

THE LINQ™

BETWEEN CRYPTOGENIC STROKE AND AF

Atrial Fibrillation detection and treatment matters for improved stroke outcomes

Reveal LINQ™

Insertable Cardiac
Monitoring System



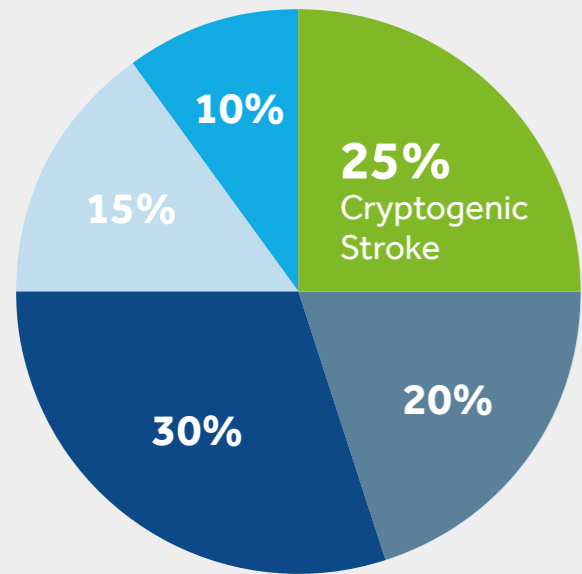
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Medtronic
Further. Together



CRYPTOGENIC STROKE IS A CHALLENGE



- Cryptogenic Stroke
- Large Vessel
- Small Vessel
- Other
- Cardiembolic



SECONDARY STROKE PREVENTION IS ESSENTIAL

1,400,000

Europeans experience ischemic strokes every year.¹

Despite a comprehensive diagnostic workup, about **25%** of ischemic stroke patients remain cryptogenic.²

Up to **30%** of patients with cryptogenic stroke may have previously undetected paroxysmal AF.³

AF Detection and Treatment Matters

Detection of AF in Cryptogenic Stroke Patients Changes Treatment



* If the patient is an appropriate candidate.

Navigate ESUS & RE-SPECT ESUS Trials:

Two studies that demonstrated the effects of NOAC treatment for all subtypes of ESUS patients

STUDY OUTCOME	
NAVIGATE ESUS	NEGATIVE ⁹ Increase in bleeding in the rivaroxaban arm
RE-SPECT ESUS	FAILED PRIMARY OUTCOME ⁹ Dabigatran was not superior to ASA

The results of both trials highlight the importance of detecting AF and tailoring treatment for cryptogenic stroke or ESUS patients

1 in 4

Stroke survivors will experience another stroke within 5 years.⁴

5x

There is a 5-fold increase in ischemic stroke risk for AF patients.¹⁰

2x

More likely for AF-related ischemic stroke to be fatal than non-AF stroke.¹¹

67%

Decrease in AF patient stroke risk with oral anticoagulants.¹²



GUIDELINES RECOMMEND ICM FOR PATIENTS WITH CRYPTOGENIC STROKE^{23,24}



THE CRYSTAL-AF STUDY DEMONSTRATES THE SUPERIORITY OF ICM FOR AF DETECTION

As published in the New England Journal of Medicine³



2020 ESC AF Guidelines

ICM recommendation for cryptogenic stroke¹² (class IIa, LOE B*)²⁷

RECOMMENDATION

In selected stroke patients without previously known AF, additional ECG monitoring using long-term non-invasive ECG monitors or insertable cardiac monitors should be considered, to detect AF.

COR

LOE

IIa*

B

2019 AHA/ACC/HRS Atrial Fibrillation Guidelines

Recommends use of implantable loop recorder (ILR) in patients with cryptogenic stroke¹² (class IIa, LOE B-R)²⁶

RECOMMENDATION

In patients with cryptogenic stroke (i.e. stroke of unknown cause) in whom external ambulatory monitoring is inconclusive, implantation of a cardiac monitor (loop recorder) is reasonable to optimize detection of silent AF.

