor FDA approved*



Spot-reading Platforms

Patients takes action to measure ECG reading on hardware platform and associated app on smartphone

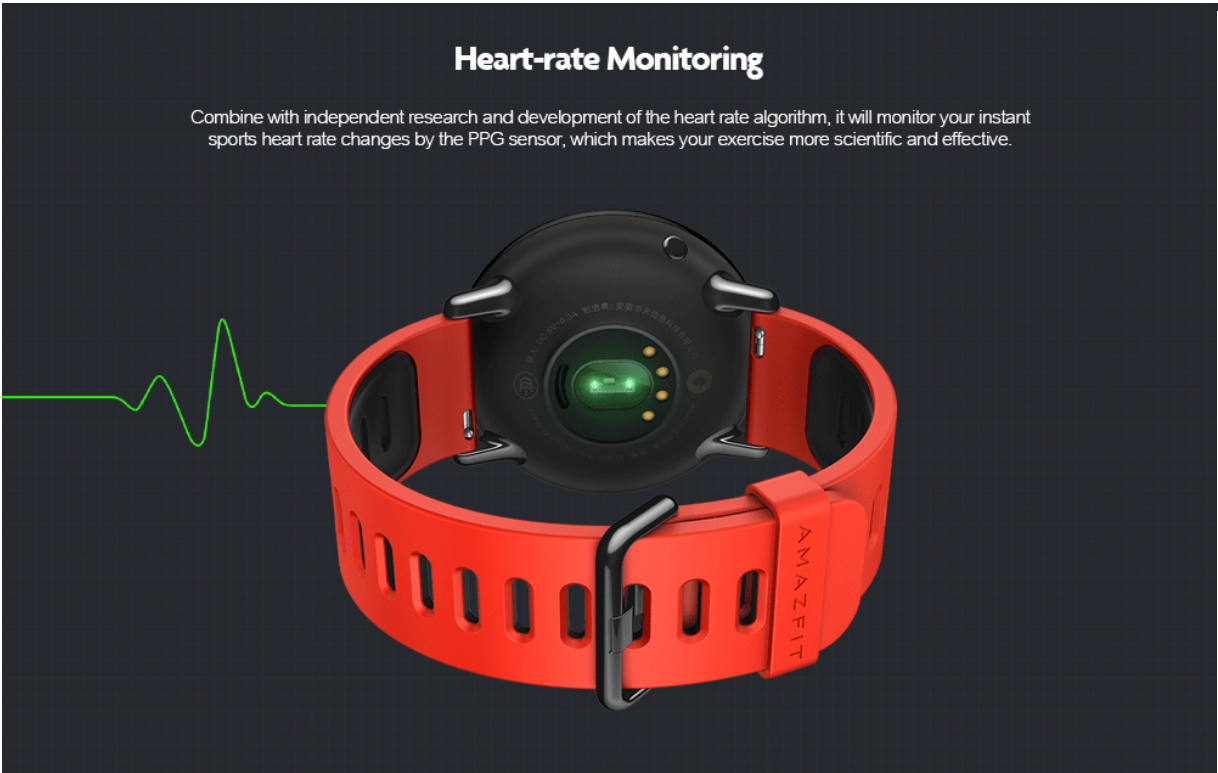


**Kardia
Alivecor**

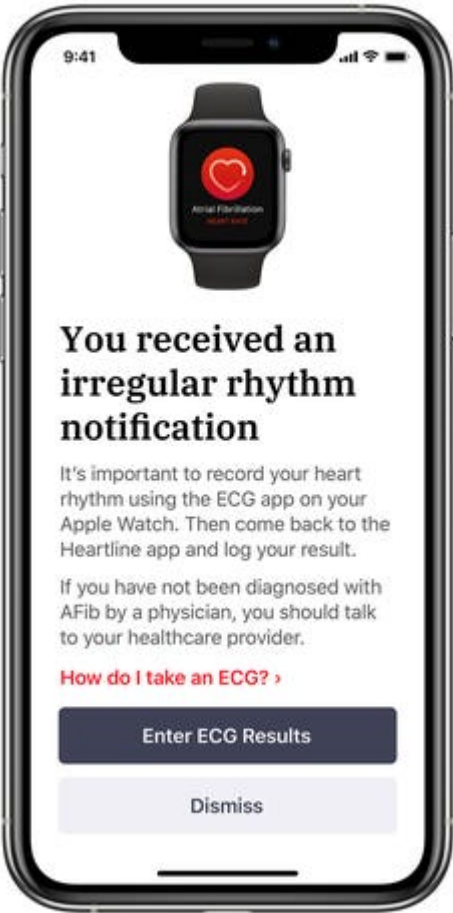
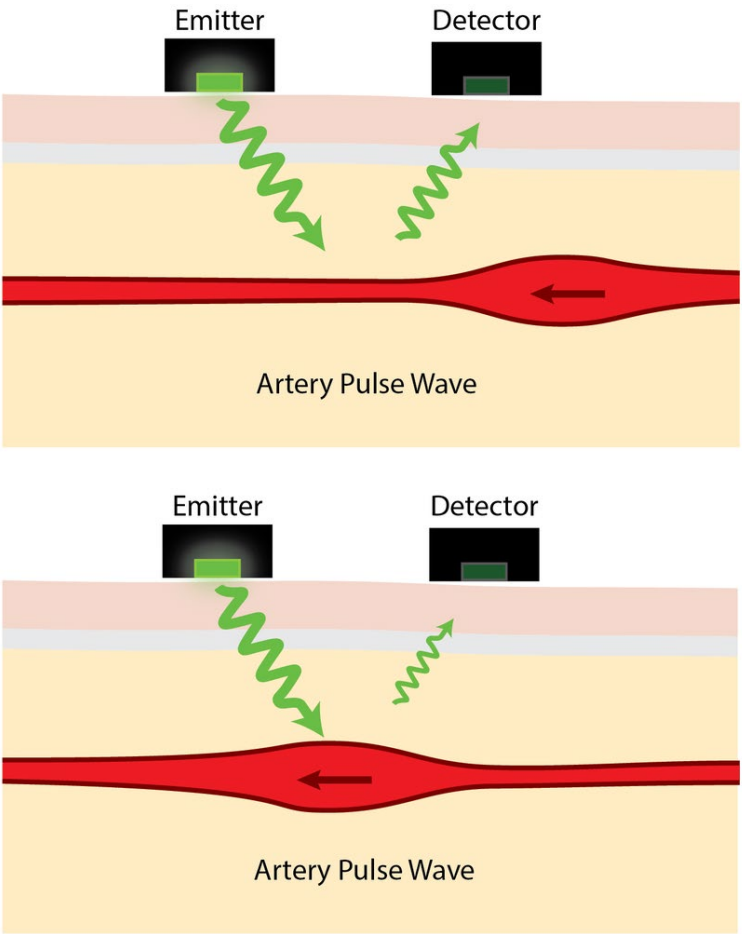
1. "Share of smartwatch or fitness tracker users in the U.S. who own a model by the following brands" [Statista Global Consumer Survey](#), Approx 6,000 US adults 18 - 64 years old, surveyed July 2020 - Sept 2021
Cardiac Diagnostics | Trieste, June 2023

