POST APPROVAL STUDY PROTOCOL

POST APPROVAL STUDY EVALUATING THE LONG TERM SAFETY AND EFFECTIVENESS OF THE ENDURANT STENT GRAFT SYSTEM (ENGAGE PAS)

DEVICE:	**ENDURANT STENT GRAFT SYSTEM**
PROTOCOL VERSION:	**VERSION # 1D** **JUNE 11, 2013**
INVESTIGATIONAL PLAN NUMBER:	**10012289**
FDA#:	**P100021/SXXX**
SPONSOR:	**MEDTRONIC VASCULAR, INC.** **3576 UNOCAL PLACE** **SANTA ROSA, CA 95403**

Investigational Plan Signature Page

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Investigational Plan Version 1D: June 11, 2013

Investigational Plan Compliance: I have read the above named Investigational Plan and agree to conduct the study as indicated.

Investigator (Please Print)

Investigator Signature Date

Institution

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ENGAGE POST-APPROVAL STUDY SYNOPSIS

Study Device	Endurant Stent Graft and Delivery System
Study Title	Post approval Study Evaluating the Long term Safety and Effectiveness of the Endurant Stent Graft System (ENGAGE PAS)
Sponsor	Medtronic Vascular 3576 Unocal Place Santa Rosa, CA 95403
Study Design	This is a multicenter, post market, non-controlled, non-randomized, two arm, prospective post approval study.
Study Purpose	The purpose of the study is to demonstrate the long term safety and effectiveness of the Endurant Stent Graft System for the endovascular treatment of infrarenal abdominal aortic or aortoiliac aneurysms in a post-approval environment, through the endpoints established in this protocol.
Post-Approval Study (PAS) Objectives	The clinical objective of the study is to evaluate the long term safety and effectiveness of the Endurant Stent Graft System assessed at 5 years through freedom from Aneurysm-Related Mortality (ARM).
[redacted]	[redacted]
Indications for Use	The Endurant Stent Graft System is indicated for the endovascular treatment of infrarenal abdominal aortic aneurysms or aortoiliac aneurysms having the following characteristics. • Morphology suitable for endovascular repair. • Adequate iliac/femoral access that is compatible with vascular access techniques, devices or accessories • Proximal neck length ≥ 10 mm • Infrarenal angulation ≤ 60°. • Non-aneurysmal aortic neck diameter of 19-32 mm. • Iliac diameters of 8-25 mm. • Bilateral distal fixation length of ≥ 15mm for the bifurcated stent graft or unilateral distal fixation length of ≥ 15mm for the Aorto-Uni-Iliac (AUI) stent graft.
Primary Endpoint	**Primary Safety Endpoint:** Freedom from Aneurysm-related Mortality Rate (ARM) at 5 years (1826 days). ARM is defined as death from rupture of the abdominal aortic aneurysm or from any procedure intended to treat the AAA. If a death occurred within 30 days of any procedure intended to treat the AAA, then it is presumed to be aneurysm related unless there is evidence to the contrary. Deaths occurring after 30 days of any procedure intended to treat the AAA that are procedure-related should be aneurysm related. All deaths will be adjudicated by a Clinical Events Committee (CEC) to determine device, procedure and/or AAA relatedness.
Additional Measures	The following metrics will be evaluated: 1. Technical Success 2. Major Adverse Events (MAE) rates within 30 days of the initial or secondary

	procedures, including: a. All-cause mortality b. Bowel ischemia c. Myocardial infarction d. Paraplegia e. Procedural blood loss ≥ 1000cc f. Renal failure g. Respiratory failure h. Stroke 3. At 12 months and subsequent 4 yearly follow-ups, the following will be reported: a. All-cause mortality b. Aneurysm-related mortality c. Aneurysm rupture d. Aneurysm expansion e. Conversions to open repair f. Stent graft migration (>10 mm compared to the 1 month CT) g. Stent graft patency h. Endoleaks i. Secondary endovascular procedures j. Technical observations k. Adverse events, as follows: i. Clinical sequelae caused by or directly associated with the Endurant device, the index procedure or any secondary endovascular procedure (including conversion to open repair) and technical observation. ii. Those adverse events that meet the definition of Major Adverse Event (MAE). iii. Those adverse events directly associated with the death of the subject. iv. Adverse events meeting Medical Device Reporting (MDR) criteria. v. Serious adverse events within 30 days of index procedure. [redacted]
Subject population	Patients diagnosed with an abdominal aortic or aortoiliac aneurysm who are considered candidates for endovascular repair, per the FDA approved Instructions For Use (IFU).
Number of subjects	This study incorporates the Test Group from the Endurant Stent Graft System US Clinical Study's Bifurcated Arm, consisting of 150 subjects and the Test Group for the Endurant Stent Graft System US Clinical Study's AUI arm, consisting of 44 subjects. In addition, 178 new bifurcated subjects will be prospectively enrolled to complement the PMA bifurcated arm subjects. All subjects are followed for a total of 5 years following initial implantation.
Number of sites	Up to 30 investigational sites in the United States may participate
Analysis Sets	The primary analysis set will consist of the Intent-to-Treat (ITT) population. This analysis set is defined as all subjects who were enrolled, i.e. when vessel access is achieved through a cut down or percutaneous approach with the intention of implanting the Endurant Stent Graft System. The ITT analysis set will be used for all analyses.

Follow-up schedule	Subjects will have required follow-up evaluations at these time points: • 1 month following the index procedure. • 12 months following the index procedure. Annually thereafter, for a total of 5 years from the index procedure.
Clinical Events Committee (CEC)	A CEC will be used to adjudicate all subject deaths and unanticipated adverse device effects through 5 years and MAEs through 30 days.
Monitoring	Monitoring will be performed per the ENGAGE PAS Monitoring Plan
[redacted]	[redacted]

1. INTRODUCTION

This clinical investigational plan describes the Post Approval Study requirements for the Endurant Stent Graft and Delivery System (hereafter referred to as the Endurant Stent Graft System). The purpose of the study is to demonstrate the performance of the Endurant Stent Graft System in the post-approval environment. The United States (US) study will be conducted using a common protocol at up to 30 centers. The information collected will be submitted at regular 6 month intervals to the FDA for the first 2 years and annually thereafter for an additional 3 years. A final post approval study report will be submitted at the completion of the study.

As the Sponsor of this clinical study, Medtronic Vascular has the overall responsibility for the conduct of the study, including assurance that the study will be performed according to the Investigational Plan and the US Food and Drug Administration (FDA) regulations. During this study, Medtronic Vascular will have certain direct responsibilities and may delegate other responsibilities to, for example, a Data Monitoring Committee, Clinical Events Committee, and/or CROs. Medtronic Vascular and/or its designees will conform to the US Code of Federal Regulations (CFR) including: Investigational Device Exemptions (21 CFR 812), Electronic Records/Electronic Signatures (21 CFR 11), Protection of Human Subjects (21 CFR Part 50), and Institutional Review Boards (21 CFR 56).

2. BACKGROUND

Abnormal bulging of the abdominal aorta, called an abdominal aortic aneurysm (AAA), is a potentially serious condition that can lead to death if the aneurysm ruptures. Endovascular aneurysm repair (EVAR) has gained an increasingly important role in the management of AAA since its introduction in the early 1990s. The past 15 years have been marked by continuing progress in the diagnosis, management, timing of treatment, and assessment of EVAR versus conventional open surgical repair, which was the original gold standard for treatment of AAA.

Endovascular aneurysm repair provides substantial clinical benefit for the patient. This minimally-invasive approach using endoluminal placement of a stent graft is a less invasive alternative to standard open surgical repair and is associated with a lower rate of morbidity and more rapid patient recovery.[1-9] The physiologic insult is clearly reduced with endovascular techniques as compared to open surgical repair, resulting in less time in the intensive care unit, shorter length of hospital stay, and earlier return to normal activities.[3,4,10,11] In addition, endovascular devices make it possible to treat patients whose co-morbidities would otherwise make conventional open repair difficult or impossible.[10]

The technology of EVAR for treating AAAs has progressed rapidly and the approach has been demonstrated to be safe and effective.[10-14] Over the years, endovascular stent grafts and their delivery systems have undergone substantial improvement, resulting in better operator handling of the device and patient outcomes. Initial success with the original endoluminal stent graft encouraged worldwide study of the technology. Although the initial endografts were relatively simple aorto-aortic tube grafts with balloon-expandable stents stitched to the end, a better understanding of the extent of the disease triggered the development of devices that could be implanted in one or both iliac arteries.[15,16]

Since the mid-1990s, commercially produced, modular systems have been available. Multiple companies have worked on the refinement of both the stent graft and its delivery system. The profile/size of the stent graft delivery system has decreased leading to fewer traumas to the vessel wall and enabling placement in patients with smaller iliac/femoral access arteries. Devices with uncovered suprarenal stents also were introduced. This development should lead to a more secure anchor to the perirenal aorta and reduce the tendency for distal migration.[15] Delivery systems have also evolved in regard to tip design, flexibility, sheaths and other features that hold the proximal stent graft, while allowing a controlled release resulting in improved deliverability and placement accuracy.[10]

When selecting the specific stent graft to be used for EVAR, the characteristics of the graft must be considered in light of the patient's anatomical and physiological characteristics. Endovascular devices vary in the type of stent used.[17] For example, longer, stiffer stents make navigation of angulated proximal implantation zones more challenging and may contribute to proximal attachment site endoleaks or kinking of the stent graft if it is deployed in tortuous vessels. It is well recognized that the most limiting consideration for the feasibility of EVAR is the anatomy of the proximal neck.[18] Many

patients are precluded from EVAR because of marked neck angulation and shorter neck lengths.

The Endurant Stent Graft System is a next-generation modular system for endovascular repair of AAA. The system was designed with the following features:

1. Designed for high flexibility and conformability to adapt straight and tortuous anatomies:
    a. The M-shaped proximal stent is specifically designed for improved wall apposition, minimizing the risk of in-folding and providing a 10mm seal zone
    b. The anchor pins on the suprarenal stent provide secure fixation to the aortic wall.
    c. Limb stents and stent spacing designed to prevent kinking in anatomies with increased iliac tortuosity.

2. Accuracy and control with simple and controlled deployment: Controlled release of suprarenal stent with anchor pins achieved by:
    a. The tip capture mechanism allows for precise positioning adjustments post deployment of the suprarenal stent.
    b. Rotation of the back-end wheel provides controlled release of the suprarenal stent with anchor pins.
    c. Proximal radiopaque markers facilitate accurate positioning in relation to the renal arteries, and the 'e' marker assists with the anterior/posterior view.

3. A delivery system with a lower outer diameter profile and hydrophilic coating (on the graft cover surface) allows it to more easily access and track in small and tortuous anatomies.

Medtronic Vascular submitted a Pre-Market Application (PMA) to the FDA on June 3 2010, and received market approval for the Endurant Bifurcated Stent Graft System on December 16, 2010. As a condition of approval, the FDA requested a post approval study. Medtronic therefore designed a post-approval study (PAS), in collaboration with the FDA, to document the performance of the Endurant Bifurcated Stent Graft System under a post-market setting. This study is referred to as ENGAGE PAS. This document describes the methodology of the ENGAGE PAS trial.

Medtronic Vascular submitted a Pre-Market Application Supplement (PMA-S) to the FDA on October 10, 2012, and received market approval for the Endurant II AUI Stent Graft System on April 16, 2013. Medtronic committed that the Endurant AUI cohort will be incorporated as a separate arm into the existing ENGAGE PAS clinical study for follow-up through 5 years.

3. INTENDED USE OF THE DEVICE

The Endurant Stent Graft System is indicated for the endovascular treatment of infrarenal abdominal aortic or aortoiliac aneurysms having the following characteristics.

- Morphology suitable for endovascular repair.
- Adequate iliac/femoral access that is compatible with vascular access techniques, devices or accessories
- Proximal neck length ≥ 10 mm
- Infrarenal angulation ≤ 60°.
- Non-aneurysmal aortic neck diameter of 19-32 mm.
- Iliac diameters of 8-25 mm.
- Bilateral distal fixation length of ≥ 15mm for the bifurcated stent graft or unilateral distal fixation length of ≥ 15mm for the AUI stent graft.

4. DESCRIPTION OF THE DEVICE

The Endurant Stent Graft System is designed to treat infrarenal abdominal aortic or aortoiliac aneurysms using an endovascular approach. When placed within the aneurysm, the Endurant Stent Graft is designed to provide a permanent, alternative conduit for blood flow within the patient's vasculature by excluding the aneurysmal sac from blood flow and pressure.

The Endurant Stent Graft System is comprised of 2 key components: the Endurant Stent Graft and the Endurant Delivery System. The stent graft is constrained by the delivery system outer sheath (graft cover). The preloaded stent graft is advanced to the aneurysm location over a guidewire. As deployment occurs, the stent graft self-expands due to the superelastic properties of the nitinol stents. Upon deployment, the proximal and distal ends of the stent graft conform to the shape and size of the proximal and distal seal zones due to the radial force of the stents.

4.1. ENDURANT STENT GRAFT COMPONENTS

The Endurant Stent Graft (Figure 1) is a modular device comprised of 2 primary components: an aorto-iliac bifurcated component and a contralateral limb component. The Aorto-Uni-Iliac (AUI) stent graft component is intended for the treatment of patients whose vessel anatomy precludes the use of a bifurcated stent graft. Additional components include aortic and iliac extensions. After the placement of the stent graft, each additional component is introduced separately into the vessel and is mated *in vivo* to the components already *in situ*.

All components are composed of nitinol stents sewn to a fabric graft. The suprarenal stents with anchor pins on the proximal end are laser cut from a nitinol tube. The bifurcated body component includes seal, body, contour, and limb stents formed from nitinol wire. The stents are formed in a ring with opposing ends terminating together in crimp sleeves. The suprarenal stents are sewn to the multifilament polyester (PET – Polyethylene Terephthalate) graft fabric using ultra high-molecular weight polyethylene suture. The wire formed stents are sewn to the graft fabric using polyester suture.

