COVER PAGE

Study Title: Retrospective Post-Market Clinical Follow-Up Study of [redacted] Vascular Graft in Peripheral Artery Disease, Aortic Aneurysms and Dialysis Access.

Protocol Date: 16 June 2021

NCT number: **NCT05124184**

PRINCIPAL INVESTIGATOR SIGNATURE PAGE

Principal Investigator: Please complete the information below. If instructed by W. L. Gore & Associates, Inc., (Gore), please sign and date the bottom of the page and return the original to the Gore study contact. Retain a copy with the protocol at the study site in the regulatory binder.

Device: [redacted]

Title: Retrospective Post-Market Clinical Follow-Up Study of [redacted] Vascular Graft in Peripheral Artery Disease, aortic aneurysms, and dialysis access.

Protocol Number: VGP 21-01
Protocol Date: 16 June 2021

I, the undersigned, have read and understood the specified protocol and agree with the contents. The protocol and any additional information provided by the sponsor will serve as a basis for conduct of the study.

Name and Title (print): _____

Address: _____

_____

_____

Phone: _____

Signature: _____ **Date**:_____

Retrospective Post-Market Clinical Follow-Up Study [redacted] Vascular Graft in Peripheral Artery Disease, Aortic Aneurysms and Dialysis Access.

Protocol number: VGP 21-01

Protocol date 16 June 2021

W. L. Gore & Associates, Inc.
Medical Products Division

PROTOCOL SUMMARY

Study Title	Retrospective Post-Market Clinical Follow-Up Study of [redacted] Vascular Graft in Peripheral Artery Disease, Aortic Aneurysms and Dialysis Access.	
Protocol Number	VGP 21-01	
Sponsor	W. L. Gore & Associates, Inc. Medical Products Division [redacted] Telephone: 800-437-8181	
Local Representative	Gore Authorized Representative W. L. Gore & Associates B.V. [redacted]	
Coordination PI	[redacted]	
Objective	The primary objective is to confirm the clinical performance and safety of [redacted] Vascular Graft throughout the device functional lifetime for each indication for use.	
Study Design	Multicenter, single-arm retrospective study	
Study Devices	[redacted]	
Subject Population	Patients that have had treatment with [redacted] Vascular Grafts for peripheral artery disease (PAD), aortic aneurysms, or dialysis access.	
General Inclusion Criteria	1. Patient is willing and able to provide written informed consent or consent is waived. 2. Patient was at least 18 years of age at the time of implant.	
General Exclusion Criteria	1. Patient was <u>not</u> available for follow up (on-site or remotely) at the clinical site, with the exception of death (*e.g.,* patient lost to follow-up immediately after treatment, patient who lives far away from the treatment site and not available to share follow-up data performed locally). 2. At the time of treatment, patient had known coagulation disorders, including hypercoagulability, that were not amenable to treatment. 3. Patient was pregnant at the time of treatment. 4. Patient had known or suspected systemic infection or infection at the site of graft implantation at the time of implant. 5. Patient had a separate major interventional or surgical vascular procedure within 30 days prior to treatment. CVC catheter placement would be permitted. 6. Patient is already enrolled in this registry under a different cohort.	
Peripheral Artery Disease Cohort	Clinical Outcomes	Primary Safety Outcome: Device-related seroma or infection at 5 years
		Primary Performance Outcome: Secondary patency (revascularization) through 5 years

		Secondary Outcomes: • Limb Salvage through 1 year • Amputation Free survival through 1 year • Device-related Adverse Events through 1 year • Device-related infection requiring reoperation through 5 years • Primary Patency through 1 year
	Follow-Up	5 Years
	Sample Size	72 Patients with any [redacted] 72 Patients with any [redacted] Graft
	PAD Cohort Inclusion Criteria	Patient was treated for peripheral arterial disease or peripheral arterial aneurysm requiring bypass with [redacted] Vascular Graft at least 5 years before site initiation.
	PAD Cohort Exclusion Criteria	At the time of treatment, the patient must not have met any of the following criteria: 1. Patient had percutaneous transluminal angioplasty (PTA) or stenting of the target artery at the anticipated site of the proximal or distal anastomosis within 30 days prior to the index procedure. Use of PTA or stenting during the index procedure is permitted. 2. Patient had a stroke or myocardial infarction (MI) within 6 weeks prior to the index procedure. 3. Patient has previous instance of Heparin-induced Thrombocytopenia type 2 or has known hypersensitivity to heparin. 4. Patient required composite bypass for index procedure (graft + significant length of autologous vessel). Autologous “cuffs” or patches are allowed.
Aortic Aneurysm Cohort	Clinical Outcomes	Primary Safety Outcome: Survival at 5 years
		Primary Performance Outcome: Primary patency at 5 years
	Follow-Up	5 Years
	Sample Size	65 Patients with [redacted]
	Aortic Aneurysm Cohort Inclusion Criteria	Underwent simultaneous or staged aortic aneurysm repair (open surgical AAA or TAAA) involving a [redacted] Vascular Graft at least 5 years before site initiation. Research device could have been used to replace or bypass either a diseased visceral branch or the aorta itself.
	Aortic Aneurysm Cohort	Patients required emergency surgery at the time of implant due to aneurysm rupture.

	Exclusion Criteria	
Dialysis Access Cohort	Clinical Outcomes	Primary Safety Outcome: Device-related infection through 2 years
		Primary Performance Outcome: Useable access circuit (reported as secondary patency) through 2 years
		Secondary Outcomes: • Primary patency through 1 year • Device-related adverse events through 1 year
	Follow-Up	2 years
	Sample Size	72 patients implanted with any [redacted] 72 Patients implanted with any [redacted]
	Dialysis Access Cohort Inclusion Criteria	Patient required the creation of a vascular access graft for hemodialysis secondary to a diagnosis of End-Stage Renal Disease using a [redacted] Vascular Graft, [redacted] Vascular Graft at least 2 years before site initiation with the intent to cannulate the registry device.
	Dialysis Access Cohort Exclusion Criteria	At the time of treatment, the patient must not have met the following criteria: 1. The patient had a previous documented (via imaging technique) and unsuccessfully treated ipsilateral central venous stenosis. 2. The patient was taking maintenance immunosuppressant medication at the time of implant such as rapamycin, mycophenolate or mycophenolic acid, prednisone (> 10 mg), cyclosporine, tacrolimus, or cyclophosphamide. 3. The patient has had a previous instance of Heparin-Induced Thrombocytopenia type 2 (HIT-2) or has known sensitivity to heparin.
Number of Sites	Up to 9 sites in Europe	
Schedule of Events	Pre-enrollment: Patients will be retrospectively identified and enrolled if treated with [redacted] Vascular Grafts and deemed suitable for inclusion. Procedure: Patient procedural and adverse event information will be retrospectively collected. Follow-up: Patient records will be collected for 2-5 years post-procedure by cohort.	
Additional Information	Contract Research Organization: [redacted]	

LIST OF ABBREVIATIONS

AAA	Abdominal Aortic Aneurysms
AE	Adverse Event
ACC/AHA	American College of Cardiology/American Heart Association
ADE	Adverse Device Effect
ALI	Acute Limb Ischemia
AVF	Arteriovenous Fistulae
AVG	Arteriovenous Grafts
CDMS	Clinical Data Management System
CE	Conformité Européenne
CIP	Clinical Investigation Plan
CKD	Chronic Kidney Disease
CLI	Critical Limb Ischemia
CLTI	Chronic Limb-Threatening Ischemia
CRF	Case Report Form
CRO	Contract Research Organization
CVC	Central Venous Catheters
EC	Ethics Committee
eCRF	Electronic Case Report Form
ePTFE	Expanded Polytetrafluoroethylene
ESRD	End Stage Renal Disease
ESVS	European Society of Vascular Surgery
EU	European Union
EVAR	Endovascular Aneurysm Repair
FDA	Food and Drug Administration (United States)
FP	Femoropopliteal Occlusions
FEP	Fluorinated Ethylene Propylene
Fr	French (sizing)
GCP	Good Clinical Practice
GFR	Glomerular Filtration Rate
Gore	W. L. Gore & Associates, Inc.
HE	Health Economics
IB	Investigators Brochure

ICF	Informed Consent Form
ICH	International Conference on Harmonization
IDE	Investigational Device Exemption
IFU	Instructions for Use
PAD	Peripheral Artery Disease
PHI	Protected Health Information
PI	Principal Investigator
PTA	Percutaneous Transluminal Angioplasty
RRT	Renal Replacement Therapy
SAE	Serious Adverse Event
SFA	Superficial Femoral Artery
SAA	Splenic Artery Aneurysms
SVS	Society of Vascular Surgery
TAAA	Acute Thoracoabdominal Aortic Aneurysm
US	United States
USADE	Unanticipated Serious Adverse Device Effect

DEFINITIONS

Adverse Event: Untoward medical occurrence, unintended disease or injury, or untoward clinical signs (including an abnormal laboratory finding) in subjects, users, or other persons, whether or not related to the investigational medical device and whether anticipated or unanticipated.

Adverse Device Effect: Adverse event related to the use of an investigational medical device

Clinical Investigation Plan: Documents that describes the rationale, objectives, design and pre-specified analysis, methodology, organization, monitoring, conduct and record-keeping of clinical investigation. These documents may include the protocol, monitoring plans, and statistical analysis plans.

Device Deficiency: Inadequacy of a medical device with respect to its identity, quality, durability, reliability, usability, safety or performance.

Enrollment: A patient is considered enrolled into the registry once informed consent has been signed and dated or consent if waived.

Registry Device: The medical device being assessed for safety or performance in this registry. May also be referred to as registry device. This includes medical devices already on the market that are being evaluated for new intended uses, new populations, new materials, or design changes.

Serious Adverse Event: Any adverse event that led to any of the following: death; serious deterioration in the health of the subject, users, or other persons as defined by one or more of the following: life-threatening illness or injury, permanent impairment of a body structure or a body function, hospitalization or prolonged of patient hospitalization, medical or surgical intervention to prevent life-threatening illness or injury or permanent impairment to a body structure or a body function, chronic disease; or fetal distress, fetal death, or a congenital physical or mental impairment or birth defect. Defined in more detail in section 9.

Serious Adverse Device Effect: An adverse device effect that has resulted in any of the consequences characteristic of a serious adverse event.

Unanticipated Serious Adverse Device Effect: Serious adverse device effect which by its nature, incidence, severity, or outcome has not been identified in the current risk assessment.

TABLE OF CONTENTS

TABLE OF TABLES

[redacted]

[redacted]

TABLE OF APPENDICES

1. Introduction

1.1. Disease

[redacted] Vascular Grafts are clinically indicated in the treatment of applicable cardiovascular conditions, including occlusive or aneurysmal diseases, hemodialysis access, pediatric heart disease, and trauma. This retrospective registry is designed to investigate specific applications, including occlusive or aneurysmal disease and hemodialysis access in adults. Review of each condition is provided below. A separate protocol will investigate the use of the devices in pediatric heart disease.

