

NEW INTELLIGENCE INSIDE.

TruRhythm™ Detection
inside the Reveal LINQ™
Insertable Cardiac Monitoring System

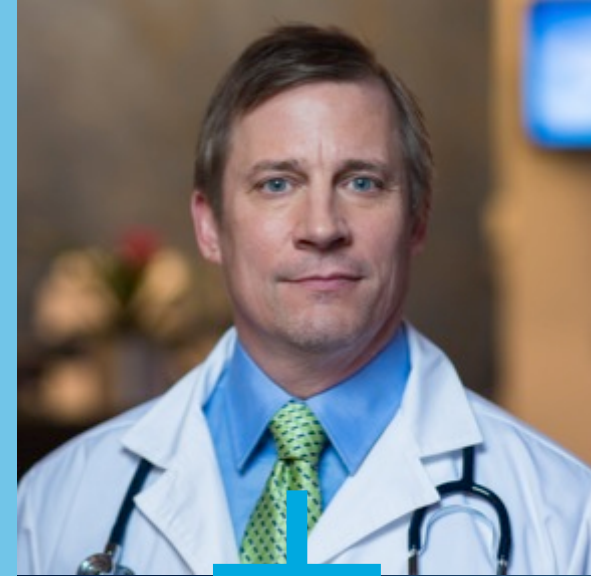


World's Smallest ICM. Now Smarter.

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REVEAL™ ICM EVOLUTION

- Accuracy
- Work Flow



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Further, Together

TRURHYTHM™ DETECTION INSIDE EVOLUTION OF REVEAL™ ICMs

Now smarter

TruRhythm™
Detection

NEW

intelligence inside the
Reveal LINQ™ ICM

World's first ILR

Reveal™ ILR



1998

World's smallest ICM

Reveal LINQ™ ICM



2014



2017

TRURHYTHM™ DETECTION INSIDE ACCURACY EVOLUTION

Reveal™ XT




AF Industry's first AF detection algorithm

2007

Reveal™ XT

With FullView™ Software

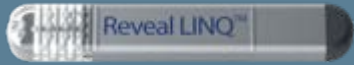
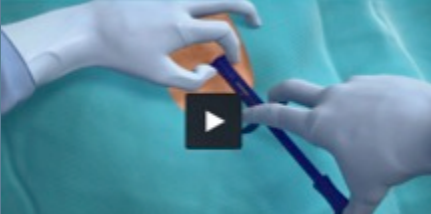



PAUSE **NEW** Pause algorithm with diminishing R-wave analysis

AF **NEW** AF algorithm and improved noise discrimination

2011

Reveal LINQ™

AF **NEW** simplified insertion and tight pocket for better signal quality

AF **NEW** AF algorithm identifies p-waves for greater accuracy

2014

TruRhythm™ Detection



Streamlined episode review for clinic efficiency^{1,2}

NEW algorithms with

- Smart filtering
- Self-learning intelligence

BRADY **PAUSE** **AF**

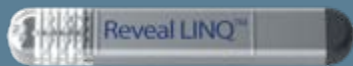
2017

¹ TruRhythm™ Detection Efficiency. Medtronic data on file. 2017.

² TruRhythm™ Detection Algorithms. Medtronic data on file. 2017.

TRURHYTHM™ DETECTION INSIDE WORK FLOW EVOLUTION

Reveal LINQ™ ICM



- Wireless data with CareAlerts
- Simplified reporting

2014

CareLink™ advancements

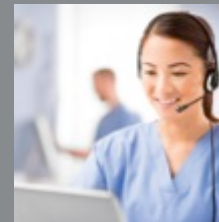


All patient and clinical data are fictitious and for demonstration purposes only.

