Amplatzer™ Talisman™ PFO Occluder

Instructions for Use

CAUTION: Read all instructions carefully. Failure to follow these instructions, warnings, and precautions may lead to patient injury or device damage.

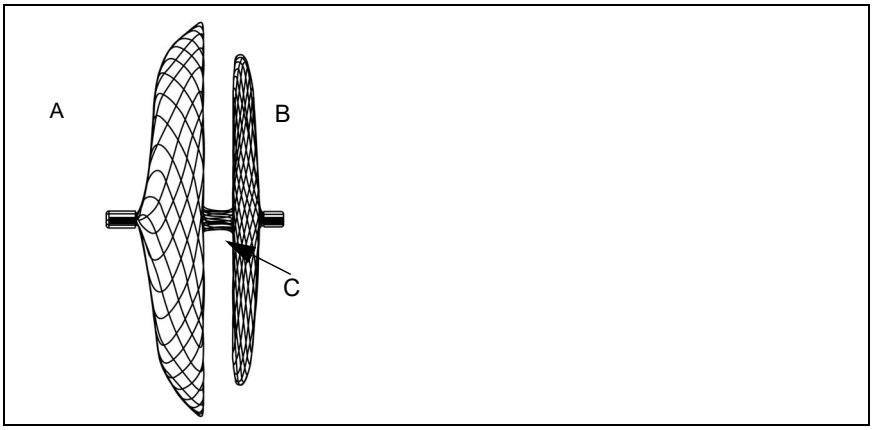
Device Description

The Amplatzer™ Talisman™ PFO Occluder (Figure 1) is a self-expandable, double-disc device made from a Nitinol wire mesh. The two discs are linked together by a short connecting waist that allows free motion of each disc. To increase its closing ability, the discs contain thin polyester fabric that is securely sewn to each disc with a polyester thread.

The occluder has radiopaque marker bands on its distal and proximal ends and also contains an end screw on the proximal end to facilitate delivery and deployment. The device is sterilized with ethylene oxide.

See Figure 2 for an illustration of the Amplatzer™ Talisman™ PFO Occluder pre-attached to the Amplatzer™ Trevisio™ delivery cable.

Figure 1. Amplatzer™ Talisman™ PFO Occluder



A Right atrial disc
B Left atrial disc
C Connecting waist

STERILE EO

℞ ONLY

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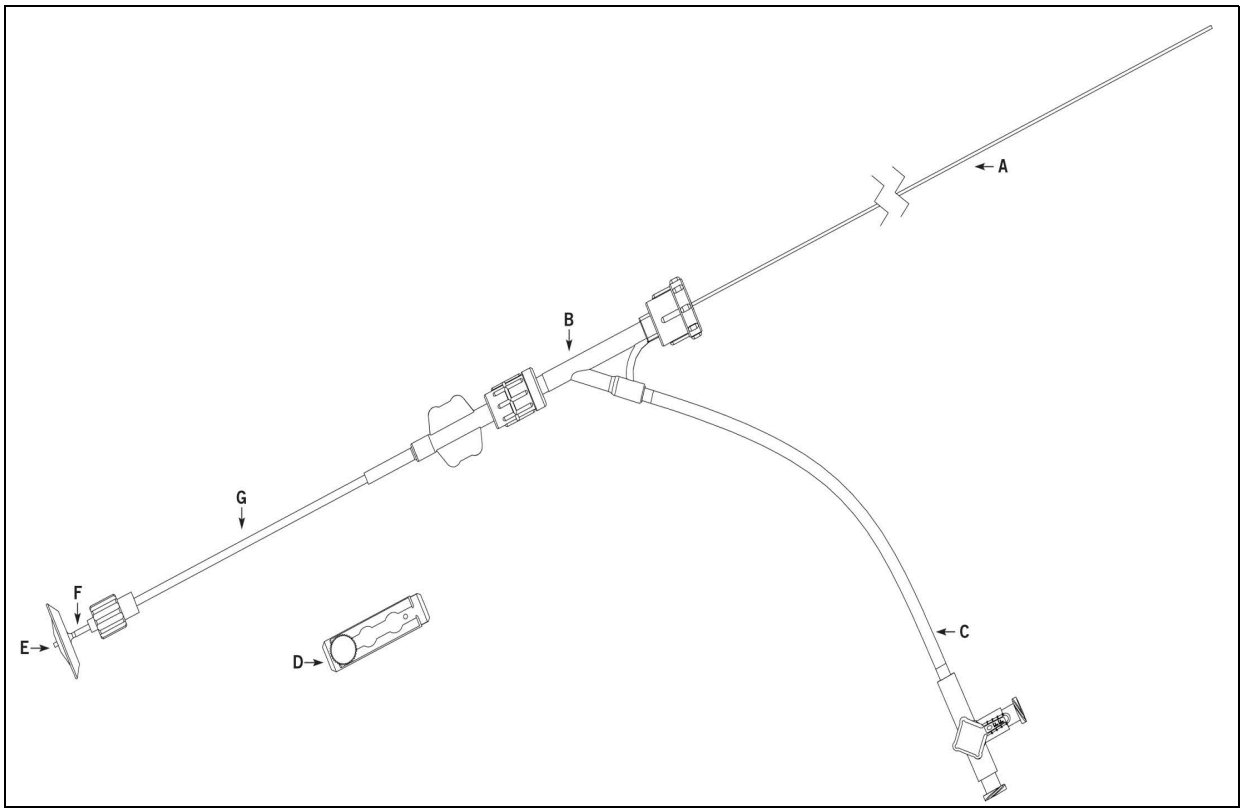
Figure 2. Amplatzer™ Talisman™ PFO Occluder Pre-attached to the Amplatzer™ Trevisio™ Delivery Cable



A	Delivery cable
B	Hemostasis valve
C	Extension tube with three-way stopcock
D	Plastic vise
E	PFO Occluder
F	Distal cable attached to the occluder
G	Loader

Indication for Use

The Amplatzer™ Talisman™ PFO Occluder is indicated for percutaneous transcatheter closure of a patent foramen ovale (PFO) to reduce the risk of recurrent ischemic stroke in patients, predominantly between the ages of 18 and 60 years, who have had a stroke due to a presumed paradoxical embolism, as determined by a neurologist and cardiologist following an evaluation to exclude other causes of ischemic stroke.

Contraindications

- Presence of thrombus at the intended site of implant, or documented evidence of venous thrombus in the vessels through which access to the defect is gained.
- Patients with intra-cardiac thrombus, mass, vegetation, or tumor.
- Patients whose vasculature, through which access to the PFO is gained, is inadequate to accommodate the appropriate sheath size.
- Patients with anatomy in which the required Amplatzer™ Talisman™ PFO device size would interfere with other intra-cardiac or intravascular structures, such as valves or pulmonary veins.
- Patients with another source of right-to-left shunts, including an atrial septal defect and/or fenestrated septum.
- Patients with active endocarditis or other untreated infections.
- Patients who are unable to tolerate intra-procedural anticoagulation or post-procedural anti-platelet therapy.

Warnings

- Do not use an open or damaged pouch; do not use a damaged device.
- Patients who are at increased risk for venous thromboembolic events should be managed with thromboembolic risk reduction regimen after the PFO closure following standard of care.

- The safety and effectiveness of the Amplatzer™ Talisman™ PFO Occluder has not been established in patients with a hypercoagulable state.
- Prepare for situations that require percutaneous or surgical removal of this device. This includes availability of a surgeon and access to operating room.
- Embolized devices must be removed as they may disrupt critical cardiac functions. Do not remove an embolized occluder through intracardiac structures unless the occluder is fully recaptured inside a catheter or sheath.
- The Amplatzer™ Talisman™ PFO Occluder device consists of a nickel-titanium alloy, which is generally considered safe. However, in vitro testing has demonstrated that nickel is released from this device for a minimum of 60 days. Patients who are allergic to nickel may have an allergic reaction to this device, especially those with a history of metal allergies. Certain allergic reactions can be serious; patients should be instructed to notify their physicians immediately if they suspect they are experiencing an allergic reaction such as difficulty breathing or inflammation of the face or throat. Some patients may also develop an allergy to nickel if this device is implanted.
- Transient hemodynamic compromise may be encountered during device placement, which may require fluid replacement or other medications as determined by the physician.
- Prior to device detachment, evaluate the position of the device relative to the free atrial wall and the aortic root using echocardiography (Figure 9 and Figure 10).
- Use echocardiography to ensure that the device does not impinge on the free atrial wall or aortic root.
- Do not release the device from the delivery cable if the device does not conform to its original configuration, or if the device position is unstable or if the device interferes with any adjacent cardiac structure (such as Superior Vena Cava (SVC), Pulmonary Vein (PV), Mitral Valve (MV), Coronary Sinus (CS), aorta (AO)). If the device interferes with an adjacent cardiac structure, recapture the device and redeploy. If still unsatisfactory, recapture the device and either replace with a new device or consider alternative treatments. See Table 12.
- DO NOT use the Amplatzer™ Talisman™ PFO Occluder after the Use-by date stated on the package label.
- This device was sterilized with ethylene oxide and is for single use only. Never reuse or re-sterilize the system. Use of expired, reused, or re-sterilized devices may result in infection.
- This device should be used only by physicians who are trained in standard transcatheter techniques.

Precautions for Special Populations

- Pregnancy: The safety and effectiveness of this occluder has not been established during pregnancy. Fluoroscopic x-ray guidance is used during placement of the device. The risk of increased X-ray exposure for patients who are pregnant must be weighed against the potential benefits of this technique.
- Nursing mother: The safety and effectiveness of this occluder has not been established in lactating mothers. There has been no quantitative assessment for the presence of leachables in breast milk.
- Pediatric Population: The safety and effectiveness of this occluder has not been established in a pediatric population.