1.1.1. Occlusive or Aneurysmal Disease

1.1.1.1. Peripheral Artery Disease

Atherosclerosis is a systemic disease of the large and medium-sized arteries causing vessel narrowing (focal or diffuse), a phenomenon which results from accumulation of immune cells, lipids, and fibrous material between the intimal and medial layers of the vessel.[1,2] The subintimal accumulation of lipid and fibrous material can narrow the vessel lumen causing arterial stenosis or occlusion, or the plaque can rupture causing embolism or thrombosis. Multiple factors contribute to the pathogenesis of atherosclerosis, including endothelial dysfunction, dyslipidemia, inflammatory and immunologic factors, plaque rupture, and tobacco use. Atherosclerosis is the dominant etiology restricting arterial blood flow in the extremities, in comparison with diseases such as inflammation and thrombosis. Lower limb vessels are more frequently impacted than vessels in the upper extremities.

Peripheral artery disease (PAD) principally arises as a result of atherosclerotic occlusion, a narrowing of the arteries in the lower extremities, impeding blood flow to the limbs.[3] The most common location is femoropopliteal arteries, the loci in approximately 50% of retrospective review, with the exception of patients with early-onset PAD, for whom the aortoiliac segment is evidently the most prevalent location. Atherosclerosis in the lower extremities is a multisegmented disease in approximately two-thirds of symptomatic patients.

The clinical manifestations of PAD depend upon the location and severity of arterial stenosis or occlusion and range from mild extremity pain with activity (i.e. claudication) to limb-threatening tissue necrosis. Acute limb ischemia of the lower extremity, one of the most common vascular emergencies, occurs with mortality and limb amputation rates as high as 20% to 40%. Other symptoms include rest pain, ulceration, and gangrene. Atherosclerosis in the aorta can also be associated with aneurysm. The pathology of aneurysmal disease is felt to be distinct from that of atherosclerosis; however, the clinical manifestations may overlap.

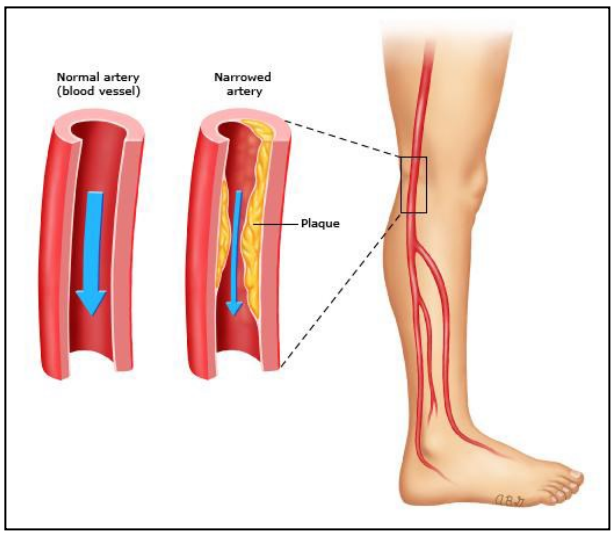


Figure 1: Peripheral Arterial Disease[4]

Single-level disease (i.e. aortoiliac arteries, superficial femoral artery [SFA]) often manifests initially as claudication. Multilevel disease can manifest as claudication, when collateral circulation is adequate, but often manifests as ischemic rest pain or lower extremity ulceration when a well-developed collateral circulation is absent. Severe manifestations can occur without an intervening history of claudication, particularly in older patients with diabetes or chronic kidney disease. Symptoms of PAD (e.g. pain, pallor, pulselessness, poikilothermia, paresthesia, paralysis, etc.) for less than two weeks or less is considered acute limb ischemia (ALI).[5] If these symptoms persist past 2 weeks or nonhealing wound/ulcers, or gangrene is evident in 1 or both legs, the disease has progressed to chronic limb-threatening ischemia (CLTI, also referred to as critical limb ischemia [CLI]).[5]

The overall prevalence of lower extremity PAD varies widely depending upon the population studied but is estimated to be approximately 10% of adults in the United States older than 55 years. Data from the 2010 United States census suggested that the overall burden of PAD among adults in the United States is greater for women compared with men, with prevalence in women increasing further in women aged 70 years and older versus men of comparable age. Peripheral artery disease is more prevalent in African-Americans compared to the non-Hispanic white population, a distinction that is evidently only partly due to disparities in risk factors for atherosclerosis, with prevalence in women increasing further in women aged 70 years and older versus men of that age. African-Americans and Hispanic-Americans experience higher incidence of diabetes and hypertension in comparison with the white population in the United States.

In Europe and North America, an estimated 27 million individuals are affected with approximately 413,000 inpatient admissions annually

attributed to PAD. The majority of individuals with PAD (70%) live in low/middle income regions of the world, including 55 million individuals in Southeast Asia and 46 million in the western pacific region. The number of individuals with PAD increased by 29 percent in low to middle income regions and 13 percent in high-income regions from 2000 to 2010 compared with the preceding decade.

The American College of Cardiology/American Heart Association (ACC/AHA) guidelines on PAD indicates that all adults over the age of 65 are at increased risk for PAD[5]. Adults between the ages of 50 and 64 are at increased risk of PAD if they have one or more traditional risk factor for atherosclerosis or a family history of PAD.[5] Any adult with diabetes mellitus and one or more concomitant risk factors for atherosclerosis is at increased risk for developing PAD.[5] Traditional risk factors of atherosclerosis include hypertension, diabetes mellitus, history of smoking, hyperlipidemia.[5] Individuals with established, clinically significant coronary artery disease or evidence of atherosclerosis in another vascular bed (e.g. coronary, carotid, subclavian, renal, mesenteric artery stenosis, or AAA) are also at increased risk for developing PAD.[5]

1.1.1.2. Aneurysmal Disease

An aneurysm is a segmental full thickness dilation of a blood vessel to 150% or greater of the basal vessel diameter.[6] True aneurysm involves distention of all 3 layers of the arterial wall such that the vessel adopts a dilated or balloon-like morphology in one or more section.[7] This dilation typically occurs progressively, weakening the vessel wall and applying pressure to the perivascular tissue.[8] Most aneurysms are asymptomatic and are discovered accidently during an unrelated exam.[8] As they progress, however, the distension of the vessel can cause pain and hemodynamic impairment which may be observed upon instrumentation of the vessel.[7] At some point the weakened vessel may rupture which may, depending on the nature (contained or free), cause immediate cardiovascular compromise.[7] Alternatively, the atherosclerotic lesion causing the aneurysm may rupture or dislodge, causing embolism in a distal vessel. If rupture results in bleeding into the retroperitoneal space, the symptoms may be confused with something else.

The etiological mechanisms underpinning aneurysmal disease are thought to vary and are not fully understood.[2,7] Aneurysms are thought to result from a pro-inflammatory vascular milieu coupled with local smooth muscle cell apoptosis and extracellular matrix degradation.[9] Atherosclerotic stenosis can activate the remodeling of the vascular wall which predisposes the artery to aneurysm. However, only a subset of aneurysms are attributed to atherosclerosis; others are driven by other processes such as vascular infection, embryological development, or hemodynamic stress.[9]

Aneurysms can form in any large vessel. Patients with a known aneurysm in one vessel (e.g. iliac, femoral, popliteal, aortic) are likely to develop or already have an aneurysm in another location.[9] An estimated 85% of patients who present with a femoral artery aneurysm have concomitant abdominal aortic aneurysm (AAA).[9] Additionally, up to 25% of patients that present with an abdominal aortic aneurysm present with a thoracic aortic aneurysm.[9]

The abdominal aorta is defined as aneurysmal when a localized dilation is more than 50 percent larger than the normal aortic diameter. From a practical standpoint, an infrarenal aortic diameter greater than 3.0 cm (measured outer wall-to-outer wall) is considered aneurysmal for most individuals.[10] AAAs are commonly described based on the relationship to the renal arteries as infrarenal, juxtarenal, pararenal, and suprarenal (Figure 2).[10]

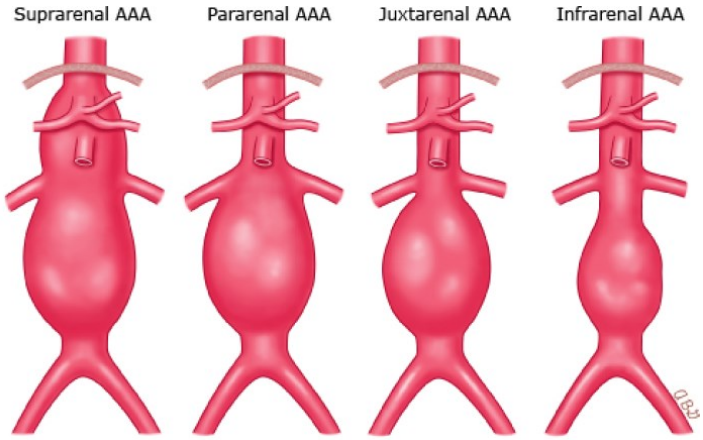


Figure 2: Classification of Abdominal Aortic Aneurysms[10]

AAAs most often occur in the segment of aorta between the renal arteries and the bifurcation of the aorta.[10] Only 5 percent of aortic aneurysms involve the renal or visceral arteries.[10] Up to 40 percent of AAAs are associated with iliac artery aneurysm(s). The presence of iliac artery aneurysm may necessitate placement of a bifurcated graft. The extent of the aneurysm also affects the surgical approach.[10]

Acute thoracoabdominal aortic aneurysm (TAAA) is a rare condition with exceptionally high mortality and morbidity.[8] Thoracoabdominal aortic aneurysm accounts for approximately one third of aortic aneurysm admission; while incidence of aortic AAA appears to be decreasing, the incidence of TAAA is evidently on the rise.[8]

The majority of patients who present with TAAA display no symptoms; TAAAs that do manifest symptoms are, on average, particularly large and at enhanced risk for rupture, thus accompanied by higher mortality rates than asymptomatic aneurysms.[8] Symptoms include chest or upper back pain or symptoms consistent with compression of surrounding structures, such as hoarseness and diaphragm paralysis,

causing lack of nerve function or arterial compression resulting in ischemia or thromboembolism.[8] Additional symptoms may be caused by aortic regurgitation or thromboembolism to almost any vascular bed, including coronary, cerebral, renal, mesenteric, lower extremity, and, in rare cases, spinal cord.[8] Aortic dissection and rupture are the most serious potential complications. Symptoms of rupture are severe pain as well as hypotension or shock.[8]

For a TAAA to be categorized as a true aneurysm, the diameter of the blood vessel must increase by at least 50% in relation to expected normal diameter and must affect all three layers of the arterial wall, intima, media and adventitia.[8] "Thoracic aortic aneurysms are classified by location within the aorta, extent of aortic involvement, and morphology…[and] can be classified into four general anatomic categories; however, some aneurysms involve more than one segment:

- Ascending aortic aneurysms arise anywhere from the aortic valve to the innominate artery (60 percent)
- Aortic arch aneurysms include any thoracic aneurysm that involves the brachiocephalic vessels (10 percent)
- Descending aortic aneurysms are those distal to the left subclavian artery (40 percent)
- Thoracoabdominal aneurysms (10 percent)[8]
- Complications of abdominal and thoracic aortic aneurysmal disease are a leading cause of death in the United States, especially in the population > 55 years of age.[8] Risk factors of TAAAs are as follows:
- Risk factors for atherosclerosis (e.g., smoking, hypertension, hypercholesterolemia).
- Known aneurysm in the thoracic aorta or at other sites (e.g., abdominal aortic aneurysm).
- Prior aortic dissection.
- High-risk conditions – Marfan syndrome, Loeys-Dietz syndrome, vascular Ehlers-Danlos syndrome, Turner syndrome, or other connective tissue disease. Patients with these conditions may have a known mutation in genes known to predispose to TAAA (FBN1, TGFBR1, TGFBR2, ACTA2, and MYH11).
- Known aortic valve disease (e.g., bicuspid aortic valve, aortic valve replacement, or aortic stenosis).
- Family history of aortic dissection or thoracic aortic aneurysm.
- Cerebral aneurysm.[8]

Peripheral aneurysm resulting from arterial degenerative disease are rare, with a reported incidence of 0.1% to 2%.[11] Examples include hepatic, celiac, renal, splenic, superior and inferior mesenteric artery aneurysms, and splenic artery aneurysms (SAAs). Among peripheral aneurysms, SAAs are the most prevalent aneurysms and are the third

most prevalent abdominal aneurysms after aortic and iliac artery aneurysms.[3] Family history and smoking increase the risk of developing peripheral aneurysms; comorbidity of an existing peripheral aneurysm exacerbates the risk of developing another peripheral aneurysm in an additional location.