Radiopaque markers are sewn onto each component of the stent graft to facilitate visualization and accurate placement. Radiopaque markers are located at the proximal and distal ends of each stent graft component, and at the bifurcation of the bifurcated stent grafts to help visualize the edges and locations of the stent grafts. The nitinol stents can also be visualized under fluoroscopy.

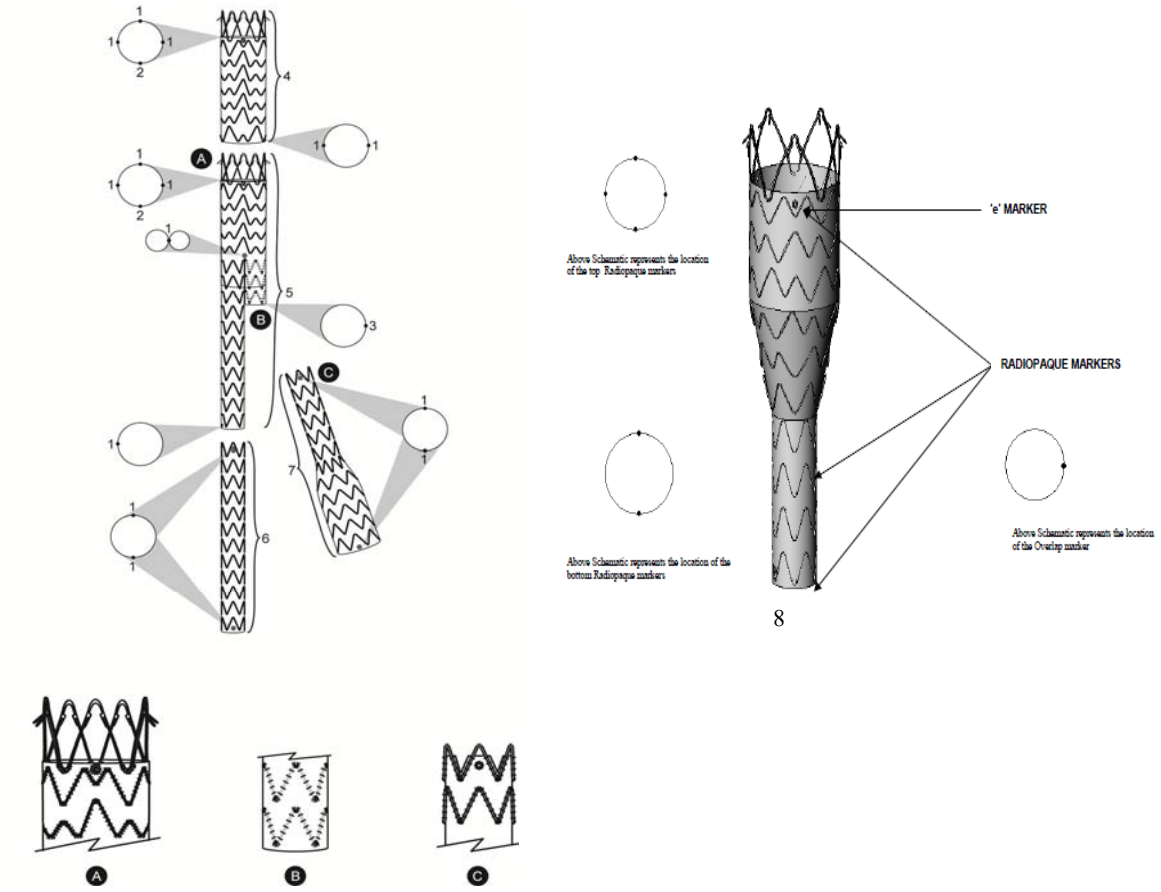

Figure 1: Endurant Stent Graft Components
Note : Graphical representation not to scale.

1. Radiopaque Marker
2. 'e' Marker
3. Radiopaque Gate Marker
4. Aortic Extension
5. Bifurcated Component
6. Iliac Extension
7. Contralateral Limb
8. Aorto-Uni-Iliac (AUI) Component

4.1.1 Bifurcated Stent Graft

The proximal section of the bifurcated stent graft component is deployed into the proximal neck and upper section of the aneurysm. All stents on the proximal aortic section of the bifurcated component are sewn to the outside of the graft fabric. The proximal stent (suprarenal) of the aortic section is not covered with graft fabric. As such, this bare stent design allows the Endurant Stent Graft to be fixed above the renal arteries without obstructing them with graft fabric. Refer to Figure 2 for a representation of the proximal configuration. The suprarenal stent has anchor pins to fix the stent graft in

place. The suprarenal stent is joined to the proximal edge of the graft by ultra high-molecular weight polyethylene suture.

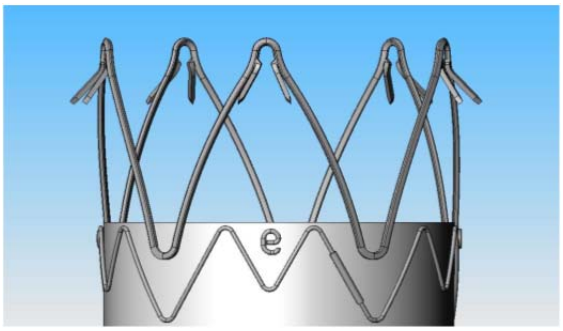

Figure 2: Endurant Stent Graft Aortic Proximal Configuration.
Note: Graphical representation not to scale

Distally, the aortic section bifurcates into 2 smaller tubes: an ipsilateral single iliac limb and a short contralateral stub leg. In the ipsilateral limb of the bifurcated stent graft component, the stents are sewn to the outside of the graft fabric providing a smooth inner lumen. In the contralateral (stub) leg of the bifurcated stent graft component, the stents are sewn to the inside of the graft fabric providing additional friction to give higher disjunction (separation) forces with the contralateral limb component. Refer to Figure 3 for a schematic of the ipsilateral limb distal configuration of the Endurant Stent Graft Component.

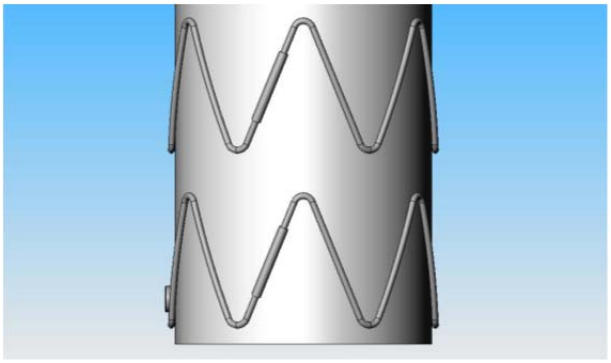

Figure 3: Endurant Stent Graft Limb Distal Configuration.
Note: Graphical representation not to scale

The diameters of the available proximal aortic section of the bifurcated stent graft components range from 23 - 36 mm, and the covered length of the bifurcated stent graft components ranges from 124 - 166 mm. In use, all stent graft components are oversized to fix the stent graft components in place and to provide sealing for the exclusion of the aneurysm. The aortic sections of the bifurcated stent graft components should be oversized approximately 10% - 20% in relation to the actual measured vessel inner diameter. The available aortic section sizes are able to be used in aortas with diameters ranging from 19 - 32 mm. The dimensions of the ipsilateral distal limb portion of the bifurcated stent graft components range in diameter from 13 - 20 mm and can be used in iliac arteries with diameters ranging from 10 - 18 mm. If a larger range of limb sizes is

necessary, then refer to the iliac extension section of the Instructions for Use (Appendix A).

4.1.2 Contralateral Limb

The proximal end of the tube-like contralateral limb component is deployed within the short contralateral stub leg of the bifurcated stent graft component, while the contralateral limb component's distal end is deployed in the contralateral iliac artery. The proximal section of the contralateral limb component uses an open web configuration, which contains no graft material in the stent valleys of its proximal stent. This is designed to reduce the chance of an endoleak. The available distal diameter of contralateral limb components ranges from 10 - 28 mm with lengths ranging from 82 - 124 mm. The contralateral limb component should be oversized by approximately 10% - 25% in relation to the vessel inner diameter and can be used in iliac arteries ranging from 8 - 25 mm.

4.1.3 Iliac Extension

When additional distal length of the stent graft is required, iliac extension components are available. The iliac extension component has a proximal end open web configuration similar to the contralateral limb component. The diameter of the iliac extension components ranges from 10 - 28 mm with a covered length of 82 mm. Similar to the contralateral limb component, the iliac extension component is designed for oversizing of approximately 10% - 25% and can be used in iliac arteries ranging from 8 - 25 mm in diameter.

4.1.4 Aortic Extension

When additional proximal length of the stent graft is required, aortic extension components are available. The aortic extension components use the same proximal bare suprarenal stent with anchor pin design as the proximal stent of the aortic section of the bifurcated component. The diameters of available aortic extension components range from 23 - 36 mm with the aortic extension having a covered length of either 49 mm or 70 mm. The aortic extension component should be oversized approximately 10% - 20% in relation to the actual measured vessel inner diameter, and can be used in aortic arteries ranging from 19-32 mm in diameter.

4.1.5 Aorto-Uni-Iliac Stent Graft

The proximal section of the Aorto-Uni-Iliac (AUI) stent graft component in use is deployed into the proximal neck and upper section of the aneurysm. All stents on the proximal aortic section of the AUI component are sewn to the outside of the graft fabric. The proximal stent (suprarenal) of the aortic section is not covered with graft fabric. As such, this bare stent design allows the Endurant Stent Graft to be fixed above the renal arteries without obstructing them with graft fabric. Refer to Figure 1 for a representation of the proximal configuration. The suprarenal stent has anchoring pins to fix the stent

graft in place. The suprarenal stent is joined to the proximal edge of the graft by ultra high-molecular weight polyethylene suture.

Distally, the aortic section tapers down to a smaller diameter tube. In the distal end of the tapered AUI stent graft, the stents are sewn to the inside of the graft fabric providing additional friction for higher disjunction (separation) forces with the contralateral limb component.

The diameters of the available proximal aortic section of the AUI stent graft components range from 23 - 36 mm, and the covered length of the AUI stent graft component is 105 mm. In use, all stent graft components are oversized to fix the stent graft components in place and provide sealing for the exclusion of the aneurysm. The aortic sections of the AUI stent graft components should be oversized approximately 10% - 20% in relation to the actual measured vessel diameter. The available aortic sections sizes can be used in aortas with diameters ranging from 19 - 32 mm. The diameter of the distal end of the AUI stent graft component is 14 mm.

4.2. ENDURANT DELIVERY SYSTEM

The Endurant Stent Graft is loaded and held inside the Endurant Delivery System, which facilitates placement of the stent graft via the arterial vasculature, e.g., femoral arteries. Using fluoroscopic guidance, the Endurant Delivery System is properly positioned within the patient's vasculature and the stent graft is deployed.

The Endurant Delivery System consists of a single use, disposable catheter with an integrated handle to provide accurate and controlled deployment. The catheter assembly is flexible and compatible with a 0.035-inch (0.89 mm) guidewire. There are 2 kinds of Endurant Delivery Systems. The Endurant Aortic Delivery System is for delivering the Aortic components, i.e., aortic extensions, bifurcated stent grafts and AUI stent grafts. The Endurant Iliac Delivery System is for delivering the Endurant contralateral limb and iliac extension stent grafts.

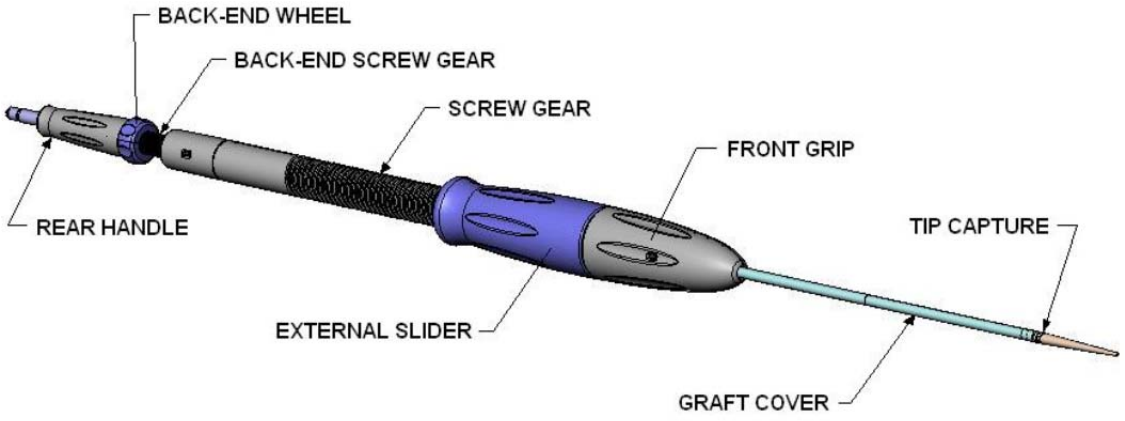

Figure 4: Endurant Aortic Delivery System
Note: Graphical representation not to scale

4.2.1 Endurant Aortic Delivery System

The Endurant Aortic Delivery System (Figures 4 to 7) is constructed of 4 concentric single lumen shafts: an outer polymer with a hydrophilic coated graft cover, a stainless steel spindle-tube shaft, a polymer middle member shaft, and a guidewire lumen containing a nitinol inner member. A stent stop (not shown in figures) is attached to the distal end of the middle member shaft to ensure the position of the Aortic Stent Graft Component during deployment.

The tapered tip attached to the distal end of the nitinol inner member, is depicted in Figures 5 and 6. A metallic spindle (as shown in Figure 6) is attached to the distal end of the spindle-tube to hold the proximal end of the suprarenal stent axially stationary before release. An atraumatic tapered polymeric tip is attached at the distal end of the inner member to facilitate tracking through tortuous and calcified vessels. Attached to the proximal end of the polymeric tip is a metallic sleeve that holds the suprarenal stent constrained on the spindle. The polymeric tapered tip, stent stop, and ring marker on the distal end of the graft cover are radiopaque and aid in fluoroscopic visualization. Hemostasis is maintained by various components within the delivery system to prevent excessive blood loss during the procedure.