Precautions

- Aspirin (325 mg/day) (or alternative antiplatelet/anticoagulant, if patient has aspirin intolerance) is recommended to be started at least 24 hours prior to the procedure.
- Antibiotics should be administered peri-procedurally.
- Patients should be fully heparinized throughout the procedure using adequate dosing so as to keep the activated clotting time (ACT) greater than 200 seconds.

  CAUTION: Intracardiac echocardiography (ICE) or transesophageal echocardiography (TEE) is recommended as an aid in evaluating the PFO and placing the Amplatzer™ Talisman™ PFO Occluder. If TEE is used, the patient's esophageal anatomy must be adequate for placement.

  CAUTION: Be cautious when using fluoroscopic X-ray guidance, which may be used during placement of the device.

  CAUTION: Do not use a power injection system to put contrast solution through the sheath.
- The safety and effectiveness of the Amplatzer™ Talisman™ PFO Occluder has not been established in patients (with):
  - Age less than 18 years or greater than 60 years because enrollment in the pivotal study (the RESPECT trial) was limited to patients 18 to 60 years old
  - A hypercoagulable state including those with a positive test for a anticardiolipin antibody (IgG or IgM), Lupus anticoagulant, beta-2 glycoprotein-1 antibodies, or persistently elevated fasting plasma homocysteine despite medical therapy
  - Unable to take antiplatelet therapy
  - Atherosclerosis or other arteriopathy of the intracranial and extracranial vessels associated with a ≥50% luminal stenosis

- Acute or recent (within 6 months) myocardial infarction or unstable angina
- Left ventricular aneurysm or akinesis
- Mitral valve stenosis or severe mitral regurgitation, irrespective of etiology
- Aortic valve stenosis (mean gradient greater than 40 mmHg) or severe aortic valve regurgitation
- Mitral or aortic valve vegetation or prosthesis
- Aortic arch plaques protruding greater than 4 mm into the aortic lumen
- Left ventricular dilated cardiomyopathy with left ventricular ejection fraction (LVEF) less than 35%
- Chronic, persistent, or paroxysmal atrial fibrillation or atrial flutter
- Uncontrolled hypertension or uncontrolled diabetes mellitus
- Diagnosis of lacunar infarct probably due to intrinsic small vessel as qualifying stroke event
- Arterial dissection as cause of stroke
- Index stroke of poor outcome (modified Rankin score greater than 3)
- Pregnancy at the time of implant
- Multi-organ failure

Patient Selection for Treatment

In considering the use of the Amplatzer™ Talisman™ PFO Occluder, the rationale for seeking PFO closure and the safety and effectiveness of the device compared to antithrombotic therapy alone should be taken into account. A shared decision-making process with the patient and their medical team is recommended when considering the use of the Amplatzer™ Talisman™ PFO Occluder. For additional information, see the topics Patient Counseling Information and Clinical Trial.

Ischemic Stroke

Most ischemic strokes are due to a mechanism unrelated to a PFO including thromboembolism from an intracardiac source, large vessel atherosclerosis, artery-to-artery thromboembolism, or small vessel disease. The following are potential etiologies of ischemic stroke unrelated to a PFO:

- Thromboembolic stroke in the setting of atrial fibrillation
- Thromboembolic stroke due to left ventricular mural thrombus
- Thromboembolic stroke due to infectious or non-infectious endocarditis
- Thromboembolic stroke associated with prosthetic heart valves
- Atheroembolic stroke due to thoracic aortic or carotid artery atherosclerotic disease
- Intracranial atherosclerotic disease
- Arterial dissection
- Vasculitis
- Migraine/vasospasm
- Hypercoagulable states

PFO and Ischemic Stroke

A PFO persists into adulthood in 25% of individuals, and in the vast majority of cases, a PFO is an incidental finding that is not associated with any disease condition. Specifically, the presence of a PFO is not associated with an increased stroke risk among asymptomatic individuals. However, in some cases of ischemic stroke where other causes have been ruled out by a comprehensive evaluation, the presence of a PFO raises the possibility that a thromboembolism from the venous circulation passed through the PFO into the arterial circulation (paradoxical thromboembolism) leading to an ischemic stroke. This is referred to as a PFO-associated stroke.

> NOTE: The term cryptogenic stroke was used in the pivotal RESPECT clinical trial that is referenced in later sections of this document. In that trial, cryptogenic stroke was defined as an ischemic stroke of unknown cause.

Antithrombotic therapy, usually with antiplatelet agents, is the current standard of care to prevent recurrent PFO-associated stroke.

In carefully selected patients with a PFO and evidence of a right-to-left shunt, PFO closure with the Amplatzer™ Talisman™ PFO Occluder may be considered to further reduce the risk of a recurrent stroke beyond what can be achieved with antithrombotic therapy alone, while taking into account the risks and benefits of the device. Although a paradoxical embolism through a PFO is one potential mechanism for causing an ischemic stroke, it is an uncommon cause. The Amplatzer™ Talisman™ PFO Occluder prevents a recurrent ischemic stroke due to a paradoxical embolism through the PFO, but it would not reduce the risk of a stroke from mechanisms or diseases that are unrelated to a paradoxical embolism through the PFO.

Before considering the implantation of the Amplatzer™ Talisman™ PFO Occluder, other potential mechanisms for an ischemic stroke should be investigated including atrial fibrillation, left atrial appendage thrombus, left ventricular thrombus, significant

cardiac valve pathology, aortic arch atheroma, intracranial and extra cranial cerebrovascular disease, small vessel disease, and a hypercoagulable state. Patients selected should undergo an evaluation by a neurologist to exclude the presence of ischemic stroke mechanisms that are unrelated to a paradoxical embolism through the PFO. It is recommended that the evaluation follow the latest professional society guidelines for diagnosing a PFO-associated stroke, and should include at a minimum the following assessments:

- MRI or CT scanning of the head to rule out small vessel disease or lacunar infarct
- TEE to rule out non-PFO intra-cardioembolic sources or conditions or aortic arch atheroma
- ECG and prolonged cardiac rhythm monitoring (~30 days) to rule out atrial fibrillation and other heart rhythm disturbances that may be associated with stroke
- Intra and extracranial artery imaging: MRA, CT angiography, or contrast angiography to rule out an ischemic stroke associated with atherosclerotic plaque, arterial dissection, or other vascular diseases
- Hematological evaluation to rule out an underlying hypercoagulable state

Patients who are first deemed by a neurologist and a cardiologist to have had a PFO-associated stroke following an evaluation to exclude other causes of ischemic stroke should next be evaluated by an Amplatzer™ Talisman™ PFO Occluder implanting physician to ensure that the device can be implanted safely. Specific factors that need to be considered for the Amplatzer™ Talisman™ PFO Occluder and implantation procedure include the following:

- Overall medical status, including conditions which might preclude the safety of a percutaneous, transcatheter procedure.
- Suitability for percutaneous procedures, including considerations of:
  - Cardiac anatomy relating to the size of the PFO and the presence or absence of an atrial septal aneurysm
  - Vascular access anatomy (for example, femoral vein size, thrombus, or tortuosity)
  - Ability of the patient to tolerate general or local anesthesia
  - Ability of the patient to undergo required imaging (fluoroscopy, intra-cardiac echocardiography, or trans-esophageal echocardiography)
- Ability to comply with the recommended post-implant pharmacologic regimen, which includes at a minimum aspirin (81 to 325 mg) and clopidogrel (75 mg) for one month after device placement, followed by aspirin (81 to 325 mg) monotherapy for at least five additional months. **In the pivotal RESPECT clinical trial, approximately 90% of patients implanted with the Amplatzer™ PFO Occluder continued taking anti-platelet medications beyond 6 months post-procedure (predominately aspirin alone).**

Patient Counseling Information

Physicians should review the following information when counseling patients about the Amplatzer™ Talisman™ PFO Occluder and the implant procedure:

- The safety and effectiveness of PFO closure with the Amplatzer™ Talisman™ PFO Occluder in combination with the required post-implant antiplatelet therapy.
- PFO closure with the Amplatzer™ Talisman™ PFO Occluder can only reduce the risk for a recurrent stroke due to a paradoxical embolism through a PFO.
  - With aging, there is an increased likelihood that non-PFO related risks for stroke may develop and cause a recurrent ischemic stroke independent of PFO closure.
- The procedural risks associated with Amplatzer™ Talisman™ PFO Occluder. Table 7 and Table 8 detail the major clinical events related to the device or procedure as observed in the RESPECT clinical trial.
- The need for adherence to a defined adjunctive antithrombotic therapy following implantation of the Amplatzer™ Talisman™ PFO Occluder.
- Patients with a history of DVT or PE may benefit from continuation or resumption of anticoagulation therapy following implantation of the Amplatzer™ Talisman™ PFO Occluder to reduce the risk of recurrent DVT or PE.

It is recommended that the medical team (neurologist and cardiologist) and the patient engage in a shared decision-making process and discuss the risks and benefits of PFO closure in comparison to using antithrombotic therapy alone, while taking into account the patient's values and preferences. Additional counseling information can be found in the Clinical Trial topic.