1.1.2. Hemodialysis Access

Chronic kidney disease (CKD) is an international health problem that affects millions of people. Several common risk factors can impact CKD, including diabetes, obesity, and hypertension. Chronic kidney disease is classified into 5 stages (Table 1); but renal insufficiency is limited to stages 3 to 5, with a glomerular filtration rate (GFR) below 60 ml/min per 1.73 m^2 for 3 months or more.[12] End Stage Renal Disease (ESRD), Stage 5, is the most severe, and is characterized by a GFR below 15 ml/min per 1.73 m^2.[12] End Stage Renal Disease has 2 phases: 1) Conservative treatment without dialysis and 2) Renal Replacement Therapy (RRT), in the form of either dialysis or kidney transplantation. The number of patients per year starting RRT has shown an exponential rise, with incidence (per million population) increasing between 2002 and 2006 from 333 to 360 in the United States (US), from 262 to 275 in Japan, and from 94 to 115 in Australia. The incidence in Europe, unlike other reported regions, has held constant during the time frame with incidence of 129 per million.[12] The prevalence of patients undergoing RRT is also rising, likely due to the increase in the number of patients who start RRT each year and/or due to the increased survival of patients with ESRD. Registries of ESRD patients undergoing RRT can be used to identify patient demographics and treatment modality, with 70% of RRT patients in the US being treated by dialysis and 30% receiving a kidney transplant. Diabetes causes 44% of new ESRD cases in the US and hypertension accounts for 27.9% of cases. The elderly population recently accounted for 25-30% of ESRD population requiring RRT.[12]

Table 1: Classification of Chronic Kidney Disease Based on Glomerular Filtration Rate

Stage	Description	GFR mL/min/1.73 m^2
1	Kidney damage with normal or elevated GFR	90+
2	Kidney damage with mildly decreased GFR	60-89
3	Moderately decreased GFR	30-59
4	Severely decreased GFR	15-29
5	End Stage Renal Disease (ESRD)	< 15 or on dialysis

1.2. Historical Treatments

1.2.1. Occlusive or Aneurysmal Diseases

1.2.1.1. Summary of Treatment Options for Occlusive Disease

Several treatments and procedures are employed in the treatment PAD and conditions such lower limb ischemia and femoropopliteal (FP) occlusions. Interventions include open surgical repair, endarterectomy, endovascular treatment, balloon angioplasty and stents (drug coated,

drug eluting, non-drug coated, covered, bare metal). According to Farber et al.,[13] little scientific data is available to identify the optimal revascularization strategy, hence the variability and equipoise in the treatment. Open vascular surgery and endovascular therapy play key roles in the treatment of this disease. [13]

Recommended medical therapy involves reducing risk factors for atherosclerosis.[14] These recommendations include smoking cessation, healthy diet and physical activity, statin therapy to control lipid levels. [14] It is recommended that patients with diabetes should maintain strict glycemic control. [14] Those with hypertension should control blood pressure (to less than 140/90 mmHg) using angiotensin-converting enzyme inhibitor and angiotensin-receptor blockers as a first-line therapy. [14]

Treatments for PAD include lifestyle interventions (e.g. exercise), pharmacological interventions, percutaneous or endovascular interventions or open surgical interventions.[3] These interventions can be used individually to treat disease or in combination.[3] Pharmacological treatments are primarily intended to mitigate risk factors of atherosclerosis to stop the progression of disease and to provide symptom relief.[3] Noninterventional treatments can significantly slow the progression of the disease and allow patients to maintain a high quality of life.[3] However, in a significant minority of patients (20% to 30%) disease progression will cause a significant reduction in function and quality of life, warranting intervention.[3] The American College of Cardiology (ACC) and American Heart Association (AHA) indicate that surgical intervention is reasonable when guideline-directed management and therapy lose efficacy and the sequelae becomes life limiting.[5]

The Clinical guidelines addressing treatment of PAD offer guidance on what patient and disease conditions are preferentially treated with either endovascular or open surgery.

Generally, the clinical guidelines recommend endovascular procedures over open procedures for small and localized occlusive disease. However, open interventions are appropriate and recommended in several clinical scenarios. Several factors should be considered when choosing whether to proceed with surgical revascularization or an endovascular approach for treating CLTI. These factors include the position of the lesions, the severity of disease, and the presence of comorbidities which may increase the risk of surgery.

1.2.1.2. Summary of Treatment Options for Aneurysmal Disease

Professional medical societies publish consensus statements and guidelines that contribute supportive information regarding the treatment of aortic aneurysms, using the available literature and their

practical expertise to craft documents that are based on the best judgement of subject matter experts.

Non-Surgical Treatment Options

Patients with asymptomatic aortic aneurysms are presented with several preventative and interventional treatment options before surgical consideration. Smoking cessation, a level 1 recommendation from the Society of Vascular Surgeons (SVS) and a class I recommendation from the European Society of Vascular Surgery (ESVS), has been shown to reduce the risk of aortic aneurysms and has been recommended for patients with aortic aneurysms or patients with a family history of aortic aneurysms.[15, 16] Similarly, a general reduction in risk factors may benefit patients with aortic aneurysms; treatment of hypertension, hyperlipidemia, diabetes, and atherosclerotic disease reduce mortality rates.[15] Lifestyle changes such as improved diet and regular exercise should also be considered.[16] Patients also have the option of pharmacological intervention with blood pressure medications, statins, doxycycline, roxithromycin, ACE inhibitors, angiotensin receptor blockers, and antiplatelet therapies; however, these are not recommended for the primary purpose of reducing aneurysm size. [15,16]

Surgical Treatment Options

Before the introduction of endovascular aneurysm repair (EVAR) in 1991, open surgical repair was the only option for aortic aneurysm intervention; currently, open repair is largely reserved for patients that do not meet the anatomic requirements for EVAR.[15, 16] During endovascular repair, a stent graft is percutaneously inserted into the aorta through the femoral artery. It is then expanded at the aneurysm site so that the blood flow is excluded from the aneurysm sac. EVAR uses local anesthetic, which makes it a better treatment option for patients contraindicated for general anesthesia.[15] Although EVAR is associated with a higher rate of reintervention than open surgery, EVAR is better than no intervention as it improves the survival rate for patients with aortic aneurysms that have been considered unfit for surgery. [15,16] The SVS and ESVS acknowledge the decrease in annual deaths caused by aneurysm rupture since the introduction of EVAR while similarly praising the increase in elective repair. [15,16]

Grading of Recommendations Assessment, Development, and Evaluation (GRADE) evidence based recommendations suggest that either open repair or EVAR may be used to treat unruptured aneurysm and the final choice should be dependent on surgical risk, aortic anatomy, age, and personal preference.[17]

Clinical guidelines addressing surgical treatment of AAA and aorto-iliac aneurysms offer guidance on what patient and disease conditions are preferentially treated with either endovascular or open surgery.

1.2.2. Hemodialysis Access

Patients who have ESRD will ultimately require hemodialysis, which is a critical treatment for survival. In order to provide adequate dialysis, implantation of a vascular conduit is required. Vascular access can be one of the most challenging aspects of RRT; and if the vascular access is malfunctioning, hemodialysis may not be possible. Three modalities of vascular access used for hemodialysis are central venous catheters (CVC), arteriovenous grafts (AVG), and autologous arteriovenous fistulae (AVF).[18]

An AVF is a surgically created anastomosis between a vein and an artery, with the vein serving as the accessible conduit. The vein portion of the fistula will grow in diameter and the wall will begin to thicken as it matures, allowing cannulation with hemodialysis needles, also allowing for sufficient blood flow for hemodialysis. United States guidelines recommend the most distal region in the upper extremities be utilized first for vascular access (e.g. wrist [radiocephalic], elbow [brachiocephalic] and transposed brachial basilic vein).[19] An AVG is similar to an AVF; in AVG, however, a surgically implanted vascular graft connects the artery to the vein. The third option for vascular access is a CVC, a catheter inserted into a large vein, generally either in the neck or chest. Hemodialysis catheters frequently require a cuff to be placed under the skin to aid in holding the catheter in place.

1.3. Registry Device Description

[redacted] for use as vascular prostheses for replacement or bypass of diseased peripheral vessels in patients suffering occlusive or aneurysmal diseases, in trauma patients requiring vascular replacement, for patients with ESRD requiring dialysis, or for pediatric heart disease. They can be used to improve blood flow to tissue or organs that are supplied by damaged vessels, provide vascular access for hemodialysis, or to create a shunt for palliative care of patients with cyanotic congenital heart disease.

[redacted]

[redacted]

[redacted]

1.4. Pre-clinical Data

Gore has performed the following pre-clinical testing on [redacted]

1. *in vitro* testing;
2. biocompatibility testing per ISO 10993-1;
3. *in vivo* animal studies.

1.5. Clinical Data

[redacted]

2. Registry Objectives

2.1. Primary Objective(s)

The primary objective is to confirm the clinical performance and safety of [redacted] Vascular Grafts throughout the device functional lifetime for each indication area; peripheral artery disease (PAD), aortic aneurysms, and dialysis access.

Cohorts including PAD, aortic aneurysm, and dialysis access represent applicable patient populations for these disease states. Appropriate sample sizes were calculated per cohort based on safety and performance acceptance criteria as part of the clinical evaluation process under European Medical Device Regulation (MDR). Statistical justifications were based on anticipated outcomes, and sample sizes were planned to estimate the same outcomes with determined level of accuracy.

2.2. Health Economic Data Analysis

A Health Economic analysis will be performed using clinical registry data. The objective of the Health Economic analysis is to understand the value of the treatment(s) studied during the period of the registry.

