



Australian Government

Medical Services Advisory Committee

Public Summary Document

Application No. 1443 – Implantable loop recorders for diagnosis of atrial fibrillation in cryptogenic stroke

Applicant: **Medtronic Australasia Pty Ltd**

Date of MSAC consideration: **MSAC 69th Meeting, 6-7 April 2017**

Context for decision: MSAC makes its advice in accordance with its Terms of Reference, [visit the MSAC website](#)

1. Purpose of application

An application requesting Medicare Benefits Schedule (MBS) listing for the insertion of implantable loop recorders (ILR), and an investigation service of the inserted ILR, for the diagnosis of atrial fibrillation (AF) in patients with cryptogenic stroke or embolic stroke of undetermined source (CS/ESUS) was received from Medtronic Australasia Pty Ltd by the Department of Health (the Department).

2. MSAC's advice to the Minister

After considering the strength of the available evidence in relation to the comparative safety, clinical effectiveness and cost-effectiveness MSAC supported MBS listing for implantable loop recorders for the diagnosis of atrial fibrillation in patients where a diagnosis of (CS/ESUS) has been made based on the results of the medical history, physical examination, brain and carotid imaging, cardiac imaging, surface ECG testing including 24-hour Holter monitoring, and other tests as indicated and the patient does not have a permanent indication for oral anticoagulation. MSAC accepted that the service was safe, clinically effective and probably cost-effective. The committee agreed that implantation of the loop recorders could be provided as an outpatient service.

3. Summary of consideration and rationale for MSAC's advice

Implantable loop recorders (ILR) monitor the electrical activity of the heart, continuously storing information as electrocardiograms, and recording abnormal activity such as arrhythmia to enable detection of atrial fibrillation (AF) and guide treatment decisions. MSAC noted that insertion of ILRs requires a small incision under local anaesthesia lateral to the sternum, creating a pocket for the device. MSAC noted that implantation of ILR devices is currently included on the MBS for investigation of recurrent unexplained syncope (MBS items 38285, 11722 and 38286) and that ILR are currently included on Part C of the Prostheses List.

MSAC agreed that the comparator of standard care (no further investigation or 24 hour Holter monitor) was appropriate. MSAC questioned whether patients with a contraindication to oral

anticoagulants (OACs) should be excluded as they may have other treatment options available, such as left atrial appendage closure (LAAC).

MSAC noted that the evidence for safety and clinical effectiveness for ILR in this population is based on one non-blinded randomised controlled trial comparing ILRs and standard of care (CRYSTAL AF).

MSAC noted that ILRs are well tolerated and the risk of adverse events associated with implantation is low. MSAC concluded that based on the evidence provided, ILRs are not as safe as standard care, given the small risk of adverse events related to device insertion, but have an acceptable safety profile.

MSAC noted that the ILR treatment arm in the CRYSTAL AF trial had a higher rate of AF detection than the standard care arm (8.9% vs 1.4%, $p < 0.0006$ at 6 months and 30% vs 3%, $p < 0.001$ at 36 months). AF detection was associated with high rates of OAC prescribing (97% of patients with detected AF). MSAC advised that ILRs are likely to detect fewer cases of AF as the time since stroke increases, and it becomes less likely that the initial stroke was caused by AF. MSAC questioned whether there needs to be a specific reference to the appropriate amount of time since the stroke occurred to ensure it is being used as secondary prevention (i.e. within 3–6 months after a stroke). MSAC agreed that the evidence, although limited to a single trial, suggests that ILRs are more effective at detecting AF than standard care. MSAC also noted the results of the EMBRACE study, which showed that a 30-day external monitor identified AF in 16.1% of patients.