Retraction of the graft cover, while the suprarenal stent is held by the spindle and the metallic sleeve of the tapered tip allows for accurate positioning and partial deployment of the body of the aortic stent graft component.

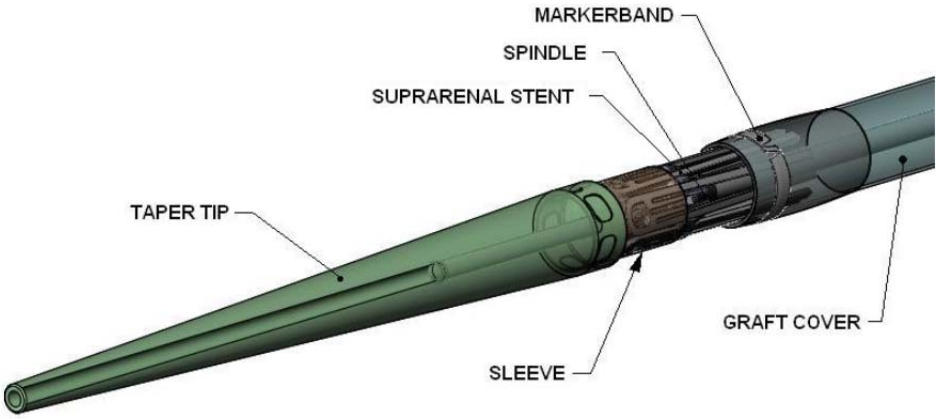

Figure 5: Endurant Aortic Delivery System – Tapered Tip Detail.
Note: Graphical representation not to scale

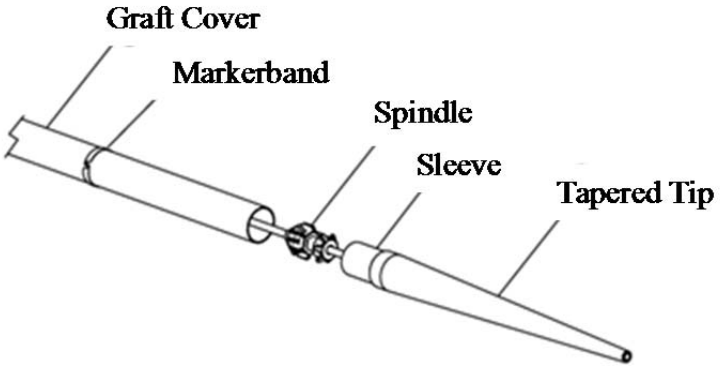

Figure 6: Endurant Aortic Delivery System - Tapered Tip Detail in Open configuration
Note: Graphical representation not to scale

The back-end wheel can be rotated clockwise to advance the tapered tip, thereby moving the metallic sleeve forward to release the anchor pins of the suprarenal stent from the spindle. After release of the suprarenal stent, the physician should rotate the back-end wheel counter clockwise to reseat the tip of the delivery system before retracting the tip into the graft cover through the deployed stent graft component in the process of removing the delivery system from the body. For detailed instructions on delivery and deployment of the Endurant Stent Graft, refer to the Instructions for Use in Appendix A.

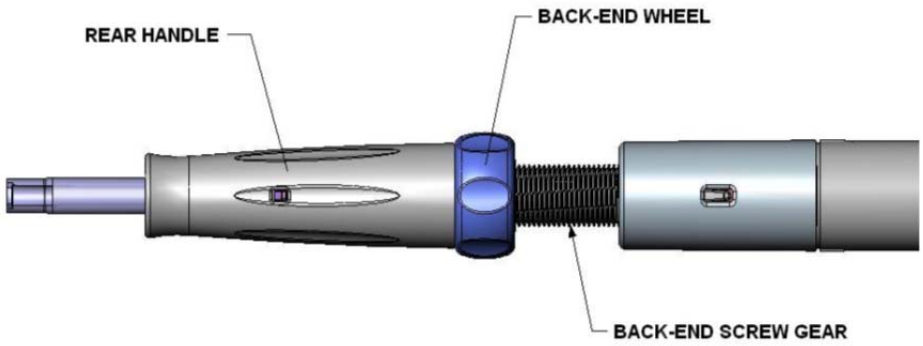

Figure 7: Endurant Aortic Delivery System – Back-End Detail.
Note: Graphical representation not to scale

4.2.2 Endurant Iliac Delivery System

The Endurant Iliac Delivery System (Figure 8) is constructed of 3 concentric single lumen shafts: an outer polymer with a hydrophilic coated graft cover, a polymer middle member shaft, and a guidewire stainless steel inner member lumen. A stent stop is attached to the distal end of the middle member shaft to maintain the position of the Iliac components during deployment. A polymeric, atraumatic tapered tip is attached at the distal end of the inner member to facilitate tracking through tortuous and calcified vessels. The tapered tip, stent stop, and ring marker on the distal end of the graft cover

are radiopaque and aid in fluoroscopic visualization. Hemostasis is maintained by various components within the delivery system to prevent excessive blood loss during the procedure. The deployment of the self-expanding stent graft components is facilitated by the retraction of the graft cover. After deployment of the stent graft component, the physician should retract the tip of the delivery system into the graft cover before removing the delivery system from the body.

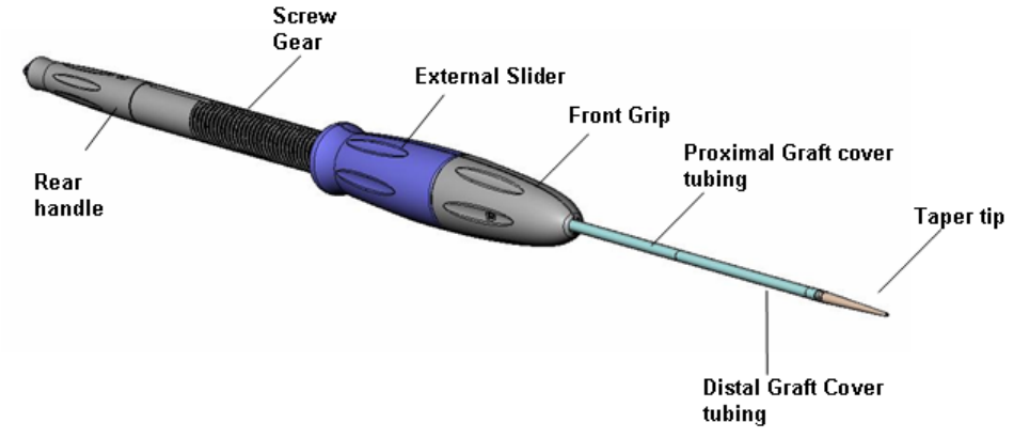

Figure 8: Endurant Iliac Delivery System.
Note: Graphical representation not to scale

5. STUDY OBJECTIVES

5.1. STUDY PURPOSE AND CLINICAL OBJECTIVE

The purpose of this study is to examine, through the endpoints established in this protocol, the long-term safety and effectiveness of the Endurant Stent Graft System, in a post-approval environment. Patients diagnosed with abdominal aortic or aortoiliac aneurysm who meet the eligibility criteria for the study may be enrolled (see Section 9.1 - Eligibility Criteria). A primary endpoint has been defined for the study. The results of females and non-whites having undergone EVAR, and a literature review and study outcome description of both females and non-whites will be provided as part of the subset analyses with each regular post-approval study update. In addition, results of acute procedural and hospital experience-related endpoints will be evaluated. Sample size estimates are based on the primary endpoint, and the expected subject dropout rate (based on previous Medtronic EVAR trial experience). Details in regard to the endpoints and statistical methods are provided in Section 7 – Statistical Methods and Analyses.

6. CLINICAL STUDY DESIGN

The post-approval performance of the Endurant Stent Graft System will be evaluated in a two-arm, non-controlled, non-randomized, and multi-center clinical study. Subjects must be diagnosed with an abdominal aortic or aortoiliac aneurysm, considered candidates for endovascular repair, and fulfill the study Eligibility Criteria (Section 9.1 – Eligibility Criteria).

The Endurant Test Groups from the Bifurcated Arm of the PMA (P100021) and the AUI Arm of the PMA (P100021/S021) will be rolled into the post-approval study cohort. The newly enrolled Bifurcated (De Novo) subjects and the Bifurcated Arm Test Group will be combined for the analysis of the Endurant Bifurcated Stent Graft. The AUI Arm from the PMA-S will be analyzed separately.

The post-approval study for Endurant Stent Graft System started enrollment in the United States in the summer of 2011. Initially, 20 sites were enrolled in the study. As many as 30 investigational sites may participate. All sites used the same investigational plan. The enrollment period was estimated to be 16 months. Investigators at any one site may not enroll more than 20% (35 subjects) of the new subject enrollment population. Data from 178 patients, who undergo AAA treatment with the Endurant Stent Graft System with complete 5 year follow-up, were combined with the data from the 150 subject Endurant Bifurcated Test Group from the Endurant US IDE PMA submission yielding a cohort of 328 subjects for analysis and summary of the long term safety and performance of the bifurcated device. The 44 AUI subjects from the Endurant US IDE PMA-S were analyzed separately. By-gender and by-race analyses were performed separately for the bifurcated group and AUI group as well.

Data from the study was submitted at 6 month intervals for the first two years, and annually thereafter. The duration of the clinical study from first enrollment through final follow-up and close-out is expected to be 6 years 5 months. To permit collection of long-term safety and effectiveness data on the stent graft system, patients will be followed for a total of 5 years post implantation under this same clinical protocol. When all enrolled patients have been followed for 5 years post index procedure, or have exited, the study will be closed. An estimated timeline of key milestones for the study is shown in Table 1. The projections for monthly subject enrollment and sites activated with IRB approvals are shown in Table 2.

Table 1: Projected milestones for the study

Key Study Milestones	Projected Dates
Six Month Progress Report	16-Jun-2011
Six Month Progress Report	16-Jun-2011
12 Month Progress Report	16-Dec-2011
18 Month Progress Report	16-Jun-2012
Last Patient Enrollment	15-Dec-2012
24 Month Progress Report	16-Dec-2012
Last Patient Follow Up	15-Dec-2017
Study Close-out Report	15-Mar-2018

Table 2: Projected monthly subject enrollment and site activation (for ENGAGE PAS De Novo subjects)

Month/Year	Subject Enrollment	Site Activation
Aug-2011	2	1
Sep-2011	5	2
Oct-2011	7	3
Nov-2011	8	3
Dec-2011	10	3
Jan-2012	8	2
Feb-2012	13	2
Mar-2012	11	2
Apr-2012	11	2
May-2012	13	2
Jun-2012	12	2
Jul-2012	15	2
Aug-2012	16	2
Sep-2012	15	2
Oct-2012	16	
Nov-2012	16	
Total	**178**	**30**

7. STATISTICAL METHODS AND ANALYSES

This is a prospective, multi-center, two-arm trial to evaluate the performance of the Endurant Stent Graft System in a post approval environment. A total of 178 subjects will be prospectively enrolled to receive the Endurant Bifurcated stent graft. The Endurant Bifurcated Arm test group, consisting of 150 subjects from the FDA approved Endurant US PMA submission, will be rolled into the prospectively enrolled cohort, resulting in a total cohort of 328 subjects for the Bifurcated Arm. The Endurant AUI Arm test group, consisting of 44 subjects, will be rolled in but analyzed separately. The primary statistical analysis will be based on freedom from Aneurysm Related Mortality (ARM) at 5 years. For the bifurcated arm, it will be compared to a Performance Goal (PG), determined from literature. This comparison will be performed based on a Kaplan-Meier (KM) analysis of the ARM. For the AUI group, the KM estimate of freedom from ARM will be calculated without a hypothesis testing. By-sex/gender and by-race (white vs. non-white) subset analyses will be performed on the freedom from ARM rate at 5 years separately for the bifurcated arm (328 subjects) and the AUI arm (44 subjects)..

In general, the number and percentage of subjects reaching each of the additional measures will be given, along with confidence intervals for those percentages.

Those acute procedural and hospital experience-related outcomes that are categorical will be reported in frequency and percentage. The outcomes that are continuous will be reported by giving the number of observations, mean, standard deviation, median, minimum and maximum.

The primary analysis set used for these analyses will be the ITT population, which consists of all subjects enrolled in the study. For the purposes of this definition, a subject is enrolled at the point when vessel access is achieved through a cut down or percutaneous approach with the intention of implanting the stent graft.

7.1. DESCRIPTION OF THE STUDY PRIMARY ENDPOINT

The primary endpoint is freedom from ARM, measured at 5 years (1826 days). For the bifurcated arm, it will be compared to the Performance Goal (PG), determined from the literature as described in Section 7.2. ARM is defined as

> ARM is defined as death from rupture of the abdominal aortic aneurysm or from any procedure intended to treat the AAA. If a death occurred within 30 days of any procedure intended to treat the AAA, then it is presumed to be aneurysm related unless there is evidence to the contrary. Deaths occurring after 30 days of any procedure intended to treat the AAA that are procedure-related should be aneurysm related.

The null hypothesis that will be tested is:

H_0: ARMF5 ≤ 92 %,

where ARMF5 is the 5-year freedom from ARM rate in the population of patients treated with the Endurant Bifurcated Stent Graft System and 92.0% is the PG.

The alternative hypothesis is:

H1: ARMF5 > 92 %,

where ARMF5 is as above.

This comparison will be performed based on a Kaplan-Meier (KM) analysis of the ARM. All deaths will be adjudicated by a CEC to determine device, procedure and/or AAA relatedness.

This study primary endpoint will be also analyzed for the AUI arm descriptively, calculating the KM estimate of 5-year freedom from ARM along with a 2-sided 95% confidence interval.

7.2. BIFURCATED LITERATURE DERIVED PERFORMANCE GOAL (PG)

A comprehensive literature review of the journal articles reporting ARM rates, calculated by Kaplan-Meier analysis or life-table analysis for Endovascular Aneurysm Repair (EVAR) through five years from the period of 2004 to 2010 was performed using the PubMed search engine.