3. Registry Design

3.1. Registry Design Schema

--REDACTED--

3.2. Description of Registry Design

This multicenter, single-arm retrospective registry (chart review) is being conducted to confirm the clinical performance and safety [redacted] Vascular Graft throughout the device functional lifetime for each indication area. A single arm design was chosen as the registry is intended only to add to existing data and literature on the study populations and devices. A retrospective registry was determined to be an appropriate design for post-market clinical data collection based on consistency of device design, procedures, clinical results available in literature and operative techniques.

Up to 9 sites in Europe will be required to enroll 353 patients that have had treatment with [redacted] Vascular Grafts in the following indication areas:

- 144 patients in PAD Cohort
  - 72 Patients with any [redacted]
  - 72 Patients with [redacted]
- 65 patients in Aortic Aneurysm Cohort with [redacted]
- 144 patients in Dialysis Access Cohort
  - 72 patients implanted with any [redacted]
  - 72 Patients implanted with Patients with [redacted]

Each site cannot contribute to more than 25% of the total patient for each cohort without sponsor approval, with a maximum of 50% of total enrollment for a single site. See section 4.1 for more details.

The Sponsor or designee will maintain an updated list of all principal investigators, site names, and addresses. This list shall be kept separately from this protocol.

Subjects may be enrolled when all inclusion and no exclusion criteria are met as specified in section 4.2 for each indication for use. Patients are enrolled into the registry when they provide consent or consent is waived and meet all inclusion and exclusion criteria.

Subjects' medical records will be reviewed by the investigator and specific data will be collected retrospectively for up to 5 years of follow-up from the index procedure for subjects in the PAD and aortic aneurysm cohorts and up to 2 years for subjects in the dialysis access cohort.

3.2.1. Management of potential confounding factors / bias

Bias will be controlled by strict adherence to the registry protocol. Sites will be monitored for compliance with registry protocol, including subject eligibility criteria, as allowed by EC regulations. In order to minimize selection bias, it is mandatory that the enrollment of patients will be consecutive in nature based on the date of the index procedure. Gore has put in place quality control in order to ensure that no selection bias is applied by the site during patient screening, please see section 5.4 for more details.

The registry is meant to retrospectively collect data for descriptive reporting as well as evaluate “real world” experience of clinical practice and patient outcomes during treatment and throughout follow-up extending up to 2-5 years, by cohort. Patient selection, diagnostic imaging and treatment interventions will be determined by physicians based on this protocol and clinical practice standards.

It is well known that excluding treated patients who are deceased or not reachable at the time of the inclusion due lack of informed consent can generate an important selection bias in retrospective study and is likely to seriously prevent the achievement of the research objectives. Therefore, for patients, who are deceased or not reachable at the time of the inclusion, the consent can be waived, according to national and local regulation. Refer to section 5.2 regarding the waived process.

3.3. Registry Endpoint(s)

3.3.1. Definitions

Outcome	**Definition**
Primary Patency	
Aortic Aneurysm / PAD Cohort	Patency of the study graft without additional or secondary surgical or endovascular procedures to maintain or restore flow to the graft. The only exceptions that do not disqualify the graft for primary patency are procedures performed for disease beyond the graft and its two anastomoses.
Dialysis Access Cohort	Interval following intervention until the next access thrombosis or repeated intervention.
Secondary Patency	
Aortic Aneurysm / PAD Cohort	Patency of the study graft with additional or secondary surgical or endovascular procedures to restore flow to the graft after occlusion or stenosis of the graft or its anastomoses The only exceptions that do not disqualify the graft for secondary patency are procedures performed for disease beyond the graft and its two anastomoses
Dialysis Access Cohort	Patency of the study graft from the time of access creation or placement until access abandonment
Limb Salvage	Freedom from an amputation above the level of the ankle of the index limb
Amputation Free survival	Freedom from an amputation above the level of the ankle of the index limb or all cause death
Device-related seroma or infection *PAD Cohort*	Clinical evidence of an infectious process in the direct vicinity of the access site or distal to the treated vascular site or seroma classified by the registry investigator as primarily related to the registry device

Device-related infection requiring reoperation *PAD Cohort*	Clinical evidence of an infectious process in the direct vicinity of the access site or distal to the treated vascular site classified by the registry investigator as primarily related to the registry device and required surgical intervention
Device-related infection *Dialysis Access Cohort*	Clinical evidence of an infectious process in the direct vicinity of the access site classified by the study investigator as primarily related to the study device
Survival	All Cause survival
Device-related Adverse Events	Any untoward medical occurrence classified by the registry investigator as primarily related to the registry device

3.3.2. Primary Endpoints

3.3.2.1. Peripheral Artery Disease Cohort

- Primary Safety Outcome: Device-related seroma or infection through 5 years
- Primary Performance Outcome: Secondary patency (revascularization) through 5 years

3.3.2.2. Aortic Aneurysm Cohort

- Primary Safety Outcome: Survival through 5 years
- Primary Performance Outcome: Primary patency through 5 years

3.3.2.3. Dialysis Access Cohort

- Primary Safety Outcome: Device-related infection through 2 years
- Primary Performance Outcome: Useable access circuit (reported as secondary patency) through 2 years

3.3.3. Secondary Endpoints

3.3.3.1. Peripheral Artery Disease Cohort

- Limb Salvage through 1 year
- Amputation-free survival through 1 year
- Device-related Adverse Events through 1 year
- Device-related infection requiring reoperation through 5 years
- Primary Patency through 1 year

3.3.3.2. Dialysis Access Cohort

- Primary patency through 1 year
- Device-related adverse events through 1 year

No secondary endpoints have been identified for the Aortic Aneurysm Cohort.

4. Study Population

4.1. Description of Population

The study population will consist of three cohorts. Patients that have had treatment with [redacted] Vascular Graft for PAD, aortic aneurysms, or dialysis access are eligible for consideration for enrollment in the registry.

Cohort	Treatment period	FU period after index procedure (years)	Number patients	Cap per site** (patient)
PAD	at least 5 years before site initiation	5*	[redacted]	18 (25%) 36 (50%)
			[redacted]	18 (25%) 36 (50%)
Aortic Aneurysms	at least 5 years before site initiation	5*	[redacted]	16 (25%) 33 (50%)
Dialysis Access	at least 2 years before site initiation	2*	[redacted]	18 (25%) 36 (50%)
			[redacted]	18 (25%) 36 (50%)

* Subject who died before the end of FU period will be not excluded from the registry.

** Site cannot enroll more than 25% of the total patients in each indication without sponsor approval. With sponsor approval, a single site may enroll a maximum of 50% of total patients.

Study staff will review patients' medical records to identify eligible patients for this retrospective data collection. The registry has been designed with standard eligibility criteria to enroll subjects for which the registry device has been intended to treat. Two sets of inclusion and exclusion criteria have been identified: general and cohort-specific criteria. Only patients who meet all of the inclusion criteria and none of the exclusion criteria (general and cohort-specific) will be included in the registry. A subject cannot be included in more than one cohort.

No vulnerable populations are included in this registry.

4.2. Inclusion Criteria

The Inclusion Criteria reflects the potential broad application of the device as evaluated by the medical judgement of the implanting physician. Inclusion Criteria will be evaluated at the time of initial identification as part of the retrospective device-use search using the patient health status at the time of the index procedure.

4.2.1. General Inclusion Criteria

1. Patient is willing and able to provide written informed consent or consent is waived, according to national and local regulations.
2. Patient was at least 18 years of age at the time of implant.

4.2.2. PAD Cohort Inclusion Criteria

1. Patient was treated for peripheral arterial disease or peripheral arterial aneurysm requiring bypass treated [redacted] Vascular Graft at least 5 years before site initiation.

4.2.3. Aortic Aneurysm Cohort Inclusion Criteria

1. Patient underwent simultaneous or staged aortic aneurysm repair (open surgical AAA or TAAA) involving a [redacted] Vascular Graft at least 5 years before site initiation. Research device could have been used to replace or bypass either a diseased visceral branch or the aorta itself.

4.2.4. Dialysis Access Cohort Inclusion Criteria

1. Patient required the creation of a vascular access graft for hemodialysis secondary to a diagnosis of End-Stage Renal Disease using [redacted] Vascular Graft at least 2 years before site initiation with the intent to cannulate the registry device.

4.3. Exclusion Criteria

4.3.1. General Exclusion Criteria

1. Patient was not available for follow up (on-site or remotely) at the clinical site, with the exception of death (e.g., patient lost to follow-up immediately after treatment, patients who live far away from the clinical site and are not available to share follow-up data performed locally).
2. At the time of treatment, patient had known coagulation disorders, including hypercoagulability, that were not amenable to treatment.
3. Patient was pregnant at the time of treatment.
4. Patient had known or suspected systemic infection or infection at the site of graft implantation at the time of implant.
5. Patient had a separate major interventional or surgical vascular procedure within 30 days prior to treatment. CVC catheter placement would be permitted.
6. Patient is already enrolled in this registry under a different cohort.

4.3.2. PAD Cohort Exclusion Criteria

At the time of treatment, the patient must not have met any of the following criteria:

1. Patient had percutaneous transluminal angioplasty (PTA) or stenting of the target artery at the anticipated site of the proximal or distal anastomosis within 30 days prior to the index procedure. Use of PTA or stenting during the index procedure is permitted.
2. Patient had a stroke or myocardial infarction (MI) within 6 weeks prior to the index procedure.
3. Patient has previous instance of Heparin-induced Thrombocytopenia type 2 or has known hypersensitivity to heparin.
4. Patient required composite bypass for index procedure (graft + significant length of autologous vessel). Autologous “cuffs” or patches are allowed.

4.3.3. Aortic Aneurysm Cohort Exclusion Criteria

At the time of treatment, the patient must not have met any of the following criteria:

1. Patient required emergency surgery due to aneurysm rupture.

4.3.4. Dialysis Access Cohort Exclusion Criteria

At the time of treatment, the patient must not have met any of the following criteria:

1. The patient had a previous documented and unsuccessfully treated ipsilateral central venous stenosis via imaging technique.
2. The patient was taking maintenance immunosuppressant medication at the time of implant such as rapamycin, mycophenolate or mycophenolic acid, prednisone (> 10 mg), cyclosporine, tacrolimus, or cyclophosphamide.
3. The patient has had a previous instance of Heparin-Induced Thrombocytopenia type 2 (HIT-2) or has known sensitivity to heparin.

A rationale for each inclusion / exclusion criterion is located in Appendix A.

5. Registry Procedures / Evaluations

No product- or procedure-related training is required, as the registry is designed to collect pseudo-anonymized clinical follow-up, procedure, demographic (including medical history), and device characteristic data from the patient's medical record.

Subjects were followed per clinical routine practices and this retrospective approach does not impact the future routine clinical treatment at the site. For this registry it is expected that the sites will follow this protocol to ensure scientifically sound evaluation of outcomes. There are no additional, known or foreseeable factors that may compromise the outcome of the registry or the interpretation of results; please refer to section 3.2.1 regarding minimization of bias.

5.1. Schedule of Events

Retrospective data collection only. Refer to section 5.8 for more details.