MSAC noted that this trial was not powered to detect a difference in time to first recurrent stroke, transient ischaemic attack or mortality and therefore a linked evidence approach was required. MSAC noted that a study of ILRs in approximately 6,000 patients is currently underway (due for completion in 2020) with time to stroke or peripheral embolic event as a primary outcome. MSAC agreed that the evidence presented using the linked evidence approach, although limited, suggested that ILRs have superior effectiveness in reducing the risk of stroke in this patient population. MSAC considered that the careful exploration of this evidence through sensitivity analyses was reassuring in reducing uncertainty of the clinical of ILR.

MSAC noted the modelled cost-utility approach used in the economic analysis, which estimated the incremental cost effectiveness ratio (ICER) at \$29,570 per quality adjusted life year (QALY). MSAC noted that the cost of the remote monitoring system (where remote monitoring may be applicable for some patients) was not included in the modelled costs of the ILRs. MSAC considered that the main area of uncertainty for the modelling was the use of a lifetime horizon, noting that the ILR was not cost-effective at 10 years with an ICER of \$74,428 per QALY. MSAC advised that the 100% specificity assumption used in the model was reasonable as it is applicable to the current generation ILR device, though specificity may have been lower in the first generation device. MSAC also considered that the population in CRYSTAL AF may be older than the eligible Australian population, but that a higher AF detection rate would reduce the ICER. MSAC agreed that overall, ILRs are likely to be cost-effective, noting that the concerns and areas of uncertainty highlighted by ESC have largely been addressed in sensitivity analyses.

MSAC noted that the estimated likely volume of use per year is approximately 720 to 1,440 implantations with total costs of between \$2 and \$4 million in the first five years of listing. MSAC agreed that the overall financial impact estimates appear reasonable. MSAC advised that outpatient implantation and removal of the ILR device is likely to be a reasonable option. MSAC noted that utilisation estimates may be affected by allowing outpatient insertions.

MSAC noted that costing of the proposed service includes MBS item 18222 (infusion of a therapeutic substance to maintain regional anaesthesia or analgesia), claimed twice, whereas the protocol states the procedure is performed under local anaesthesia.

MSAC noted that MBS items 38285 and 11722 (the MBS items on which the proposed service and associated costs are based) have been reviewed by the Cardiac Services Clinical Committee of the MBS Review Taskforce and foreshadowed that potential changes to these items would have an impact on this application's listing.

When considering the MBS item descriptor, MSAC advised that the proposed consultation item for device re-programming, data retrieval and analysis of the ILR should be limited to four per year for three years, consistent with the ILR lifespan.

MSAC supported MBS listing for implantable loop recorders for the diagnosis of atrial fibrillation in patients where a diagnosis of CS/ESUS has been made based on the results of the medical history, physical examination, brain and carotid imaging, cardiac imaging, surface ECG testing including 24-hour Holter monitoring, and other tests as indicated and the patient does not have a permanent indication for oral anticoagulation. MSAC accepted the service was safe, clinically effective and probably cost-effective. The committee agreed that implantation of the loop recorders could be provided as an outpatient service.

4. Background

MSAC has not previously considered ILRs for diagnosis of AF in patients with CS/ESUS.

5. Prerequisites to implementation of any funding advice

Several ILRs are currently listed on the Australian Register of Therapeutic Goods (ARTG) as shown in Table 1.

