

Abdominal aortic aneurysm (AAA) treatment

Vascular Surgery

Patient Information Leaflet

The vascular centre for the Black Country population is at The Dudley Group and so major vascular operations are carried out at Russells Hall Hospital, Dudley.

Surgeons, anaesthetists, radiologists and nurses from Russells Hall Hospital in Dudley, New Cross Hospital in Wolverhampton and Manor Hospital in Walsall are working together as part of the Black Country Vascular Centre (BCVC) to improve the care that patients with vascular conditions receive.

Introduction

This leaflet is about **treatment of abdominal aortic aneurysms (AAAs)**. Repair of an AAA is a surgical procedure that is usually carried out when the risk of an AAA rupturing (bursting) is higher than the risk of an operation.

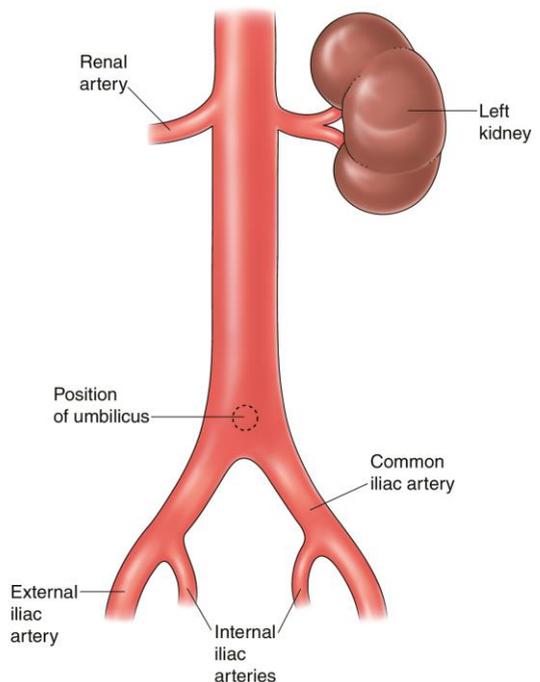
Your aneurysm may have reached a size at which surgery is considered the best option for you. This leaflet provides information about your options for treatment which will be discussed with you by your vascular specialist team.

What is the aorta?

The aorta is the largest artery (blood vessel) in the body. It carries blood from the heart and descends through the chest and the abdomen (tummy area).

Many arteries come off the aorta to supply blood to all parts of the body. At about the level of the belly button, the aorta divides into two arteries known as iliac arteries, one going to each leg (please see figure 1).

Figure 1 – shows a normal aorta



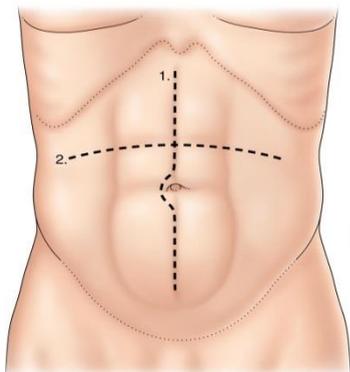
1a. Normal arterial anatomy

What is an aneurysm and an abdominal aortic aneurysm?

An aneurysm occurs when the wall of a blood vessel is weakened and balloons out. In the aorta, this ballooning makes the wall weaker and more likely to burst (see figure 2).

Aneurysms can occur in any artery but they most commonly occur in the section of the aorta that passes through the abdomen. These are known as **abdominal aortic aneurysms (AAA)**.

Aortic aneurysm repair (open operation) - infra renal aneurysms

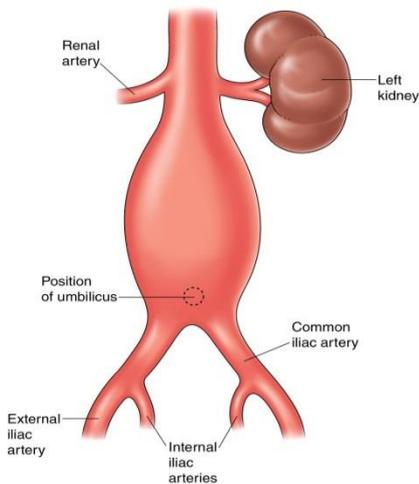


Incisions either:

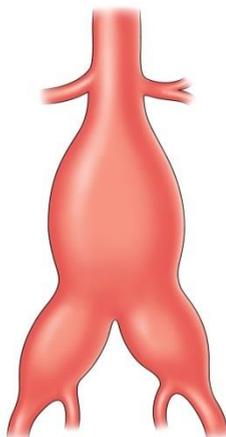
1. Longitudinal (up and down) to give good exposure to pelvic vessels.
2. Transverse (across) Suitable where less extensive exposure required.