- Customized reports
- Wireless data enhancements
- User interface updates

2015

NEW services and education



- Reveal LINQ™ Mobile Manager
- FocusON Reveal LINQ™ SM Monitoring & Triaging Service
- Reveal LINQ™ Education Programs

2016

TruRhythm™ Detection



Best-in-class data to streamline episode review^{1,2}



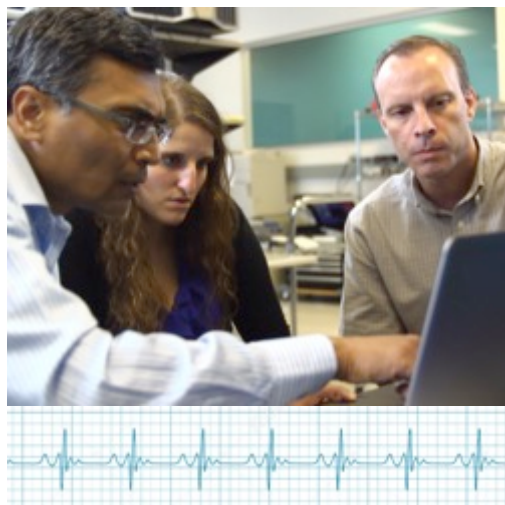
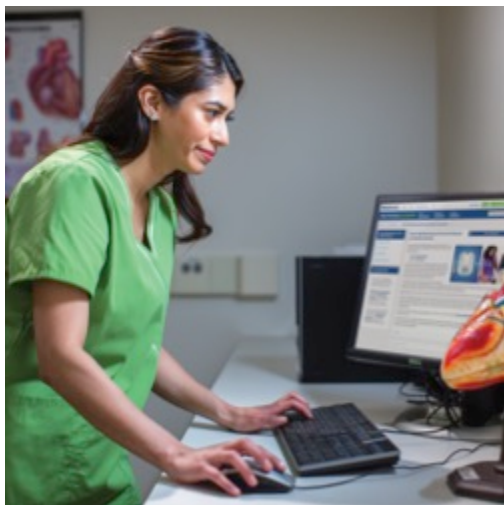
Improved accuracy and reporting for actionable data¹

2017

¹ TruRhythm™ Detection Algorithms. Medtronic data on file. 2017.

² TruRhythm™ Detection Efficiency. Medtronic data on file. 2017.

TRURHYTHM™ DETECTION INSIDE THE JOURNEY



Clinical need

Clinicians said streamlined data was the biggest need

50,000+ ECGs

Over 50,000 real-world ECGs analyzed to increase device accuracy

TruRhythm™ Detection

NEW exclusive and intelligent algorithms that streamline episode review¹

¹ TruRhythm™ Detection Algorithms. Medtronic data on file. 2017.

TRURHYTHM™ DETECTION INSIDE



INTELLIGENT NEW ALGORITHMS

- Smart filtering
- Self-learning



ACTIONABLE WORK FLOW EFFICIENCY

- Streamlined episode review and reporting^{1,2}

¹ TruRhythm™ Detection Algorithms. Medtronic data on file. 2017.

² TruRhythm™ Detection Efficiency. Medtronic data on file. 2017.

NEW ALGORITHMS

- Smart filtering
- Self-learning intelligence



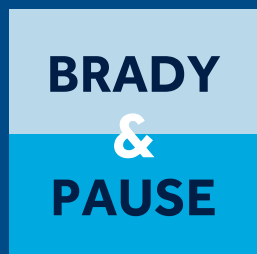
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TRURHYTHM™ INTELLIGENT DETECTION

NEW ALGORITHMS

SMART FILTERING

NEW second sensing filter analyzes rhythms for possible undersensing in Brady and Pause



SELF-LEARNING

Exclusive fifth-generation atrial fibrillation algorithm **learns and adapts** to patient's rhythm over time