5.2. Informed Consent Process

For the inclusion of patients in the registry, the investigator should review all inclusion/exclusion criteria and, in the case of including patients who are alive and reachable at the site, the patient will be required to sign the Informed Consent Form (ICF) before enrolment in the registry.

As this study is retrospective and considering the nature of patient's disease, some patients may have died by the time they are included. The investigator is expected to make reasonable efforts to contact the potential patient, such as checking whether they are still alive, browsing through their clinical records, contacting available telephone numbers, or obtaining contact information from population and/or health care registers. If, after reasonable effort, the patients are found to be deceased or not reachable, the request for informed consent can be waived in accordance with national and local legislation.

If, during the course of the registry, patients who were not previously reachable come back to the clinical site for a visit, the investigator is expected to collect informed consent from those patients.

To protect patient privacy, patient-identifiable information (e.g., name, initials, complete birth date, and race) will not be collected.

The informed consent form will include emergency contact details for any concerns. The case history (i.e., source documents / subject chart) for each subject shall document that such informed consent was obtained, if this was obtained remotely or if the consent was waived. In case the consent was waived, the reason must be clearly described in the source document.

The EC approved consent form will be signed and personally dated by the subject and the person who conducted the informed consent discussion. The original signed informed consent form will be retained in the subject records. A copy of the signed informed consent document will be given to the subject for their records.

For France only. According to *Méthodologie de référence MR-004*, applicable for this retrospective registry, the investigator has to inform all pre-identified patients (all patients present in the pre-screening log) about this registry, and in particular their right to oppose the processing of their data for the scope of this registry. Regarding the processing of data of deceased persons, investigator has to make sure that the patient had not objected to it during his lifetime in writing. If not, the personal data concerning him will be collected for the scope of this registry. In this context, an Information and Non-opposition letter is prepared and sent to all patients present in the pre-screening log. The data collection will not begin until one month after the investigator sent out the non-opposition letter, to give time to the patient to read and, eventually oppose in writing his/her participation in this registry.

5.2.1. Remote Collection of the Informed Consent Form

Considering the low risk (see section 8, Risk Assessment) of this retrospective registry and the absence of registry-specific procedure for the patient, the remote collection of the informed consent will not adversely affect the rights and welfare of the patients.

In case the patient is unable to come to the hospital (e.g., COVID-19 pandemic, moved to another area, logistics, etc.), the discussion and collection of the consent may take place by a means other than a face to face (e.g., mailing consent documents to potential participants and discussing the registry and consent document via phone) per local regulations.

Specific procedures to ensure adequate documentation of prospective informed consent process, in accordance with regulation and best clinical practice, will be provided to the investigators in a separate document.

5.2.2. Vulnerable Populations

No patients deemed to be of a vulnerable population may be enrolled.

5.2.3. Emergent Cases

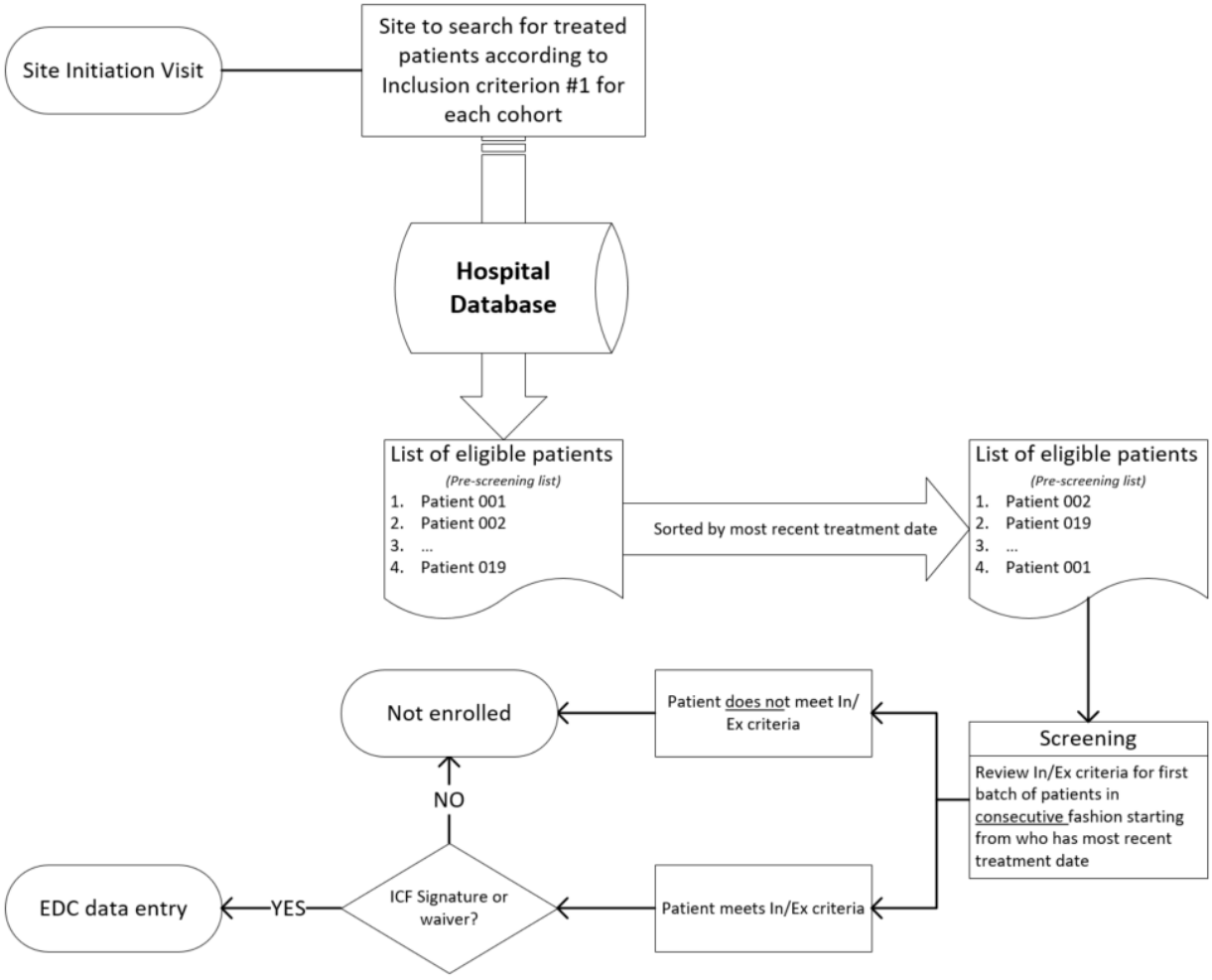
Not applicable due to retrospective nature of the registry.

5.3. Pre-Screening

Sites are expected to perform a search of patients treated with the registry devices within the hospital database following the site initiation performed by Gore. Upon site activation, the site staff will search in the hospital database patients who were treated with registry devices for each indication, representing patients meeting Inclusion #1 for each cohort. This search is based on the information already present in the patient medical record.

The research results will be recorded in the Pre-screening log and ordered based on patient's date of index procedure.

The pre-screening log produced with this research must be maintained at the site in order to document the reasons for exclusion for any patient preventing bias of the data. This list cannot be shared with Gore/other external individuals (CRO), but are only available at the site in the study binder for audit/inspection purposes.



5.4. Enrollment

Patient enrollment should be consecutive and beginning with patients with most recent treatment date and working towards earlier patients. The site should review batches of 15 consecutive patients at a time until site or study cap is reached. From the pre-screening log (sorted by most recent treatment date), the site should review the patients charts against inclusion and exclusion criteria, then check whether the patients are still alive and reachable in order to obtain consent. The patient is considered enrolled when informed consent is obtained or consent if waived.

Only patients enrolled in the study will be recorded in the EDC until the site reaches the max cap of enrolled patients planned for this study or until the cohort is completed.

If a patient identified in the pre-screening list will not be enrolled, only the principal reason will be recorded in the patient screening and enrollment log.

During the on-site monitoring visit, the CRA should review the Pre-screening log and Subject Screening and Enrollment log against the subjects recorded in the EDC, in order to prove the enrolment occurred sequentially, with the purpose of minimizing selection bias.

Patients cannot be enrolled in more than one cohort. Before enrolling a patient, sites should review the patient chart to confirm the patient is not eligible for more than one arm. If the patient is eligible for more than one arm (i.e. AAA & PAD), sites should enroll patients into the arm with the earliest treatment date.

5.5. Screening

Formal screening will not be performed due to retrospective nature of this registry.

No screening procedures are performed, with exception of reviewing of the inclusion and exclusion criteria based on the information already present in the patient's medical record.

5.6. Screen Failure

For clarity, this registry defines screening failure as subjects from the pre-screening log who do not meet Inclusion/Exclusion criteria or declined consent.

However, if after the collection of the consent, the subjects do not meet eligibility criteria, the primary reason for screen failure will be documented and retained in registry records. The subject will be excluded from the registry and a replacement subject may be enrolled. Screening failure subject after obtaining ICF signature will be recorded in the EDC.

5.7. Randomization and or Blinding

No randomization or blinding is to be performed due to the confirmatory nature of the registry design.

5.8. Procedure

The registry procedures consist only of the collection of retrospective data from the source documents available at the site. Diagnostic imaging, treatment interventions, and follow up will be determined by physicians based on clinical practice standards.

5.8.1. Subject Chart Review

The chart reviews will be conducted by the investigator or a trained study coordinator at each site. Records from all patients who underwent treatment [redacted] Vascular Grafts for PAD, aortic aneurysms, or dialysis access will be identified for further screening according the inclusion and exclusion criteria.

Those subjects meeting all of the inclusion criteria and none of the exclusion criteria will be considered for data collection.

5.8.2. Data Elements

The following clinical routine data will be recorded in the registry database from the existing medical records of enrolled subjects.

- Subject information and Demographics (Age and sex)
- Medical History
- Index procedure information
- Discharge information
- Follow-up data, including (antiplatelet and anticoagulant therapy) and imaging reports (no imaging will be collected)
- Adverse events
- Device Deficiency
- Repeat Intervention
- Death or discontinuation

5.9. Repeat Interventions

Reinterventions may have been performed at the discretion of the investigator to treat AEs or maintain device performance. Any reinterventions performed will be documented on the CRF form. The components used as part of the reintervention, the date of the reintervention, procedural data and any AEs leading to reintervention will also be documented on the CRF form.

5.10. Follow Up

No on-site follow-up is required after the subject is included in the registry, as the registry consists of retrospective data collection only.

Follow-up data will be collected from the information already present in the medical chart at least to 5 years from the index procedure for the PAD and aortic aneurysm cohort and at least to 2 years for the dialysis access cohort. This data should include any adverse events, repeat interventions, and records of office, telephone, or imaging visits. No imaging will be collected for this registry.

In case the site recognized that the enrolled subject does not have data available regarding the last FU visit specified in the protocol, site should enter the next follow up data available (i.e. if a patient did not come in at year 5, but came in at year 6, year 6 data should be entered). If no follow up visit data is available, site staff should collect and document any past safety data (SAE, re-intervention, hospitalization, death, etc.) through the end of the follow up period specified for the cohort. If consent is waived, the site should contact relatives or general practitioner by phone to collect this data.