Incisions are kept as short as possible.

Figure 2 – shows an AAA



1a. Aortic aneurysm



2b. Aortic and iliac artery aneurysms

What causes an AAA?

In most cases, the exact reason why an aneurysm forms in the aorta is not clear. Aneurysms can affect people of any age and both sexes. However, they are most common in men, people with high blood pressure (hypertension) and those over the age of 65.

The wall of the aorta normally has layers of supporting tissues. As people age, they may lose some of this tissue. This is thought to explain why aneurysms are more common in older people.

Your genetic make-up plays a part as you have a much higher chance of developing an AAA if one of your immediate relatives (parent, brother or sister) has or had one.

Certain other 'risk factors' increase the chance of getting an aneurysm. These include smoking, high blood pressure and high cholesterol as these factors can weaken artery walls.

How are aneurysms discovered?

The majority of AAAs cause no symptoms and are discovered by chance. A routine examination by a doctor, or an X-ray or scan performed for some other reason, may pick up the presence of an aneurysm.

Alternatively, some patients notice an abnormal pulsation (throbbing) in their abdomen. As the aneurysm stretches, it can cause pain in the back or abdomen.

Screening for AAAs has been introduced for men older than 65 years. This is performed using an ultrasound scan. The scan will tell you if there is an aneurysm present and exactly how large it is.

The most important feature of the scan is the maximum diameter of the aorta, which is usually about 2cm across in adults, although this varies with your build. An aneurysm is said to be present if the artery is over 3cm across, and then the tendency is for the vessel to gradually increase in size over years.

If an aneurysm is suspected when you are examined, or found on ultrasound, your GP will refer you to a vascular consultant for advice.

What are the symptoms of an AAA?

Aneurysms generally take years to develop and it is rare for them to give symptoms during this time.

If you do develop symptoms, you may experience one or more of the following:

- A pulsing feeling in your abdomen, similar to a heartbeat.
- Pain in your abdomen or lower back (uncommon).

What is the concern about an AAA?

The main concern is that the aneurysm might rupture (burst). The wall of the aneurysm is weaker than a normal artery wall and may not be able to withstand the pressure of blood inside. If it ruptures, internal bleeding occurs which is often fatal. However, most AAAs do not rupture – this only happens in a few cases.

What is the chance of an AAA rupturing?

The chance of rupture is very low for small AAAs. For aneurysms measuring less than 5.5cm (about two inches) in diameter, the risk of rupture is less than one in 100 per year¹ (please see table 1 for more information).

When aneurysms get larger than 5.5cm, the risk of rupture is increased. It is usually at this size that the option of surgery is considered.

Table 1 – shows the risk of the aneurysm bursting related to its size (diameter)²

Size of aorta	Risk of rupture per year
4cm or less	Less than 1 in 200 people with an aneurysm this size will have a rupture
4cm to 5cm	1 to 5 in 100 people with an aneurysm this size will have a rupture
5cm to 6cm	3 to 15 in 100 people with an aneurysm this size will have a rupture
6cm to 7cm	10 to 20 in 100 people with an aneurysm this size will have a rupture
over 7cm	20 to 50 in 100 people with an aneurysm this size will have a rupture

Each individual's risk from their AAA and from surgery may be different. Therefore, any decision on treatment will be carefully considered by your vascular team and always discussed in detail with you and, when appropriate, your family.

If you experience a sudden onset of new severe abdominal pain, or back pain that is different from any back pain you may have had previously, you may be developing a leak from your AAA or be at immediate risk of rupture.

If you experience any of these things, please dial 999 for an ambulance and tell the ambulance control that you have an aortic aneurysm and need to go urgently to hospital. Do not drive yourself to hospital.

Should everyone with an AAA have surgery?

No. Surgical repair of an AAA is a major operation and carries risks.

Surgery is only advised when it is considered the risk of the aneurysm bursting is greater than the risk of having surgery.

Research has shown that for people with aneurysms measuring less than 5.5cms, it is safer not to operate as the risks of having an operation are greater than the benefit¹.

Surgery is commonly advised if you develop an AAA larger than 5.5cm in diameter (5cm in women). For these larger aneurysms, the risk of rupture is usually higher than the risk of surgery.

What will happen after my discussion with the vascular specialist team?

