Meta-Analysis Summary: Prolonged Cardiac Rhythm Monitoring and Secondary Stroke Prevention in Patients with Cryptogenic Cerebral Ischemia

As published in Stroke, August 2019[i]

What: A meta-analysis published in *Stroke* (August) demonstrates that long-term heart monitoring, or prolonged cardiac rhythm monitoring (PCM), could have a significant impact on secondary stroke prevention.

The study titled *"Prolonged Cardiac Rhythm Monitoring and Secondary Stroke Prevention in Patients With Cryptogenic Cerebral Ischemia "*shows that PCM is associated with higher rate of AF detection, higher incidence of anticoagulation initiation, and reduced stroke recurrence in patients with cryptogenic ischaemic stroke (IS) or transient ischaemic attack (TIA).

The Study: The study is the first outcome evidence available for long-term heart monitoring in patients with unexplained stroke.

Objective: The study aimed to evaluate the impact of long-term heart monitoring – on secondary stroke prevention using data from available-to-date randomised clinical trials and observational studies.

Method: The study was conducted by performing a comprehensive literature search and conference proceedings to identify studies reporting stroke recurrence rates in patients with history of unexplained stroke receiving long-term heart monitoring compared with patients receiving conventional cardiac monitoring. It included a total of 1,102 patients with an average age of 68 years old.

Results: Patients who underwent long-term cardiac monitoring compared to conventional cardiac monitoring show:

- **2.5 x increased incidence of AF detection**
- **2.1 x increased incidence of anticoagulant initiation**
- **55% decreased risk of recurrent stroke**

About Unexplained (Cryptogenic) Stroke and atrial fibrillation (AF):

An estimated 350,000 people are living with stroke in Australia[ii]. 82% of strokes are ischaemic [iii] and one third of the ischaemic strokes is cryptogenic[iv], or unexplained, stroke which occurs when the underlying cause of a stroke remains unclear despite testing.

It is estimated that every nine minutes someone in Australia will suffer a stroke[v]. Having a stroke means the patient is at greater risk for having another (recurrent) stroke. One-in-10 stroke survivors are likely to suffer a recurrent stroke within 10 years[iii].

Undiagnosed AF – a common abnormal heart rhythm where the upper chambers of the heart beat fast or quiver – is a cause of unexplained strokes. It can be highly symptomatic or there may be no symptoms at all. There are approximately 100,000 Australians living with undiagnosed AF[vi].

Stroke is one of the most serious consequences of AF and imposes substantial personal and economic costs. Ineffective or no stroke prevention treatment may lead to greater incidence of stroke, poor outcomes for patients and cost to the Australian health system.[vii]

About long-term insertable cardiac monitors in stroke management:

AF can be highly symptomatic or there may be no symptoms at all. Continuous cardiac monitoring can be used to assess AF. Longer-term monitoring is recommended[viii] and short- and intermediate-term cardiac monitoring may miss many patients with paroxysmal AF[ix]. Almost 9 in 10 (88%) patients who had been diagnosed with AF would have been missed if only monitored for 30 days[ix*].

The study supports current AF and stroke guidelines. The [AF guidelines](#) by Cardiac Society of Australia and New Zealand recommend longer term cardiac monitoring in patients with unexplained stroke. Further, the guidelines recognise a substantial proportion of AF occurs beyond the duration of external monitors, and a longer duration of monitoring is associated with higher frequency of AF detection in patients with unexplained stroke. This is in line with the 2017 Clinical Guidelines for Stroke Management by Stroke Foundation[x]. Within the meta-analysis, patients undergoing prolonged monitoring had at least 30 days of monitoring with 63% patients undergoing insertable cardiac monitoring.

The study also provides good evidence showing that PCM represents an important diagnostic tool to identify the subgroup of unexplained stroke with underlying AF who will benefit more from oral anticoagulation than standard antiplatelet therapy, and distinguish them from other cases in which further investigation and different management might be required. Compared with the previously published systematic reviews and meta-analyses, this is the first to report the significant impact of PCM-guided anticoagulation in the secondary prevention of stroke after an unexplained stroke.

Appendix:

Below is the image of the Medtronic Reveal LINQ™ Insertable Cardiac Monitoring System (for media purpose only). Similar devices are available.

Medtronic's Reveal LINQ System – a long-term heart monitoring system - may detect abnormal heart rhythms for up to 3 years[xi].

[i] Tsivgoulis G, Katsanos AH, Grory BM, et al. Prolonged Cardiac Rhythm Monitoring and Secondary Stroke Prevention in Patients With Cryptogenic Cerebral Ischemia. Stroke, August 2019 volume 50, issue 8. Original published online June 20, 2019 https://www.ahajournals.org/toc/str/50/8
[ii] https://strokefoundation.org.au/-/media/AE5EF6F25316408AB8DD90386FEC7830.ashx?la=en

[iii] Stroke Foundation Acute Audit Report 2017 https://informme.org.au/-/media/7D1480925C2046BA914F3F66D392B83A.ashx?la

[iv] Finsterer J, Acta Neurol Belg. 2010 Jun;110(2):135-47

[v] Deloitte Access Economics. No postcode untouched – Stroke in Australia 2017

[vi] Deloitte Access Economics Pty Ltd. *Off beat:* Atrial fibrillation and the cost of preventable strokes. September 2011; 10-15.

[vii] Deloitte Access Economics Pty Ltd. *Off beat:* Atrial fibrillation and the cost of preventable strokes. September 2011;

[viii] https://www.heartlungcirc.org/article/S1443-9506(18)31778-5/fulltext#sec0175

[ix] Sanna T, Diener HC, Passman RS, et al. Cryptogenic Stroke and Underlying Atrial Fibrillation (CRYSTAL AF). N Engl J Med. 2014; 370(26):2478-2486.

* Based on Kaplan Meier estimates

[x] https://informme.org.au/en/Guidelines/Clinical-Guidelines-for-Stroke-Management

[xi] Refer to the Reveal LINQ ICM Clinician Manual for usage parameters.