TRURHYTHM™ INTELLIGENT DETECTION

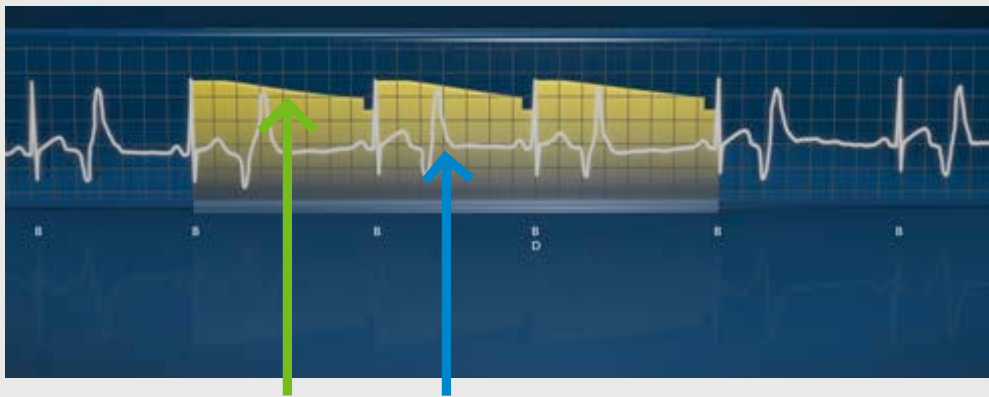
CLINICAL NEED

BRADY AND PAUSE EPISODES

- Improve PVC detection¹
- Improve small R-wave detection¹

BRADY
&
PAUSE

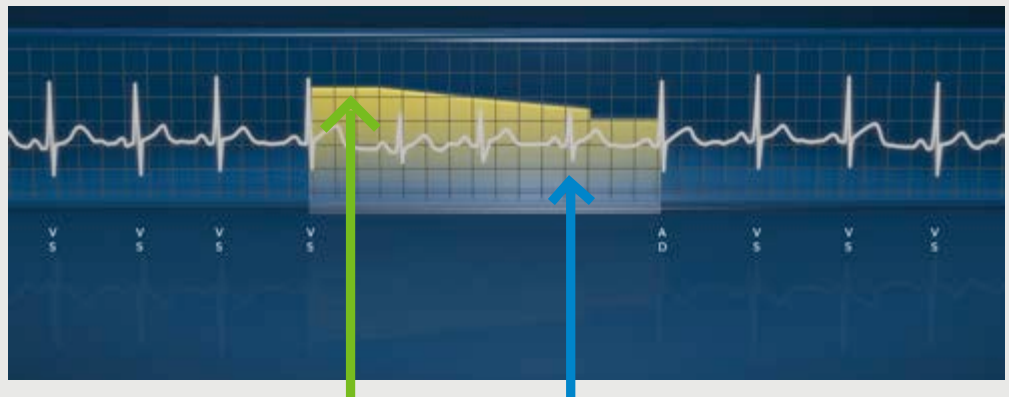
PVCs example



Above image: Detection threshold of first sensing filter

Result: PVC not detected due to undersensing

Small R-waves example



Above image: Detection threshold of first sensing filter

Result: Small R-waves not detected due to undersensing

¹ TruRhythm™ Detection Algorithms. Medtronic data on file. 2017.

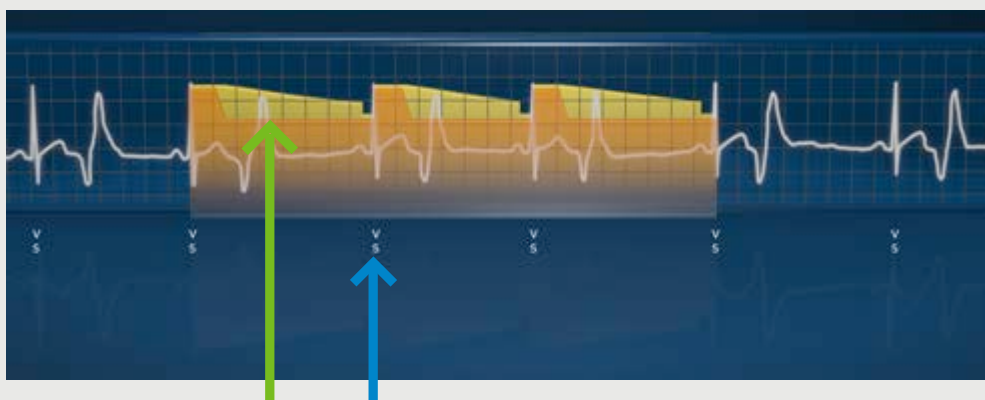
TRURHYTHM™ INTELLIGENT DETECTION BRADY AND PAUSE SOLUTION

SMART FILTERING ALGORITHM

Exclusive second filter rejects Brady and Pause episodes with:

BRADY
&
PAUSE

EVIDENCE OF PVCs PVCs example



Above image: Threshold of new, second filter detects PVCs
Result: ECG markers re-classified; false episodes rejected

EVIDENCE OF SMALL R-WAVES Small R-waves example



Above image: Threshold of new, second filter detects small R-waves
Result: ECG markers re-classified; false episodes rejected