MR Conditional

Non-clinical testing has demonstrated the Amplatzer™ Talisman™ PFO Occluder is MR Conditional. A patient with the Amplatzer™ Talisman™ PFO Occluder can be safely scanned in an MR system under the following conditions:

- Static magnetic field of 1.5 Tesla (1.5T) or 3.0 Tesla (3.0T)
- Maximum spatial gradient field of 19 T/m (1900 G/cm).
- Maximum MR system reported, whole-body-averaged specific absorption rate (SAR) of 2.0 W/kg (normal operating mode)

Under the scan conditions defined above, the device is expected to produce a maximum temperature rise of less than or equal to 3ºC after 15 minutes of continuous scanning.

In non-clinical testing, the image artifact caused by the device extends approximately 16 mm from the Amplatzer™ Talisman™ PFO Occluder when imaged with a gradient echo pulse sequence in a 3.0T MR system.

Potential Adverse Events

Potential adverse events that may occur during or after a procedure using this device may include, but are not limited to:

- Air embolus
- Allergic reaction/toxic effect due to: anesthesia, contrast media, medication, or metal
- Arrhythmia
- Arteriovenous fistulae
- Bleeding
- Cardiac perforation
- Cardiac tamponade
- Chest pain
- Death
- Deep vein thrombosis
- Device embolization
- Device erosion
- Endocarditis
- Esophagus injury
- Fever
- Headache/migraine
- Hematoma
- Hypertension/hypotension
- Infection
- Myocardial infarction
- Pacemaker placement secondary to PFO device closure
- Pain
- Pericardial effusion
- Pericarditis
- Peripheral embolism
- Pseudoaneurysm
- Pulmonary embolism
- Reintervention for residual shunt/device removal
- Stroke
- Transient ischemic attack
- Thrombus formation
- Valvular regurgitation
- Vascular access site injury
- Vessel perforation

Clinical Trial

Design

The Amplatzer™ PFO Occluder was evaluated in a prospective, randomized, multi-center, event-driven trial (RESPECT trial[1]) comparing device closure of a PFO (plus medical management) with medical management alone in the prevention of recurrent ischemic stroke in patients diagnosed with a cryptogenic ischemic stroke and PFO.

A total of 980 patients were enrolled in the study with 499 patients randomized to PFO closure using the Amplatzer™ PFO Occluder (the Device group) and 481 randomized to the Medical Management (MM) group.

The four medical therapy regimens allowed per protocol in the MM group were: (a) Aspirin alone, (b) Coumadin[‡] alone, (c) Clopidogrel alone or (d) Aspirin combined with dipyridamole. Patients implanted with the Amplatzer™ PFO Occluder were to take clopidogrel for 30 days and aspirin for 6 months. Additional medical therapy beyond six months was at the discretion of the treating physician. Device group subjects were evaluated by transesophageal echocardiogram (TEE) at approximately 6 months post implant to assess PFO closure.

The primary effectiveness endpoint was the composite of recurrent nonfatal stroke, fatal ischemic stroke, or post-randomization mortality within 30 days post-implant or 45 days post-randomization in the Device group and within 45 days after randomization in the MM group. The secondary effectiveness endpoints included the absence of transient ischemic attack (TIA) and the rate of complete PFO closure (assessed by TEE bubble study) at 6 months follow-up (in the Device group only). The safety endpoint consisted of serious adverse events, which included death, life threatening adverse events, inpatient hospitalization or prolongation of an ongoing hospital stay, persistent or significant disability/incapacity, and medically significant events.

The intention-to-treat (ITT) population was the pre-specified primary analysis population. Analyses were also performed on the Per Protocol population, which consisted of subjects who received their randomly assigned treatment and complied with protocol-mandated medical treatment and excluded subjects who did not receive their randomized therapy, did not comply with the protocol-mandated medical treatment, or had a major inclusion/exclusion criterion violation. In accordance with the pre-specified decision rules, trial enrollment was stopped once 25 primary endpoint events occurred. The initial data lock used for primary analyses occurred on 20 May 2012, the extended follow-up data lock occurred on 14 August 2015, and the final data lock occurred on 31 May 2016.

Patients Studied

Inclusion criteria

- PFO and a cryptogenic stroke within 270 days

1. Saver, Jeffrey L., John D. Carroll, David E. Thaler, Richard W. Smalling, Lee A. MacDonald, David S. Marks, and David L. Tirschwell. “Long-term outcomes of patent foramen ovale closure or medical therapy after stroke,” New England Journal of Medicine 377, no. 11 (2017): 1022–1032.

- Stroke was defined as an acute focal neurological deficit, presumed to be due to focal ischemia, and either:
  - Symptoms persisting ≥24 hours, or
  - Symptoms persisting <24 hours with MR or CT findings of a new, neuroanatomically relevant, cerebral infarct
- Cryptogenic stroke was defined as a stroke of unknown cause
- PFO was defined as visualization of microbubbles (during TEE) in the left atrium within three cardiac cycles of right atrial opacification at rest and/or with Valsalva

Screening to establish the diagnosis of cryptogenic stroke

- Work-up of qualifying stroke evaluated by a neurologist
- TEE
- ECG or Holter monitor
- Brain MRI or CT scan
- Imaging of intracranial arteries with MR angiography, CT angiography, contrast arterial angiography, or transcranial Doppler
- Imaging of extracranial arteries with MRA, CTA, contrast arterial angiography, or duplex ultrasound
- Hypercoagulable state screening

General exclusion criteria

- Age <18 years and age >60 years
- MI or unstable angina within 6 months
- Mitral or aortic valve stenosis or severe regurgitation
- LVEF <35%
- Kidney, liver or lung failure
- Uncontrolled hypertension or diabetes mellitus despite medications
- Subjects contraindicated for aspirin or clopidogrel
- Subjects not able to discontinue anticoagulation if randomized to the Device
- Qualifying stroke with Modified Rankin score >3
- Anatomy in which the Device would interfere with intracardiac or vascular structures
- Progressive neurological dysfunction or life expectancy <2 years

Criteria to exclude patients with known causes of ischemic stroke

- Atrial fibrillation/atrial flutter (chronic or intermittent)
- LV aneurysm, intracardiac thrombus, or tumor
- Mitral or aortic valve vegetation or prosthesis
- Aortic arch plaques protruding >4 mm into the lumen
- Atherosclerosis or arteriopathy of intra- or extracranial vessels with >50% diameter stenosis
- Another cause of right-to-left shunting (for example, an ASD or a fenestrated atrial septum)
- Presence of a hypercoagulable state
- Lacunar infarct probably due to intrinsic small vessel as the qualifying event, defined as an ischemic stroke in the distribution of a single, small deep penetrating vessel in a patient with any of the following:
  - A history of hypertension (except in the first week post stroke)
  - A history of diabetes mellitus
  - Age ≥50 years
  - MRI or CT with leukoaraiosis greater than symmetric, well-defined periventricular caps, or bands (European Task Force on Age-Related White Matter Changes rating scale score >0)
- Arterial dissection as the qualifying event

The RESPECT trial subject demographics and baseline characteristics and baseline stroke risk factors for the ITT population are shown in Table 1 and Table 2, respectively.

Table 1. Subject Demographics and Baseline Characteristics – ITT Study

Variable	Device Group (N=499)	MM Group (N=481)	p-value[a]
Age, years[b]	N=492 45.7 (9.7) 46.7 [18.1, 61.0]	N=476 46.2 (10.0) 47.6 [18.4, 60.9]	0.491
Time from stroke to randomization, days	499 130 (70) 117 [10, 277]	481 130 (69) 121 [10, 286]	0.891
Sex, male	268/499 (53.7%)	268/481 (55.7%)	0.564
Previous myocardial infarction	5/499 (1.0%)	2/481 (0.4%)	0.452
Previous transient ischemic attack	58/499 (11.6%)	61/481 (12.7%)	0.626
Stroke prior to qualifying cryptogenic stroke	53/499 (10.6%)	51/481 (10.6%)	1.000
Substantial shunt at rest or Valsalva[c]	247/499 (49.5%)	231/481 (48.0%)	0.655
Atrial septal aneurysm[d]	180/499 (36.1%)	170/481 (35.3%)	0.842

Continuous variables are reported as n, mean (SD), median [min, max] and categorical variables as n (%).
MM = Medical Management

[a] 2-sample t-test (age), Wilcoxon-Mann-Whitney test (days from stroke to date randomized) or Fisher's Exact test.

[b] The IRB at one site did not allow recording of subject birthdates on the case report forms (12 subjects).

[c] Substantial shunt defined as Grade III at rest or Valsalva by TEE.

[d] Defined as total excursion of the septum primum relative to the plane of the interatrial septum ≥ 10 mm.

Table 2. Baseline Stroke Risk Factors – ITT Population

Variable	Device Group (N=499)	MM Group (N=481)	p-value[a]
Current smoker	75/499 (15.0%)	55/481 (11.4%)	0.109
Former smoker	134/499 (26.9%)	143/481 (29.7%)	0.322
Diabetes mellitus	33/499 (6.6%)	41/481 (8.5%)	0.278
Hypercholesterolemia	196/499 (39.3%)	195/481 (40.5%)	0.696
Hypertension	160/499 (32.1%)	153/481 (31.8%)	0.945
Atrial fibrillation	0/453 (0.0%)	1/442 (0.2%)	0.494
Birth control/HRT	41/499 (8.2%)	51/481 (10.6%)	0.228
Migraine	195/499 (39.1%)	186/481 (38.7%)	0.948
Other risk factor	37/456 (8.1%)	40/443 (9.0%)	0.636

MM = Medical Management

[a] Fisher's Exact test.