Table 1 ILRs listed on the ARTG

ARTG no.	Sponsor	Start date	Product name	Intended purpose
278935	Biotronik Australia Pty Ltd	10/08/2016	BioMonitor 2-AF	BioMonitor 2-AF is used for the monitoring and automatic recording of the following cardiac arrhythmias: Atrial fibrillation, bradycardia, sudden rate drop, high ventricular rate (HVR), asystole. Its primary purpose is to provide early detection and diagnostics of the occurrence of these arrhythmias which can be clinically manifested
215074	Biotronik Australia Pty Ltd	24/09/2013	BioMonitor	BioMonitor is an implantable cardiac monitor for monitoring of heart rhythm. Its primary purpose is to provide early detection and diagnosis of symptoms of arrhythmias. BioMonitor does not have a pacing function
218791	Medtronic Australasia Pty Ltd	23/12/2013	Reveal LINQ	The Reveal LINQ ICM is an insertable automatically-activated and patient-activated monitoring system that records subcutaneous ECG
160756	St Jude Medical Australia Pty Ltd	2/4/2009	SJM Confirm Model DM2102	The SJM Confirm ICM is indicated for the monitoring and diagnostic evaluation of patients who experience unexplained symptoms such as: dizziness, palpitations, chest pain, syncope, and shortness of breath, as well as patients who are at risk for other cardiac arrhythmias. The SJM Confirm, Model DM2102 is also indicated for patients who have been previously diagnosed with AF or who are susceptible to developing AF
149903	Medtronic Australasia Pty Ltd	06/02/2008	Reveal XT	The Reveal XT Model 9529 insertable cardiac monitors are implantable patient-activated and automatically-activated monitoring systems that records subcutaneous ECG. The Reveal XT Model 9529 is designed to automatically record the occurrence of arrhythmias in a patient. Arrhythmia may be classified as atrial tachyarrhythmia/atrial fibrillation (AT/AF),

ARTG no.	Sponsor	Start date	Product name	Intended purpose
				bradyarrhythmia, asystole, or (fast) ventricular tachyarrhythmida
149904	Medtronic Australasia Pty Ltd	6/02/2008	Reveal DX**	The Reveal DX Model 9528 insertable cardiac monitors are implantable patient-activated and automatically-activated monitoring systems that records subcutaneous ECG. The Reveal DX Model 9528 is designed to automatically record the occurrence of arrhythmia in a patient. Arrhythmia may be classified as bradyarrhythmia, asystole, or (fast) ventricular tachyarrhythmia. In addition, the Reveal DX can be activated by the patient to record cardiac rhythm during symptomatic episodes

Source: Therapeutic Goods Administration, accessed 23 August 2016

** Available on the Prosthesis List but do not have AF detection capabilities

6. Proposal for public funding

The proposed medical service is for the insertion of an ILR for diagnosis of AF in patients with CS/ESUS where a diagnosis of CS/ESUS has been made based on results of the medical history, physical examination, brain and carotid imaging, cardiac imaging, surface ECG testing including 24-hour Holter monitoring, and other tests as indicated.

ILRs are used with the MBS code for the diagnosis of primary disorder in patients with recurrent unexplained syncope (Item 38285). The application stated that requesting a new MBS item for explantation of the device is not required as the current MBS item 38286 (not specific to any indication) could apply for this service, should the two MBS services be listed.

ILRs are currently listed on Part C of the Prosthesis List with a Minimum Benefit of \$3,900.00.

The proposed new MBS item descriptors are shown in Table 2.

Table 2 Proposed MBS item descriptors

Category 3 - THERAPEUTIC
MBS ### IMPLANTABLE LOOP RECORDER, insertion of, for diagnosis of atrial fibrillation in patients with cryptogenic stroke/embolic stroke of undetermined source where: <ul style="list-style-type: none"> - A diagnosis of cryptogenic stroke/embolic stroke of undetermined source has been made based on results of the medical history, physical examination, brain and carotid imaging, cardiac imaging, surface ECG testing including 24-hour Holter monitoring, and other tests as indicated, AND - atrial fibrillation is suspected, AND - patient does not have a permanent indication for OAC, OR - patient does not have a permanent OAC contraindication including initial programming and testing, as an admitted patient in an approved hospital Multiple Services Rule (Anaes.) Fee: \$192.90 Benefit: 75% = \$144.70 85% = \$163.95
Category 2 – DIAGNOSTIC PROCEDURES AND INVESTIGATIONS
MBS ### IMPLANTABLE LOOP RECORDER, for investigation of atrial fibrillation in patients with cryptogenic stroke/embolic stroke of undetermined source, including re-programming of device, retrieval of stored data, analysis, interpretation and report Fee: \$34.75 Benefit: 75% = \$26.10 85% = \$29.55

ECG = electrocardiogram; MBS = Medicare Benefits Schedule; OAC = oral anticoagulation

7. Summary of Public Consultation Feedback/Consumer Issues

The Protocol Advisory Sub-Committee (PASC) received one response from a peak body, six responses from specialists and one response from a device organisation. The responses were positive.