TRURHYTHM™ INTELLIGENT DETECTION

CLINICAL NEED

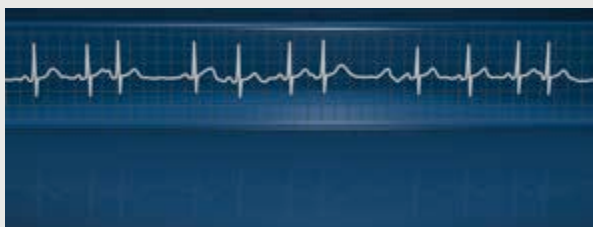
AF EPISODES

Further enhance current AF algorithm to improve AF discrimination in patients with **irregular sinus arrhythmias** (sick sinus or PACs)

AF



AF detection algorithms based on R-wave variability alone may classify sick sinus or PACs as AF



AF detection in Reveal LINQ™ without P-Sense algorithm

The Reveal LINQ™ ICM's **P-Sense algorithm** uniquely identifies P-waves and rejects false AF episodes



AF detection in Reveal LINQ™ with P-Sense algorithm

CHALLENGE TODAY

P-Sense Algorithm cannot adapt based on a patient's history

P-Sense sometimes cannot identify P-waves in patients with irregular sinus rhythms



TRURHYTHM™ INTELLIGENT DETECTION AF SOLUTION

SELF-LEARNING ALGORITHM

Exclusive fifth-generation AF algorithm **learns and adapts** to a patient's daily rhythm

AF

1. LEARNS

AF algorithm tracks R-wave variability in a patient and keeps their P-wave evidence history



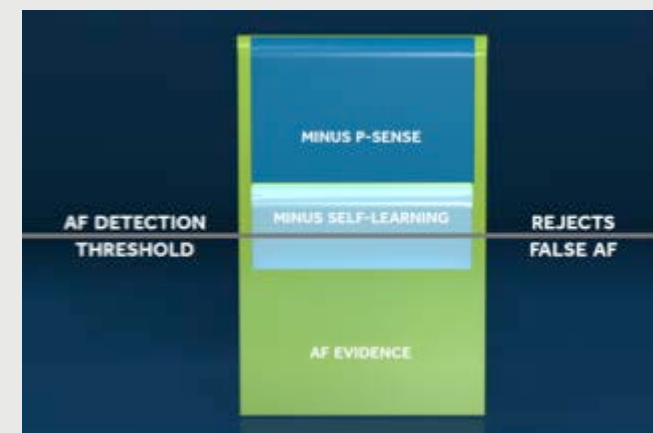
2. ADAPTS

Self-learning algorithm will keep a history of P-wave evidence for each patient and use that history to adapt the level of AF evidence needed to store an AF episode