RESPECT Effectiveness and Safety Results

Subject Follow-up

There was a higher rate of discontinuation in the MM group vs. the Device group for the initial data lock (19.1% in the MM vs 10.4% in the Device group), for the extended follow-up data lock (30.1% in the MM group vs 18.2% in the Device group), and for the final data lock (33.3% in the MM group vs 20.8% in the Device group). For the initial data lock (20 May 2012), there were 1476 patient-years of follow-up (mean 3.0 years) in the Device group and 1284 patient-years (mean 2.7 years) in the MM group. For the extended data lock (14 August 2015), there were 2769 patient-years of follow-up (mean 5.5 years) in the Device group and 2376 patient-years (mean 4.9 years) in the MM group. For the final data lock (31 May 2016), there were 3141 patient-years of follow-up (mean 6.3 years) in the Device group and 2669 patient-years (mean 5.5 years) in the MM group.

Medical Therapy Use

In the MM group, antiplatelet therapy (mostly in the form of a single antiplatelet agent) was used in approximately 75% of subjects with approximately 55% of subjects on aspirin alone. Warfarin alone or warfarin in combination with an antiplatelet agent was used in the remaining MM group subjects. Approximately 90% of Device group subjects were taking anti-platelet medications throughout the study (predominately aspirin alone beginning 6-months post-Device implantation).

Primary Endpoint Analysis Results

ITT Population. All primary endpoint events were non-fatal ischemic strokes. The primary endpoint analysis of the initial (20 May 2012), extended follow-up (14 August 2015), and final (31 May 2016) data locks for the ITT population (499 Device subjects and 481 MM subjects) are shown in Table 3. In the initial data lock analysis, there were 25 total primary endpoint events, 9 in the Device group (rate 0.61 per 100 patient-years) vs. 16 in the MM group (rate 1.25 per 100 patient-years), corresponding to a 50% relative risk reduction in favor of the Device group (which did not achieve statistical significance, p=0.089). In the extended follow-up data lock analysis, there were 42 total primary endpoint events (18 in the Device group and 24 in the MM group) and a 35% relative risk reduction compared with the initial data lock analysis in favor of the Device group. In the final data lock analysis, there were 46 total primary endpoint events (18 in the Device group and 28 in the MM group) and a 45% relative risk reduction (RRR) compared with the 50% RRR initial data lock analysis in favor of the Device group.

Table 3. Summary of Primary Endpoint Analyses Results (ITT Population)

Data Lock	# Events (Rate per 100 Pt-Yrs)[a]		Hazard Ratio[b] (95% CI)	Relative Risk Reduction	p-value[c]
	Device Group (N=499)	MM Group (N=481)			
20 May 2012	9 (0.61)	16 (1.25)	0.50 (0.22, 1.13)	50%	0.089
14 August 2015	18 (0.65)	24 (1.01)	0.65 (0.35, 1.2)	35%	–
31 May 2016	18 (0.58)	28 (1.07)	0.55 (0.31, 0.999)	45%	–

[a] 100 x (Total number of events / total patient years follow-up)

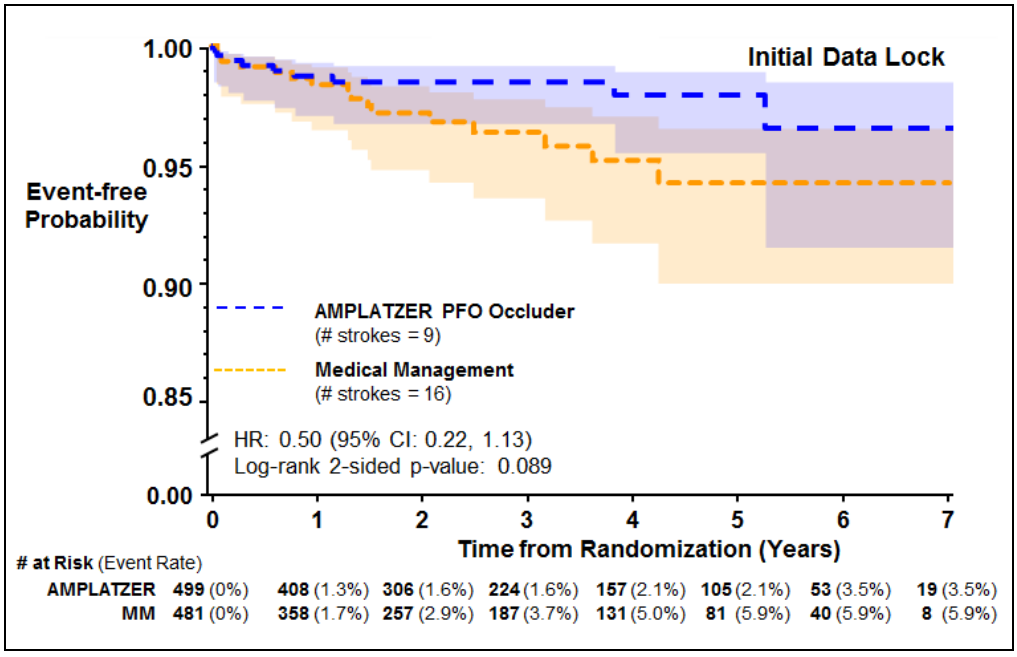
[b] Based on a Cox proportional hazards model

[c] Based on a log-rank test

MM = Medical Management; Pt-Yrs = Patient-Years

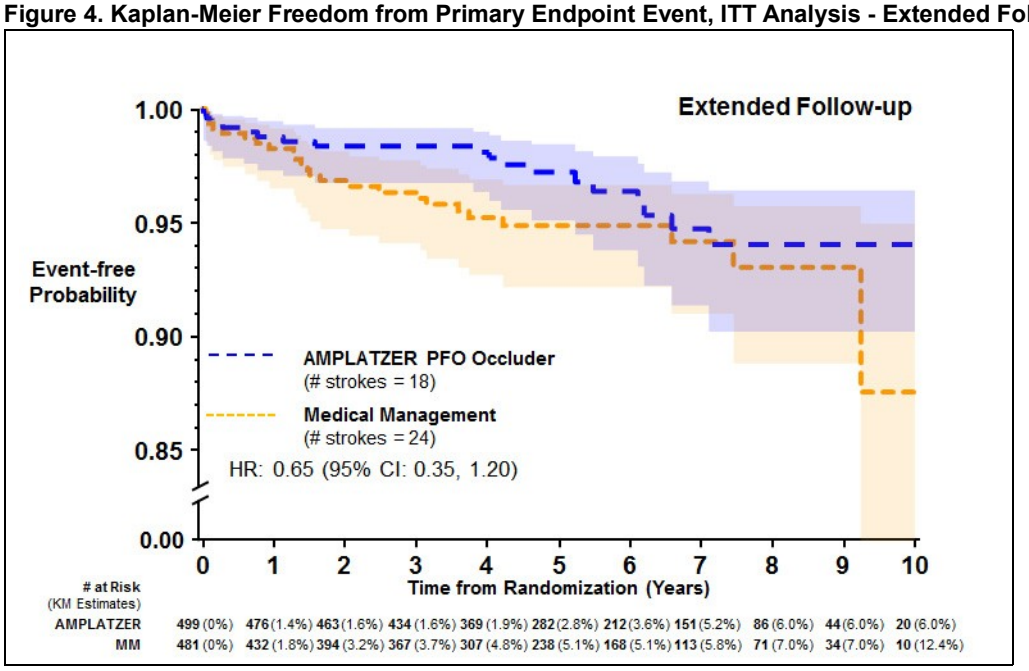
For the initial data lock, the Kaplan-Meier rates of recurrent non-fatal ischemic stroke at 5 years were 0.021 in the Device group vs. 0.059 in the MM group (Figure 3). For the extended follow-up data lock, the Kaplan-Meier rates of recurrent non-fatal ischemic stroke at 5 and 8 years were 0.028 in the Device group vs. 0.051 in the MM group, and 0.060 in the Device group vs. 0.070 in the MM group, respectively (Figure 4). For the final data lock, the Kaplan-Meier rates of recurrent non-fatal ischemic stroke at 5 and 8 years were 0.026 in the Device group vs. 0.050 in the MM group, and 0.050 in the Device group vs. 0.073 in the MM group, respectively (Figure 5).

Figure 3. Kaplan-Meier Freedom from Primary Endpoint Event, ITT Analysis - Initial Data Lock



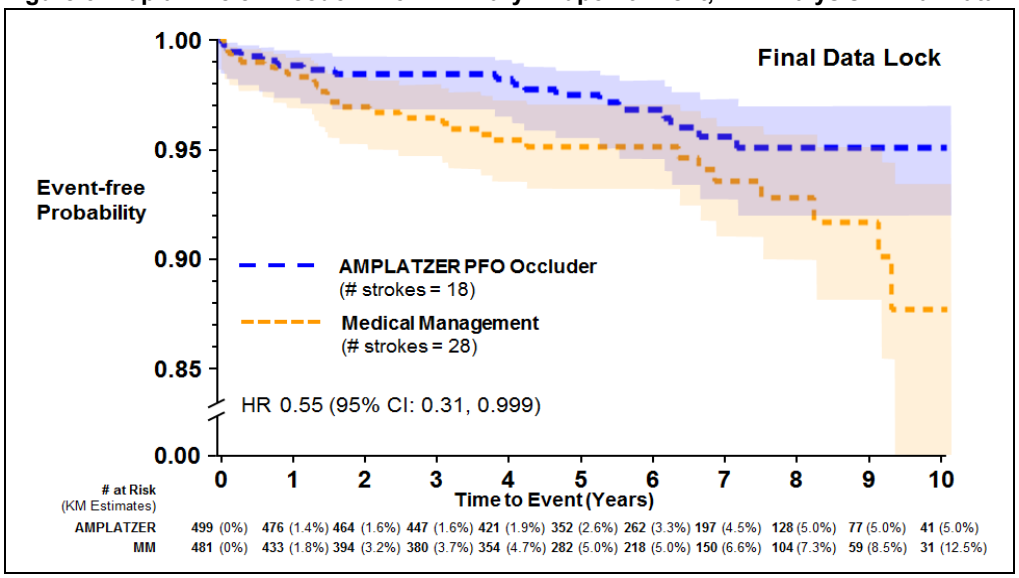
Confidence intervals are calculated without multiplicity adjustment. 95% confidence intervals are provided to illustrate the variability of estimates and should not be used to draw any statistical conclusions.