Issues raised in the responses were:

- Benefits include monitoring for effectiveness of pharmacotherapies/ablation post diagnosis of AF.
- The outcomes should include minor surgical risk of infection.
- The outcomes should include longer term benefits of reduction in secondary stroke with its hospitalisations, medical services and rehabilitation costs.
- The term “cryptogenic” should be replaced with ESUS.

8. Proposed intervention’s place in clinical management

ILRs monitor the electrical activity of the heart, continuously storing information as electrocardiograms, and recording abnormal activity such as arrhythmia. The ILR is implanted under local anaesthesia.

There are two medical conditions that are relevant to this service: cryptogenic stroke defined as cerebral ischemia of obscure or unknown origin; and atrial fibrillation, a common cardiac arrhythmia.

The clinical management algorithm for investigation of stroke mechanism including CS/ESUS is shown in Figure 1. This figure also includes the proposed place of ILRs (red text) if public funding is recommended, and demonstrates the proposed comparator to ILRs (green text).

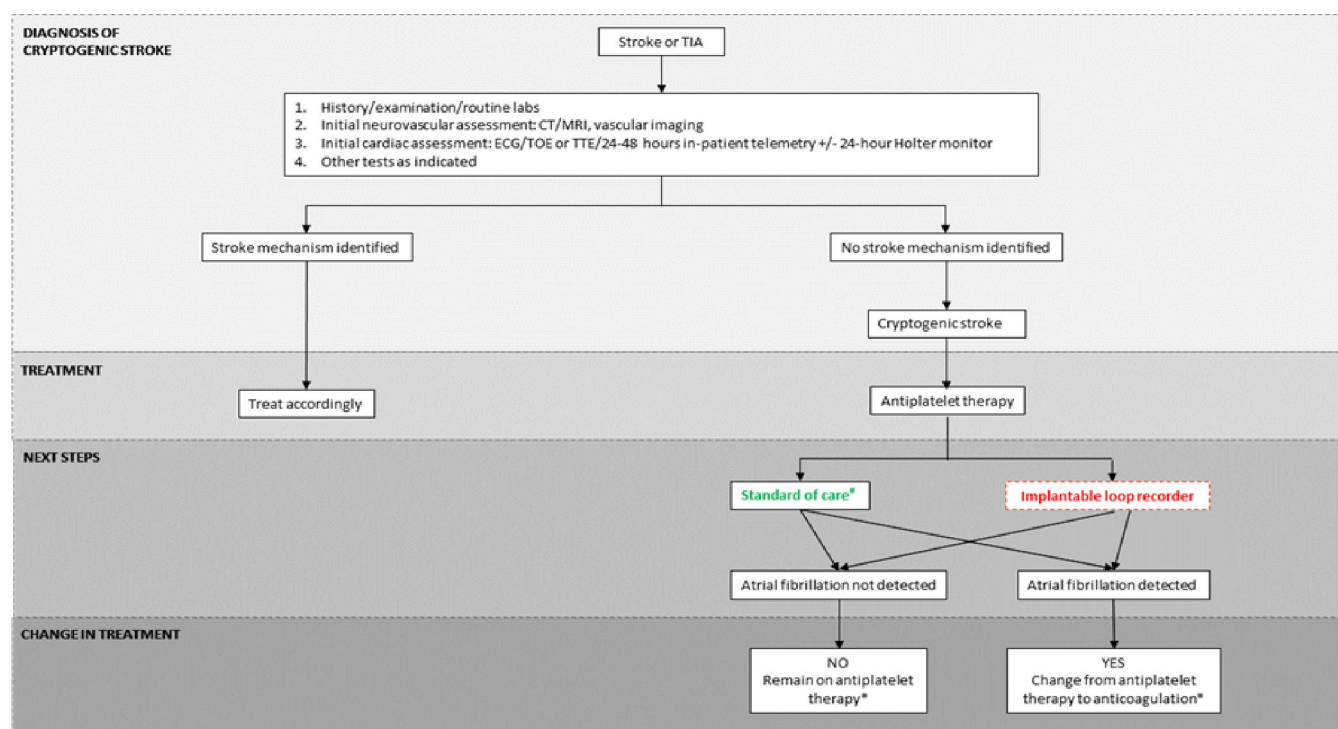


Figure 1 Clinical management algorithm for ILRs relative to SoC

#No further investigation or 24-hour Holter monitor * Treatment unless contraindicated

Red text: proposed place of medical service (ILRs); Green text: proposed comparator for ILRs

Abbreviations: ECG, electrocardiogram; TIA, transient ischaemic attack; TOE, transoesophageal echocardiogram; TTE, transthoracic echocardiogram

9. Comparator

The SBA nominated ‘standard of care’ as the main comparator for further investigation of a patient diagnosed with CS/ESUS and suspected of underlying AF. Standard of care includes no further investigation (after completion of CS/ESUS workup) or one additional round (*repeat*) 24-hour Holter monitor.

10. Comparative safety