Passive Monitoring with PPG sensors

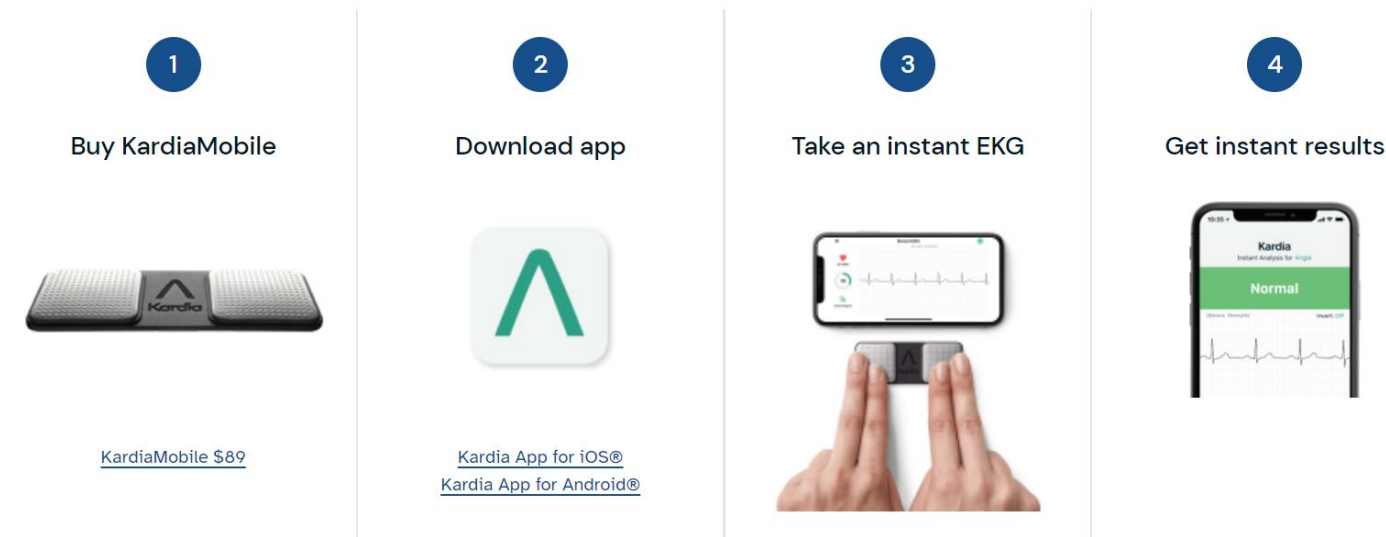
Wrist-worn with spot readings



KEY: Passively looking for irregular PULSE, not ECG



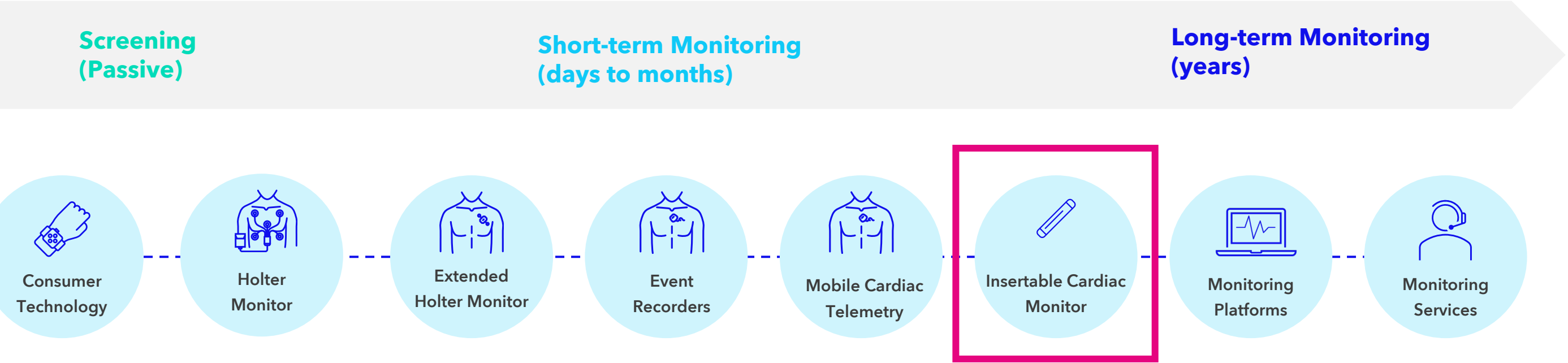
Recording an ECG with Kardia



What are the challenges?

Cardiac Monitoring

Categories



LINQ™ family of ICMs

(Reveal LINQ™ ICM and LINQ II™ ICM)



20+ years of Reveal™ ICMs

Pioneering the world's first ICM

1998



Reveal™ ICM
World's first
ICM

2000



Reveal™ Plus ICM
Automatic
detection
added

2007



Reveal™ DX ICM
3-year longevity
1.5T or 3T MRI

2009



Reveal™ XT ICM
World's first
AF detection
algorithm

2011



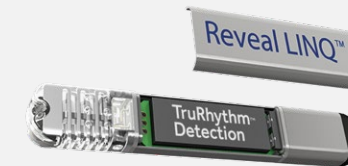
**Reveal XT ICM with
FullView™ Software**
Improved noise
discrimination
and AF detection

2014



Reveal LINQ™ ICM
World's
smallest ICM¹

2017



**Reveal LINQ™ ICM
with TruRhythm™
Detection**
1 million Reveal
LINQ patients
served²

2020



LINQ II™ ICM
Bluetooth®
connectivity,
4.5-year
longevity,[†]
PVC burden
detector,
improved
algorithms

2021



**LINQ II ICM
with AccuRhythm™
AI algorithms**
Improvements
implemented via
the cloud to all
LINQ II ICMs

[†]Nominal settings.