The key words (as single words or in combination) such as “Abdominal aortic aneurysm and aneurysm-related death” and “EVAR and aneurysm-related death” were employed. These chosen key words were deliberately broad, to include as many articles as possible for review. Articles that appeared relevant based on title and abstract were reviewed in detail.

Criteria for inclusion into the PG analysis were:

- An ARM rate calculated by either Kaplan-Meier analysis or life-table analysis, with the ARM rate clearly indicated by either chart or text.
- The definition of ARM must be either explicitly stated or could be deduced from the article.
- The rate must be specific for the time frame to be analyzed (i.e., rates were not extended outwards to later time frames, but were within the specified time frame of the study and study analysis).

On the basis of the above search criteria, 13 articles with KM estimates for 5 year freedom from ARM were found and their citations are shown in Appendix L. A total of

6385 subjects treated with EVAR were accounted for in the 13 journal articles reviewed for this analysis.

A definition of ARM inclusive of a death related to the implant procedure ≤30 days from implantation or >30 days after implantation if the death is deemed procedure related in the medical opinion of the Clinical Events Committee.

After reviewing the articles, the weighted average freedom from ARM by population size (as reported in EVAR literature) is 95.99% (or 96%) at 5 years. With a clinical acceptable margin and variations reported in the literature, the PG for freedom from ARM at 5 year is set to be 92% with inputs from both clinician and FDA.

7.3. SAMPLE SIZE CALCULATIONS

The sample size calculation is based on the primary analysis for the bifurcated arm as analysis for the AUI arm is descriptive.

The statistical analysis of the 5-year post approval safety endpoint assumes a 97.3% freedom from ARM at 5 years and a 15% annual attrition rate. These assumptions are based on:

- The current Vitality post-approval study results (P070027/R015), which show a 96.9% freedom from ARM at 5 years as outlined in the 2012 study Annual Progress Report, and

- The 2012 ENGAGE post-approval study report (P100021/R005), which shows a 99.7% freedom from ARM at 3 years, and an 8.5% annual attrition rate during the first 3 years of follow-up for the Endurant Bifurcated Test Group.

The planned sample size of 328 subjects, including 150 rollover subjects in the bifurcated arm of the IDE trial and 178 De Novo subjects, will yield approximately 170 evaluable subjects at the 5th year and this will provide a minimum of 90% statistical power for a 1-sided test at a 0.05 statistical significance level against the Performance Goal (PG). Therefore, according to these assumptions, enrolling additional 178 De Novo subjects will provide a sufficient sample size for the statistical hypothesis test on the 5-year post approval safety endpoint.

7.4. ADDITIONAL MEASURES

The following metrics will be evaluated:

1. Technical Success
    a. Technical success of the Endurant Stent Graft System (assessed intra-operatively) is defined as:

Successful delivery and deployment of the stent graft in the planned location and with no unintentional coverage of both internal iliac arteries (in the case of AUI, unintentional coverage of the ipsilateral internal iliac artery) or any visceral aorticbranches and with the removal of the delivery system

2. Major adverse event (MAE) rates within 30 days of the initial or secondary procedures, including:
    a. All-Cause Mortality
    b. Bowel Ischemia
    c. Myocardial Infarction
    d. Paraplegia
    e. Procedural Blood Loss ≥ 1000 cc
    f. Renal Failure
    g. Respiratory Failure
    h. Stroke
3. At 12 months and subsequent 4 yearly follow-ups, the following will be reported:
    a. All-cause mortality
    b. Aneurysm-related mortality
    c. Aneurysm rupture
    d. Aneurysm expansion
    e. Conversions to open repair
    f. Stent graft migration (>10mm compared to the first post-implant CT)
    g. Stent graft patency
    h. Endoleaks
    i. Secondary endovascular procedures
    j. Stent-graft integrity
    k. Adverse Events, as follows:
        i. Clinical sequelae caused by or directly associated with the Endurant device, the index procedure or any secondary endovascular procedure (including conversion to open repair) and technical observation.
        ii. Those adverse events that meet the definition of a Major Adverse Event (MAE).
        iii. Those adverse events directly associated with the death of the subject
        iv. Adverse events meeting Medical Device Reporting (MDR) criteria
        v. Serious adverse events within 30 days of index procedure.

[redacted]

7.5. ACUTE PROCEDURAL AND HOSPITAL EXPERIENCE

The following acute procedural and hospital experience-related outcomes will be summarized using descriptive statistics.

1. Mean duration (min) of procedure.
2. Proportion of subjects who underwent general anesthesia.
3. Mean volume (cc) of estimated blood loss.
4. Proportion of subjects requiring blood transfusions.
5. Mean length of time (hours) in intensive care unit.
6. Mean length of time (days) of overall hospital stay (from index procedure to discharge).

7.6. ANALYSIS METHODS

Statistical analyses for this post-approval study will take place after the final subject's 5 year follow-up. The study will be conducted in a way to minimize the incidence of study deviations and missing data, and all subjects with assessable data will be accounted for. Statistical analyses will be performed using the Statistical Analysis System (SAS) for Windows (Version 9.1 or higher) or other validated statistical or graphical software.

Data generated from the clinical study will be analyzed as specified in the following sections. Subject data listings, tabular, and graphical representations will be provided. In general, for categorical variables, frequency and percentage will be presented as descriptive statistics. For continuous variables, number of observations, mean, standard deviation, median, minimum, and maximum will be reported.

7.6.1 Data Analysis Subsets

All analyses will be constructed using an Intent-to-Treat (ITT) population. This analysis set is defined as all subjects who were enrolled, i.e. when vessel access is achieved through a cut down or percutaneous approach with the intention of implanting the Endurant Stent Graft System. The ITT analysis set will be used for all safety and effectiveness analyses.

7.6.2 Analysis of the Primary Study Endpoint

In the bifurcated arm, the statistical hypothesis will be tested by calculating a 1-sided 95% confidence limit for the 5-year KM estimate and comparing it to the Performance Goal (PG). The confidence limit will be based on the Greenwood standard error and using a normal approximation. If the lower confidence limit is greater than the Performance Goal (PG), then the null hypothesis (see Section 7.1) will be rejected in favor of the alternative hypothesis and a higher than 92% freedom from ARM rate at 5 year will be concluded.

In the AUI arm, a KM estimate will be calculated along with a 2-sided 95% confidence interval for the freedom from ARM at 5 years.

Subjects who die from aneurysm-related death as determined by the CEC will be considered as having the event. The time from the initial implant to the time of death is the time to event. Other subjects will be considered censored at the date of last follow-up visit / contact or the date of death due to other reasons.

7.6.3 Analysis of the Additional Measures

For these additional measures, which are all proportions, a 2-sided 95% confidence interval will be constructed based on the binominal distribution, i.e., using the exact method. Because these confidence intervals are strictly descriptive, i.e., no statistical hypothesis to be tested, no multiplicity adjustment of the confidence level will be performed.

7.6.4 Analysis of the Acute Procedural and Hospital Experience Endpoints

All analyses on acute procedural and hospital experience outcomes are considered as additional to that for the primary and secondary endpoints. For duration of procedure, volume of estimated blood loss, length of time in intensive care unit (ICU) and length of time in hospital (from admission to discharge) will be summarized using mean, standard deviation, median, min and max. For proportion of subjects undergoing general anesthesia and proportion of subjects requiring blood transfusion, the number and percentage of subjects in each category will be presented. All ITT subjects with available data will be included in the analysis.

7.6.5 Analysis of Baseline Variables

All clinically relevant baseline variables will be tabulated. Categorical variables, including binary variables, will be reported by giving the number and percentage of subjects in each category. Continuous variables will be reported by presenting the mean, standard deviation, median, minimum, and maximum value for each. All ITT subjects with available data will be included in the analysis.

7.6.6 Subset Analyses

By-sex/gender and by-race (white vs. non-white) subset analyses will be performed on the 5-year ARM rate separately for the bifurcated arm and AUI arm. A 2-sided 95% confidence interval based on a KM estimate of the rate will be calculated for each arm using the Greenwood standard error and normal approximation. In addition, this study will also attempt to better understand the overall outcomes in females and non-whites undergoing endovascular repair (EVAR) with the Endurant device. The study report will summarize the current research results of females and nonwhites having undergone EVAR, and a literature review and study outcome description of both females and non-whites will be provided with each regular post-approval study update. Publications to be examined will include single-center experiences and multicenter trials. Specifically, descriptive statistics will be used to summarize literature derived outcomes in patients with the EVAR therapy, literature-derived

Endurant specific outcomes, and the post-approval study outcomes. These summaries will be conducted to the level of detail available in both the literature and the post-approval study trial subsets, including device safety and effectiveness measures such as aneurysm-related mortality, endoleaks, aortic ruptures, etc.

7.6.7 Time Window Conventions Used in Analysis of Endpoints

Throughout this study, all attempts will be made to collect complete and compliant data. Thus, the majority of data are expected to be within the protocol-specified timeframes for follow-up visits. However, in practice, it may not be possible to achieve this completely. For example, an unscheduled visit may take place and then the patient may miss the next follow-up or withdraw. For these exceptions, and to take into account all available data, the following rules and time windows will be applied in the statistical analyses (Table 3).

Table 3: Windows for analysis of noncompliant or missing data.

Study Visit	Target Day	Time Window
Implant	0 days	Day 0
1 Month	30 days	1 – 90 days
12 Months	365	305 – 548 Days
2 Year	731	549 – 913 Days
3 Year	1096	914 – 1278 Days
4 Year	1461	1279 – 1644 Days
5 Year	1826	1645 – 2009 Days

If there are 2 or more assessments in the same time window, then the assessment closest to the target day will be used in the analysis.

For an adverse event or death, date of onset will be defined as the time when the event occurred. In cases where the date of onset is incomplete, the 15th day of the known month or July 1st of the known year will be used. Furthermore, adverse events or death may be observed at any time during the study, so no time windows will be applied. An event that occurs "within 1 month" is an event that takes place between Days 0 to Day 30 inclusive. The same applies to events such as adverse events or death within 1 year, i.e., Day 0 – Day 365 inclusive.

7.6.8 Patient Withdrawal and Missing Data

Intent-to-treat analysis allows for the evaluation of all subjects who enrolled the study, even though some may not complete the study (e.g., subjects who are, for any reason, lost to follow-up, drop-outs, or terminated by investigator). The intent-to-treat principle means that analysis will be based on observed results of all subjects for the treatment as they are enrolled to receive. Imputation of missing data will not be performed in the

intent-to-treat analysis, unless otherwise specified. For example, to determine the rate of MAEs within 365 days, only following subjects with observations will be counted for the rate:

The numerator consists of:

- The number of subjects that experienced an MAE during Day 0 and Day 365, inclusive.

The denominator consists of:

- The number of subjects evaluated during the analysis window (i.e., last day in study>=304), plus
- Any subjects not evaluated during the analysis window, but that had an MAE during Day 0 and Day 303, inclusive.

Note that subjects that were followed less than 305 days and no MAE reported during the follow-up period will be excluded from the analysis of this rate because no complete observations were made to these subjects due to withdrawal or lost to follow-up.

For the analysis of primary endpoint, freedom from ARM rate at 5 years, the KM analysis will be applied. Subjects who lost to follow-up or withdraw consent will be considered censored at the date of withdrawal. Therefore, no subjects in the intent-to-treat analysis set will be excluded from the analysis. Vital status of other subjects at 5 years will be determined. For the purposes of analyzing ARM, subjects who die of unrelated causes will be considered censored at time of death.

8. CLINICAL STUDY PREPARATION PROCEDURES

8.1. SELECTION OF CLINICAL INVESTIGATORS

Investigators selected will be responsible for fulfilling the clinical study requirements specified in this investigational plan. The study center must have the necessary resources to comply with the requirements. The following criteria will be used to select investigators for participation in the ENGAGE PAS clinical study.

- Investigator is qualified by training and expertise in endovascular repair of abdominal aortic and aortoiliac aneurysms.
- Investigator and clinical research staff have experience with US IDE studies and have the time to conduct the study in accordance with the investigational plan.
- Agreement to comply with the investigational plan and regulatory requirements.
- Adequate volume of potential patients who meet the eligibility criteria, i.e., at least 1 patient per center per month.
- Number of simultaneous competing clinical studies that might interfere with patient enrollment or study conduct.
- Appropriate facilities, resources, and equipment.
- An expressed desire to participate in the study.
- Willing to undergo required study training.
- Willing and able to complete study initiation activities in a timely manner (2-3 months).

All investigators will sign the appropriate study-related agreements (Form of Investigator Statement, Clinical Research Agreement) before they are added to the clinical study.

8.2. INSTITUTIONAL REVIEW BOARD REQUIREMENTS

No clinical study activities will begin without documented approval of the investigational plan and the informed consent documentation by an Institutional Review Board (IRB) affiliated with the study center. The IRB has the authority and responsibility to review and approve the study and its conduct in accordance with Title 21, Part 56—Institutional Review Boards, US Code of Federal Regulations. The primary purpose of the IRB is to protect the rights and welfare of the patients enrolled in the clinical study.

Information required by the IRB will be supplied to the investigators and the investigator is responsible for providing all materials to the IRB. The investigator will notify Medtronic Vascular when IRB approval is granted. An approval letter from the IRB addressed to the investigator is required, and a copy of this letter must be provided to Medtronic Vascular prior to any studies activities related to enrollment of the first patient. This approval letter must reference the name of the study and specific version of the Endurant Post Approval Study Investigational Plan and the Informed Consent document.

Investigators are also responsible for ensuring that the IRB reviews the study according to the timeframes designated by the IRB. A renewal/approval letter based on continuing review by the IRB must also be provided to Medtronic Vascular annually.

A roster of the IRB committee members or a General Assurance number is required and must be maintained with the clinical study files at the site and Medtronic Vascular. An updated roster should be provided to Medtronic Vascular on an annual basis. If an investigator is a member of the IRB, then written documentation must be provided by the IRB stating that the investigator did not participate in the approval process (voting) for this study.