5.11. Subject Withdrawal from the Registry

Subjects who are alive at the time of their enrollment in the registry can withdraw from the registry without indicating any reasons at any time. No additional data will be collected and reported into the registry database after consent withdrawal. The sponsor may retain and continue to use any data collected before the withdrawal of consent, if not explicitly requested otherwise by the subject.

A replacement subject may be enrolled in rare event that a subject decides to withdraw from the registry before all follow-up visits have been recorded in the EDC.

5.12. Subject Lost to Follow Up

No subject lost to follow up are expected in this registry. According to General Exclusion criterion #1, subjects with no follow-up after treatment should not be included in the registry. All subjects that complete at least one follow-up after treatment will be enrolled.

5.13. Subject Registry Completion

A subject has completed the registry when the all expected follow-up visits have been completed and properly recorded in the EDC. Any subject who does not complete these requirements due to voluntary withdrawal, physician withdrawal, death, or any other reason will be considered a withdrawal.

5.13.1. Subject Discontinuation

Subjects will be discontinued from the registry in case of the explant of the device or renal transplantation for subjects enrolled in the AV access cohort.

5.14. Explant Procedures

Not applicable due to the retrospective data collection.

6. Registry Administration

6.1. Training

All Investigators involved in this registry must be trained on the protocol, EDC and Good Document Practice by Sponsor associates, designees, or another appropriately trained physician at the registry Site.

6.2. Monitoring

Site monitoring for this protocol will be provided by Contract Research Organization (CRO). Monitoring oversight will be provided by the sponsor.

The site monitors are qualified by training and experience to oversee the progress of the registry at the site and will verify that the investigators and their staff understand and adhere to both the applicable regulatory requirements and the protocol. In addition, they may assist in resolution of any problems that may arise during the registry.

6.2.1. Site Initiation

The start of this registry corresponds with the first site initiation perform at the first site. Site initiation will be performed to verify that each investigator and his / her staff understands the protocol, applicable regulations, human subject protection requirements, and the investigator's obligations. This visit will confirm that required documentation with the appropriate approval is in place prior to subject enrollment.

The clinical investigation shall not begin until the sponsor has confirmed the required approval / favorable opinion from the EC or regulatory authority have been obtained. Site Initiation can be performed remotely (web-conference) if on-site visit is not possible.

6.2.2. Periodic Site Monitoring

Periodic site monitoring will occur as necessary to verify continuing adequacy of facilities and adherence to the protocol, Good Clinical Practices (GCPs), and applicable regulations and laws that pertain to the conduct of the registry. These activities will also review the Case Report Forms (CRFs) and source documentation, the timely submission of accurate records to the sponsor, and the maintenance of proper records. A report will be written following each site visit and a follow-up letter will be provided to the site with a summary of findings. Each site will also be visited at close-out to confirm that all documentation is complete.

The registry will employ a risk-based monitoring approach where data are reviewed remotely and centrally for logical context, completeness, and obvious outliers. Only specific critical data variables will be source verified during on-site visits. Informed consent documentation for all patients will be reviewed to verify that all patients agreed to registry participation. Monitoring procedures and requirements will be documented in a clinical monitoring plan developed and maintained by Gore.

6.3. Device Accountability and Storage

Due to the retrospective nature of this registry, participating sites will have utilized their commercial contractual agreement with the Sponsor or designee for device shipping, storage, use and return. Implanted device part numbers will be collected on CRFs, if available.

6.4. Core Lab

Not applicable. This registry will not utilize a Core Lab for evaluation of imaging.

6.5. Protocol Deviations

The investigator must follow the protocol, except in the event of an immediate hazard(s) to a subject. The investigator must report those deviations immediately to the sponsor. The investigator will report the protocol deviation in accordance with the applicable regulations.

A protocol deviation is defined as any change, divergence, or departure from the registry design or procedures of a research protocol. The investigator is responsible for promptly recording and reporting protocol deviations to the sponsor and the reviewing Ethic Committee (EC) per EC policy. The sponsor will determine the effect of the protocol deviation on the scientific soundness of the registry and subject safety and determine if additional reports or actions are required. Additional action may include site retraining, removal of devices from the site, and / or site termination.

The investigator will not implement any changes to the protocol without first obtaining written agreement from the sponsor and documented approval from the EC, except in the event of an immediate hazard(s) to a subject. The investigator will document and report the protocol deviation in accordance with the applicable regulations. Protocol deviations will be analyzed by the sponsor and reported to regulatory authorities in accordance with applicable regulations.

Considering the retrospective nature of this registry, protocol deviations would only affect the informed consent signature process and verification of inclusion / exclusion criteria.

6.6. Protocol Amendments

The protocol may be amended by the sponsor throughout the life of the registry, as result of new findings or advisement from the applicable regulatory body or advisory committee. The investigator will obtain EC approval on all amendments in a timely manner. The sponsor will confirm proper training of Investigator and site staff on all protocol amendments.

6.7. Access to Source Data / Documents

Source data are defined as all information necessary for the reconstruction and evaluation of the clinical investigation.

The investigator should maintain adequate and accurate source documents and registry records that include all pertinent observations on each registry subject. Source data should be attributable, legible, contemporaneous, original, accurate, and complete. Changes to source data should be traceable, should not obscure the original entry and should be explained if necessary (e.g., via an audit trail).

Where copies of the original source documents or printouts are retained, these need to be signed and dated by a member of the study team with a statement that it is a true reproduction of the original source.

The investigator will keep all study records, source data, and investigational devices available for inspection by the sponsor, sponsor's monitors, EC, and regulatory authorities.

6.8. Registry Records Retention

The investigator will maintain complete, accurate, and current registry records as required by applicable regulatory requirements. Records will be maintained during the registry and for a minimum of fifteen years after the latter of the date on which the registry is terminated or completed. In any event, registry records will not be disposed of, nor custody of the records transferred, without prior written sponsor approval.

Investigator records will include, but not be limited to:

- All correspondence with another investigator, an EC, the sponsor, a monitor, or regulatory authority, including required reports.
- Records of each subject's case history and exposure to the device. Case histories include the case report forms and supporting data including, for example, signed and dated consent forms and medical records, including, for example, progress notes of the physician, the individual's hospital chart(s), and the nurses' notes. Such records shall include:
    - Documents evidencing informed consent. In case the consent is waived, a brief description of the circumstances justifying the failure to obtain the informed consent. The case history for each individual shall document that informed consent was obtained or waived prior to participation in the registry.
    - All relevant observations, including records concerning adverse device effects (anticipated and unanticipated), the information and date and condition of each subject upon entering, and information about relevant previous medical history and the results of all diagnostic tests.

- A record of the exposure of each subject to the investigational device, including the date and time of each use, and any other therapy.

- The protocol, any amendments, and documentation of any deviations from the protocol, including the dates and the reasons for such deviations.
- Any other records that regulatory authority requires to be maintained by regulation or by specific requirement for a category of investigations or a particular investigation.
- A signed Investigator Agreement.
- Any other records as required by the regulatory authority, the EC, and the sponsor.

The investigator will prepare and submit the following reports:

- Protocol deviations shall be reported as described in section 6.
- Other: Any other reports as reasonably requested by the sponsor or required by regulatory authority.

6.9. Publication Plan

The International Committee of Medical Journal Editors (ICMJE) member journals have adopted a trials-registration policy as a condition for publication. According to ISO14155, this registry will be recorded in a public trials registry.

It is the intent of the sponsor that the multicenter results of this registry will be submitted for publications (in a peer reviewed journal). A publications committee will be established to review the multicenter results, data request, and develop a publication strategy. The timing of the multicenter publications may be dependent on regulatory submissions and approvals. Individual sites should coordinate requests for either single center or multi-center data through the publications committee.

6.10. Health Economics

The sponsor may use registry data to develop a better understanding of the impact that the device may have on clinical practice in order to meet anticipated business needs.

7. Data Collection and Submission

The validated Clinical Data Management System (CDMS) for this registry will be provided by [redacted] The sponsor keeps a separate Clinical Data Management Plan (CDMP) describing the procedures for verification, validation, and security of the CDMS. The Clinical Data Management Plan will describe and document procedures regarding data management processes for this investigation.

Patient data will be retrospectively collected from the medical records and other source documentation already existing in patient files at the sites.

7.1. Data Collection Methods

This registry will report clinical data using the [redacted] web-based application. The CDMS will be the database of record for the protocol and subject to regulatory inspections and quality assurance review. All users will be trained to use the CDMS and will comply with registry specific guidelines / instructions as well as applicable regulatory requirements.

Subject data will be collected using protocol-specific case report forms (CRF). Site staff will enter data directly into the CRF for transmission to the sponsor. The sites will be notified of any significant amendments to the CRFs.

A source document is defined as original documents, data, and records (e.g., hospital records, clinical and office charts, laboratory notes, memoranda, subjects' diaries or evaluation checklists, recorded data from automated instruments, copies or transcriptions certified after verification as being accurate copies, x-rays, subject files, and records kept at the pharmacy, at the laboratories and at medico-technical departments involved in the clinical trial).

7.2. Data Clarification and Correction

Once entered, data will be evaluated to confirm that it is complete, consistent, and logically sound. If changes to the data in the CDMS are required, all changes, reasons for changes, and persons making the changes will be captured in the CDMS's audit trail. Sponsor will perform periodic data reviews throughout the entire registry. Procedures and documentation for regular and ongoing data review are described in the Clinical Data Management Plan.

7.3. CRF Completion Schedule

Entry of patient data into the EDC system cannot occur prior to the collection of the patient's informed consent to participate in the registry or after investigator documents that the informed consent can be waived.

8. Risk Assessment

A complete listing of the known risks associated with [redacted] Vascular Grafts can be found in the applicable product IFUs. Investigators are advised to review the IFU document to familiarize themselves with these risks and correlate this information with the subject's presenting pathology and prior medical history.

8.1. Summary of Expected Benefits

[redacted] are a commercially-marketed devices indicated for replacement or bypass of diseased vessels in patients suffering occlusive or aneurysmal diseases, in trauma patients requiring vascular replacement and for dialysis access. Patients suffering from a medical ailment described here who were treated with a [redacted] would likely experience the benefit of restored patency/flow in the target lesion and relief from symptoms. The duration of this benefit would likely be appreciated by the patient throughout their lifetime as the [redacted] of these devices is intended to be a permanent repair; however, the ability of the device to achieve its intended function may be affected by the subject's underlying condition or subsequent medical course. Participation in this study is not expected to provide any direct benefits to participating subjects. However, the data collected during the study will foster a better understanding of

[redacted]. As the study will not require the use of any procedure and / or test and / or device different from those required by routine clinical practice for the investigated conditions, enrolled subjects will not be exposed to additional risks as compared to routine clinical practice.

8.2. Risk-to-Benefit Rationale

As this is a retrospective study, there is no potential for physical risks to subjects. There is a minimal risk of breaches of confidentiality since subject information will be collected and analyzed for the proposed study. However, appropriate measures will be taken to minimize the risk as much as possible. All information entered into the central database will be de-identified. This study will abide by all regulations related to protecting human subjects and protected health information (PHI).