¹ICM Size Comparison Guide. 2021.

²Medtronic Reveal™ ICM family data. Data on file. 2021.

Reveal LINQ detection

The Reveal LINQ ICM can classify the following 4 types of arrhythmia episodes...

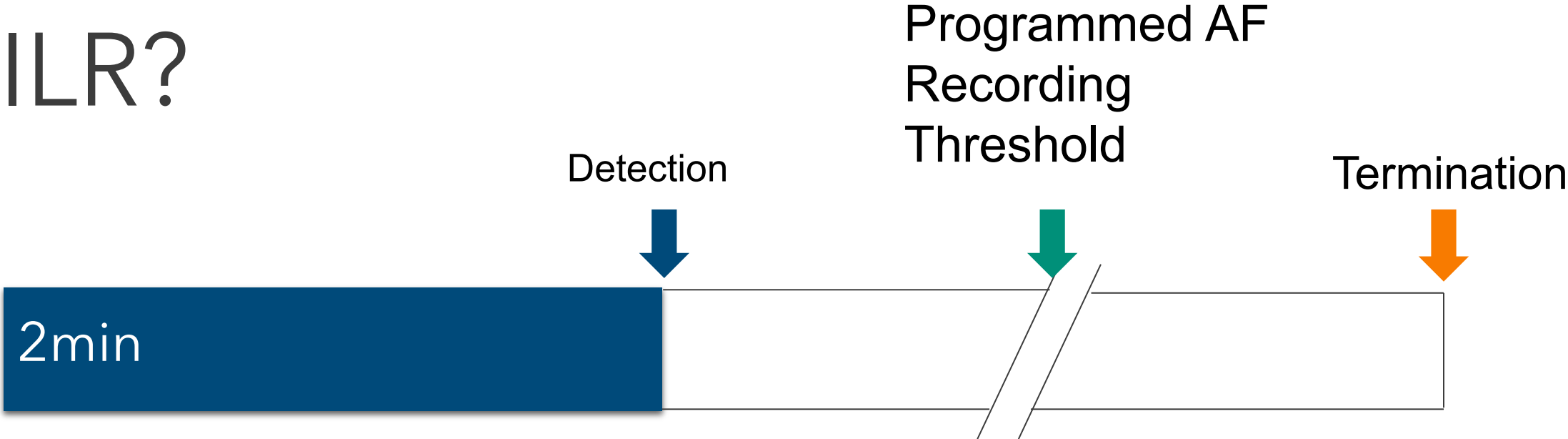