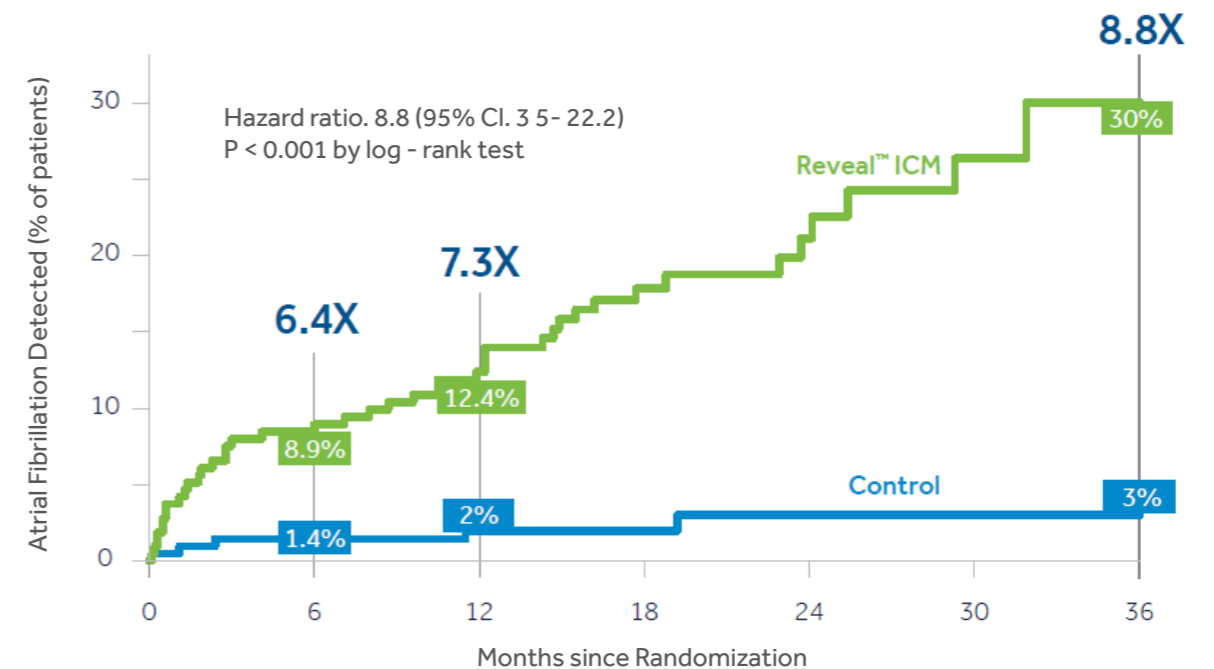
COR

LOE

IIa

B-R

CRYSTAL-AF study results*



- 30% AF detected at 3 years vs. 3% for SOC
- Multiple studies show that **short-term monitoring is NOT sufficient** for AF detection in cryptogenic stroke.^{14,15}

*Class IIa Benefit >> Risk and LOE B-R is moderate quality of evidence from 1 or more RCTs or meta-analysis of moderate quality RCTs.



"Atrial fibrillation after cryptogenic stroke was most often asymptomatic and paroxysmal and thus likely to be detected by strategies based on symptom-driven monitoring or intermittent short term recordings."