8.3. INFORMED CONSENT

To protect the rights and welfare of study patients, the Endurant Stent Graft System clinical study will be conducted in conformance with Title 21, Part 50—Protection of Human Subjects, US Code of Federal Regulations. Obtaining informed consent in accordance with the policy of the IRB, this investigational plan, and the US IDE regulations is mandatory for patient participation. The patient informed consent document(s) must be provided in a language that the patient reads and understands. All patients must provide voluntary, written informed consent.

Medtronic Vascular and the IRB must approve the informed consent documentation and any modifications to the consent materials prior to use. Required elements of an informed consent document and a sample informed consent form are provided in Appendices E and F, respectively. The approved informed consent documentation must have a version number. It is also recommended that the document carry an IRB approval stamp. The informed consent process (including time and date of discussion), should be documented in the patient's medical record and signed/dated by the individual (investigator or designee) who recorded it. A copy of the signed informed consent documentation should be given to the subject.

8.4. STUDY TRAINING

Prior to the start of the study, the investigator and study staff at each site will undergo training to provide in-depth information about the use of the device, the clinical investigational plan, and study requirements. Medtronic Vascular personnel (or designees) will conduct the training. Training of study personnel will be documented on the appropriate training record form and maintained with the site and Medtronic Vascular study files. Clinical research staff will be supplied with the investigational plan, instructions for use, case report form instructions, and other supporting materials.

Topics to be covered at the training include the following.

- Study plan overview and study timeframes
- Role of Clinical Events Committee
- Subject eligibility criteria
- Informed consent procedure and documentation in the subject's medical record
- HIPAA regulations and patient confidentiality
- Screening procedures
- Data collection schedule
- Imaging requirements and guidelines
- Study-specific assessments
- Device disposition, inventory, storage requirements and packing slips
- Instructions for use and implantation procedures
- Device complaints and returns
- Adverse event reporting
- Source document requirements
- CRF completion instructions and corrections
- Monitoring procedures
- IRB policies and procedures
- Regulatory and other study document completion and maintenance
- Study correspondence with sponsor, monitor and data management
- Regulatory requirements and compliance
- Overview of Good Clinical Practices
- Identification of potential issues that might arise in regard to clinical study site management

Medtronic personnel (or designees) may be present for the first implant at a site. Also, an Investigators' Meeting may be conducted prior to the start of the study for the purpose of study-related training.

8.5. REQUIRED EQUIPMENT

The Endurant Stent Graft System is commercially available in the United States and will be used in this study. The commercial version of the Instructions for Use is provided in Appendix A. Final product labeling is found in Appendix G.

The Endurant Stent Graft Systems are composed of the following components.

- Endurant Bifurcated Stent Graft
- Endurant Contralateral Limb
- Endurant Iliac Extension
- Aortic Extension
- Endurant Aortic Delivery System
- Endurant Iliac Delivery System

Each Endurant Stent Graft component (bifurcated, contralateral limb, aortic and iliac extensions) is individually contained within an Endurant Delivery System. Endurant Delivery Systems are sterilized using E-beam and are supplied sterile for single use only. The system should be stored at room temperature in a secured, dark, dry place. Ancillary required and recommended equipment associated with implantation of the Endurant Stent Graft System is listed in the Endurant Stent Graft System Instructions for Use—Section 9: Clinician Use Information (Appendix A – Instructions For Use and as provided electronically on www.medtronic.com/manuals or may be provided in hard-copy format upon request).

8.6. SITE ACTIVATION AND SUPPLY OF STUDY MATERIALS

Before a patient is enrolled at a study site, the investigator must receive a "Go Letter" from Medtronic Vascular. In addition, the following documentation must be on file at Medtronic Vascular.

- IRB approval letter for the investigational plan and informed consent documentation
- IRB membership list or General Assurance number
- Executed Clinical Research Agreement
- Executed budget agreement
- Site Investigator Qualification Form
- Delegation of Authority Form
- Form of Investigator Statement (templates provided in Appendix H)
- Executed Non-Disclosure Agreement
- Curriculum Vitae (investigator, sub-investigators, research coordinator)
- Training Records (device, investigational plan, GCP)

Medtronic Vascular will control the supply of case report form materials, return shipment containers for explanted devices, and other items required to conduct the clinical study. Investigators will be provided with the post-approval study plan, procedures, informed consent information and templates, case report form instructions, and other supportive documents required for the study.

9. CLINICAL STUDY PROCEDURES

Clinical data will be collected preoperatively to establish eligibility, at baseline, during implantation of the Endurant Stent Graft, throughout the hospital stay, and postoperatively. Each patient will continue to be followed after the 12-month evaluation on an annual basis to collect a total of 5 years' experience. When all enrolled patients have been followed for 5 years post index procedure or have previously exited from the study, the study will be closed and the final report generated.

Information for the case report forms will be collected using an electronic data capture system (EDC). The clinical investigators will use EDC to review, sign, and date the case report forms. Medtronic Vascular monitors (or designees) will review all electronic case report forms. Sample case report forms and information for required assessments are provided in Appendices I and J.

Any source documentation (procedure reports, imaging studies, lab reports, death certificates, etc.) that is sent to the sponsor or reviewing committees should have all patient identifiers removed and replaced with the subject's study ID.

The data collection schedule is summarized in Table 4.

Table 4: Overview of the study procedures and data collection requirements.

Data	Screening/ Baseline	Procedure	1-Month FU ±15 days	12-Month FU ± 56 Days	24-Month FU ± 56 Days	36-Month FU ± 56 Days	48-Month FU ± 56 Days	60-Month FU ± 56 Days
Informed Consent	✓							
Physical Examination	✓		✓	✓	✓	✓	✓	✓
Pregnancy Test (for female of child-bearing potential)	✓							
Medical History	✓							
CT/MRA with contrast	✓		✓	✓	✓	✓	✓	✓
CT non contrast and Color Duplex Ultrasound (only for subjects with renal insufficiency)			✓	✓	✓	✓	✓	✓
INR	✓							
Serum Creatinine	✓		✓	✓	✓	✓	✓	✓
Current Health Status & Risk Factors	✓							
Preimplant Adjunctive Procedures		✓						
Angiogram of Abdomen & Pelvis		✓						
Device and Procedure Information		✓						
Hospital Discharge Information		✓						
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Abdominal X-Ray (4-view, KUB)			✓	✓	✓	✓	✓	✓
Adverse Event Assessment		✓	✓	✓	✓	✓	✓	✓

9.1. ELIGIBILITY CRITERIA

The study population will include those patients who are appropriate candidates for endovascular repair of abdominal aortic aneurysms (evidenced by screening contrast-enhanced CT or MRA) and who fulfill all of the following eligibility criteria. Data will be recorded on the **Inclusion and Exclusion Criteria Form.**

9.1.1 Inclusion Criteria

- Age ≥18 years
- Indication for elective surgical repair of AAA with an endovascular stent graft in accordance with the applicable guidelines on endovascular interventions and the Instructions for Use of the Endurant Stent Graft System
- Signed consent form. The subject or legal representative has been informed of the nature of the trial and has consented to participate and authorized the collection and release of his medical information
- Intention to electively implant the Endurant Stent Graft System
- Ability and willingness to comply with the Clinical Investigational Plan (CIP).

9.1.2 Exclusion Criteria

- High probability of non-adherence to physician's follow-up requirements
- Current participation in a concurrent trial which may confound study results
- Female of childbearing potential in whom pregnancy cannot be excluded or who is lactating.

9.2. PATIENT SCREENING, ENROLLMENT, AND PRE-IMPLANT PROCEDURES

Investigators will assess potential patients with an abdominal aortic or aortoiliac aneurysm for their suitability for enrollment in the study. Initially, patient eligibility will be determined by the investigator based on the diagnosis of AAA as evidenced on screening contrast-enhanced CT/MRA. If the patient appears to meet the eligibility criteria, then the investigator will discuss the study with the patient and provide information relating to the potential risks and benefits, and required follow-up procedures per the informed consent process (Section 8.3 – Informed Consent). After the patient voluntarily has signed and dated the informed consent document, the patient will be considered a study candidate, i.e., subject, and move on to the screening phase of the enrollment process. If a patient does not sign the informed consent document, then screening procedures for the ENGAGE PAS clinical study must not proceed. To avoid subject selection bias, consecutive screening and enrollment will be expected. Subjects will be screened consecutively for stent graft implantation and enrollment into ENGAGE PAS. Consecutive enrollment is strongly encouraged in order to minimize selection bias.

Screening assessments and collection of baseline information can take place only after the patient has given voluntary, documented informed consent. The following information will be collected in the respective forms:

- Informed consent information and Inclusion/Exclusion Criteria in **Subject Enrollment and Inclusion/Exclusion Criteria Form**.
- Screening dates, patient demographics, current health status, laboratory analyses, Aneurysm imaging results/dimensions in **Screening Form.**
- Medical history, ASA Physical Status Classification and risk factors in **Medical History Form**.
- [redacted]

[redacted]

Test results that are within the timeframes specified below may be used even though the actual test was done prior to a patient's informed consent. This may be done only for standard of care tests with the intent to minimize stress and discomfort to the patient and reduce costs. Required screening evaluations include the following.

- Physical examination (within 1 month of index procedure).
- Pregnancy test (for female patients of childbearing potential). Test must be completed at the time of screening (prior to) the index procedure. Results must be negative.
- CT or MRA with contrast of the abdomen and pelvis (celiac to external iliac arteries) completed within 4 months prior to the index procedure. This will be used to visualize and assess the characteristics, length, and diameters of the AAA and the surrounding anatomy.
- Laboratory tests (completed within 1 month prior to the index procedure) to include serum creatinine and INR.

Those patients who sign and date the informed consent document, meet all of the study eligibility criteria, and complete and pass the screening evaluations will be eligible for enrollment into the clinical study.

The subject will be considered to be enrolled when vessel access is achieved through a cut down or percutaneous approach with the intention of implanting the Endurant Stent Graft System.

Percutaneous approach: A needle is used to access the vessel followed by the introduction of a wire through the lumen of the needle. It is over this wire that other

catheter can be placed into the blood vessel and this technique is known as the modified Seldinger technique. Following access the wire and sheaths are removed and hemostasis is gained with either pressure or with a percutaneous closure device or other means of closure.

Subjects who do not qualify for enrollment after the screening procedure and an informed consent voluntarily signed, will be documented as ineligible on the **Subject Enrollment and Inclusion/Exclusion Form**.

9.3. IMPLANT PROCEDURES

Information pertaining to any preoperative adjunctive procedures and data collected during the procedure will be recorded on the **Endovascular Procedure Form**. The anesthesia and general surgical protocol (administration of prophylactic antibiotic therapy, technique for access and closure of the arterial site, use of systemic heparin, etc.) will be left to the discretion of the implanting physician and the standard medical practice at the hospital. The Endurant Stent Graft System Instructions for Use, which is provided electronically (www.medtronic.com/manuals) or can be provided in hard copy format upon request, must be followed for implantation of the stent graft system.

Verification of the dimensions and characterization of the AAA and pertinent arteries will be documented using angiography at the time of the procedure and prior to the insertion of the Endurant Stent Graft System. Use of an angiographic catheter with calibrated radiopaque marking is preferred. The investigator will verify dimensions and characterizations of the subject's anatomy in relation to the Endurant Stent Graft System.

Fluoroscopic guidance will be used for placement of the stent graft throughout the endovascular procedure. Total fluoroscopic time will be documented. All devices should be deployed following the steps outlined in the Instructions for Use (IFU), which is provided with the packaged device (also Appendix A). Upon completion of the index procedure, a final run-off angiography should be performed to document the status of the Endurant device(s), the aneurysmal sac, and the surrounding vasculature.

Information to be recorded on the **Endovascular Procedure Form** includes the following.

- Adjunctive procedures performed prior to the index procedure
- Date of hospital admission prior to the index procedure
- Date of the index procedure
- General procedural information
- Success of Endurant implantation
- Additional procedures performed
- Volume of contrast used, fluoroscopy time
- Blood loss, was transfusion required
- Occurrence of adverse events or Technical Observation

Identification and/or serial numbers for all investigational components of the Endurant Stent Graft System used during the index procedure will be recorded on the **Device Disposition Form**.

Report adverse events on the **Adverse Event Form as** specified in Section 9.9 - Adverse Events.

Inability to implant the Endurant Stent Graft following arterial access due to deployment issues or entrapment of the delivery system will be considered a treatment failure. The appropriate case report forms should be completed. These subjects will be followed through the 1-month follow-up time point and then exited from the study.

The **Conversion to Open Repair Form** should be completed for any conversion, as appropriate. If a primary conversion to open repair is required during the index procedure, then the subject will be followed for 1 month, at which time the subject will be exited from the study.

9.4. HOSPITAL DISCHARGE PROCEDURES

Information pertaining to the patient's hospital experience and discharge will be recorded on the **Hospital Discharge Form**. Data will include the following.

- Date of hospital discharge
- Duration of stay in the ICU, if applicable
- Aneurysm-related imaging, serum creatinine (if done)
- Occurrence of adverse events
- [redacted]

Imaging is not required at the time of hospital discharge. However, if done, the **Site Image Report Form** should be completed by the site for each film that can provide information relating to the aneurysm treatment. The electronic de-identified copies of the films should be sent to Medtronic in a timely manner and the **Site Image Report Form** completed in a timely manner through the 5 year follow-up time point.

9.5. REQUIRED FOLLOW-UP EVALUATIONS

Patient follow-up visits are required subsequent to the implantation of the Endurant Stent Grafts at 1 month, 12 months, and annually thereafter for a total of 5 years of follow-up experience for each patient. After implantation of the Endurant Stent Graft, the study site will be informed of the target date and required follow-up window time- frames for each patient. Follow-up window timeframes are summarized in Table 5. All data required for the follow-up must be collected within the window for that scheduled visit, not necessarily on the same day.

Table 5: Required postoperative follow-up schedule and windows.