PAUSE

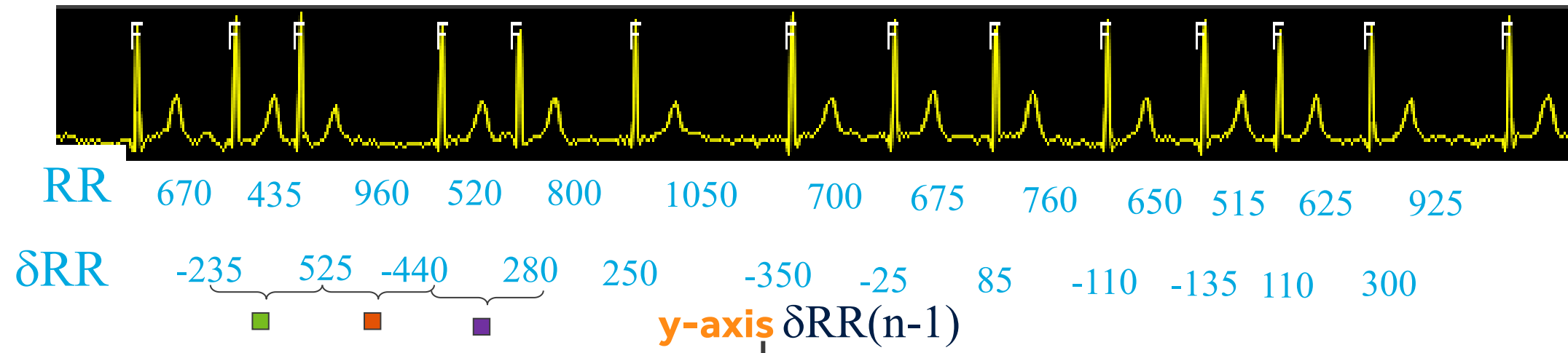
BRADY

TACHY

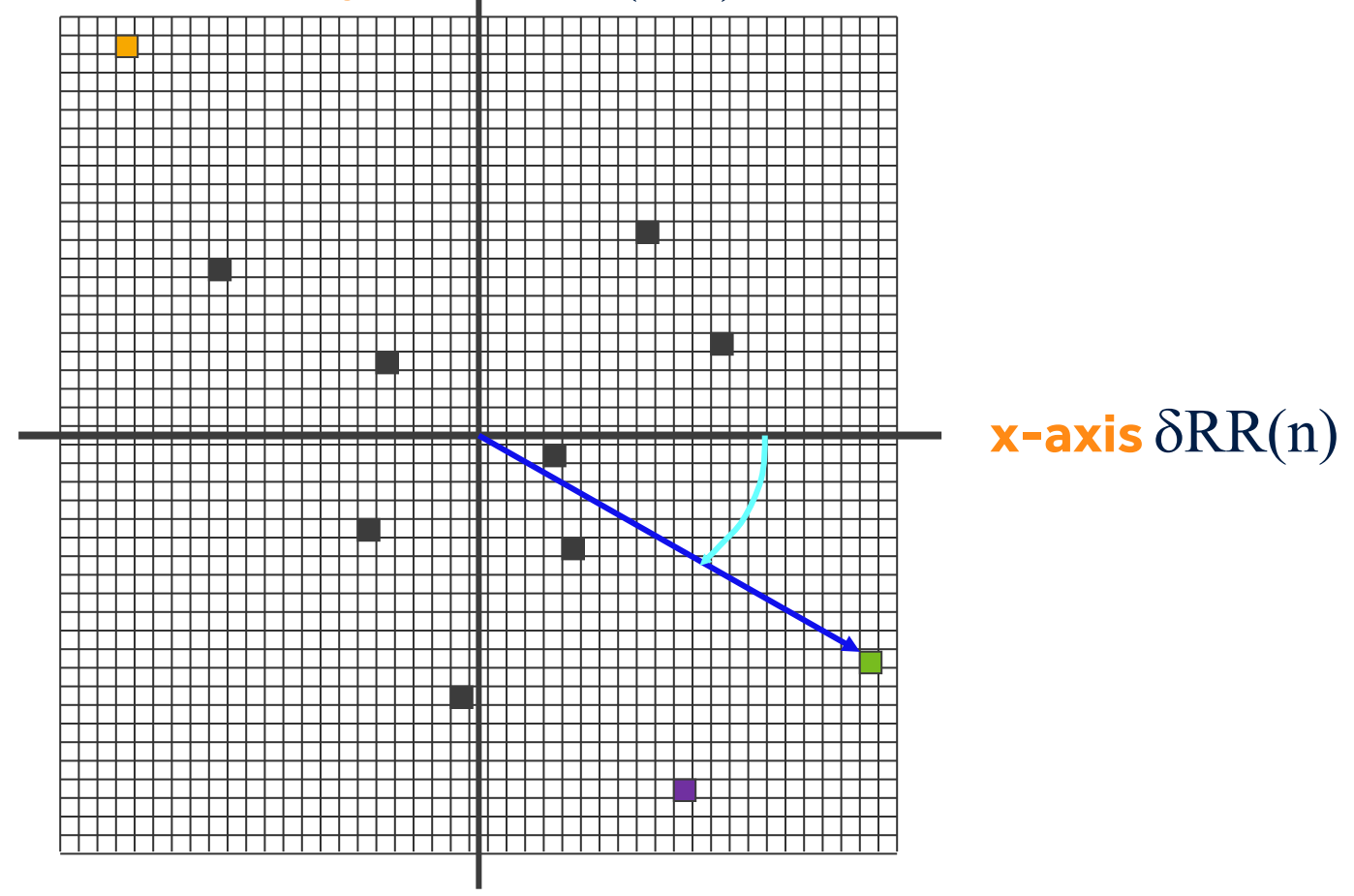
AF

Why ILR?

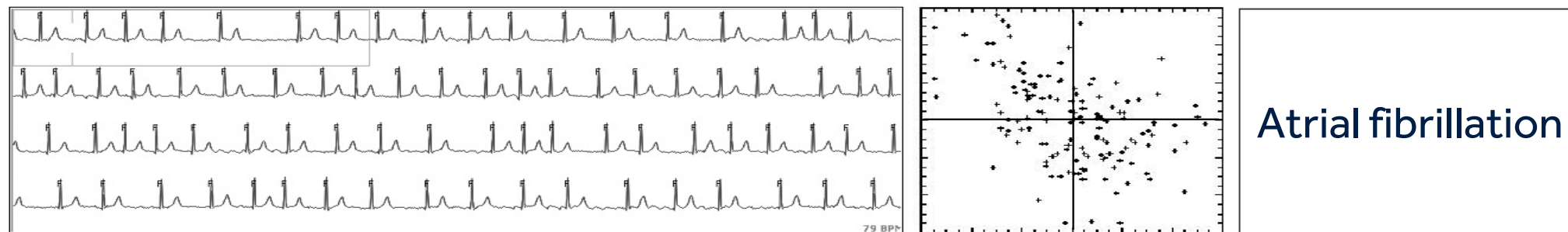
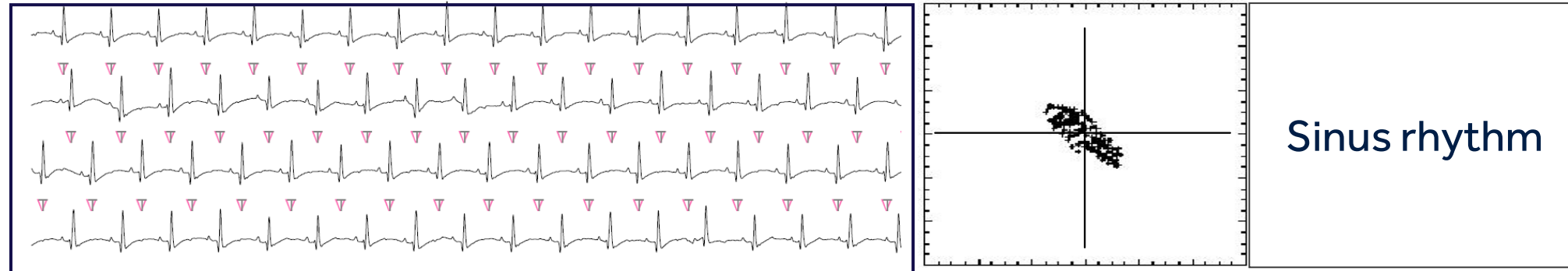