-Sanna. et al. N Eng/J Med.³



30-DAY CARDIAC MONITORING IS NOT ENOUGH

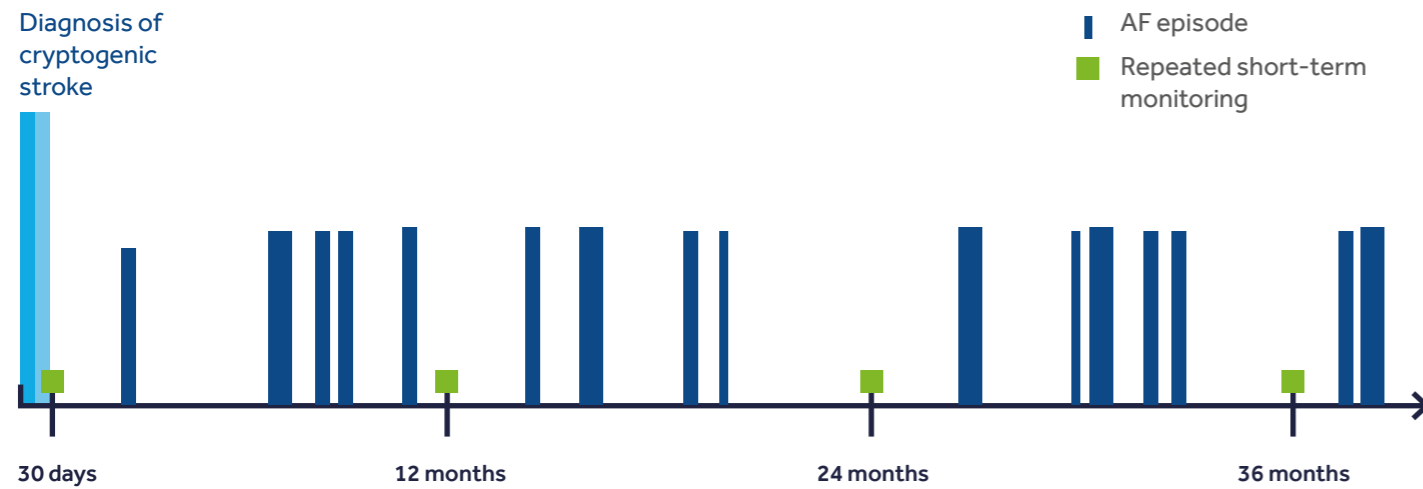
Short-term and intermediate-term cardiac monitoring may miss many patients with paroxysmal AF³



SECONDARY STROKE REDUCTION WITH PROLONGED CARDIAC MONITORING

Short-term and intermediate-term cardiac monitoring may miss many patients with paroxysmal AF³.

Long-term, continuous monitoring (up to 3 years)



Short-term monitoring (up to 1 week)
Intermediate-term monitoring (up to 30 days)

As published in Stroke¹⁶

The use of prolonged cardiac monitoring (PCM) has a potential impact on secondary stroke prevention, as patients with cryptogenic IS/TIA undergoing PCM had higher rates of AF detection and anticoagulant initiation, and lower stroke recurrence.



Patients who underwent PCM showed:

55% DECREASED RISK OF RECURRENT STROKE

Compared to conventional cardiac monitoring.¹⁶



2.5x

Increased incidence of AF detection¹⁶

2.1x

Increased incidence of anticoagulant initiation¹⁶

<4% of AF detected within the first month of cardiac monitoring.¹³

79% of first AF episodes were asymptomatic at 12 months.³

88% of patients who had AF would have been missed if only monitored for 30 days.³