Figure 4. Kaplan-Meier Freedom from Primary Endpoint Event, ITT Analysis - Extended Follow-Up



Confidence intervals are calculated without multiplicity adjustment. 95% confidence intervals are provided to illustrate the variability of estimates and should not be used to draw any statistical conclusions

Figure 5. Kaplan-Meier Freedom from Primary Endpoint Event, ITT Analysis - Final Data Lock



Confidence intervals are calculated without multiplicity adjustment. 95% confidence intervals are provided to illustrate the variability of estimates and should not be used to draw any statistical conclusions.

In the ITT population, the number needed to treat with the Amplatzer™ PFO Occluder to prevent one recurrent stroke at 5 years was 27 in the initial data lock analysis, 43 in the extended follow-up data lock analysis, and 42 in the final data lock analysis.

Per-Protocol Population. The primary endpoint results for the initial (20 May 2012), extended follow-up (14 August 2015), and final (31 May 2016) data locks for the Per-Protocol population (463 Device subjects and 474 MM subjects) are shown in Table 4. In the initial data lock analysis, there were 20 total primary endpoint events, 6 in the Device group (rate 0.42 per 100 patient-years) and 14 in the MM group (rate 1.19 per 100 patient-years), corresponding to a 63% relative risk reduction in favor of the Device group (which reached statistical significance, p=0.034, unadjusted for multiple testing). In the extended follow-up data lock analysis, there were 37 total primary endpoint events (15 in the Device group and 22 in the MM group) and a numerically smaller relative risk reduction (42%) compared with the initial data lock analysis in favor of the Device group. In the final data lock

analysis, there were 39 total primary endpoint events (15 in the Device group and 24 in the MM group) and a numerically smaller relative risk reduction (47%) compared with the initial data lock analysis in favor of the Device group.

Table 4. Summary of primary endpoint analyses results (Per-Protocol Population)

Data Lock	# Events (Rate per 100 Pt-Yrs)[a]		Hazard Ratio[b] (95% CI)	Relative Risk Reduction	p-value[c]
	Device Group (N=463)	MM Group (N=474)			
20 May 2012	6 (0.42)	14 (1.19)	0.37 (0.14, 0.97)	63%	0.034
14 August 2015	15 (0.57)	22 (0.99)	0.58 (0.30, 1.12)	42%	–
31 May 2016	15 (0.50)	24 (0.96)	0.53 (0.28, 1.01)	47%	–

[a] 100 x (Total number of events / total patient years follow-up)

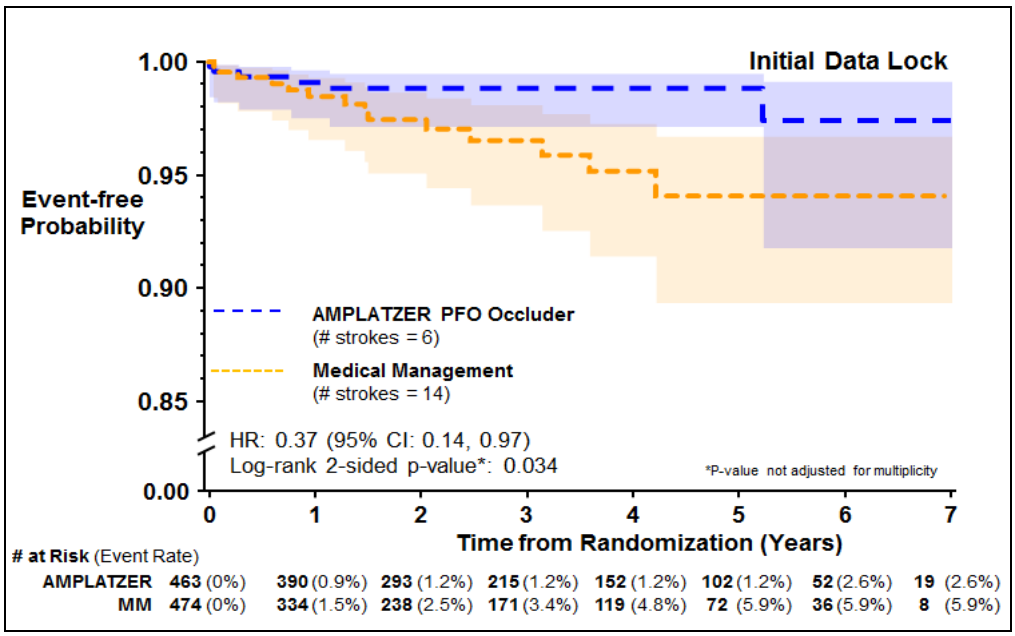
[b] Based on a Cox proportional hazards model

[c] Based on a log-rank test, unadjusted for multiple testing

MM = Medical Management; Pt-Yrs = Patient-Years

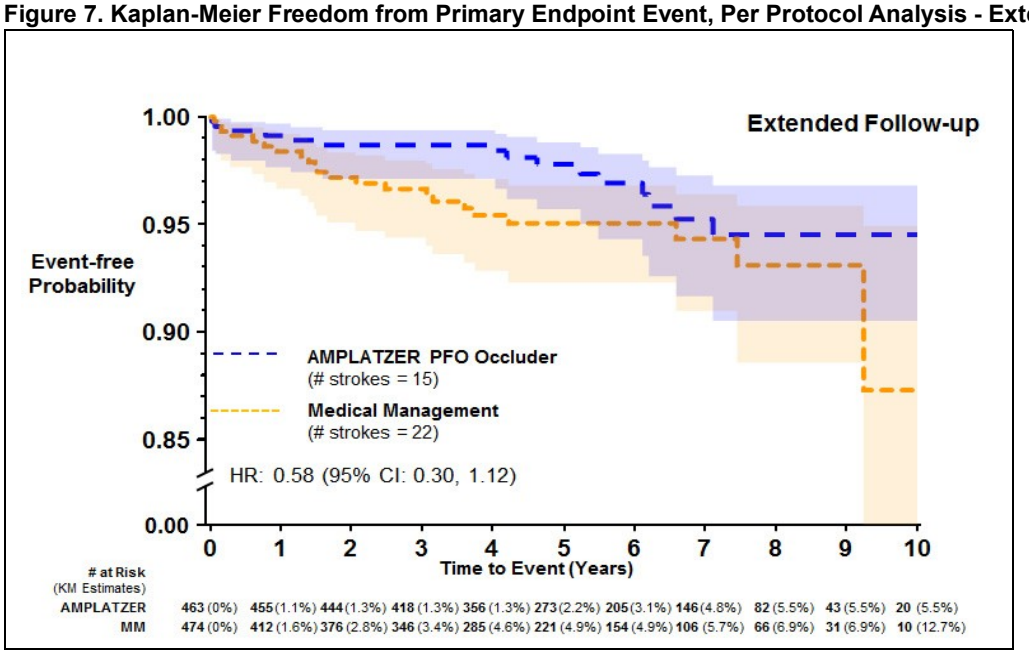
For the initial data lock, the Per Protocol Kaplan-Meier rates of recurrent non-fatal ischemic stroke at 5 years were 0.012 in the Device group vs. 0.059 in the MM group (Figure 6). For the extended follow-up data lock, the Per Protocol Kaplan-Meier rates of recurrent non-fatal ischemic stroke at 5 and 8 years were 0.022 in the Device group vs. 0.049 in the MM group, and 0.055 in the Device group vs. 0.069 in the MM group, respectively (Figure 7). For the final data lock, the Per Protocol Kaplan-Meier rates of recurrent non-fatal ischemic stroke at 5 and 8 years were 0.021 in the Device group vs. 0.048 in the MM group, and 0.046 in the Device group vs. 0.067 in the MM group, respectively (Figure 8).

Figure 6. Kaplan-Meier Freedom from Primary Endpoint Event, Per Protocol Analysis - Initial Data Lock



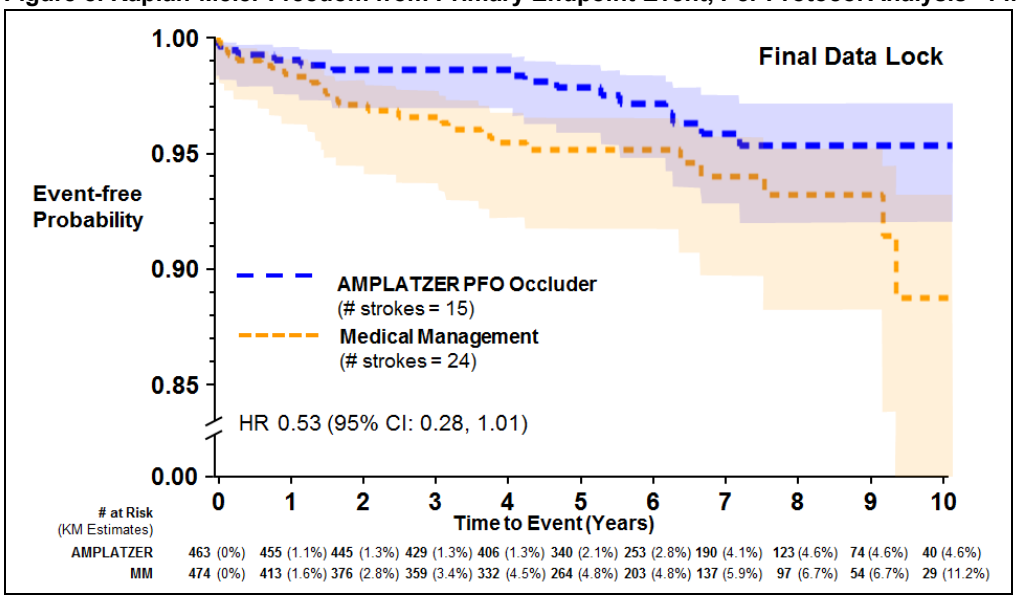
Confidence intervals are calculated without multiplicity adjustment. 95% confidence intervals are provided to illustrate the variability of estimates and should not be used to draw any statistical conclusions.