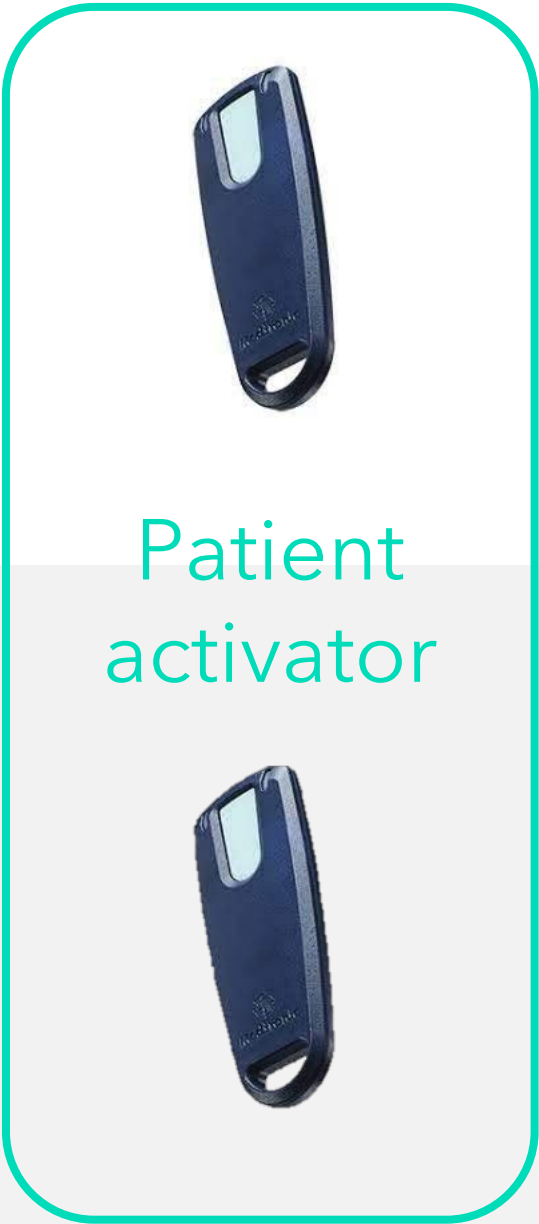
Lorenz plot



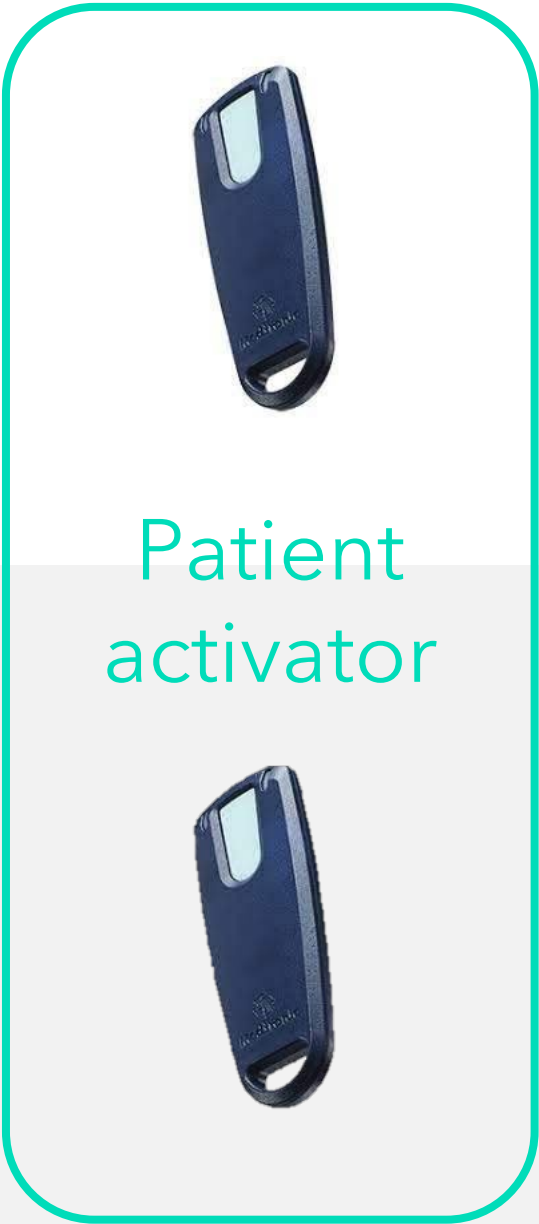
AF detection



Reveal LINQ

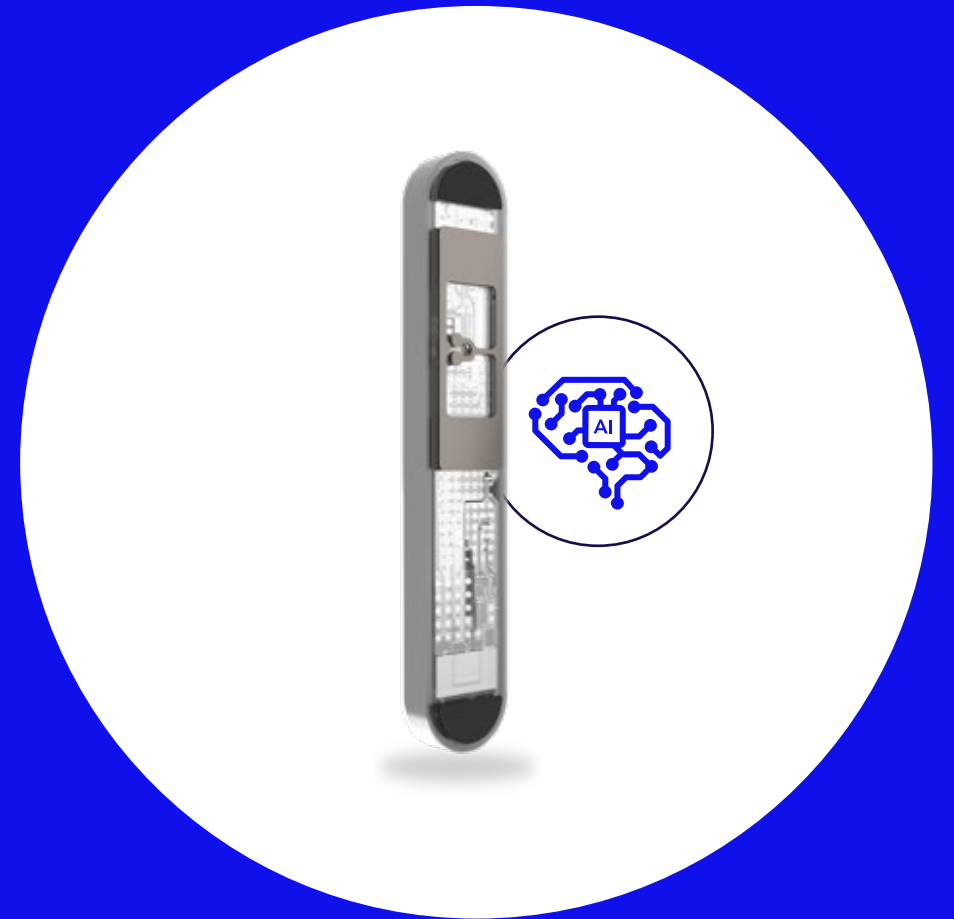


LINQ II



Why AI?