Even when the aneurysm is large, surgery is not suitable for every person, as it is a major operation with serious risks. You need to be healthy enough to survive the operation and benefit from it. If you have other health conditions, such as heart or lung disease, the operation may not help you live longer, so it may not be worth the risks.

All patients in this area being considered for AAA surgery undergo a cardiopulmonary exercise test (CPET), and have a consultation with a consultant anaesthetist so that we can assess your fitness for surgery. For more information on CPET please see:

<http://dudleygroup.nhs.uk/wp-content/uploads/2017/07/Cardiopulmonary-exercise-testing-V2.pdf>

In addition, a **CT scan** will be carried out to examine your AAA more closely.

Your vascular specialist will recommend other treatments and lifestyle changes to improve your health. These may include losing weight, eating a healthier diet, stopping smoking, exercising and taking medicines to lower your blood pressure and cholesterol.

How do I decide what treatment to have?

Once we have the results of the scans and tests, your case will be discussed in a multidisciplinary team (MDT) meeting. This meeting will involve a surgeon, radiologist and an anaesthetist who will talk over the best options in your case.

Your specialist vascular surgeon will then give you a clear explanation of possible treatments, and you will be able to have full discussion about these before making a decision. Your best interests will always be taken into account and you are not obliged to undergo any treatment that you do not want.

What happens if I cannot have an operation?

Your fitness to undergo surgery and the risk to you will be thoroughly assessed. If your general state of health is poor, or if you have certain other medical conditions, the risk of surgery may outweigh the benefits of treating the aneurysm.

The surgeon and anaesthetist may advise that you should be **medically managed and have no operation** if you are unfit for surgery. This involves medical treatments aimed at keeping you healthy and reducing the risks of rupture of your AAA.

This will include treating any high blood pressure and high cholesterol, and improving your fitness by treating any heart, lung or kidney disease. If fitness is improved, an operation may be performed at a later time.

People who have diabetes are less likely to have problems with surgery if their diabetes is controlled. Regular moderate exercise can also help keep your heart and lungs healthy.

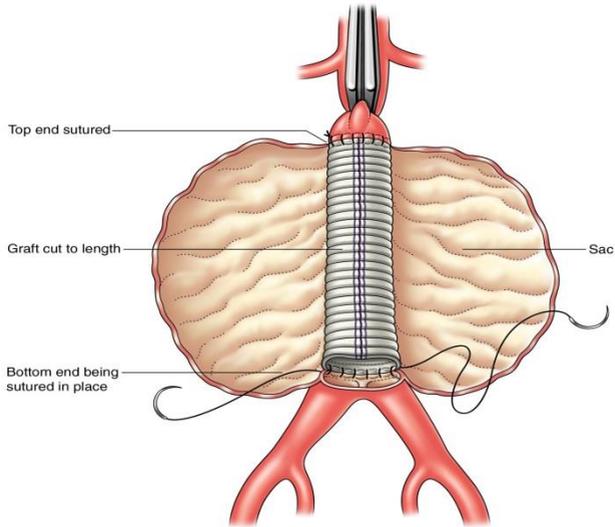
What are the surgical options for AAAs?

The two types of operation available to repair your AAA are **open surgery** or **endovascular repair (EVAR)**. The vascular centre for the Black Country population is at The Dudley Group. Therefore, major vascular operations such as open repair surgery or endovascular repair are carried out at Russells Hall Hospital in Dudley.

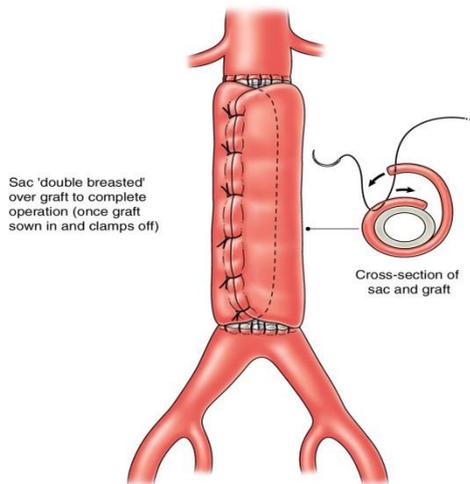
Open repair

This traditional operation involves cutting open your abdomen to replace the aneurysm with an artificial piece of artery (a graft – see figure 3). This is a major operation and carries some risk. However, it is successful in most cases and the long term outlook is good. The graft usually works well for the rest of your life.