Figure 7. Kaplan-Meier Freedom from Primary Endpoint Event, Per Protocol Analysis - Extended Follow-Up



Confidence intervals are calculated without multiplicity adjustment. 95% confidence intervals are provided to illustrate the variability of estimates and should not be used to draw any statistical conclusions.

Figure 8. Kaplan-Meier Freedom from Primary Endpoint Event, Per Protocol Analysis - Final Data Lock



Confidence intervals are calculated without multiplicity adjustment. 95% confidence intervals are provided to illustrate the variability of estimates and should not be used to draw any statistical conclusions.

For the secondary endpoint of the rate of PFO closure in the Device group, 249 of 349 subjects had grade 0 shunt both at rest and post-Valsalva at 6 months, for a complete closure rate of 71.3% (Table 5). The rate of effective closure (Grade 0 or I at Rest and Grade 0 or I at Valsalva) was 94.2% at 6 months.

Table 5. 6-Month PFO Closure Data, Device Group Subjects Who Received A Device

Closure	Shunt Grade	n/N (%)
Complete	Grade 0 Rest AND Grade 0 Valsalva	249/349[a] (71.3%)
Effective	Grade 0/I Rest AND Grade 0/I Valsalva	323/343 (94.2%)

[a] 349 subjects includes 338 subjects with a shunt grade assessed both at rest and Valsalva plus 11 subjects with a shunt grade assessed as Grade 1 or higher either at rest or with Valsalva (included in the closure analysis as complete closure failures). PFO closure data were incomplete or missing in 33.2% of subjects.

For the secondary endpoint of freedom from TIA, the Kaplan-Meier rate per 100 patient years (initial data lock analysis) in the Device group was 0.47 vs. 0.55 in the MM group.

Safety Evaluation

There were 430 serious adverse events (SAEs) in 201 patients in the Device group and 331 SAEs in 173 patients in the MM group. The proportions of patients experiencing an SAE in the two groups were similar (40.3% in the Device group and 36.0% in the MM group; Table 6). There were 18 deaths: 7 in the Device group (7/499, 1.4%) and 11 in the MM group (11/ 481, 2.3%). None of the deaths were adjudicated by the Data Safety Monitoring Board as being related to the Device, procedure, delivery system, or study protocol.

In the Device group, there were 25 SAEs related to the Device or implantation procedure in 21 subjects. The proportion of patients experiencing an SAE related to the procedure was 2.4% and the proportion of patients experiencing an SAE related to the device was 2.0%. No unanticipated adverse device effects were reported in the trial.

Table 6. Overall Rate of SAEs Through the Final Data Lock

	Device Group (N=499, 3141 patient-years)		MM Group (N=481, 2669 patient-years)	
	n[a] (%)	Events (Rate per 100 Pt-Yrs)	n (%)	Events (Rate per 100 Pt-Yrs)
Any SAE	201 (40.3%)	430 (13.7)	173 (36.0%)	331 (12.4)
Deaths related to procedure or device	0 (0.0%)	0 (0.0%)	N/A	N/A
Related to procedure	12 (2.4%)	12 (0.4)	N/A	N/A
Related to device	10 (2.0%)	13 (0.4)	N/A	N/A

[a] Subjects could have more than one event
MM = Medical Management; Pt-Yrs = Patient-Years

Twelve (12) procedure-related SAEs occurred in 12 patients (2.4%), and are summarized in Table 7.

Table 7. Procedure-related SAEs in the Device Group Through the Final Follow-up Data Lock (N = 467)

Event	n (%)
Cardiac perforation *(required pericardiocentesis)*	2 (0.4%)
Cardiac perforation *(no treatment required)*	2 (0.4%)
Access site bleeding *(1 required sutures, 1 required transfusion, 1 required no treatment)*	3 (0.6%)
Right atrial thrombus *(detected during procedure - procedure abandoned)*	1 (0.2%)
Deep vein thrombus	1 (0.2%)
Atrial fibrillation	1 (0.2%)
Other *(allergic drug reaction - vasovagal response)*	2 (0.4%)

Thirteen (13) device-related SAEs occurred in 10 patients (2.0%) and are summarized in Table 8.

Table 8. Device-related SAEs in the Device Group Through the Final Data Lock (N = 467)

Event	n (%)
Ischemic stroke *(included in the primary endpoint)*	2 (0.4%
Pulmonary embolism	2 (0.4%)
Thrombus in right atrium *(not attached to device)*	1 (0.2%)
Explant/surgical intervention	2 (0.4%)
Atrial fibrillation	1 (0.2%)
Residual shunt (requiring closure with septal occluder device)	1 (0.2%)
Other (*chest tightness, atrial flutter, non-sustained ventricular tachycardia, sepsis*)	4 (0.8%)

There were a total of 33 reported venous thromboembolism (VTE) events (serious or non-serious events) in 24 subjects: 27 events in 20 Device group subjects, and 6 events in 4 MM group subjects. These events are summarized in Table 9.

Table 9. Venous Thromboembolic Events through the Final Data Lock

	Device Group (N=499)			MM Group (N=481)		
	# Patients	# Events	Rate Per 100 Pt-Yrs	# Patients	# Events	Rate Per 100 Pt-Yrs
All VTEs	20	27	0.86	4	6	0.22
Deep Vein Thrombosis	14	14	0.45	3	3	0.11
Pulmonary Embolism	12	13	0.41	3	3	0.11

MM = Medical Management; Pt-Yrs = Patient-Years

There were a total of 32 supraventricular arrhythmia events (serious or non-serious events) reported in the Device group subjects and 12 supraventricular arrhythmia events in MM group subjects. Most events were atrial fibrillation. These events are summarized in Table 10

Table 10. Supraventricular Arrhythmia Events through the Final Data Lock

	Device Group (N=499)			MM Group (N=481)		
	# Patients	# Events	Rate Per 100 Pt-Yrs	# Patients	# Events	Rate Per 100 Pt-Yrs
Atrial fibrillation	22	25	0.80	9	12	0.45
Peri-procedural	7	7	0.22	NA	NA	NA
Post-procedural	15	18	0.57	NA	NA	NA
Atrial Flutter	2	2	0.06	0	0	0
Paroxysmal Supraventricular Tachycardia	5	5	0.16	0	0	0

MM = Medical Management; Pt-Yrs = Patient-Years

Technical Success

Technical success, defined as successful delivery and release of the device for subjects in whom delivery system entered the body at the time of first procedure, was 99.1%.

Procedural Success

Procedural success, defined as successful implantation with no reported in-hospital SAEs in device subjects, was 96.1%.

Directions for Use

Materials for Use with this Device

- 0.035-inch Amplatzer™ Guidewire (9-GW-002)
- Amplatzer™ Talisman™ Delivery Sheath

For more information about the delivery sheath, see the Amplatzer™ Talisman™ Delivery Sheath instructions for use. See Table 11 for information about the device sizes and the compatible delivery sheaths; see Table 12 for information about selecting the correct device size.

Table 11. Compatibility Table

Device Order Number	Right Atrial Disc Diameter	Left Atrial Disc Diameter	Recommended Amplatzer™ Talisman™ Delivery Sheath
9-PFO-1818	18 mm	18 mm	9-TDS-08F45-80 (8 Fr)
9-PFO-2518	25 mm	18 mm	9-TDS-08F45-80 (8 Fr)
9-PFO-3025	30 mm	25mm	9-TDS-09F45-80 (9 Fr)
9-PFO-3525	35 mm	25 mm	9-TDS-09F45-80 (9 Fr)

The following materials are pre-packaged with the Amplatzer™ Talisman™ PFO Occluder:

- Amplatzer™ Trevisio™ delivery cable pre-attached to occluder
- Loader
- Hemostasis valve with extension tube and three-way stopcock
- Plastic vise

Storage and Handling Information

There are no special storage requirements beyond what is typical for medical devices.

This Instructions for Use is recyclable.

Reporting Device Incidents

If, in the course of use of this device, you have reason to believe that a serious incident occurred, please report it to the manufacturer. For user facilities in the United States, report a medical device-related serious injury to the manufacturer, or to the FDA if the medical device manufacturer is unknown.