The submission identified one randomised controlled trial (RCT) and five systematic reviews and/or meta-analyses. The pivotal trial, CRYSTAL AF, was a prospective, multi-centre, open-label RCT that aimed to assess whether long-term monitoring with ILRs (REVEAL XT Metronic device) was more effective than standard of care (control) for detecting AF in patients with CS/transient ischaemic attack (TIA) (n=441).

The insertion of the ICM (insertable cardiac monitor) requires a small incision to be made, under local anaesthesia, lateral to the sternum, creating a pocket for the ILR to be placed. In general, the ICM is well-tolerated and the risk of adverse events (AEs) is low. In CRYSTAL AF, 2.9% of subjects experienced AEs due to infection or erosion or implant site pain which required the removal of the device. There were 16 (7.2%) non-serious AEs and 8 (3.6%) serious AEs related to the procedure or the device, none of which were considered unexpected.

The most common adverse event in the intervention arm was AF, which was statistically significantly higher than in the control arm (odds ratio = 5.13 (95% CI: 2.58, 10.20)). There were no other statistically significant differences in adverse events that occurred between the two arms of CRYSTAL AF. Although not statistically significant:

- the rate of deaths was higher in the ILR arm than in the control arm over 12 months (7/221 (3.2%) vs. 2/220 (0.9%), respectively),
- the rate of cerebrovascular events was higher in the ILR arm than in the control arm over 12 months (13/221 (5.9%) vs. 5/220 (2.3%), respectively); and
- the rate of TIA was lower in the ILR arm than in the control arm over 12 months (12/221 (5.4%) vs. 19/220 (8.6%), respectively).

11. Comparative effectiveness

As shown in Table 3, there was a significantly higher rate of AF detection using the ILR compared with standard of care at six months (hazard ratio (HR) = 6.43 (95% confidence interval (CI): 1.9 to 21.7), 12 months (HR = 7.4 (95% CI: 2.6 to 20.8)), and 36 months (HR = 8.8 (95% CI: 3.5 to 22.2)). Of those detected with AF, 23/29 of cases (79%) were asymptomatic (paroxysmal) in the intervention arm over 12 months.