Follow-Up Visit	Window Start Day	Target Day	Window Close Day
1 month (± 15 days)	15	30	45
12 Months (±56 days)	309	365	421
24 Months (±56 days)	675	731	787
36 Months (±56 days)	1040	1096	1152
48 Months (±56 days)	1405	1461	1517
60 Months (±56 days)	1770	1826	1882

The following data are required at each follow-up evaluation and will be recorded on the corresponding **Clinical Follow-Up Form**.

- Date of follow-up visit/data collection
- Serum creatinine value
- Occurrence of adverse events
- [redacted]

An imaging report (**Site Image Report Form)** should be completed for each imaging study that can provide information relating to the aneurysm treatment (guidelines for imaging are provided in Appendix J). The electronic de-identified copies of the films should be sent to Medtronic in a timely manner and the **Site Image Report Form** completed in a timely manner through the 5 year follow-up time point.

If a subject requires a secondary procedure that results in explant of the Endurant Stent Graft, then the patient will be followed for 1 month and exited from the study. The **Secondary Endovascular Procedure Form and Adverse Event Forms** should be completed, as appropriate.

Subjects who do not respond will be documented as having missed visits. The investigator will keep a record of documented follow-up attempts in the subject's study file. In addition, a **Protocol Deviation Form** will be completed. Refer to Section 9.7 – Protocol Deviations for additional information.

9.6. UNSCHEDULED VISITS

No data are required from unscheduled follow-up evaluations other than aneurysm-related imaging studies and information pertaining to adverse events. If an unscheduled visit occurs, then data should be recorded on the **Clinical Follow-Up Form.**

The **Site Imaging Report Form** should be completed by the site for each film that can provide information relating to the aneurysm treatment. The electronic de-identified copies of the films should be sent to Medtronic in a timely manner and the **Site Image Report Form** completed in a timely manner through the 5 year follow-up time point.

9.7. PROTOCOL DEVIATIONS

A protocol deviation occurs when a clinical investigator and/or study site personnel do not conduct the study according to the clinical investigational plan. All deviations are recorded on a **Protocol Deviation Form.** Depending upon the nature of the protocol deviation, expedited reporting and prior approval from Medtronic Vascular may be required. All deviations will be summarized and submitted in regular progress reports, and the final study report to FDA.

If Medtronic Vascular finds that an investigator is not complying with the executed study agreements, the investigational plan, the FDA regulations, or the requirements of the reviewing IRB, prompt action will be taken to secure compliance. Additional information is provided in Section 9.16– Study Termination.

9.7.1 Deviations Requiring Prior Approval

An investigator is required to obtain prior approval from clinical study management at Medtronic Vascular and the IRB before initiating deviations from the Investigational Plan that affect the scientific soundness of the plan, or the rights, safety, and welfare of the subjects (non-emergent situation). However, prior approval is not required in situations where unforeseen circumstances are beyond the investigator's control, e.g., subject did not attend scheduled follow-up visit, laboratory test was performed incorrectly, and test equipment did not operate properly.

9.7.2 Non-Urgent Deviations

Protocol deviations which do not have the urgency associated with expedited notification or prior Medtronic Vascular/ IRB approval (as discussed in the above paragraphs) will be reported upon discovery, such as during completion of eCRFs or a monitoring visit.

9.8. TECHNICAL OBSERVATIONS

A technical observation is a defect, malfunction, or failure of the Endurant Stent Graft System. Also, this may pertain to the device or system not functioning according to its design intent. These might include (but not be limited to) anchor pin fracture, migrations, and device access difficulties. Technical observations may or may not be related to an adverse event in a subject. Technical observations that are not associated with any untoward medical occurrence in a subject will be reported on the appropriate forms: **Site Image Report Form, Procedure Form and/or Conversion to Open Repair Form**. If adverse events occurred as a result of the technical observation, then the appropriate adverse events forms must be completed as well.

9.9. ADVERSE EVENTS

Potential (anticipated) adverse events that may be associated with endovascular implantation of an abdominal aortic stent graft are listed in Section 15 - Risk Analysis. Events reported should reflect actual diagnoses/syndromes and not merely clinical signs or symptoms, if possible. For example, if chest pain is recorded as an adverse event and the diagnosis is actually Myocardial Infarction, then the event should be reported as a Myocardial Infarction. Events reported should represent a new onset or increase in the severity of the condition from the time of enrollment in the study (the subject is considered to be enrolled when vessel access is achieved through a cut down or percutaneous approach with the intention of implanting the Endurant Stent Graft System).

Adverse events will be reported to Medtronic Vascular on the **Adverse Event Form**. Source documentation for adverse events must be collected and filed with the subject's hospital chart. Refer to Section 10 – Adverse Event Definitions and Expedited Reporting for additional information.

Adverse events that are inherent to a surgical procedure and expected to occur in most subjects for a projected duration according to the opinion of the investigator may be considered unavoidable. Such events include, but are not limited to, those listed in Table 6. These adverse events should not be reported during this study.

Table 6: Expected and unavoidable adverse events related to the surgical procedure.

Description of the Event	Time Frame from the Index Procedure
Endoleaks observed and resolved during the index procedure	Resolved by the time the subject leaves the OR
Anesthesia-related nausea and/or vomiting	Within 24 hours
Low-grade fever (< 100° F or < 37.8° C)	Within 48 hours
Back pain related to laying on OR table	Within 48 hours
Incisional pain (pain at access site)	Within 72 hours
Sleep problems or insomnia	Within 72 hours
Mild to moderate bruising or ecchymosis	Within 168 hours

9.10. PATIENT DEATH

The investigator is responsible for reporting the death of a subject to Medtronic Vascular and the IRB. The procedures and reporting timeframes detailed in Section 10 – Adverse Event Definitions and Expedited Reporting must be followed. All deaths will be reviewed and adjudicated by the Clinical Events Committee.

Patient deaths must be documented on the **Study Exit Form**. A copy of the death summary report (as dictated by the physician) and death certificate should be sent to Medtronic Vascular. If an autopsy is conducted, then the autopsy report also should be

submitted. When the death occurs at a non-investigational site, it is the investigative center's responsibility to attempt to retrieve information about the death. If the death does not occur in an institution, then the investigator must submit a summary of the known events surrounding the death. All patient deaths will be classified according to the following definitions of mortality.

Aneurysm-Related Death
Aneurysm-Related Death is defined as death from rupture of the abdominal aortic aneurysm or from any procedure intended to treat the AAA. If a death occurred within 30 days of any procedure intended to treat the AAA, then it is presumed to be aneurysm related unless there is evidence to the contrary. Deaths occurring after 30 days of any procedure intended to treat the AAA that are procedure-related should be aneurysm related.

Perioperative Death
Any death that occurs intraoperatively or within 30 days of the primary procedure. In addition, any death that occurs beyond 30 days while the patient is still hospitalized following the index procedure will be considered a perioperative death.

"Within 30 days" is defined as within 30 days of the procedure or at hospital discharge, whichever is longer.

In the event of a patient death, the Endurant Stent Graft should be explanted (when feasible) and returned to Medtronic Vascular for analysis. Refer to Section 9.11 - Explanted Devices.

9.11. EXPLANTED DEVICES

All explanted devices should be returned to Medtronic Vascular for analysis. Information pertaining to the explant procedure should be recorded on the **Endovascular Procedure Form or Conversion to Open Repair Form**. Relevant information should also be recorded on associated case report forms, e.g., **Adverse Event Form**, **Study Exit Form**.

Detailed instructions are provided in Appendix K for explant of the device and its return. An overview of the explant procedure follows.

- Notify Medtronic Vascular when an explant has occurred. Medtronic Vascular will provide a shipping container for the explanted product, which includes instructions and a return shipping label.
- Before the device is explanted, if possible, obtain an *in situ* photograph of the stent graft. At the time of removal, care should be taken to avoid excessive manipulation with metallic instruments at the proximal and distal fixation sites. Leave the stent graft as intact as possible and avoid deforming the device.

- When the explant is performed as part of an autopsy or a postmortem procedure, the device should be carefully excised with at least 1 cm of host tissue adjacent to the proximal and distal fixation sites. Do not disturb the inside surface of the stent graft.
- Record the location of the site of the tissue removal relative to the position of the stent graft.
- If possible, immediately after its removal, make photographic records of the explanted device and the explant site.
- Clearly identify all components relative to surgical placement and orientation. Identify the proximal and distal ends. The anterior portion of the stent graft should also be labeled. Surgical clips and sutures can be used to label the explanted device. A complete record of labeling methodology should be made at the time of the explant procedure and be included with the explanted product and any relevant reports.
- Complete the **Explant Form** (non-CRF: located in Appendix K). Labels are provided in the explant kit.
- The subject undergoing explant as a secondary procedure will be followed for 1 month subsequent to removal of the device.
- A summary of the explant findings will be provided to the investigator.

9.12. STUDY EXIT

The **Study Exit Form** should be completed at the time a subject is exited from the study. A subject will be considered to have exited from the study for any of the following reasons.

- Subject completes follow-ups required by the investigational plan.
- Subject dies.
- Subject requests to be withdrawn.
- Physician requests that patient be withdrawn to protect the welfare of the patient.
- Patient is lost to follow-up.
- Other (specify).

A subject may elect to withdraw from the study at any time. The subject should notify the investigator. The investigator and research staff should encourage all subjects to return for required follow-up visits. A subject is considered lost to follow-up if by the five year time point the subject who missed earlier consecutive visits has not come in for their final follow-up visit. Only at this time should the subject be exited from the trial.

The site research staff should make every effort to contact the patient at each scheduled follow-up visit, despite any lack of contact on any previous occasions. The clinical objective may be jeopardized if a large number of subjects are lost to follow-up or withdraw consent.

A subject may be considered lost to follow-up for a particular visit if 3 documented attempts are made to make contact with the subject, one by certified mail.

9.13. STRATEGIES FOR MAINTAINING LONG-TERM SUBJECT FOLLOW-UP COMPLIANCE

Medtronic will be work with each site to maintain compliance of implanted subjects in order to assess the long-term performance of the Endurant Stent Graft. The following are strategies for increasing that compliance.

1. During site training, Medtronic will emphasize to the site the importance of study follow-up, and that the site should communicate this importance to each subject.
2. Medtronic Clinical Research Associates (CRAs) will continue to contact sites prior to the next follow-up visit to ensure a visit has been scheduled. After the anticipated visit takes place, the CRA will again contact the site to ensure the subject was seen.
3. Sites will be informed to promptly reschedule any missed patient visits, and to reinforce the necessity of a follow-up visits to confirm proper stent graft function.
4. If a scheduled visit is missed due to patient illness, transportation issues, or travel, the site will be advised to:
   a. Reinforce the necessity of follow-up visits;
   b. Identify alternate transportation sources
   c. Identify alternate investigational sites to perform required imaging for device assessment
5. For lost-to-follow-up subjects, sites will be requested to examine the Social Security Death Index to determine subject status (only the status will be sent to Medtronic, excluding subject identifying information).

In addition to the aforementioned steps executed at the site level, Medtronic will evaluate follow-up compliance at each site, on a quarterly basis, as the electronic data capture system can provide regular reports on site / subject follow-up compliance rates. Those sites which have reported several missed visits will be contacted to determine a root cause of the noncompliant visits. Once this cause is determined, CRAs will work with the site to help reinforce the importance of follow-up visits. If the site continues to deviate from the follow-up schedule, additional training will take place at the site level. Repeated follow-up compliance violations within the site's control may result in further actions, including but not limited to withdrawal of permission to enroll subjects at a particular site, or denial of future study participation.

Medtronic is committed to patient safety and realizes that follow-up visits are essential in determining any device-related issues. By taking the steps listed above, Medtronic anticipates improved subject follow-up and site compliance with the follow-up requirements of the protocol.

9.14. SUBJECT CONFIDENTIALITY

Subject confidentiality will be maintained throughout the clinical study to the extent permitted by law. That is, every attempt will be made to remove patient identifiers from clinical study documents. For this purpose, a unique subject identification code (site number, subject number and subject initials) will be assigned and used to allow identification of all data reported for each subject. This will also ensure that the information can be tracked back to the source data.

Study data may be made available to third parties, e.g., in the case of an audit performed by regulatory authorities, provided the data are treated confidentially and that the subject's privacy is guaranteed. The identity of a subject will never be disclosed in the event that study data are published.

Medtronic Vascular recommends that the study sites comply with the subject confidentiality provisions of the Health Insurance Portability and Accountability Act (HIPAA) issued by the U.S. Department of Health and Human Services (HHS). Sites should maintain patient privacy in accordance to federal regulations (45 CFR Parts 160 and 164), local regulations, and institutional requirements.

9.15. DEVICE TRACKING

The investigator also is required to maintain adequate records of the Endurant Abdominal Stent Graft Systems used in trial subjects. This information is recorded in the Device Disposition Form.

Explanted product should be returned to Medtronic Vascular (see Appendix K).

9.16. STUDY TERMINATION

Medtronic Vascular and/or the US FDA have the right to terminate this study at any time and remove all study materials from the site. Regardless of the underlying reason for terminating the study, all subjects that have been enrolled up to the point of study termination will continue to be followed out to the 5 year follow-up time frame.

9.17. STUDY CLOSURE

Upon completion (when all patients enrolled have completed the 5-year follow-up visit or previously exited the study, and the CRFs and queries have been completed) or termination (closure that occurs prior to meeting defined endpoints) of the study, Medtronic Vascular and/or its designees will notify the site. Study closeout visits will be performed. All unused study devices and any unused study materials and equipment will be collected and returned to Medtronic Vascular and/or its designees. The monitors will ensure that the investigator's regulatory files are up to date and complete and that any outstanding issues from previous visits have been resolved. Other issues that will be reviewed at this visit include: discussing record retention requirements (refer to Section 13.1—Investigator Records), device accountability, possibility of site audits, publication policy, and notifying the IRB of study closure, etc.