3. REJECTS

Self-learning algorithm rejects false AF in patients with irregular sinus



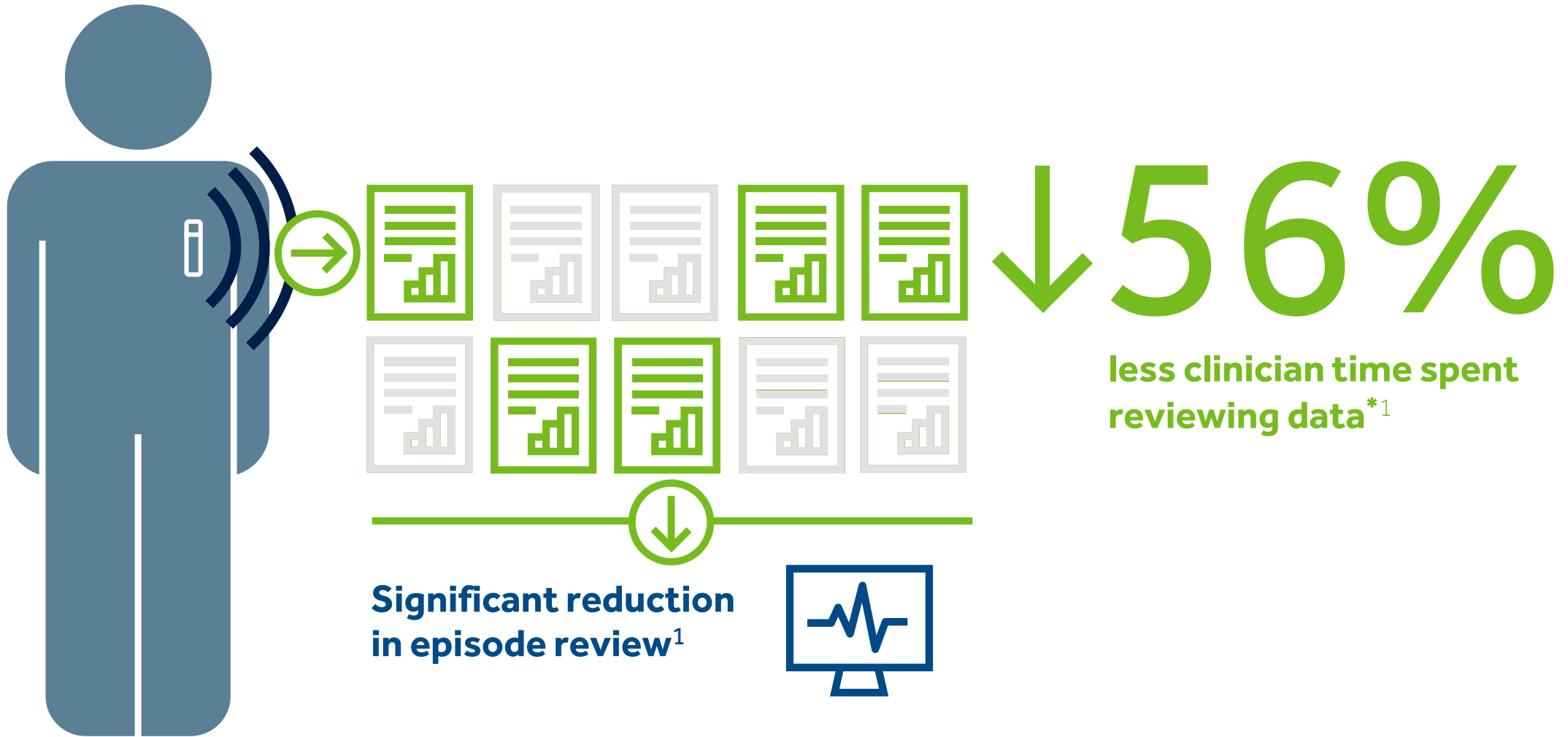
WORK FLOW EFFICIENCY

- Episode reduction
- Report improvements



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TRURHYTHM™ ACTIONABLE DETECTION STREAMLINED EPISODE REVIEW



¹ TruRhythm™ Detection Algorithms. Medtronic data on file. 2017.

*Review of false detects, compared with the Reveal LINQ™ ICM without TruRhythm™ Detection

TRURHYTHM™ ACTIONABLE DETECTION

INCREASED SPECIFICITY; MAINTAINED SENSITIVITY

BEST-IN-CLASS DATA

- Reduce episode review burden with fewer false detects¹
- Maintain clinical success without sacrificing sensitivity¹



	REDUCTION IN FALSE DETECTIONS	RELATIVE SENSITIVITY ¹
BRADY	↓ 95%	98.3% [†]
PAUSE	↓ 47%	99.4% [†]
AF AF episode duration sensitivity used is ≥2 mins.	↓ 49%	99.1% [†]

¹ TruRhythm™ Detection Algorithms. Medtronic data on file. 2017.

*Compared with the Reveal LINQ™ ICM without TruRhythm™ Detection

† Relative sensitivity compared with the Reveal LINQ™ ICM without TruRhythm™ Detection