Table 12. Device Sizing Guidelines

PFO Morphology	Example Anatomical Characteristics	Suggested Amplatzer™ Talisman™ PFO Occluder Size (mm)
Simple PFO or PFO with a non-prominent ASA PFO where a secure device position and effective PFO closure can be achieved when using the 25 mm device size	1. Absence of ASA, long tunnel, and thickened septum secundum 2. Non-prominent ASA (<20 mm total excursion) without a long tunnel (≥10 mm length) and without a thickened septum secundum (≥10 mm thickness)	25
Complex PFO PFO with one or more anatomical characteristics that may complicate the ability to achieve a secure device position and effective PFO closure when using the 25 mm device size	1. ASA (≥10 mm excursion) with long tunnel (≥10 mm length) 2. ASA (≥10 mm excursion) with thickened septum secundum (≥10 mm thickness) 3. Prominent ASA with excessive mobility (≥20 mm total excursion) 4. Lipomatous hypertrophy of septum secundum (≥15 mm thickness)	30 or 35
PFO with small anatomy Anatomy not suitable for 25 mm device size secondary to interference with adjacent cardiac structures	1. Septal primum length <20 mm	18
NOTE: Evaluate the position of the device after deployment, but before detachment. Use echocardiography to ensure that the device does not impinge on the free atrial wall or aortic root. If the device interferes with an adjacent cardiac structure (such as free atrial wall or aortic root), recapture the device and redeploy. If device position remains unsatisfactory, recapture the device and either replace with a smaller device (18 mm or 25 mm) or consider alternative treatments. Use of the 35 mm device should only be considered in cases where a secure device position cannot be achieved with the 30 mm device. The presence of an ASA alone does not necessarily prevent successful PFO closure with a 25 mm device size. In the RESPECT trial, 180 patients (36%) in the device closure group had an ASA. The 25 mm device size was used in the majority of patients with an ASA (77%) to close the PFO, and at six months post-implant, effective closure was achieved in 95% of these patients. There were no cases of device embolization in any patient in the study.		

Pre-Procedure Care

- Aspirin (325 mg/day) (or alternative antiplatelet/anticoagulant, if patient has aspirin intolerance) is recommended to be started at least 24 hours prior to the procedure.
- Antibiotics can be administered periprocedurally at operator's discretion.
- Patients should be fully heparinized throughout the procedure using adequate dosing so as to keep the activated clotting time (ACT) greater than 200 seconds.

Procedure

CAUTION: Intracardiac echocardiography (ICE) or transesophageal echocardiography (TEE) is recommended as an aid in evaluating the PFO and placing the Amplatzer™ Talisman™ PFO Occluder. If TEE is used, the patient's esophageal anatomy must be adequate for placement.

CAUTION: Be cautious when using fluoroscopic X-ray guidance, which may be used during placement of the device.

CAUTION: Do not use a power injection system to put contrast solution through the sheath.

1. Puncture the femoral vein and perform a standard right-heart catheterization.
2. Perform an angiogram to demonstrate the PFO:

   a. Catheterize the left atrium using a 45° LAO position and cranial angulation of 35°– 45°.

   b. Inject contrast medium into the right upper lobe pulmonary vein.

   NOTE: Occluder size and placement are based on the morphology and location of the PFO.
3. Use the J-tip guidewire to gain access through the PFO.
4. Use ICE or TEE to assess PFO morphology.

   NOTE: PFO morphology is best assessed using a short axis view, where the PFO is visualized adjacent to the aortic valve, and the septum primum is oriented in a near horizontal position (ICE septal short-axis view; TEE angles 30°, 45°, and 60°). Using this view, the excursion of the septum primum, length of the PFO tunnel, and the thickness of the septum secundum are assessed. These features should also be assessed using a long axis bicaval view (ICE septal bicaval view; TEE angles 90°, 105°, and 120° — see Figure 9 and Figure 10).

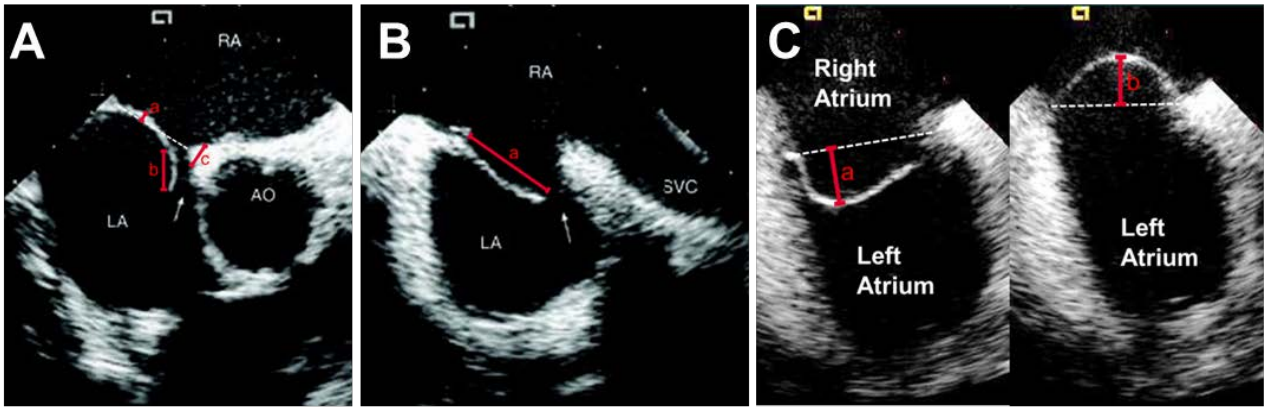
   Atrial Septal Aneurysm (ASA): An atrial septal aneurysm is a redundancy or saccular deformity of the septum primum with increased mobility and bulging into the right atrium or the left atrium. ASA is defined as an excursion of the septum primum of ≥10 mm from the plane of the atrial septum into the right atrium or left atrium or a combined total excursion into the right atrium and left atrium of ≥15 mm. A prominent ASA is defined as having a combined excursion of ≥20 mm.

   PFO Tunnel Length: The PFO tunnel length is defined as the maximum overlap between the septum primum and septum secundum. A long tunnel is defined as a tunnel length ≥10 mm.

   Septum Secundum Thickness: The septum secundum thickness is defined as the maximum thickness of the septum secundum within 10 mm from the PFO. A thickened septum secundum is defined as thickness ≥10 mm. Lipomatous hypertrophy of the septum secundum is defined as having a thickness of ≥15 mm.

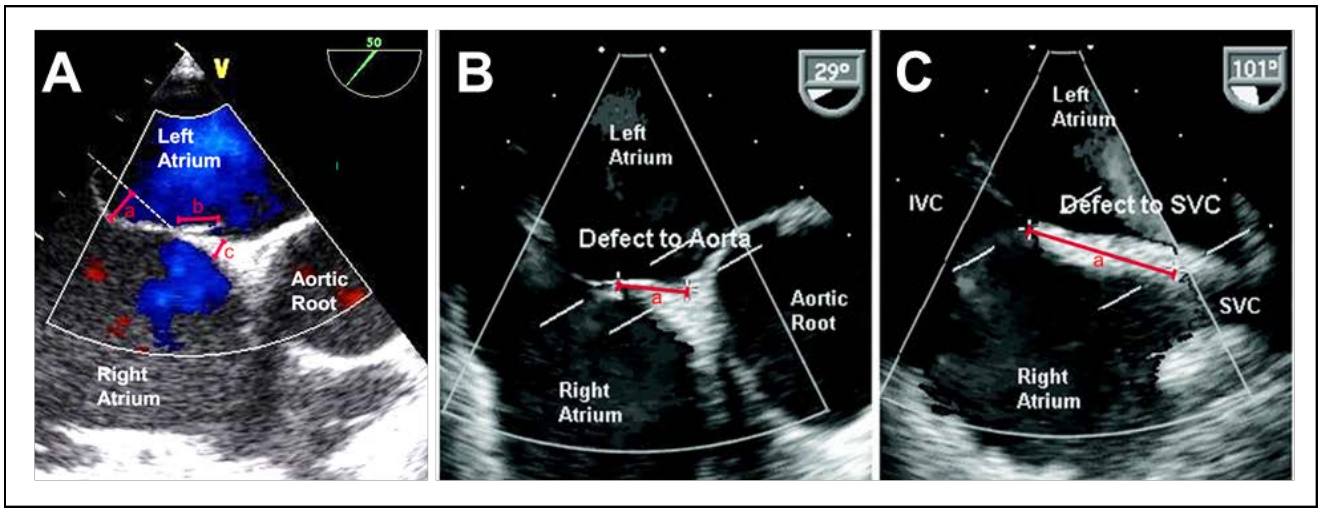
   NOTE: If TEE imaging is used, Steps 4–6 can be performed prior to femoral access, if desired.
5. Use ICE or TEE to measure the distance from the PFO to the aortic root and the distance from the PFO to superior vena cava orifice (Figure 10B and Figure 10C).

Figure 9. ICE Images



9A	PFO as assessed by ICE in short axis view with measurement of septum primum excursion (a), PFO tunnel length (b), and septum secundum thickness (c).
9B	PFO as assessed by ICE in long axis bicaval/SVC view with measurement of septum primum length (a).
9C	PFO as assessed by ICE in septal view with measurement of septum primum excursion into left atrium (a) and right atrium (b).

Figure 10. TEE Images



10A	Measurement of septum primum excursion (a), PFO tunnel length (b), and septum secundum thickness (c) in the short axis 50-degree view (range 30 to 60 degrees to visualize the aortic root en face).
10B	Distance from the PFO to aortic root (a) in the 30-degree view (range 0 to 45 degrees to visualize the aortic root en face)
10C	Distance from the PFO to the orifice of the superior vena cava (SVC) (a) in the bicaval 90-degree view (range 80 to 125 degrees to minimize foreshortening of the SVC).

NOTE: If Imaging cannot clearly localize the PFO, place a wire through the PFO to help with identification.