Table 3 Balance of clinical benefits and harms of ILR relative to SoC

Outcomes (units) Follow-up	Participants (studies)	Quality of evidence (GRADE) ^a	Relative effect (95%CI)	Risk with SoC	Risk or risk difference with ILR
AF detection (%) 6 months	N=441 (1 RCT)	⊕⊕⊕⊖	HR = 6.43 [1.9, 21.7], p=0.0006	3 (1.4%)	19 (8.9%)
AF detection (%) 12 months	N=441 (1 RCT)	⊕⊕⊕⊖	HR = 7.3 [2.6, 20.8]; p<0.0001	4 (2.0%)	29 (12.4%)
AF detection (%) 36 months	N=441 (1 RCT)	⊕⊕⊕⊖	HR = 8.8 [3.5, 22.2]; p<0.001	5 (3.0%)	42 (30%)
Non-serious procedure or system related AEs (%)	N=221 (ICM only) (1 RCT)	⊕⊕⊕⊖	NA	NA	16 (7.2%)
Serious procedure or	N=221 (ICM only)	⊕⊕⊕⊖	NA	NA	8 (3.6%)

system related AEs (%)	(1 RCT)				
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^a GRADE Working Group grades of evidence (Guyatt et al., 2013)

⊕⊕⊕⊖ **Moderate quality:** We are moderately confident in the effect estimate: The true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different.

The critique identified the following limitations with the evidence from CRYSTAL AF:

- The detection of AF, which resulted in 97% of patients to be prescribed OAC, is a surrogate outcome for the prevention of recurrent stroke (patient-relevant outcome); however, CRYSTAL AF was not powered to evaluate the rate of recurrent stroke after the index CS/ESUS;
- It was unclear if the follow-up regimen in standard of care, performed at physician discretion, was appropriate and applicable to the Australian context.
 - Only 7.7% of patients received ECG monitoring with 24-hour Holter monitor (nominated main comparator) and 29.5% of patients received standard ECG at 6 month follow-up visit (primary endpoint);
- It was noted that approximately 9% of patients in CRYSTAL AF had a prior TIA; this was not consistent with the proposed listing of the ILR; and
- The risk of bias was considered moderate due to the lack of blinding.

Clinical Claim

The submission stated that compared with standard of care, ILRs have superior effectiveness and inferior safety for detecting AF in patients diagnosed with CS/ESUS.

12. Economic evaluation

A modelled cost-effectiveness analysis was presented using a Markov decision analytic methodology to evaluate the diagnosis of AF, treatment of AF, complications and events relevant to the condition and treatments administered (see Table 4). The cost-effectiveness ratio (ICER) is expressed in terms of cost per quality-adjusted life year (QALY) gain over the cohort's life-time.

Table 4 Summary of the economic evaluation presented to support the cost-effectiveness of ILR

Perspective	Australian health care system
Comparator	Conventional follow-up or standard of care
Type of economic evaluation	Modelled cost-utility analysis
Sources of evidence	Pivotal clinical trial (CRYSTAL AF) and other published evidence (where possible)
Time horizon	Life-time (but patients in the ILR arm transit to SoC after the device's battery depletion)
Outcomes	QALYs
Methods used to generate results	Markov cohort analysis
Health states	Primarily defined by with / without AF; AF detected / undetected; OAC / aspirin.
Cycle length	3 months
Discount rate	5%
Software packages used	TreeAge

Abbreviations: AF, atrial fibrillation

The result for the base case economic evaluation is shown in Table 5, the ICER is estimated to be \$29,570.

Table 5 Base case cost-effectiveness results for ILR vs SoC estimated in the model

Treatment arms	Cost	Incremental cost	QALYs	Incremental QALYs	ICER
Patient follow-up under standard of care	\$26,155	-	7.791	-	-
ILR assisted patient follow-up	\$30,201	\$4,046	7.9279	0.1368	\$29,570

Abbreviations: ICER; incremental cost-effectiveness ratio; QALY, quality-adjusted life year.

The critique noted that the ICER was sensitive to the treatment effect of NOACs as measured from the indirect comparison from AVERROES and ARISTOTLE. The incremental benefit of NOACs in ILR-detected AF (likely paroxysmal) was uncertain. The modelled results were also sensitive to the time horizon, the assumption that the risk of recurrent stroke would be constant beyond the three year trial duration of CRYSTAL AF, the cost of ILR, the rate of incidence of new AF, the methodology of mortality rates, and the discount rate.