TRURHYTHM™ ACTIONABLE DETECTION REPORTING IMPROVEMENTS

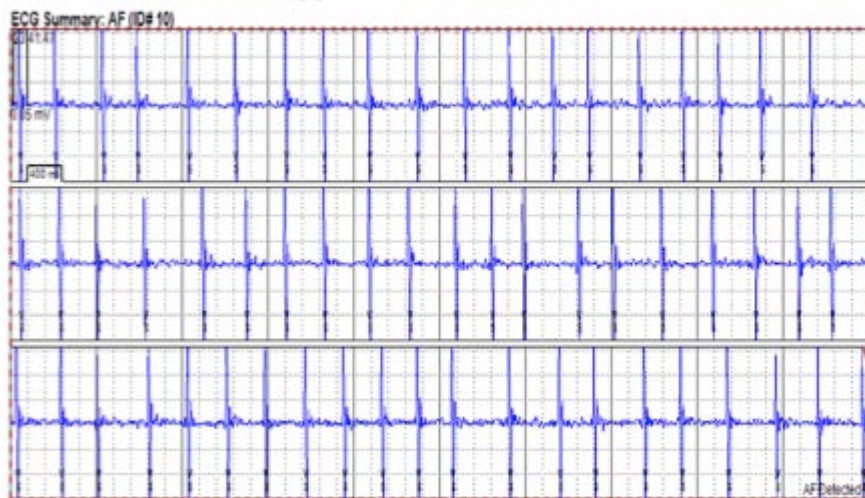
MORE ACTIONABLE AF REPORTS

- 30 seconds of ECG for longest stored AF episodes*
- 2 minutes of markers for longest stored AF episode

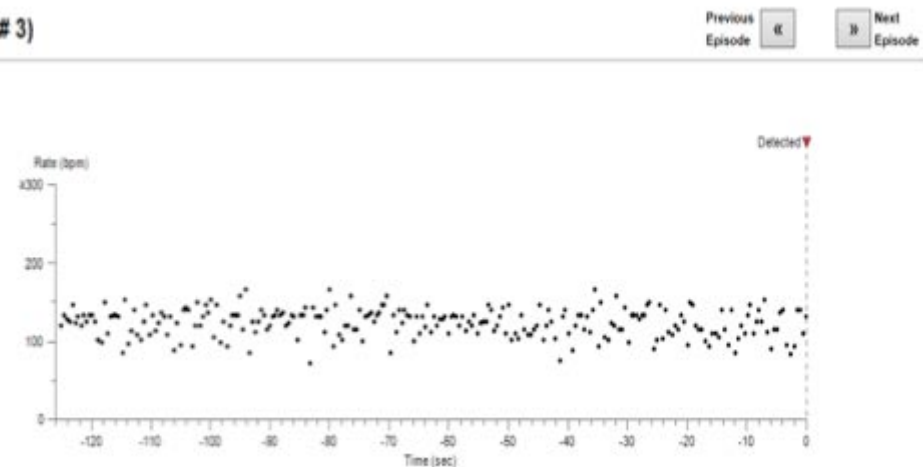


AF episodes from wireless transmissions will show **30 seconds of ECG** vs. 10 seconds*

AF episodes will have **~2 minutes of intervals** vs. 10 seconds, from wireless transmissions



AF (ID# 3)



*30 seconds will show on the report when the AF episode is the only episode type available that day:

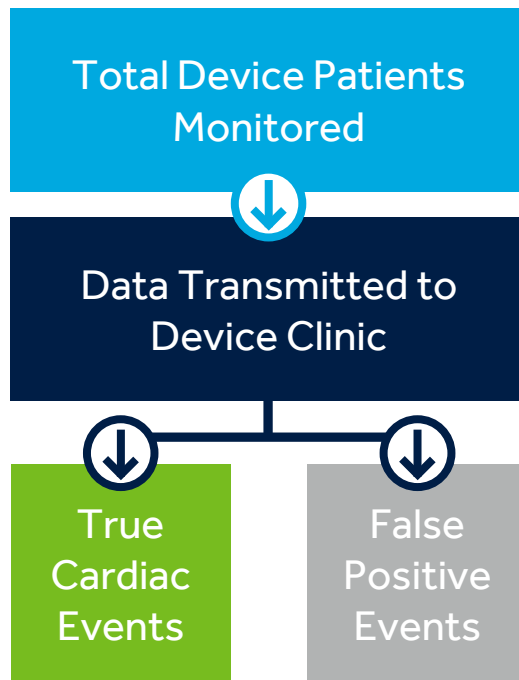
- For TruRhythm in store longest AF episode only mode → it is the longest AF between 2 manual interrogations
- When in store AF: all, 6 min, 10 min, or longer mode → it is the longest AF of the day