6. Size the device based on the PFO morphology while taking into consideration the distances from the PFO to the aortic root and SVC.

   Most PFOs can be adequately covered with the 25 mm device. Consider the use of a larger device (30 mm or 35 mm) if the PFO has an atrial septal aneurysm (ASA) with other features (for example, long tunnel or thickened septum secundum) that may result in a substantial residual shunt or an unsecured position across the septum. Use of the 35 mm device should only be considered in cases where a secure device position cannot be achieved with the 30 mm device.

   Use echocardiography and a push-pull test (see step 20) to evaluate the position of the device after device deployment, but before detachment. If the device position after deployment is not secure, consider the use of a larger device (30 mm or 35 mm).

   If the device interferes with an adjacent cardiac structure (such as free atrial wall or aortic root), recapture the device and redeploy. If device position remains unsatisfactory, recapture the device and either replace with a smaller device or consider alternative treatments. Refer to Table 11 and Table 12 for device selection and sizing guidelines. Check SVC, inferior vena cava (IVC) and coronary sinus (CS) flows after device deployment, but before detachment.

   WARNING: Use echocardiography to ensure that the device does not impinge on the free atrial wall or aortic root.

7. Prepare the Amplatzer™ Talisman™ PFO Occluder for use:
   a. Inspect the sterile package. Do not use the device if the sterile package is open or damaged.
   b. Open the sterile package and inspect the PFO occluder, Amplatzer™ Trevisio™ delivery cable, loader, and hemostasis valve. Do not use if damage is observed or if the occluder is detached from the cable.
   c. Remove the device with attached delivery accessories from the package (delivery cable, loader, and hemostasis valve) and ensure the connection is secure between the loader and the hemostasis valve.
   d. Ensure the PFO occluder is appropriately attached to the delivery cable:
      - Rotate the occluder one full turn counter-clockwise.

- Rotate occluder clockwise until resistance is felt.

- Rotate occluder counter-clockwise 1/8 of one turn to facilitate device release upon deployment.

NOTE: If the occluder detaches from the delivery cable, re-attach it to the distal end of the delivery cable by rotating the device clockwise approximately 4 to 5 turns until it is secure. Then, rotate the device counter-clockwise 1/8 of one turn to facilitate occluder release during implantation.

8. Load the occluder in the loader.
   a. Flush the loader and hemostasis valve with sterile saline.
   b. With the occluder and distal end of the loader submerged in sterile saline, pull back on the delivery cable to retract the device inside the loader until the distal marker band of the occluder reaches the loader tip.
9. Flush sterile saline through the hemostasis valve until no air bubbles are visible on the loaded occluder.

   NOTE: The attachment of the occluder to the cable may be checked after loading by rotating the cable clockwise until resistance is felt, then rotating the cable counter-clockwise 1/8 turn.
10. Prepare the Amplatzer™ Talisman™ Delivery Sheath according to the Amplatzer™ Talisman™ Delivery Sheath instructions for use.
11. Insert the dilator into the delivery sheath and tighten the rotating luer.
12. Advance the dilator and delivery sheath over the guidewire, through the PFO, and into the left atrium, confirming correct movement via echo and/or fluoroscopy.

    WARNING: Do not advance the delivery system if resistance is felt.
13. Slowly remove the guidewire and dilator to prevent ingress of air; allow blood back-flow to purge all air from the system.
14. While maintaining a wet-to-wet condition, attach the loader to the delivery sheath and tighten the rotating luer to lock the components together.
15. Advance the delivery cable and occluder through the delivery sheath until the occluder reaches the tip of the sheath. A mark on the cable indicates the occluder is nearing the end of the sheath.

    CAUTION: Do not rotate the cable while advancing the occluder; do not advance the delivery cable and occluder if resistance is felt.
16. Using echocardiography and fluoroscopy for guidance, hold the delivery cable in place while retracting the delivery sheath to deploy the left atrial disc and part of the connecting waist.
17. Pull the left atrial disc gently against the atrial septum. This can be felt or observed by echocardiography or fluoroscopy.
18. Maintain a slight tension on the delivery cable while retracting the delivery sheath approximately 5–10 cm to deploy the right atrial disc.
19. Use echocardiography or angiography to confirm that the device is in place and evaluate for residual shunt or valve insufficiency.
20. Prior to detaching the occluder, perform a gentle to and fro motion (push-pull test) with the delivery cable to assure a secure occluder position across the septum.
21. If the occluder position is unstable or interferes with any adjacent cardiac structure (such as SVC, PV, MV, CS, AO), do not release it from the delivery cable and perform the following steps:
    a. Recapture the occluder by stabilizing the delivery cable and advance the delivery sheath until the occluder is completely within the sheath.
    b. Reposition the occluder and deploy it again, or remove the occluder from the patient.

    NOTE: The occluder can be deployed a maximum of three times. If the position is still unsatisfactory, then remove and replace both the device and the sheath.
22. If the occluder does not conform to its original shape, recapture the device and replace it with a new device.
23. Place the plastic vise on the proximal end of the delivery cable.
24. Detach the occluder from the delivery cable by turning the delivery cable counter-clockwise (indicated by the arrow on the plastic vise).

    In the unlikely event that this should not be possible, advance the delivery sheath against the right atrial disc to secure the occluder and to facilitate detachment.

WARNING: When the procedure is complete, slowly remove the delivery cable and delivery sheath from the patient. Remove the sheath slowly to prevent an ingress of air.

Post-Procedure Care

- It is up to the physician's discretion whether a patient should be kept overnight. Regardless of the length of hospital stay, the patient should have a TTE prior to discharge.
- Patients with any observed pericardial effusion following the device implantation should be closely monitored with serial echocardiograms performed to ensure the pericardial effusion is not enlarging or until it resolves.
- Clinical follow-up with a cardiologist is recommended at one day post-implant, pre-discharge, and again at one week, six months, and 12 months post-implant. An annual clinical follow-up with a cardiologist is also recommended.
- Patients who experience a stroke after device implantation should undergo TEE for evaluation of thrombus formation.
- If a left-sided thrombus is identified following device implant, the patient should be evaluated for a hypercoagulable state and therapeutic anticoagulation (warfarin) should be initiated for a minimum of three months. A TEE should be performed following anticoagulation treatment to confirm resolution of the device-related thrombus. Thrombolysis or surgical removal of the device should be considered if the patient does not respond to anticoagulant therapy.
- Patients should be educated to seek immediate medical attention that includes an echocardiogram, if they develop signs or symptoms of hemodynamic instability such as chest pain, arrhythmia, fainting, or shortness of breath.
- Patients should take appropriate endocarditis prophylaxis for six months following device implantation. The decision to continue endocarditis prophylaxis beyond six months is at the discretion of the physician.
- Patients should be treated with antithrombotic therapy (such as aspirin) for six months post-implant. The decision to continue antithrombotic therapy beyond six months is at the discretion of the physician. **In the RESPECT trial, approximately 90% of patients implanted with the Amplatzer™ PFO Occluder continued taking anti-platelet medications beyond six months post-procedure (predominately aspirin alone).**
- Patients should be instructed to avoid strenuous activity for a minimum of one month post-device implant or as directed by physician. Strenuous activities may lead to the increased risk of adverse events including erosion. Patients should be reminded that if they experience any symptoms of shortness of breath or chest pain at any time, and especially after strenuous activity, they should seek medical care immediately.
- For patients with a history of PE or DVT, chronic anticoagulation rather than antiplatelet therapy should be considered post-device implantation.

Post-Procedure Instructions

- Registration form – An implant registration form is located in each device box. Complete the patient information section and send the form to Abbott Medical. Return the Amplatzer™ Talisman™ PFO Occluder accessories to Abbott Medical at the end of their operating life.

Disposal

- Amplatzer™ Talisman™ PFO Occluder accessories should be appropriately classified as biohazards and disposed of in compliance with applicable facility procedures and local and country laws and regulations. Return the Amplatzer™ Talisman™ PFO Occluder accessories to Abbott Medical at the end of their operating life.

Warranty

Abbott Medical warrants to buyer that, for a period equal to the validated shelf life of the product, this product shall meet the product specifications established by the manufacturer when used in accordance with the manufacturer's Instructions for Use and shall be free from defects in materials and workmanship. Abbott Medical's obligation under this warranty is limited to replacing or repairing at its option, at its factory, this product if returned within the warranty period to Abbott Medical and after confirmed to be defective by the manufacturer.

EXCEPT AS EXPRESSLY PROVIDED IN THIS WARRANTY, ABBOTT MEDICAL DISCLAIMS ANY REPRESENTATION OR WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING ANY WARRANTY AS TO MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

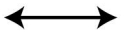
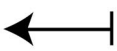
See the Terms and Conditions of Sale for further information.

For U.S. --- California Only:

⚠ **WARNING: This product can expose you to chemicals including ethylene oxide, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information, go to www.P65Warnings.ca.gov.**

Symbol Definitions

The following symbols may appear on the device packaging:

Symbol	Definition
	Caution, consult accompanying documents
	MR Conditional
	Manufacturer
	Reference number
	Product serial number
	Batch Code
	Use-by date
	Do not re-use
	Do not resterilize
	Sterilized using ethylene oxide
	Unique device identification
	Follow instructions for use on this website
	Keep dry; keep away from rain.
	Do not use if package is damaged
	Inner diameter
	Outer diameter
	Length
	Usable length

Symbol	Definition
	Federal law restricts this device to sale by or on the order of a physician.
	Date of manufacture
	Quantity
PFO Occluder	PFO Occluder
Delivery Sheath	Delivery Sheath
	Manufacturing facility