10. ADVERSE EVENT DEFINITIONS AND EXPEDITED REPORTING

The following adverse events will be collected for the study:

- Clinical sequelae caused by or directly associated with the Endurant device, the index procedure or any secondary endovascular procedure (including conversion to open repair) and technical observation.
- Those adverse events that meet the definition of Major Adverse Event (MAE).
- Those adverse events directly associated with the death of the subject.
- Adverse events meeting Medical Device Reporting (MDR) criteria.
- Serious adverse events within 30 days of index procedure.

A list of potential adverse events is provided in Section 15 - Risk Analysis. Adverse event definitions and reporting schedules are defined in the following sections. Definitions for "Adverse Event" and "Serious Adverse Event" are not specified in the US FDA IDE regulations (21 CFR 812) and so are based on those in the EN ISO 14155:2011 document, entitled, *Clinical investigation of medical devices for human subjects – Part 1: General requirements (ISO 14155-1:2003E)*.[23]

10.1. DEFINITIONS

Adverse Event[20]

Specific adverse event definitions are provided in Appendices B-D.

Adverse Event (AE) (ISO14155:2011)

Any untoward medical occurrence, unintended disease or injury, or untoward clinical signs (including abnormal laboratory findings) in subjects, users or other persons, whether or not related to the investigational medical device.

NOTE 1 This definition includes events related to the investigational medical device or the comparator.

NOTE 2 This definition includes events related to the procedures involved.

NOTE 3 For users or other persons, this definition is restricted to events related to the investigational medical device.

Major Adverse Event

Major adverse events include the occurrence of any of the following and are defined in Appendix B.

- All-Cause Mortality
- Bowel Ischemia
- Myocardial Infarction

- Paraplegia
- Procedural Blood Loss ≥ 1000 cc
- Renal Failure
- Respiratory Failure
- Stroke

Serious Adverse Event[20]
Serious Adverse Event (SAE) (ISO14155:2011)

Adverse event that

a) led to a death.
b) led to a serious deterioration in the health of the subject that either resulted in
    1) a life threatening illness or injury, or
    2) a permanent impairment of a body structure or a body function, or
    3) in-patient hospitalization or prolongation of existing hospitalization, or
    4) medical or surgical intervention to prevent life-threatening illness or injury or permanent impairment to a body structure or a body function
c) led to fetal distress, fetal death or a congenital abnormality or birth defect

NOTE Planned hospitalization for a pre-existing condition, or a procedure required by the CIP, without serious deterioration in health, is not considered a serious adverse event

Unanticipated Adverse Device Effect[20]

An unanticipated adverse event is defined as any serious adverse effect on health or safety or any life-threatening problem or death caused by, or associated with, a device, if that effect, problem, or death was not previously identified in nature, severity, or degree of incidence in the investigational plan or application (including a supplementary plan or application), or any other unanticipated serious problem associated with a device that relates to the rights, safety, or welfare of subjects.

10.2. EXPEDITED ADVERSE EVENT REPORTING

Investigators are responsible for reporting all adverse events to Medtronic Vascular as described in Section 9.9 – Adverse Events. The investigator should follow the reporting requirements of the reviewing IRB for all adverse events (including serious events). In addition, Medtronic requires that the following timeframes be used for the reporting of adverse events.

Adverse Events

The investigator must report to Medtronic Vascular any adverse event as soon as possible In addition, the investigator must report the adverse event to the reviewing IRB according to its policies and procedures.

Information should be submitted on the Adverse Event Form.

Documentation of the IRB and Medtronic notification should be maintained in the site's clinical study files. It is recommended that acknowledgement of receipt from the IRB be maintained in the study file as well.

Serious Adverse Events
The investigator must report to Medtronic Vascular any serious adverse event as soon as possible, but in no case later than **3 working days** after the investigator first learns of the event. In addition, the investigator must report the serious adverse event to the reviewing IRB according to its policies and procedures.

Information should be submitted on the **Adverse Event Form**. All relevant source documentation should be faxed to the Medtronic Vascular Clinical Affairs Department at (763) 367-3214.

Documentation of the IRB and Medtronic notification should be maintained in the site's clinical study files. It is recommended that acknowledgement of receipt from the IRB be maintained in the study file as well.

Unanticipated Adverse Device Effect
The investigator must report to Medtronic Vascular any unanticipated adverse device effect as soon as possible, but in no case later than **3 working days** after the investigator first learns of the event. The investigator's report to the reviewing IRB must be completed within 10 working days of the investigator's knowledge of the event (per 21 CFR 812.150).

Information should be submitted on the **Adverse Event Form**. All relevant source documentation should be faxed to the Medtronic Vascular Clinical Affairs Department at (763) 367-3214.

Documentation of the IRB and Medtronic notification should be maintained in the site's clinical study files. It is recommended that acknowledgement of receipt from the IRB be maintained in the study file as well. Questions about reporting of adverse events may be directed to the ENGAGE PAS clinical study team.

10.3. MEDICAL DEVICE REPORTING

The products used in this study are market approved and will be used within current indications for use as specified in the product labeling. If there should be any alleged device related death, serious injury/illness, device malfunction, or complaint reported, the event will be reported through Medical Device Reporting (MDR) per FDA regulations 21 CFR 803, subpart C.

Manufacturers must report device-related deaths, serious injuries/illnesses and malfunctions to the FDA whenever they become aware of information that reasonably suggests that the reportable event occurred (one of their devices has or may have caused or contributed to the event).

A device complaint is defined as any (written, electronic or oral communication that alleges) deficiencies related to the identity, quality, durability, reliability, safety, effectiveness or performance of a device after it is released for distribution.

A device malfunction is defined as failure of a device to perform as claimed by the manufacturer. This includes all performance specifications and all claims made in the instruction for the device.

Serious injury/ Serious illness is defined as an injury or illness that

- is life threatening.
- results in permanent impairment of a body function or permanent damage to a body structure; or
- necessitates medical or surgical intervention to preclude permanent impairment of a body function or permanent damage to a body structure.

All device complaints, malfunctions and serious injuries/illnesses will be documented on the eCRF as soon as possible but in no case later than 3 working days after the Investigator, or other site personnel authorized to participate in the study, become aware of the event, and reported to the IRB within the IRB timeframe if required.

11. DATA MANAGEMENT PROCEDURES

Medtronic Vascular will oversee all data management functions. Medtronic Vascular will be responsible for database development, system maintenance, user training, data queries, and report generation. A contract research organization will be responsible for the electronic data capture system.

11.1. CASE REPORT FORMS

Medtronic Vascular will use an electronic data capture (EDC) system to collect patient data. The electronic case report forms (eCRFs) are the primary component of EDC and are based on the sample forms shown in Appendix I. Training on use of the system will be provided to the study site personnel. Instructions for completion of the eCRFs also will be provided.

The eCRFs must be completed, saved, and locked via electronic signature by the Investigator using a unique ID and password. This ID and password are for the use of the investigator only and may not be used by any other person. Because of the potential for errors or inaccuracies in transcribing data into eCRFs, source documentation must be maintained in each subject's hospital chart and/or electronic medical record. The eCRFs and source documentation must be available at all times for inspection by the study monitors or regulatory inspectors.

Changes made to eCRFs will be electronically recorded in a complete audit trail that cannot be changed, but can be accessed by authorized personnel at anytime. All data are transmitted via the Internet in an encrypted fashion. When received at the server site, the data are decrypted and stored. Data can be extracted for Medtronic Vascular review and analysis at any time.

11.2. SOURCE DOCUMENTATION

Regulations require that an investigator maintain information in the study subject's medical records to corroborate data collected on the eCRF. To comply with these regulatory requirements, the following information will be maintained and made available as required by Medtronic Vascular and/or its designees and/or regulatory inspectors. Shadow charts are not appropriate or adequate source documentation. Complete medical (clinical and hospital) records include the following documentation.

- Medical history/physical condition of the patient before involvement in the study sufficient to verify clinical protocol entry criteria.
- Description of device implantation procedure (material used, drugs administered during the procedure, device identification information and disposition, date, time, angiographic and clinical findings, etc.).

- Signed notes in the subject's medical record on the enrollment day that identify and include: the subject's date of enrollment, procedure date, the study sponsor (Medtronic Vascular), clinical site name, the subject-assigned identification number, the subject- assigned enrollment number, and documentation and confirmation that the appropriate informed consent was obtained.
- Dated and signed notes for each subject's study visit.
- Lab results.
- All ECG, angiogram, CT, Ultrasound and MRI reports, etc.
- Dated printouts or reports of special assessments (ECG report, imaging report, etc.).
- Adverse event reporting and follow-up of the adverse events. Information in the medical chart should include at a minimum the following: event description, severity, seriousness, onset date, date site became aware of event, duration, relation to study device, treatment, and outcome of the adverse event.
- Study subject's condition upon completion of or withdrawal from the study.

11.3. TRANSMISSION OF DATA

Required data will be recorded on the appropriate eCRF at the time of or as soon as possible after the patient visit. The eCRFs and any requested supporting source documents must be sent to Medtronic Vascular and/or retrieved from the investigator during monitoring visits. Questions about completion of the eCRFs may be directed to the ENGAGE PAS clinical study team.

11.4. DATA QUERIES

During monitoring visits, the Monitor will perform review as per the Monitoring plan on variables, i.e., demography, inclusion/exclusion criteria, safety, effectiveness, on the eCRFs with each subject's source documents. Any discrepancies will be queried by Medtronic Vascular or its designee and must be resolved by the investigational site staff and investigator in a timely manner. Queries also will be generated by Medtronic Vascular data management personnel during routine review of the data on the electronic data capture system.

12. MONITORING AND AUDITING PROCEDURES

12.1. MONITORING

This study will be monitored in accordance with the protocol, International Conference on Harmonization (ICH) Guidelines, Good Clinical Practices and applicable regulations and guidelines governing clinical study conduct and the ethical principles that have their origin in the Declaration of Helsinki, including Title 21 CFR Parts 11, 50, 54, and 56.

A monitor is an individual designated by a sponsor or contract research organization to oversee the progress of an investigation. The monitor may be an employee of a sponsor or a consultant to the sponsor, or an employee of or consultant to a contract research organization. The monitor will be trained on the device, investigational plan, informed consent, instructions for use, applicable Medtronic Vascular procedures, electronic data capture system, and regulatory requirements. The monitor will periodically check and report on the progress of the clinical study at an investigational site or other data gathering organization, e.g., other Medtronic facility.

All Case Report Forms will be reviewed for completeness and clarity. Source verification of study data and the schedule for monitoring visits to the sites will be performed per the study's Monitoring Plan. Missing or unclear data will be requested as necessary throughout the study. Additional documentation such as Discharge Summaries or Death Certificates may be requested when adverse events are observed.

The monitors for this study are responsible for securing compliance with the signed clinical study agreement, the investigational plan, applicable FDA regulations, or any conditions of approval imposed by the reviewing IRB or FDA.

12.2. RESPONSIBILITIES OF THE CLINICAL INVESTIGATOR

This clinical study is subject to regulations of the U.S. Food and Drug Administration (FDA). Therefore, the Investigator is responsible for ensuring that the investigation is conducted according to the signed clinical study agreement, the investigational plan and all applicable FDA regulations, for protecting the rights, safety, and welfare of subjects under the investigator's care, and for the control of devices under investigation. The investigator is also responsible for ensuring that informed consent is properly obtained per 21 CRF Part 50 of the FDA's regulations.

The Investigator is also responsible for the following:

- ***Awaiting Approval***: The Investigator is responsible for determining whether potential subjects would be interested in participating in an investigation, but not requesting the written informed consent of any subject to participate and not allowing any subject to participate before obtaining IRB and FDA approval.

- ***Compliance***: The Investigator is responsible for conducting the investigation in accordance with the signed clinical study agreement with Medtronic, the Investigational Plan, and any applicable FDA regulations and any conditions of approval imposed by the IRB or FDA.

12.3. RESPONSIBILITIES OF THE SPONSOR

Medtronic is the Sponsor of this clinical study. As the Sponsor, Medtronic is responsible for selecting qualified investigators and providing them with the information they need to conduct the clinical study properly, ensuring proper monitoring of the investigation, ensuring that IRB review and approval are obtained, and ensuring that any reviewing IRB and FDA are promptly informed of significant new information about the clinical study.

12.4. MONITORING VISITS

Scheduled visits to the clinical investigational site may occur at the following times: prior to the start of the clinical study (pre-study qualification visit), at initiation of the study and interim visits throughout the clinical study as required, annually, and upon completion of the clinical study.

12.4.1 Pre-study Qualification Visit

A pre-study visit may be conducted by Medtronic Vascular personnel (or designees) to review the clinical investigational plan and regulatory requirements with the investigator and the study personnel to assure that they:

- Understand the investigational status of the device and the requirements for its use and accountability.
- Understand the clinical investigational plan.
- Understand the requirements for an adequate and well-controlled clinical study.
- Understand and accept the obligation to conduct the clinical investigation in accordance with the national regulations.
- Understand and accept the obligation to obtain informed consent in accordance with the national regulations.
- Understand and accept the obligation to obtain IRB approval before the clinical study is initiated, ensure continuing review of the study by the IRB, and keep Medtronic Vascular informed of IRB approval and actions concerning the clinical study.
- Have access to an adequate number of eligible patients to participate in the study (1/center/month).
- Have adequate facilities and resources to conduct the study. This includes resources appropriate for use of electronic data capture systems.
- Have sufficient time from other obligations to carry out the responsibilities of the clinical study.

- Sign the Investigator Agreement and study contracts (prior to enrollment of patients).

A report of the pre-study qualification visit will be completed. Resolution of any concerns or completion of any appropriate follow-up activities stemming from the pre-study visit also will be documented.

12.4.2 Initiation Visit

Medtronic Vascular clinical personnel (or designees) will provide assistance for both technical concerns and study management issues during the initiation visit. First implant may or may not coincide with this visit. Any observations will be documented and issues requiring follow-up will be identified on a monitoring report. Training of study personnel also will be documented.