The study does not use any clinical procedures, tests, devices from those required by routine clinical practice, enrolled subjects will not be exposed to additional risks when compared to routine clinical practice.

9. Adverse Events and Safety Monitoring

9.1. Anticipated Adverse Events

Anticipated adverse events are medical complications that are known to be associated with PAD, artery aneurysm and dialysis access patients undergoing surgical procedure with treatment with [redacted] Vascular Graft. See section 8, Risk Assessment.

9.1.1. Adverse Event Relationship

Each reported AE will be assessed by the investigator for its primary suspected relationship to the device, procedure or disease.

Only one primary relationship will be assigned to each reported AE.

Registry Device-related

The functioning or characteristics of the device caused or contributed to the adverse event.

Registry Procedure-related

The registry procedure (and not the device or other adjunctive procedure) caused or significantly contributed to the adverse event.

Registry Disease-related

The adverse event was a result of the underlying disease progression for which the registry procedure is being performed, and not the device or procedure. Within the dialysis cohort, adverse events attributed to a cannulation procedure should be classified as registry disease-related.

Not-related

An adverse event which cannot be attributed to the device, procedure, or disease.

Unknown relationship

The relationship of the adverse event to the device, procedure, or disease cannot be determined.

9.1.2. Adverse Event Classification

Each AE will be assessed by the Investigator to determine if it is Serious or Non-serious, as defined below, per ISO14155.

Serious Adverse Event

A serious adverse event is an adverse event that

- Led to death
- Led to serious deterioration in the health of the subject that resulted in:
  - A life-threatening illness or injury,
  - A permanent impairment of a body structure or a body function,
  - Hospitalization or prolongation of patient hospitalization, or
  - Medical or surgical intervention to prevent life-threatening illness or injury or permanent impairment to a body structure or a body function
  - Chronic disease
- Led to fetal distress, fetal death, or congenital physical or mental impairment or birth defect.

Any AE that does not meet the definition of a SAE will be considered Non-serious.

Planned hospitalization for elective procedure without serious deterioration in health is not considered serious.

NOTE: Emergency room visits and 23-hour observations may not constitute hospitalization.

9.1.3. Adverse Event Reporting and Coding

Considering the retrospective nature of the registry only AEs already documented in the subject's medial record will be reported on the appropriate CRF.

No follow-up related to the open adverse event in order to obtain new information is required for this registry.

The investigator at each site is ultimately responsible for reporting AEs to the sponsor.

The following information on each reported AE will be collected:

- Adverse event name
- Adverse event onset date
- Relationship
- Classification serious or non-serious
- Outcome
- Resolution date

Adverse events will be coded using the Medical Dictionary for Regulatory Activities (MedDRA).

Adverse event submission guidelines:

- Adverse event reporting begins once the patient is enrolled in the registry (ICF signed or waived). All adverse events should be reported from index procedure through registry completion / discontinuation.
- Provide a diagnosis if possible. If unable to provide a diagnosis, report the symptoms as separate events. Adverse events should be reported using the full name without abbreviations or narratives.
- Adverse events ongoing at registry completion / discontinuation should be left as “ongoing” on the AE case report form.
- Medical condition and adverse event observed at the time of treatment will be part in the medical history of the patients. Adverse events will be reported in the EDC only if they become serious or increase in intensity, or if a worsening of a baseline condition.

9.1.4. Subject Death

In this registry, death is not considered an AE, but rather the outcome of an AE.

An ongoing AE at the time of death or registry withdrawal will remain categorized as ongoing.

9.2. Unanticipated Serious Adverse Device Effects (USADE)

The sponsor is required to notify the appropriate regulatory agencies per local requirements of any USADE. Therefore, if a complication occurs that the investigator believes may be a potential USADE, the site should immediately contact the sponsor and EC to determine reporting requirements.

9.3. Device Deficiency

Device deficiencies are defined as any inadequacy in the identity, quality, durability, reliability, safety, or performance of an investigational device, including malfunction, use errors, or inadequacy in information supplied by the manufacturer.
All device deficiencies – even those that could have led to a SAE should be reported to the Sponsor immediately.

The following information on each reported deficiency will be collected:

- Description of deficiency
- Date of occurrence
- Batch code and lot number of the affected device
- Related subject AE information (if applicable)

Due to the retrospective approach, any device deficiency may have already been reported as part of the hospital’s routine via Product Surveillance Group procedures. To close any potential gaps, sites are asked to report all device deficiency in the EDC.

10. Statistical Analysis

10.1. Registry Hypotheses

No formal statistical hypothesis is planned for testing in the study. Separate primary and secondary outcomes will be measured along with 95% confidence intervals for each cohort using Exact Binomial method. The analysis of the primary endpoint will be descriptive in nature.

10.2. Sample Size Assumptions

The sample size for the study is estimated using the desired width of the 95% confidence interval. It is assumed that for PAD and Dialysis cohorts, if the estimated percentage of the primary outcome is around 55%, the half-width of the confidence interval would be 12%. Similarly, for the Aortic Aneurysms, considering the primary outcome to be around 32%, the sample size of 65 subjects would allow the half-width of the confidence interval to be lower than 12%.

Cohort	Endpoint Used for Sample Size Calculation, Assumed Rate	Sample Size
PAD	≥ 56% Secondary patency (revascularization) at 5 years	72 Patients (per device)
Aortic Aneurysm	≥ 33% survival at 5 years	65 Patients
Dialysis Access	≥ 55% secondary patency through 2 years	72 Patients (per device)

10.3. Sample Size Determination

The sample is calculated assuming the Binomial Exact 95% confidence interval would be constructed for the primary outcomes using the above assumptions. The subjects for which the primary outcomes cannot be determined will be considered missing in the analysis.

10.4. Randomization Scheme

The subjects will be enrolled in the study who had previously been treated with the [redacted] Vascular Graft devices and meet the I/E criteria for the study. As such this section does not apply to the study.

10.5. Blinding Scheme

Since the study subjects have already been treated and the device type known, this section does not apply

10.6. Data Analysis

10.6.1. Timing of Analyses

Separate analysis will be performed for each of the PAD, Aortic Aneurysms and Dialysis Access cohorts once all data has been entered and cleaned in the EDC. Analyses at any other time may be performed at the discretion of Gore.

There are no planned interim analyses or guidelines for early termination due to the retrospective and exploratory nature of the study.

10.6.2. Analysis Populations

This study consists of five different analyses populations, defined by indication/disease type and device used. Separate analysis will be performed for each patient population.

1. PAD patients treated with any [redacted]
2. PAD patients treated with any [redacted]
3. Aortic Aneurysm patients treated with any [redacted]
4. Dialysis Access patients treated with any [redacted]
5. Dialysis Access patients treated with any [redacted]

All enrolled subjects meeting the inclusion / exclusion criteria will be included in the primary and secondary endpoint analyses.

10.6.3. Pooling of Data

Clinical use is not expected to differ significantly between study sites. As such, there is no anticipated concern in pooling the data from different sites for analysis. However, separate analysis will be performed to show the consistency of safety and effectiveness by gender and age for the primary outcomes.

10.6.4. Statistical Analysis of Primary Endpoint(s)

Analysis for the primary endpoints will be presented with confidence intervals. Missing data at the time of analysis will not be imputed.

10.6.5. Statistical Analysis of Secondary Endpoint(s)

Analysis for the secondary endpoints will be presented with confidence intervals. Missing data at the time of analysis will not be imputed.

11. Ethical and Regulatory Considerations

11.1. Statement of Compliance

The requirements of Clinical Investigation of Medical Devices for Human Subjects Good Clinical Practice (ISO14155:2020), International Conference on Harmonization Good Clinical Practice (ICH E6 (R2)), and Food & Drug Administration (FDA) applicable regulations have been incorporated into applicable Clinical Quality System procedures.

The following are applicable to this registry:

21 CFR Part 11	Electronic Records; Electronic Signatures
21 CFR Part 50	Protection of Human Subjects
ICH-GCP E6 (R2)	International Conference on Harmonization Regulations Guideline For Good Clinical Practice
Regulation (EU) 2017/745	Regulation (EU) 2017/745 of the European Parliament and of the Council of 5 April 2017 on medical devices, amending Directive 2001/83/EC, Regulation (EC) No 178/2002 and Regulation (EC) No 1223/2009 and repealing Council Directives 90/385/EEC and 93/42/EEC

ISO 14155:2020 (E)	Clinical investigation of medical devices for human subjects – Good clinical practice

11.2. Compliance Responsibilities

The sponsor will conduct the registry in accordance with all applicable regulations and laws. The sponsor will be responsible for documenting that investigators have the necessary skills, training, and information to properly conduct the registry. The sponsor will confirm proper monitoring of the registry and verify that the site has obtained EC approval prior to enrollment. The sponsor will provide information to the investigators and the reviewing EC concerning the progress of, and any new material information about, the registry.

The investigator will conduct the registry in accordance with all applicable regulations and laws, any relevant agreements, the registry protocol, and all approval conditions of the reviewing EC. Any additional requirements imposed by the EC shall be followed. The investigator will verify EC approval is obtained prior to enrollment, maintained throughout the course of the registry, and that all EC reporting requirements are met. The investigator is responsible 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 or waived according to national and local regulation.

The registry shall be conducted in accordance with the ethical principles that have their origin in the Declaration of Helsinki.

11.3. Informed Consent

The investigator shall verify that all potential subjects still alive and reachable for this registry are provided with a consent form describing this registry and sufficient information to make an informed decision about their participation.

The formal consent of a subject, using the EC-approved consent form, must be obtained by the investigator before that subject undergoes any registry-related procedure. The consent form will be signed and personally dated by the subject, and the person who conducted the informed consent discussion. The original signed informed consent form will be retained in the subject records. A copy of the informed consent document will be given to the subject for his or her records. Any significant, new information which emerges while the registry is in progress that may influence a subject's willingness to continue to take part in the registry will be provided to the subject.

The investigator shall verify that documentation of the acquisition of informed consent is recorded in each subject's records in accordance with applicable regulations.

Emergency contact details for reporting serious adverse events and serious adverse device effects will be listed in the EC-approved Informed Consent Form.

11.4. Regulatory Review

The investigator shall not enroll any subjects prior to obtaining approval from all required local authorities, including competent authorities and radiation committee.

In addition, the investigator shall not enroll any subjects prior to obtaining approval for the registry from a properly constituted independent EC.

11.5. Conflict of Interest

All investigators will follow applicable laws and regulations as well as the conflict of interest policies of their site and the reviewing EC.

11.6. Confidentiality

All subject records will be kept confidential to the extent provided by applicable laws and regulations. The registry monitors and other authorized representatives of the sponsor may inspect all documents and records required to be maintained by the investigator, including but not limited to medical records.

Such records may also be reviewed by the site's EC and other regulatory bodies.

11.7. Registry Discontinuation or Suspension

The entire registry may be suspended or prematurely terminated by the sponsor in the following cases:

- If suspicion of an unacceptable risk to subjects arises during the registry, the sponsor may suspend the registry while the risk is assessed. The sponsor will terminate the registry if an unacceptable risk is confirmed.
- Administrative decision by the sponsor.