*Based on Kaplan-Meier estimates



PATIENTS ARE MORE SATISFIED WITH ICMs THAN EXTERNAL WEARABLE MONITORS²²



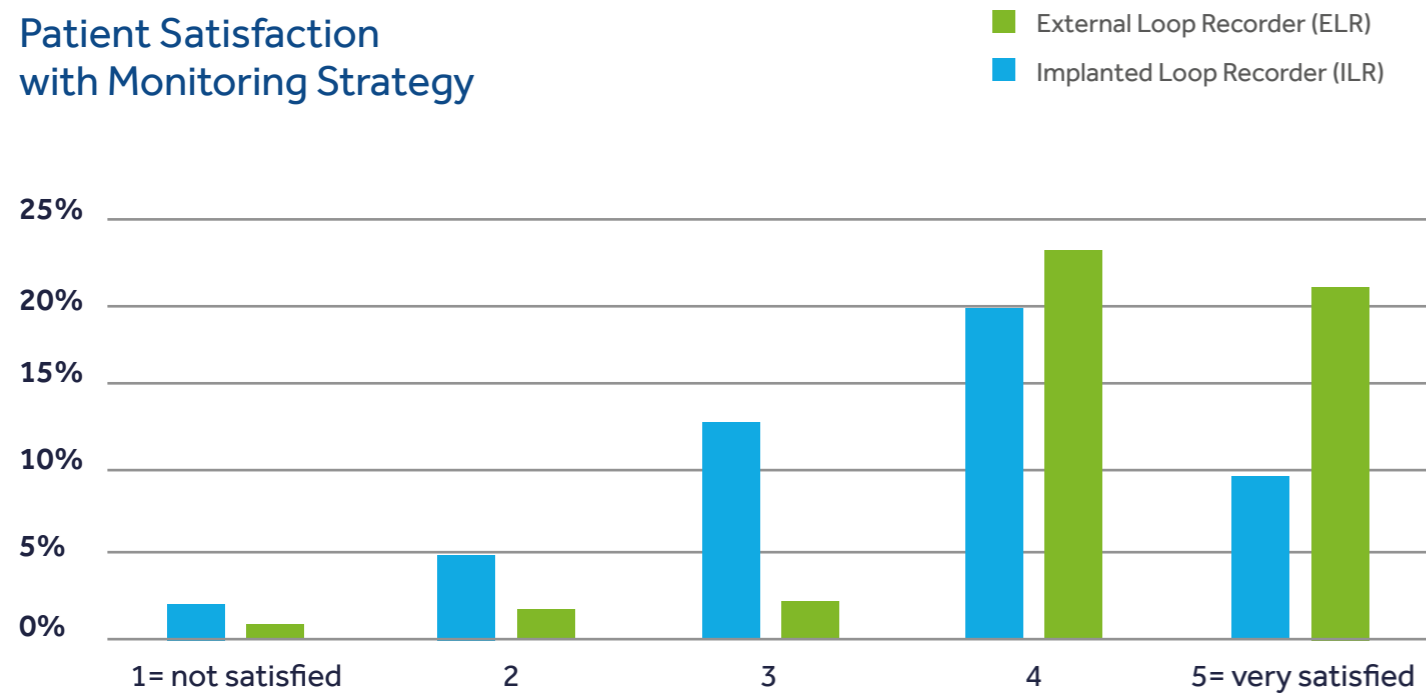
Percentage of patients "very satisfied" with monitoring strategy was higher in ILR vs. ELR arm (21% vs. 10%)²²



INFORM YOUR CLINICAL DECISIONS WITH THE REVEAL LINQ™ ICM SYSTEM



Patient Satisfaction with Monitoring Strategy



Overall Chi-square = 34.4; p<0.001.
 += Bonferroni-adjusted pairwise comparison of column proportions p<0.05.

The world's smallest, most accurate insertable cardiac monitor^{17,18}

1.5T & 3T MRI CONDITIONAL

No post-insertion wait time or patient positioning restrictions*



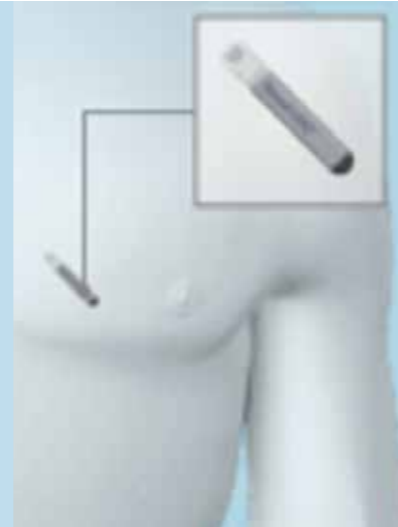
Up to 3 years of continuous cardiac monitoring¹⁹

The Reveal LINQ™ insertable cardiac monitoring system transforms your ability to diagnose atrial fibrillation with its proven AF detection algorithm.²⁰

99.7% AF episode detection accuracy

Industry's highest AF episode detection accuracy rate.^{20,21}

- The Reveal LINQ™ ICM is inserted just under the skin of the patient's chest in a short and simple procedure
- The heart monitor is one-third the size of a AAA battery (1.2 cc) and is not visible in most patients
- Use of the Reveal LINQ™ System doesn't require a change in daily activities



*Reference the Reveal LINQ ICM Clinician Manual for usage parameters.