12.4.3 On-Site Interim Monitoring Visits

On-site monitoring visits will be made on an as-required basis (and at least annually) to assess adherence to the clinical investigation plan, IRB review of study progress, maintenance of records and reports, and selected review of source documents for accuracy, completeness, legibility, and omissions. The monitors will acquire information to assess the progress of the study (toward meeting study objectives) and identify any concerns that stem from observation of device performance and/or review of the investigator's patient records, study management documents, and patient informed consent documents. Monitoring reports will be generated along with communications to the investigator, which document the result of the monitoring visit and any recommended actions. Resolution of concerns and completion of assigned tasks will be documented.

12.4.4 Audits

An on-site audit may be completed periodically throughout the study at each clinical site by an independent group. The purpose of the audit will be to ensure compliance to the investigational plan and regulatory requirements, e.g., written informed consent was documented, information recorded on the case report forms is complete and accurate as compared to source documentation, protocol deviations are noted, and device accountability is accurate and complete. A randomly selected number of patient records and other supporting documents will be compared to the case report forms. A record of the findings and recommended actions to correct deficiencies will be documented on the audit report.

12.4.5 Final Monitoring Review

Depending upon the status of the study at each center, a close-out or final visit may be conducted. Any ongoing responsibilities will be discussed with the investigator and the study center coordinator. A final monitoring report, which includes, at a minimum, disposition of any unused devices, will be completed.

13. RECORDS AND REPORTS

Throughout the course of this clinical study, Medtronic Vascular, the investigators, and reviewing IRBs are responsible for the records and reports detailed in the following sections.

13.1. INVESTIGATOR RECORDS

Records must be maintained by the investigator in compliance with national regulations. Investigator records are subject to regulatory inspection (and Medtronic Vascular) and copying, and must be retained for a period of 2 years after the investigation is completed or terminated, or, 2 years after the records are no longer required to support the application to market the device (whichever date is later).

The investigator is responsible for the preparation (review and signature) and retention of the records cited below.

- All correspondence with another investigator, IRB, Medtronic Vascular, a monitor, or FDA, including required reports and study documents which pertain to the investigation.
- Records of receipt, use, and final disposition of a device.
- Records of each subject's case history and exposure to the device. Case histories include the case report forms and supporting source data (signed and dated informed consent forms, medical records, e.g., progress notes of the physician, patient's hospital chart, nursing notes).
- The clinical investigational plan, with documents showing the dates of and reasons for each deviation from the protocol.
- Any other records that FDA requires to be maintained by regulation or by specific requirement for a category of investigations or a particular investigation.

13.2. INVESTIGATOR REPORTS

The investigator is responsible for the preparation and submission of the reports cited in Table 7. Reports must be prepared in complete, accurate and timely manner. These reports may be subject to regulatory inspection (and Medtronic Vascular) and copying, and the retention requirements described above for Investigator Records. In addition to the reports listed in the following table, FDA or the reviewing IRB may request reports pertaining to any aspect of the clinical study.

Table 7: Investigator Reporting Responsibilities.

REPORT	SUBMIT TO	DESCRIPTION/CONSTRAINTS
Unanticipated Adverse Device Effects	Sponsor & IRB	The report must be submitted to Medtronic Vascular within 3 working days after the investigator first learns of the effect. Notification to the IRB should be made according to the reporting requirements of the reviewing IRB, but no later than 10 working days after the investigator first learns of the effect.
Serious Adverse Events	Sponsor & IRB	The report must be submitted to Medtronic Vascular within 3 working days after the investigator first learns of the event. Notification to the IRB should be made according to the reporting requirements of the reviewing IRB.
Adverse Events	Sponsor & IRB	The report must be submitted to Medtronic Vascular as soon as possible Notification to the IRB should be made according to the reporting requirements of the reviewing IRB.
Withdrawal of IRB Approval	Sponsor	The investigator must report a withdrawal of the reviewing authority within 5 working days.
Deviation from Investigation Plan (Emergency)	Sponsor & IRB	Notification must be made within 5 working days if the deviation was made to protect the life or physical well-being of a subject.
Deviation from Investigation Plan (Other – Non Emergent)	Sponsor & IRB	If the deviation may affect the scientific soundness of the plan or the rights, safety and welfare of the subjects (and is not an emergency), then the deviation must be approved by Medtronic Vascular and the reviewing authority prior to its implementation. If the deviation does not affect these issues (study soundness, rights, safety, etc.) then only Medtronic Vascular must approve it, (except in cases which are beyond the control of the investigator—see Section 9.7 – Protocol Deviations).
Failure to Obtain Informed Consent	Sponsor & IRB	The Investigator must notify Medtronic Vascular and the reviewing authority within 5 working days after device use. The report must include a brief description of the circumstances justifying the failure to obtain informed consent.
Final Report	Sponsor & IRB	This report must be submitted within 3 months after termination or completion of the investigation.

13.3. SPONSOR RECORDS

Medtronic Vascular will maintain the following study-related records.

- All correspondence with another sponsor, a monitor, an investigator, an IRB, or FDA, including required reports.
- Signed investigator agreements will be required to be collected under 21 CFR 812.43.
- Records concerning adverse events related to the device (whether anticipated or unanticipated) and complaints.
- Any other records that FDA requires to be maintained by regulation or by specific requirement for a category of investigation or a particular investigation.

13.4. SPONSOR REPORTS

Medtronic Vascular is responsible for the reports cited in Table 8. These reports are subject to regulatory retention and inspection requirements. In addition to the reports listed in the following table, FDA or the reviewing IRB may request reports pertaining to any aspect of the clinical study.

Table 8: Medtronic Vascular Reporting Responsibilities.

REPORT	SUBMIT TO	DESCRIPTION
Unanticipated Adverse Device Effects	Regulatory authorities and all participating IRBs and investigators	Medtronic Vascular will report on unanticipated adverse event within 10 working days after receiving notice of the effect.
Medical Device Reporting	FDA	Medtronic Vascular will report Deaths, Serious injuries, Malfunctions and Product complaints within 30 days of becoming aware of a reportable event.
Informed Consent	Regulatory authorities	Medtronic Vascular will submit a copy of any report from an investigator of use of the device without obtaining informed consent within 5 working days of receipt of notice of such use.
Withdrawal of IRB Approval	IRBs, investigators, and regulatory authorities, as appropriate	Notification will be made within 5 working days after receipt of the withdrawal of approval.
Withdrawal of Regulatory Approval	All IRBs and investigators	Notification will be made within 5 working days of receipt of notice of the withdrawal of approval.
Progress Report	Regulatory authorities and IRBs	A progress report will be submitted at least annually.
Recall and Device Disposition	Regulatory authorities, IRBs, and investigators	Notification will be made within 30 working days and will include the reasons for any request that an investigator return, repair or otherwise dispose of any devices.
Final Report	Regulatory authorities, IRBs, and investigators	Medtronic Vascular will notify reviewing authorities within 30 working days of the completion or termination of the investigation. A final report will be submitted within 6 months of completion or termination.

13.5. INSTITUTIONAL REVIEW BOARD RECORDS

Each reviewing IRB should maintain the following records. Records are subject to regulatory (and Medtronic Vascular) inspection and copying, and must be retained for a period of 3 years after completion of the study. Additional information may be found in 21 CFR 56.

- Research proposals reviewed and accompanying documentation
- Continuing review of ongoing studies
- Correspondence between IRB and investigator
- Membership roster
- Written procedures
- Meeting minutes
- Approved informed consent documents
- Statements of significant new findings
- Record retention
- Progress reports submitted by investigators
- Reports of adverse events

14. STUDY COMMITTEES

14.1. CLINICAL EVENTS COMMITTEE

A Clinical Events Committee (CEC) is a group of physicians independent of the clinical study with expertise and experience in the area of AAA stent grafts. The members may be interventional cardiologists, vascular surgeons, cardiothoracic surgeons, or interventional radiologists. The CEC will review and adjudicate all major adverse events (refer to Appendix B), (except procedural blood loss) through thirty days post-procedure. The CEC will review and adjudicate all deaths and any unanticipated adverse device effects that occur during the five year follow-up period. The CEC will also review and adjudicate any datapoints pertaining to stent graft occlusions, device migrations, type I and III endoleaks and AAA sac enlargement that require further clarification. The CEC will review events when the MCRI (Medtronic Clinical Research Institute) Clinical Safety forwards the relevant documentation to the members. These events are reviewed by the CEC members and adjudicated as being device related, procedure related and/or aneurysm related.

The CEC will meet periodically and follow specific criteria to classify and adjudicate the aforementioned events and patient deaths. A Manual of Operations will be developed that will detail the operations of the committee. Results of the adjudication process will be recorded by the CEC members on the **CEC Event Adjudication Form.**

15. RISK ANALYSIS

15.1. POTENTIAL RISKS

Following is a list of potential (expected) risks that may be associated with use of the Endurant Stent Graft Systems. The occurrence of the listed complications may lead to a repeat endovascular intervention and/or open surgical repair. Since the Endurant Stent Graft System is a significant risk device, all risks may not be known.. These risks are believed to be similar to those associated with the existing commercial endovascular devices available as well as the risks associated with standard open surgical repair of AAA.

All efforts will be made to minimize these risks by selecting investigators who are experienced and skilled in using endoluminal aortic devices and who have been adequately trained. Also, risk minimization activities were performed during development and design verification tests of the device. Activities intended to minimize risks include the following.

- Investigator and study personnel training will be conducted to share information regarding the design of the Endurant Stent Graft System, its application and pre-clinical results.
- Adherence to eligibility criteria and screening procedures will ensure that appropriate patients are enrolled.
- Adherence to the Endurant Stent Graft System Instructions for Use packaged with the device (Appendix A).
- The subjects will be carefully monitored throughout the study period.
- The investigator will evaluate the subject adverse events during the course of the study.
- Data submitted from the investigative centers will be monitored during the course of the study.
- Monitoring visits will be conducted to evaluate protocol compliance and data quality.
- Safety and effectiveness data obtained during the course of the study will be shared with investigators in periodic reports to increase understanding of the device and potential adverse events.

Detailed study procedures are provided in Section 9 - Clinical Study Procedures.

The following potential risks may be associated with use of the Endurant Stent Graft System.

- Amputation
- Anesthetic complications and subsequent attendant problems (e.g., aspiration)
- Aneurysm enlargement
- Aneurysm rupture and death
- Aortic damage, including perforation, dissection, bleeding, rupture and death
- Arterial or venous thrombosis or pseudoaneurysm
- Arteriovenous fistula
- Bleeding, hematoma or coagulopathy
- Bowel complications (e.g., ileus, transient ischemia, infarction, necrosis)
- Cardiac complications and subsequent attendant problems (e.g., arrhythmia, myocardial infarction, congestive heart failure, hypotension, hypertension)
- Claudication (e.g., buttock, lower limb)
- Death
- Edema
- Embolization (micro and macro) with transient or permanent ischemia or infarction
- Endoleak
- Femoral-femoral artery bypass thrombosis
- Fever and localized inflammation
- Genitourinary complications and subsequent attendant problems (e.g., ischemia, erosion, fistula, incontinence, hematuria, infection)
- Hepatic failure
- Impotence
- Infection of the aneurysm, device access site, including abscess formation, transient fever and pain
- Lymphatic complications and subsequent attendant problems (e.g., lymph fistula)
- Neurologic local or systemic complications and subsequent attendant problems (e.g., confusion, stroke, transient ischemic attack, paraplegia, paraparesis, paralysis)
- Occlusion of device or native vessel
- Pulmonary complications and subsequent attendant problems
- Renal complications and subsequent attendant problems (e.g., artery occlusion, contrast toxicity, insufficiency, failure)
- Stent graft: improper component placement; incomplete component deployment; component migration; suture break; occlusion; infection; stent fracture; graft twisting or kinking; insertion and removal difficulties; graft material wear; dilatation; erosion; puncture and perigraft flow
- Surgical conversion to open repair
- Vascular access site complications, including infection, pain, hematoma, pseudoaneurysm, arteriovenous fistula, dissection.
- Vascular spasm or vascular trauma (e.g., iliofemoral vessel dissection, bleeding, rupture, death)
- Vessel damage
- Wound complications and subsequent attendant problems (eg, dehiscence, infection, hematoma, seroma, cellulitis)

15.2. POTENTIAL BENEFITS

The potential benefits of the Endurant Stent Graft Systems have not been documented; nevertheless, they are expected to be similar to those associated with endovascular stent graft systems currently in clinical trials or commercially available. Endovascular treatment of AAA has been shown to be an effective, less invasive procedure that may result in a reduced rate of early mortality and comorbidities associated with open surgical repair.[4-9] Stent graft repair also provides a treatment option for patients who would not otherwise be eligible for surgical repair. Additional potential benefits include the following.

- Reduced operating room and anesthesia time
- Reduced requirement for blood transfusions
- Shorter time in intensive care
- Shorter length of hospital stay
- Shorter recovery time and return to activities of daily living

16. PUBLICATION POLICY

Publications based on the results of the ENGAGE Post Approval Study will follow the process outlined in the Clinical Research Agreement. A publication committee may be formed to oversee the preparation of manuscripts and identify first authors and writers for primary and ancillary publications of the study results.

At the conclusion of the study, a multicenter manuscript may be prepared for publication in a peer-reviewed, scientific journal. The manuscript will be made available for review by all co-authors, including Medtronic Vascular personnel, prior to submission.

Publication of the primary results from any single site experience within the study will not be allowed until the multicenter results are published. Exceptions to this rule will require the prior approval of Medtronic Vascular.

Secondary or ancillary manuscripts also are anticipated. For the purposes of timely abstract presentation and publication, such publications will be delegated to the appropriate principal author(s). Final analysis and review of the manuscript for all multicenter publications will require the approval of Medtronic Vascular.

As owners of the Endurant Stent Graft System Study database, Medtronic Vascular has the discretion to determine who will have access to the data. This includes raw as well as summary data. Complete study data, which may contain health information that could be identified with a subject, will be made available only for study-related/business-related activities, or to regulatory authorities and other government bodies.

17. INSURANCE

Medtronic Vascular has umbrella insurance in an amount common in the medical device industry to cover significant exposures. Medtronic Vascular will comply with local regulatory requirements concerning insurance coverage.

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