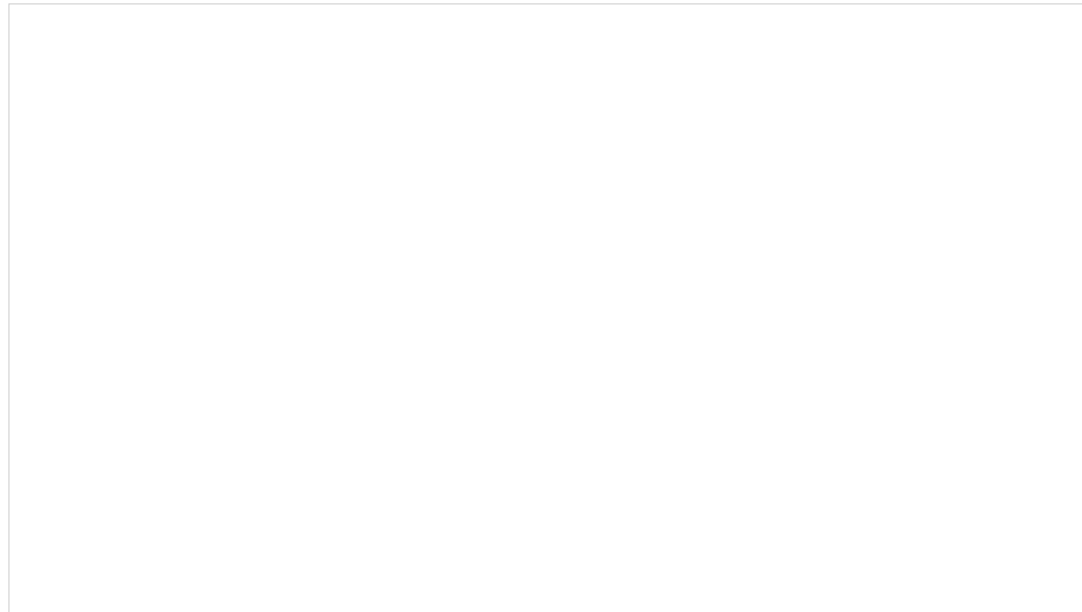
See what artificial intelligence can do.



Why use artificial intelligence?