13. Financial/budgetary impacts

Based on epidemiological evidence and estimated uptake rates, the estimated total number of patients receiving the ILR implants for the detection of AF post CS/ESUS is estimated to be 470 in Year 1, gradually growing to 720 in Year 5, when the lower end incidence estimate of 4,472 is applied (see Table 6). This is estimated to be 939 in Year 1, growing to 1,440 in Year 5, when the higher end incidence estimate is applied (see Table 7).

The total MBS cost of the proposed listings and associated MBS services such as anaesthetics, including the costs of the device explantation, is estimated to be approximately \$480,000 in Year 5 under the lower end incidence estimate. This is estimated to be \$950,000 under the higher end incidence estimate.

Table 6 Estimated numbers of patients receiving an ILR implantation and estimated total costs to the MBS (including follow-up consultations and explantations) - Based on the 20% CS / ESUS rate assumption

Year	Year 1 (2017)	Year 2	Year 3	Year 4	Year 5
Estimated patient numbers receiving an implant under the MBS	470	564	626	673	720
Total MBS costs - at 75%/85% benefit	\$310,828	\$372,993	\$414,437	\$445,520	\$476,602

Table 7 Estimated numbers of patients receiving an ILR implantation and estimated total costs to the MBS (including follow-up consultations and explantations) - Based on the 40% CS / ESUS rate assumption

Year	Year 1 (2017)	Year 2	Year 3	Year 4	Year 5
Estimated patient numbers receiving an implant under the MBS	939	1,127	1,252	1,346	1,440
Total MBS costs - at 75%/85% benefit	\$621,655	\$745,986	\$828,874	\$891,039	\$953,205

14. Key issues from ESC for MSAC

In considering the application for the requested MBS service of implantable loop recorders for diagnosis of atrial fibrillation in cryptogenic stroke, ESC noted that there were several associated policy and implementation issues for consideration.

ESC noted the Stroke Foundation is updating its clinical guidelines, which are expected to be launched in July 2017. If this proposed service receives a positive recommendation, the Department will review its listing to ensure it is in accordance with the updated guidelines.

ESC noted that MBS items 38285 and 11722 (the MBS items on which the proposed service and associated costs are based) have been reviewed by the Cardiac Services Clinical

Committee of the MBS Review Taskforce and noted that potential changes to these items would have an impact on this application's listing.

ESC noted that the application allows for the proposed investigation item (modelled from 11722) to be claimed twice per year. ESC also noted that there are alternative monitoring arrangements where monitoring of the data from the ILR can be done remotely on an ongoing basis, or when triggered by the patient. ESC advised the number of device checks per year be capped to around four checks per year. ESC noted that the cost of monitoring is not likely to have a substantial impact on cost-effectiveness.

ESC considered that implantation of ILR is a relatively simple procedure, and that outpatient implantation and removal would be appropriate for the proposed service. ESC noted that the evidence base consists of one non-blinded randomised control trial (RCT) of ILR for detection of AF compared with standard of care (SoC), CRYSTAL AF. In considering the comparative safety of ILR, ESC noted that the ILR is well tolerated and the risk of adverse events associated with implantation is low.

The main outcome measure from the CRYSTAL AF trial was the time to first documented event of AF. ESC noted a divergence between curves for the time to first recurrent stroke or transient ischemic attack (TIA), though the difference was not significant by standard statistical measures and the study was small and not powered to detect differences in this clinically relevant outcome. ESC considered each of the translation issues that were raised in the critique of the submission based assessment. ESC considered that the translation issue regarding the age of the population in the CRYSTAL AF trial compared with the proposed MBS population was well addressed in the pre-ESC response and noted that, if anything, this difference underscores the clinical advantage of ILR compared with SoC.