FOLLOW-UP CAN BE A CHALLENGE

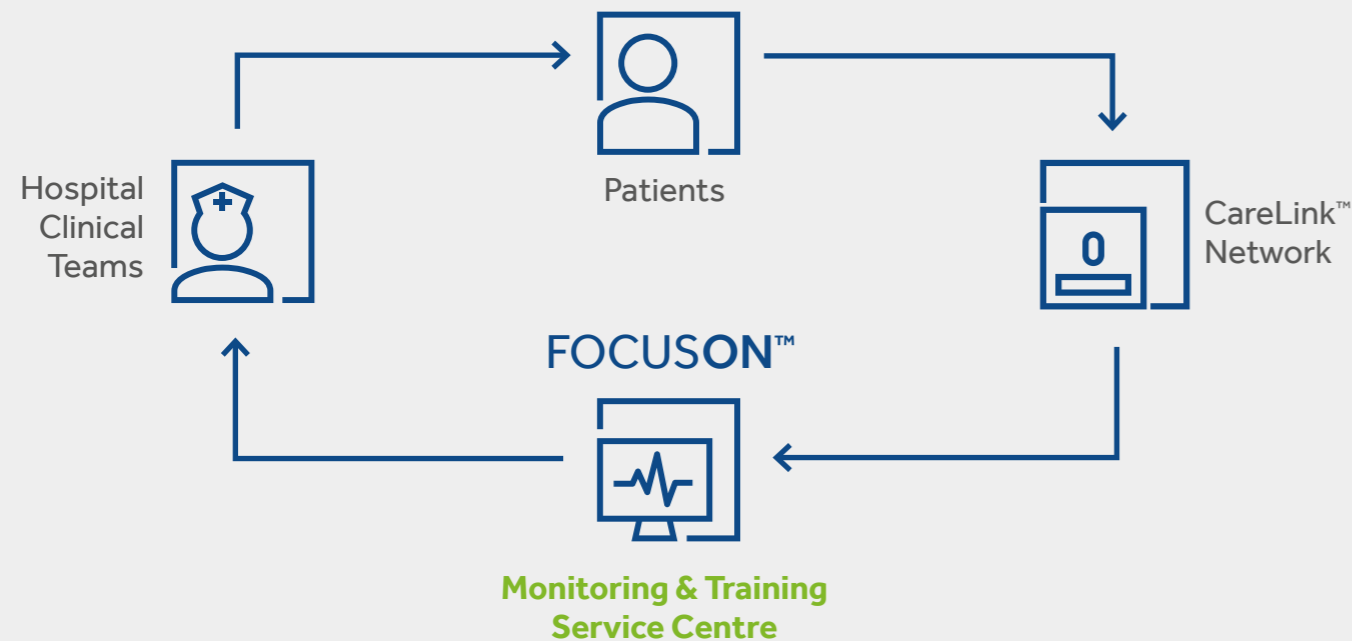
FOCUSON™ IS OUR SOLUTION

FocusOn™ is a monitoring and triaging service designed to help healthcare professionals save time whilst enabling better outcomes.

All data is reviewed by two separate certified ECG/cardiac device specialists, supervised by cardiologists.



FocusOn™ monitors and triages all incoming CareLink™ data according to hospital customisations.



INCREASE EFFICIENCY & IMPROVE QUALITY

THE BENEFIT OF FOCUSON™

EFFICIENCY

FOCUSON™ FREES UP TIME

Less time spent reviewing non-actionable data means more time for other clinical activities.

FOCUSON™ EXPANDS ACCESS

Prioritized and proactive communication frees up resources, so more patients can be seen and treated.

QUALITY

FOCUSON™ ENABLES BETTER OUTCOMES

Clinically relevant transmissions are triaged and escalated promptly to hospital clinical teams, allowing patients requiring treatment to be prioritised and treated in a timely manner.



80%
of transmissions do not
require clinical action^{29,30}



>3.5h
of data review is saved
per patient, per year*



3x
faster than standard
workflow in reviewing
transmissions³⁰

*For patients implanted with Reveal LINQ™ ICM - based on 11.4 minutes per transmission^{29,30}