TRURHYTHM™ ACTIONABLE DETECTION

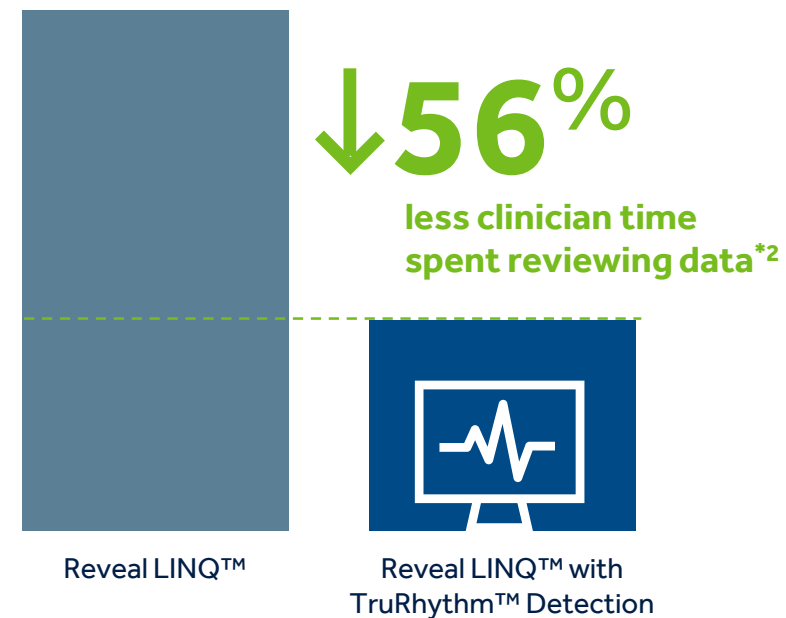
TIME SAVINGS

MORE EFFICIENT REVIEW

- Save time with more accurate detection^{1,2}



Reduction in data review time*



¹ TruRhythm™ Detection Algorithms. Medtronic data on file. 2017.

² TruRhythm™ Detection Efficiency. Medtronic data on file. 2017.

*Review of false detects, compared with Reveal LINQ™ ICM without TruRhythm™ Detection

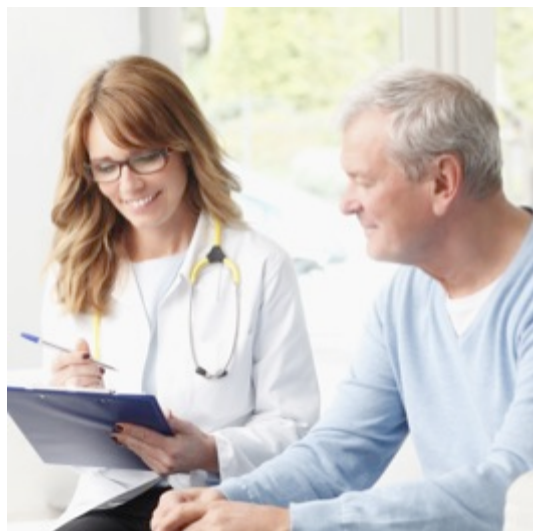
PROVEN SOLUTION

- Clinical rigor
- Confidence across indications



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REVEAL™ ICM: MOST STUDIED AND PUBLISHED



50M

days of real-world
patient follow-up —
the most of any
ICM manufacturer¹



**Most clinically
validated**

ICM in **cryptogenic
stroke, syncope,
and atrial fibrillation**
patients²⁻⁴

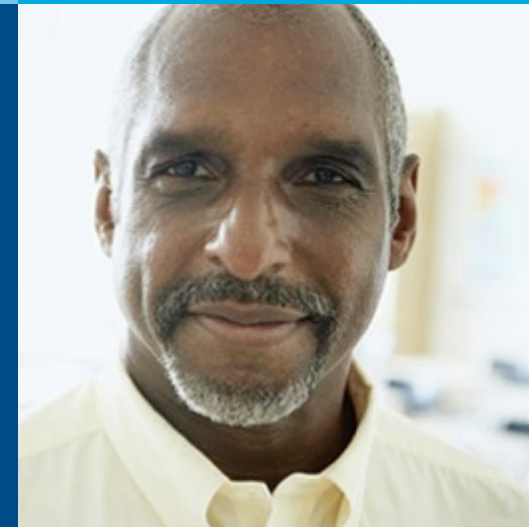
50+

published
detection
performance
papers⁵



500+

published clinical
articles and
abstracts⁶



¹ Reveal LINQ™ ICM Days of Follow-Up. Medtronic data on file. 2017.