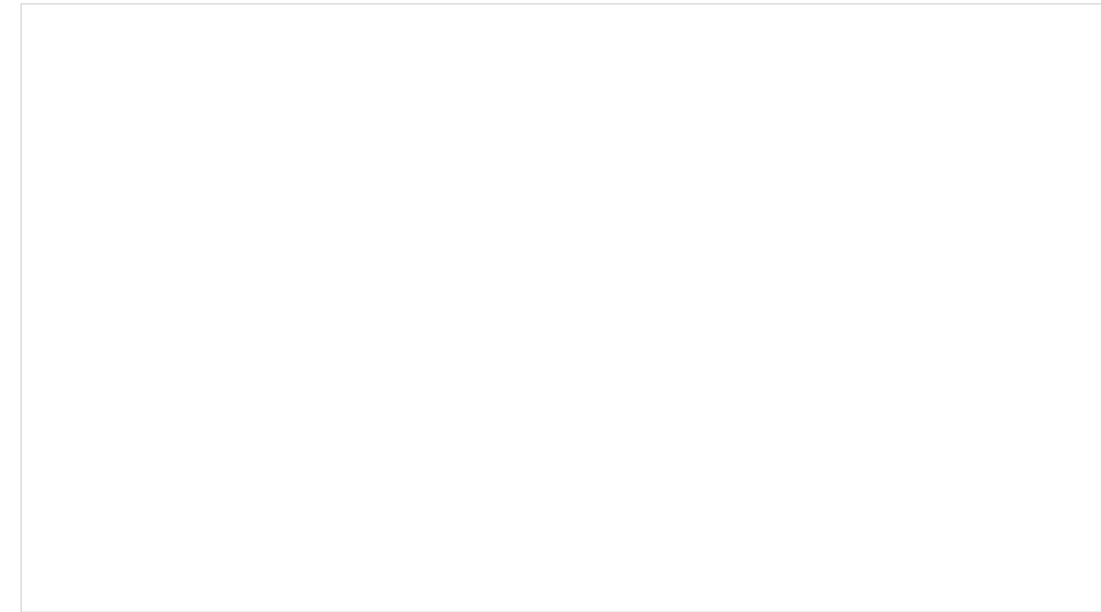
Rate-based analysis

Relies heavily on R-R wave timing

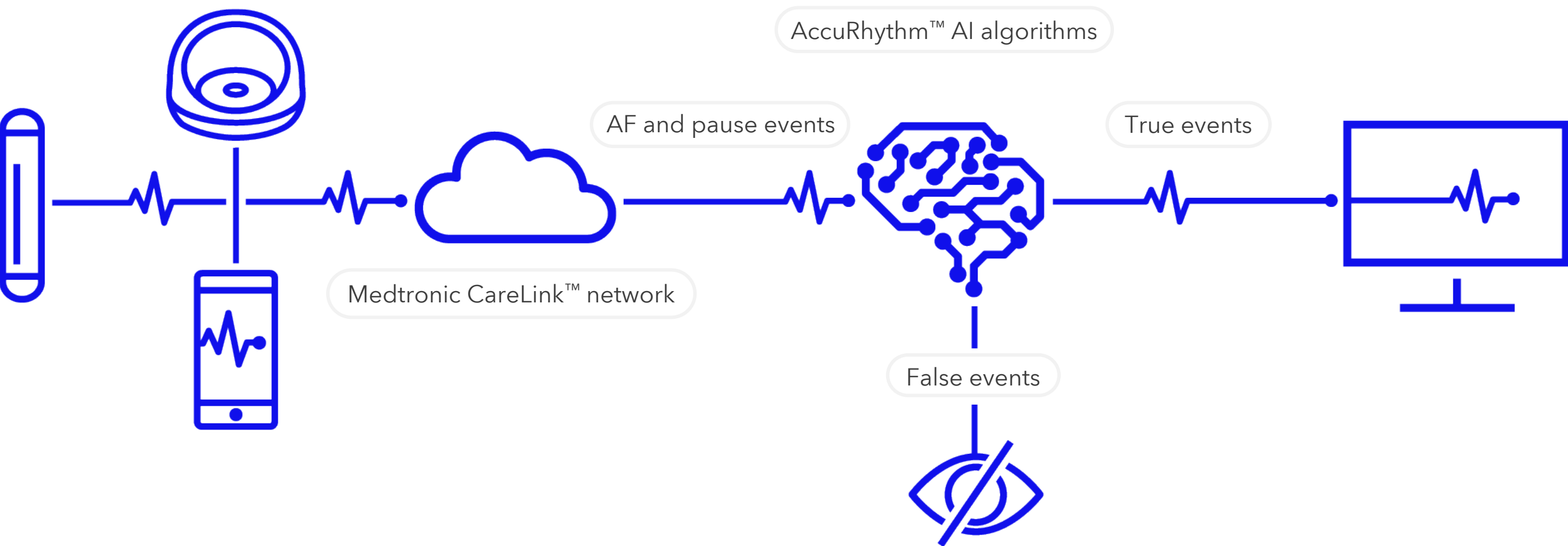


Rhythm-based analysis

Reviews the whole strip and relationships between segments and waveform features in adjudication



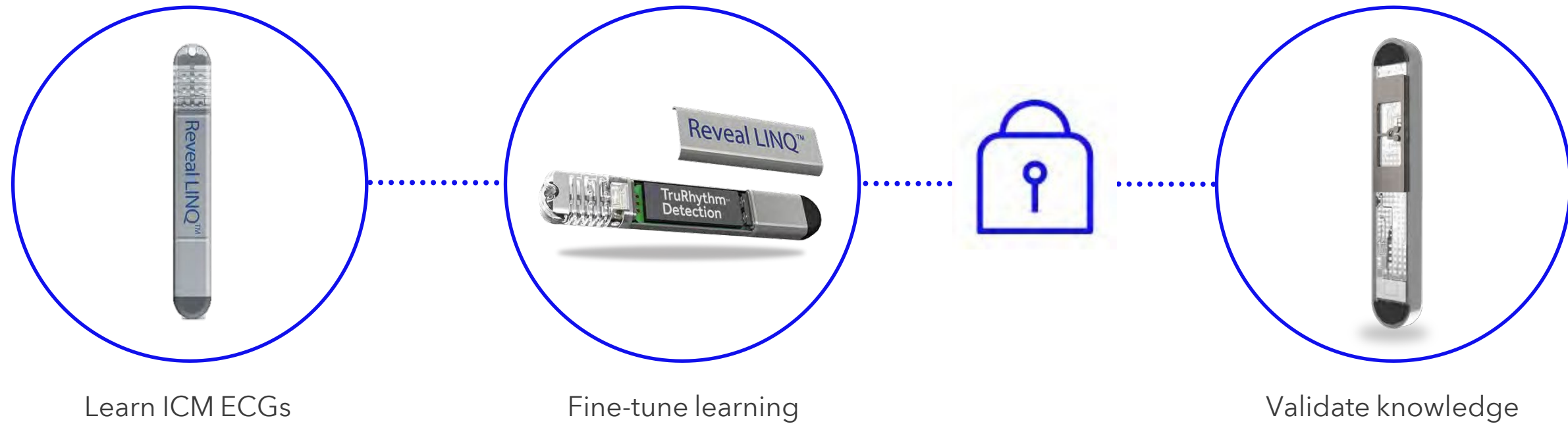
How AccuRhythm AI Is Applied To LINQ II Data



How did AccuRhythm™ AI “learn?”