ESC noted that the detection of AF, which resulted in 97% of patients being prescribed oral anticoagulation in the trial, is a surrogate outcome for the patient relevant outcome of prevention of recurrent stroke. ESC acknowledged that this is likely to reflect current clinical practice and that the linked evidence approach, while not ideal, is appropriate given that the CRYSTAL AF trial was not powered to detect differences in rates of recurrent stroke.

ESC noted that the submission's estimate for the ILR's sensitivity at 96.1% and specificity at 100% favours ILR. ESC considered that the sensitivity analysis of this variable helped to reduce uncertainty regarding these estimates.

ESC noted that the critique identified that the submission's estimate for risk of recurrent stroke in the model was uncertain due to:

- differences in the proportion of patients with paroxysmal AF compared with permanent AF. ESC considered that this was adequately addressed in the applicant's pre-ESC response;
- the assumed constant risk of stroke throughout the duration of the model. ESC considered stratifying the Gage (2004) estimated risk by CHADS-Score was appropriate and was evaluated appropriately in sensitivity analyses;
- uncertainty regarding the efficacy of the non-vitamin K antagonist oral anticoagulants (NOACs) compared with aspirin in reducing recurrent stroke in this patient population. ESC considered that the submission approach is clinically justified;
- wide confidence intervals for the hazard ratio of NOACs relative to aspirin which resulted in wide variation in the ICER. ESC considered that the probabilistic sensitivity analysis provided assists in reducing the uncertainty in the cost-effectiveness; and

- the hazard ratios calculated from the subgroup populations from the AVERROES and ARISTOTLE studies included patients with previous transient ischemic attack (TIA). ESC considered that this was addressed in a sensitivity analysis.

Overall ESC noted that the translation and extrapolation required in the model introduced uncertainty. However, ESC considered that translation was generally well applied and based on reasonable evidence, with robust sensitivity analyses provided to reduce uncertainty. ESC considered that the evidence sources for utility values and costing were appropriate and provided confidence in the modelling presented.

ESC noted that there was some uncertainty regarding the predicted uptake of the proposed service but that overall financial impact estimates appear reasonable.

ESC noted general support for the service from consumers and an acceptance that the service appears to enhance ease of access and use.

15. Other significant factors

Nil.

16. Applicant's comments on MSAC's Public Summary Document

Medtronic Australasia welcomes MSAC findings and considers the outcome of this application an important step in improving outcomes for patients with CS/ESUS. Improving AF detection via ILR alleviates risk of stroke recurrence because it alters the treatment strategy – identifying patients who can benefit from anticoagulation therapy for secondary stroke prevention. This treatment strategy is well established and recommended in the Australian Stroke Foundation's Draft Clinical Guidelines for Stroke Management 2017. In summary:

- Medtronic is in agreement with MSAC that implantation and removal of loop recorders could be provided as an outpatient service. This advice recognises that medical technology and clinical practice evolves enabling healthcare delivery to be provided in different settings, creating opportunities for more efficient delivery of healthcare, with cost benefits and advantages for clinicians and patients. To enable these benefits to be realised Medtronic would be supportive of an MBS descriptor that enables this service to be provided in either an inpatient or out-patient setting – as determined by patient and clinician needs and preferences. However, this will require a change in funding arrangements as current MBS arrangements limit funding for ILRs to use in hospital settings.
- If as a result of the stroke guidelines and MBS Review Taskforce activities the proposed listing should change, Medtronic and other relevant stakeholders' consultation would be appropriate, especially during the implementation phase of the new ILR MBS item.
- Although not originally proposed in the Application, Medtronic notes ESCs comment that the cost of remote monitoring (RM) for patient follow-up is not likely to have a substantial impact on the cost-effectiveness of the proposed service and encourages RM follow up item number/s be established during the implementation phase of the new ILR MBS item.

17. Further information on MSAC

MSAC Terms of Reference and other information are available on the MSAC Website: [visit the MSAC website](#)