² Sanders P, et al. *Heart Rhythm*. 2016;13(7):1425-1430.

³ Sanna T, et al. *N Engl J Med*. 2014;370(26):2478-2486.

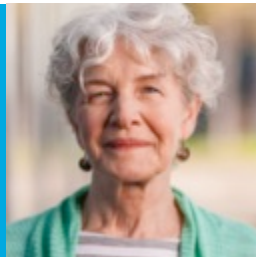
⁴ Edvardsson N, et al. *Europace*. 2011;13(2):262-269.


⁵ Medtronic Reveal™ AF Publications. Medtronic data on file. 2016.


⁶ Medtronic Reveal™ Publications. Medtronic data on file. 2016.

TRURHYTHM™ PROVEN DETECTION CONFIDENCE ACROSS INDICATIONS

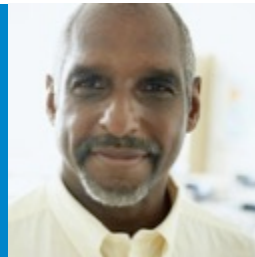
Cryptogenic stroke





 **Why Reveal LINQ™ ICM?**
88% percent of AF patients would be missed if monitoring stopped at 30 days*¹

 **Why TruRhythm™ Detection?**
Don't miss an AF episode† with high sensitivity and streamlined data review²

Syncope





 **Why Reveal LINQ™ ICM?**
78% of patients with recurrent syncope are diagnosed with an ICM³

 **Why TruRhythm™ Detection?**
Spend half the time reviewing data, with significant improvement in Brady and Pause detections**^{2,4}

Atrial fibrillation



 **Why Reveal LINQ™ ICM?**
Short and intermittent monitoring will likely miss many patients with paroxysmal AF¹

 **Why TruRhythm™ Detection?**
Manage AF patients over time with more actionable and accurate reports²

The Reveal LINQ™ ICM is guideline-recommended for Cryptogenic Stroke and Syncope^{5,6}

¹ Sanna T, et al. *N Engl J Med*. 2014;370(26):2478-2486.

² TruRhythm™ Detection Algorithms. Medtronic data on file. 2017.

³ Edvardsson N, et al. *Europace*. 2011;13(2):262-269.

⁴ TruRhythm™ Detection Efficiency. Medtronic data on file. 2017.

⁵ Kirchhof P, et al. *Eur Heart J*. Published online August 27, 2016. Accessed online August 31, 2016.

⁶ Task Force for the Diagnosis and Management of Syncope, et al. *Eur Heart J*. November 2009;30(21):2631-2671.

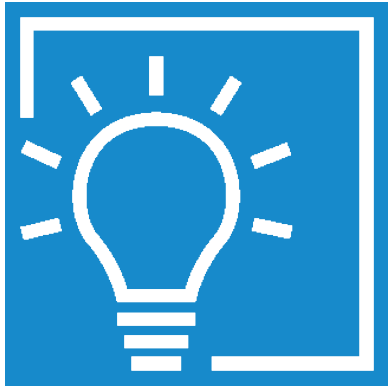
* Based on Kaplan Meier estimates

† Episodes detected are ≥ 2 minutes

** Compared with the Reveal LINQ™ ICM without TruRhythm™ Detection

TRURHYTHM™ DETECTION

NEW INTELLIGENCE TO GUIDE DECISIONS



INTELLIGENT

Exclusive NEW smart filtering and self-learning algorithms¹



ACTIONABLE

Best-in-class data to streamline episode review¹



PROVEN

Most studied with 500+ clinical articles and abstracts²

¹ TruRhythm™ Detection Algorithms. Medtronic data on file. 2017.

² Medtronic Reveal™ Publications. Medtronic data on file. 2016.

THANK YOU



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Brief statement

See the device manual for detailed information regarding the instructions for use, the implant procedure, indications, contraindications, warnings, precautions, and potential adverse events. For further information, contact your local Medtronic representative or consult the Medtronic website at www.medtronic.com.



www.medtronic.com/manuals

Consult instructions for use at this website. Manuals can be viewed using a current version of any major Internet browser. For best results, use Adobe Acrobat Reader® with the browser.

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