References

1. Bejot Y, et al. *Presse Medicale* 2016;45:391-398.
2. Saver, JL. *Cryptogenic Stroke*. *N Engl J Med* 2016;374:2065-74.
3. Sanna T, et al. *N Engl J Med*. 2014;370:2478-2486.
4. Mohan KM, et al. *Stroke*. 2011;42:1489-1494.
5. January CT, et al. *Heart Rhythm*. Published online January 28, 2019.
6. Kirchhof P, et al. *Eur Heart J*. 2016;37:2893-2962.
7. Kernan WN, et al. *Stroke*. 2014;45:2160-2236.
8. Hart RG, et al. *N Engl J Med*. 2018;378:2191-2201.
9. Diener HC, et al. *N Engl J Med*. 2019;380:1906-1917.
10. Wolf PA, et al. *Arch Intern Med*. 1987;147:1561-1564.
11. Lin HJ, et al. *Stroke*. 1996; 27:1760-1764.
12. *Stroke Prevention in Atrial Fibrillation Study*. *Circulation*. 1991;84:527-539.
13. Brachmann J, et al. *Circ Arrhythm Electrophysiol*. 2016; 9:e003333. doi: 10.1161/CIRCEP.115.003333.
14. Choe WC, Passman RS, Brachmann J, et al. A Comparison of Atrial Fibrillation Monitoring Strategies After Cryptogenic Stroke (from the Cryptogenic Stroke and Underlying AF Trial). *Am J Cardiol* 2015;116:889-893.
15. Ziegler PD, Rogers JD, Ferreira SW, Nichols AJ, Richards M, Koehler JL, Sarkar S. Long-term detection of atrial fibrillation with insertable cardiac monitors in a real-world cryptogenic stroke population. *Int J Cardiol* 2017;244:175-179.
16. Tsvigoulis G, et al. Prolonged Cardiac Rhythm Monitoring and Secondary Stroke Prevention in Patients With Cryptogenic Cerebral Ischemia. *Stroke*. Published online June 20, 2019.
17. *ICM Size Comparison Guide*. Medtronic data on file. 2019.
18. *ICM Accuracy Comparison Guide*. Medtronic data on file. 2019.
19. Reference the Reveal LINQ ICM Clinician Manual for usage parameters.
20. *TruRhythm Detection Algorithms*. Medtronic data on file. 2017.
21. Nöcker G, Mayer J, Boldt LH, et al. Performance of an Implantable Cardiac Monitor to Detect Atrial Fibrillation: Results of the DETECT AF Study. *J Cardiovasc Electrophysiol*. December 2016;27(12):1403-1410.
22. Buck B, et al. "PERDIEM Post-Embolism Rhythm Detection with Implantable versus External Monitoring Trial: Final Results." Oral presentation at the 5th European Stroke Organization Conference (ESOC), Milan, Italy, May 2019.
23. Hart RG, Diener HC, Coutts SB, et al. Embolic strokes of undetermined source: the case for a new clinical construct. *Lancet Neurol*. April 2014;13(4):429-438.
24. Landman SR and Sarkar S. Characterization of cardiac diagnostic care pathways by indication and physician specialty in a real-world dataset of 314,554 patients. Presented at the 2019 European Society of Cardiology Congress.
25. Milstein, N.S., Musat, D.L., Allred, J. et al. Detection of atrial fibrillation using an implantable loop recorder following cryptogenic stroke: implications for post-stroke electrocardiographic monitoring. *J Interv Card Electrophysiol* 57, 141-147 (2020). <https://doi.org/10.1007/s10840-019-00628-6>.
26. January CT, Wann LS, Calkins H, et al. 2019 AHA/ACC/HRS Focused Update of the 2014 AHA/ACC/HRS Guideline for the Management of Patients With Atrial Fibrillation: A Report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines and the Heart Rhythm Society. *Heart Rhythm*. Published online January 28, 2019.
27. Kirchhof P, et al. *Eur Heart J*. 2016;37:2893-2962.
28. Hart RG, Diener HC, Coutts SB, et al. Embolic strokes of undetermined source: the case for a new clinical construct. *Lancet Neurol*. April 2014;13(4):429-438.
29. Cronin et al. 2012, *Heart Rhythm*, vol 9, n°12.
30. Medtronic Data on File.

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. If using an MRI SureScan® device, see the MRI SureScan® technical manual before performing an MRI. For further information, contact your local Medtronic representative and/or consult the Medtronic website at medtronic.eu.

For applicable products, consult instructions for use on www.manuals.medtronic.com. 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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