Trained on over 1,000,000 professionally adjudicated ECGs

Debiased, varied, reviewed



AccuRhythm™ AI algorithm training

Learn ICM ECGs



Real-world clinicians



Certified technicians



Electrophysiologists



Cardiac rhythm scientists

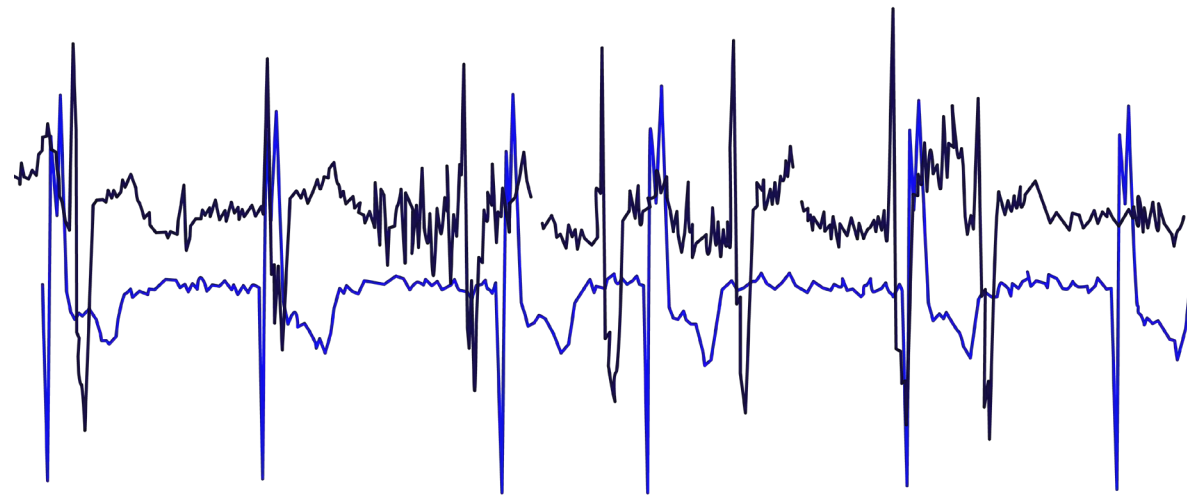


Panel reviews

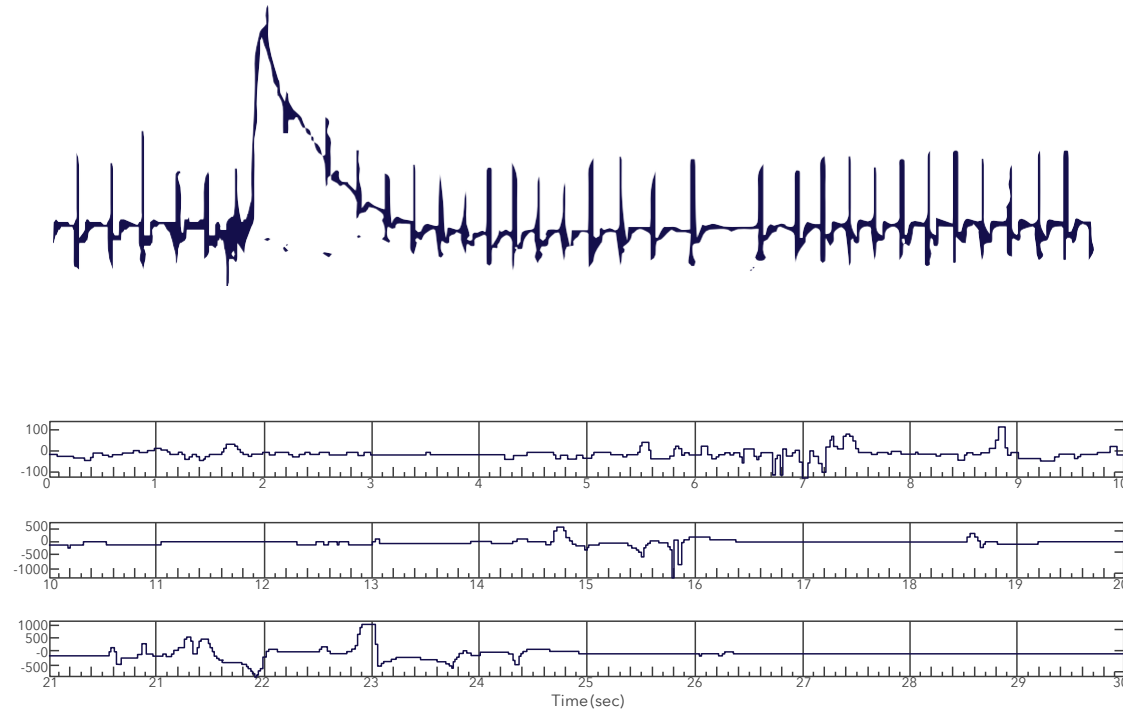
AccuRhythm™ AI algorithm training

Purposeful bias prevention and proactive event variety

Fine-tune learning



Loss of contact **before** true pause



Loss of contact false pause

AccuRhythm™ AI algorithm training

Locked state to retain unbiased lens

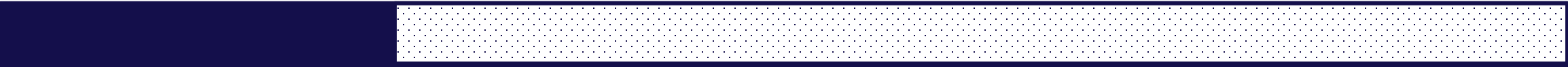
Validate learning



Performance reviewed and validated

Reduced LINQ II™ ICM false alerts

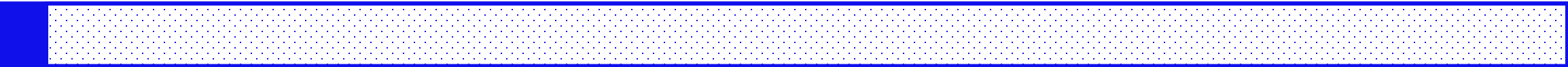
Atrial fibrillation (AF)



Reduced false alerts

> 74%

Pause



Reduced false alerts

> 97%

Performance the metrics from the AccuRhythm AI algorithms manual.

Performance reviewed and validated

Preserved LINQ II™ ICM true alerts

Atrial fibrillation (AF)



Preserved true alerts 99.3%

99.96% detected true AF duration preserved

Pause

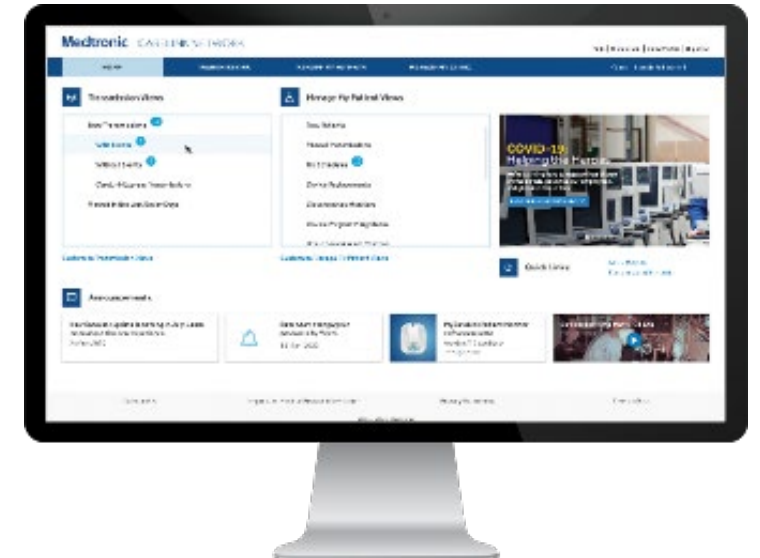
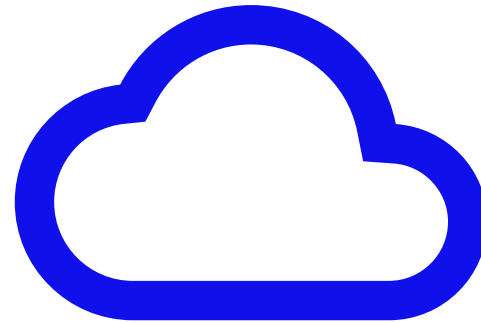


Preserved true alerts 100%

Performance the metrics from the AccuRhythm AI algorithms manual.

The AccuRhythm™ AI platform

Atrial Fibrillation (AF) and Pause algorithms



LINQ II™ ICM algorithms

AccuRhythm AI platform
and algorithms

Actionable clinical
data

AccuRhythm™ AI algorithm training

Locked state to retain unbiased lens

Periodic updates to the AccuRhythm AI algorithms will be introduced after thorough supervised training