Registry participation of an individual registry site or an individual member of a registry site may be suspended or prematurely terminated by the sponsor in the following cases:

- If a principal investigator, EC responsible for the registry has withdrawn approval for any reason.
- If sponsor monitoring or auditing identifies serious or repeated deviations on the part of the registry site or an individual registry investigator.
- If a site does not enroll any subjects.

Procedures for suspension or premature termination of this registry are:

- If the sponsor received notice that the EC has been withdrawn for any reason, the sponsor shall notify the investigator as soon as possible and preferably within 24 hours. Registry enrollment must immediately cease until such approval is reinstated.
- If the investigator receives notice that the EC has been withdrawn for any reason, the investigator shall notify the sponsor as soon as possible and preferable within 24 hours. Registry enrollment must immediately cease until such approval is reinstated.
- If the sponsor suspends or prematurely discontinues the registry the sponsor shall inform the investigators, the ECs and the competent authority of the rationale and provide them with the relevant data supporting this decision.
- If the registry (or a registry site) is prematurely terminated a routine close out visit will be performed.
- If the investigator terminates or suspends a registry without prior agreement of the sponsor, the investigator should inform the institution where applicable, and the investigator / institution should promptly inform the sponsor and the EC, and should provide the sponsor and the EC a detailed written explanation of the termination or suspension.

The procedures of premature registry termination of an individual subject (voluntary withdrawal or withdrawal of the subject by the investigator) are detailed in section 5.11 of the protocol.

Procedure for resuming the registry after temporary suspension

- When the sponsor concludes an analysis of the reason(s) for the suspension, implements the necessary corrective actions, and decides to lift the temporary suspension, the sponsor shall obtain concurrence from the ECs and, where appropriate, the competent authority by providing the rational and relevant data supporting this decision before the registry resumes.
- When concurrence from ECs and, where appropriate, other competent authorities is obtained, the sponsor shall inform the investigators to resume the registry.
- If subjects have been informed of the suspension, the principal investigator or authorized designee shall inform them of the reasons for resumption.

12. References

1. Berger JS, Davies MG. Overview of lower extremity peripheral artery disease In:October 7, 2019.
2. Harris L, Dryjski M. Epidemiology, risk factors, pathogenesis, and natural history of abdominal aortic aneurysm - UpToDate.pdf. In:September 25, 2019.
3. Conte MS, Pomposelli FB, Clair DG, et al. Society for Vascular Surgery practice guidelines for atherosclerotic occlusive disease of the lower extremities: Management of asymptomatic disease and claudication. *Journal of Vascular Surgery.* 2015;61(3):2S-41S.e41.
4. Davis MG. Patient education - Peripheral artery disease and claudication (Beyond the Basics). In:2019.
5. Gerhard-Herman Marie D, Gornik Heather L, Barrett C, et al. 2016 AHA/ACC Guideline on the Management of Patients With Lower Extremity Peripheral Artery Disease: A Report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines. *Circulation.* 2017;135(12):e726-e779.
6. Barshes NR. Overview of upper extremity peripheral artery disease. In:June 4, 2019.
7. Jim J, Thompson RW. Clinical features and diagnosis of abdominal aortic aneurysm. In:October 15, 2019.
8. Woo YJ, Greene CL. Clinical manifestations and diagnosis of thoracic aortic aneurysm. In:May 2, 2019.
9. Chung J. Epidemiology, risk factors, and natural history of lower extremity peripheral artery disease In:April 16, 2019.
10. Eidt JF. Open surgical repair of abdominal aortic aneurysm. In:September 17, 2019.
11. Hogendoorn W, Lavida A, Myriam Hunink MG, et al. Open repair, endovascular repair, and conservative management of true splenic artery aneurysms. *Journal of Vascular Surgery.* 2014;60(6):1667-1676.e1661.
12. Schmidli J, Widmer MK, Basile C, et al. Editor's Choice - Vascular Access: 2018 Clinical Practice Guidelines of the European Society for Vascular Surgery (ESVS). *European Journal of Vascular and Endovascular Surgery.* 2018;55(6):757-818.
13. Farber A, Eberhardt RT. The Current State of Critical Limb Ischemia: A Systematic Review. *JAMA surgery.* 2016;151(11):1070-1077.
14. Aboyans V, Ricco J-B, Bartelink M-LEL, et al. Editor's Choice - 2017 ESC Guidelines on the Diagnosis and Treatment of Peripheral Arterial Diseases, in collaboration with the European Society for Vascular Surgery (ESVS). *European Journal of Vascular and Endovascular Surgery.* 2018;55(3):305-368.
15. Chaikof EL, Dalman RL, Eskandari MK, et al. The Society for Vascular Surgery practice guidelines on the care of patients with an abdominal aortic aneurysm. *Journal of Vascular Surgery.* 2018;67(1):2-77.e72.
16. Wanhainen A, Verzini F, Van Herzeele I, et al. Editor's Choice - European Society for Vascular Surgery (ESVS) 2019 Clinical Practice Guidelines on the Management of Abdominal Aorto-iliac Artery Aneurysms. *Eur J Vasc Endovasc Surg.* 2019;57(1):8-93.
17. Posso M, Quintana MJ, Bellmunt S, et al. GRADE-Based Recommendations for Surgical Repair of Nonruptured Abdominal Aortic Aneurysm. *Angiology.* 2019;70(8):701-710.
18. Bylsma LC, Gage SM, Reichert H, Dahl SLM, Lawson JH. Arteriovenous Fistulae for Haemodialysis: A Systematic Review and Meta-analysis of Efficacy and Safety Outcomes.

European journal of vascular and endovascular surgery : the official journal of the European Society for Vascular Surgery. 2017;54(4):513-522.

19. Clinical Practice Guidelines for Vascular Access. *American Journal of Kidney Diseases.* 2006;48:S176-S247.

Registry-Specific Appendices

Appendix A: Eligibility Criteria with Justification / Rationale

General Inclusion & Exclusion Criteria

Item Number	Text of Criterion	Rationale
Inclusion 1	Patient is willing and able to provide written informed consent or consent is waived.	Required element of ISO 14155 and other regulatory guidelines
Inclusion 2	Patient was at least 18 years of age, at the time of implant.	Patients younger than 18 would be considered a vulnerable population.
Exclusion 1	Patient was not available for follow up (on-site or remotely) at the clinical site, with the exception of death (e.g., patient lost to follow-up immediately after treatment, patient who lives far away from the treatment site and not available to share FU data performed locally).	Ensures a reasonable expectation of follow up.
Exclusion 2	At the time of treatment, patient had known coagulation disorders, including hypercoagulability, that were not amenable to treatment,	As device patency is under examination, coagulation disorders could confound data. It is expected that medications will change over the follow up period, patients have poor compliance & meds may not be documented well retrospectively.
Exclusion 3	Patient was pregnant at the time of treatment.	Potential device effects on a pregnant woman or fetus have not been nor are desired to be evaluated. Study Subjects are expected to receive radiation as part of the index procedure and recommended follow-up procedures.
Exclusion 4	Patient had known or suspected systemic infection or infection at the site of graft implantation at the time of implant.	Infections could lead to adverse events and confound the interpretation of study results.
Exclusion 5	Patient had a separate major interventional or surgical vascular procedure within 30 days prior to treatment. CVC catheter placement would be permitted.	Additional procedures could confound endpoints. While scheduled post treatment procedures were initially included, team felt this would be hard to capture. This will be captured in the CRFs if available.
Exclusion 6	Patient is already enrolled in this registry under a different cohort	Patients enrolled in multiple arms could confound the study results.

PAD Cohort Criteria

Item Number	Text of Criterion	Rationale
Inclusion 1	Patient was treated for peripheral arterial disease or peripheral arterial aneurysm requiring bypass treated [redacted] Vascular Graft at least 5 years before site initiation.	Target population with time for follow up. Pathologies, configurations, & anatomic location are intentionally as broad as possible to represent real world data. If appropriate, analysis will be weighted based on configurations & lengths. Patients are to be enrolled in reverse consecutive order with at least 5 years of FU from the time of SIV.

Exclusion 1	Patient had percutaneous transluminal angioplasty (PTA) or stenting of the target artery at the anticipated site of the proximal or distal anastomosis within 30 days prior to the index procedure. Use of PTA or stenting during the index procedure is permitted.	Use of additional devices could confound endpoints.
Exclusion 2	Patient had a stroke or MI within 6 weeks of the procedure.	Recent myocardial infarction or stroke could confound the interpretation of registry results.
Exclusion 3	Patient has previous instance of Heparin-induced Thrombocytopenia type 2 or has known hypersensitivity to heparin.	Heparin may be used in any vascular procedure. In addition, per the [redacted] Graft IFU, this is a contraindication. Team would prefer to leave In/Ex the same across devices.
Exclusion 4	Patient has previous Patient required composite bypass for index procedure (graft + significant length of autologous vessel). Autologous “cuffs” or patches are allowed.	Use of composite bypass represent a more technically challenging procedure and population that are not representative of the larger intended group.

AAA Cohort Criteria

Item Number	Text of Criterion	Rationale
Inclusion 1	Underwent simultaneous or staged aortic aneurysm repair (open surgical AAA or TAAA) involving a [redacted] Graft at least 5 years before site initiation. Research device could have been used to replace or bypass either a diseased visceral branch or the aorta itself.	Target population. Leaving the indication broad. This would include the graft used as both Aortic replacement and as a visceral branch. Acceptance criteria was based on graft used for visceral branching and not aorta. If necessary, analysis will be stratified by configuration. Patients are to be enrolled in reverse consecutive order with at least 5 years of FU from the time of SIV.

Item Number	Text of Criterion	Rationale
Exclusion 1	Patients required emergency surgery at the time of implant due to aneurysm rupture.	Represents a more severe patient population.

Hemodialysis Access Criteria

Item Number	Text of Criterion	Rationale
Inclusion 1	Patient required the creation of a vascular access graft for hemodialysis secondary to a diagnosis of End-Stage Renal Disease using [redacted] Vascular Graft at least 2 years before site initiation with the intent to cannulate the registry device.	Target Population with opportunity for follow up. Patients are to be enrolled in reverse consecutive order with at least 5 years of FU from the time of SIV. Intention is for device to be used for dialysis.

Item Number	Text of Criterion	Rationale
Exclusion 1	The patient had a previous documented and unsuccessfully treated ipsilateral central venous stenosis via imaging technique.	Venous stenosis could confound endpoints.
Exclusion 2	The patient was taking maintenance immunosuppressant medication at the time of implant such as rapamycin, mycophenolate or mycophenolic acid, prednisone (> 10 mg), cyclosporine, tacrolimus, or cyclophosphamide.	Population may have renal transplant or preparing for a transplant. This exclusion is not anticipated to limit enrollment.
Exclusion 3	Patient has previous instance of Heparin induced Thrombocytopenia type 2 or has known hypersensitivity to heparin.	Heparin may be used in any vascular procedure. In addition, per the [redacted] Vascular Graft IFU, this is a contraindication.