Infra renal aortic aneurysm



4a.



5a.

Figure 3 – an aneurysm is repaired with an artificial piece of artery

The anaesthetic

You will receive a general anaesthetic (be asleep) for the operation and be offered an epidural which is routinely inserted for pain relief. You will also need various drips inserted into your arms and one in your neck. A catheter will be put into your bladder to drain urine away.

Risks and complications

An open aneurysm repair is a major operation and carries serious risks, including the chance of infection, heavy bleeding and reactions to the general anaesthetic.

Open surgery can also cause heart and breathing problems, and a stroke. Between two in 100 and six in 100 people having open surgery have a heart attack. Around four in 100 people die during open surgery or in the 30 days after surgery.

If your risk of a major complication is higher than usual because you already have a serious medical problem, the team will discuss this with you.

Other risks include:

- Kidney failure. Between two in 100 and 10 in 100 people have kidney failure after open surgery. The kidneys often recover although you may need dialysis for a time.
- Problems with your bowels caused by a drop in blood flow during the operation. In rare cases, this can cause gangrene in a part of the bowel, which is serious.
- Decreased circulation in the legs.
- Blood clot in the leg.
- An infection in your graft.
- Problems getting an erection or having sex.

Recovery

All patients go to the Intensive Care Unit after surgery. Your recovery time will depend largely on your age, health and activity level before surgery.

You will be able to eat and drink once you are fully awake after surgery. The nurses will aim to get you sitting up and walking as soon as possible. Your overall length of hospital stay will normally be about 10 days.

You will be able to go home once you are well enough. At this stage, you may still need to take painkilling tablets. Most people find they struggle to carry out their usual activities, and what they can do physically and socially, for about three weeks after open surgery. Even six weeks after surgery, most people still feel somewhat limited. A full recovery often takes between three and six months after open repair surgery.

You may have bruising and swelling around your genital area which can be extensive; however, this will settle and should not cause a problem. Your wound should be dry and healed within 10 days. If you develop redness or swelling in the wound, you should see your GP. You will be referred back to your surgeon if your GP has any concerns.

Endovascular repair (EVAR)

This is a 'keyhole' surgery technique and is less major surgery than open repair. The aneurysm in your tummy is repaired by inserting a special stent (a metal mesh-work tube) through small cuts in your groin, using X-rays to guide the stent into place. The stent re-lines the aorta from the inside preventing it from getting bigger and bursting (see figure 4).

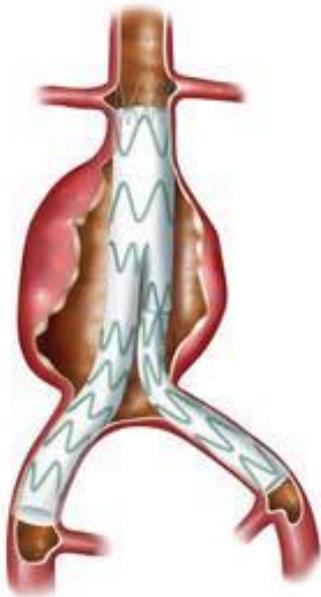


Figure 4 – an aneurysm is repaired using a stent

This technique is safer than the open repair surgery and you need to spend less time in hospital. A disadvantage is that all patients treated by endovascular surgery need to be followed up after the operation with regular scans to monitor the stent-graft. 10 per cent of patients (one in every 10 people) will require further intervention in the future, such as more surgery.

Not every patient or every aneurysm is suitable for this type of surgery. Only about six out of every 10 patients have aneurysms of a suitable size and shape for this keyhole operation. We will use a CT scan to determine if your aneurysm can be treated by endovascular repair.

The anaesthetic

EVAR can be performed with a local anaesthetic, where you are numbed below the waist by an injection in your back (spinal/epidural anaesthetic), or with a general anaesthetic when you are asleep. The anaesthetist will discuss these options with you. A catheter will be put into your bladder to drain urine away and drips will be inserted into your arms.

Risks and complications

The risk of a major complication is lower for endovascular repair as the operation does not interfere with the circulation as much as open surgery. About two in 100 people die during endovascular repair surgery or in the 30 days after surgery.

There is a chance of infection, bleeding and reactions to the anaesthetic. It is also possible to have a heart attack, stroke, breathing problems or blood clot because of the surgery.

If your risk of a major complication is higher than usual because you already have a serious medical problem, the team will discuss this with you.

During the operation, there is a chance that your aorta might be damaged, which could lead to the aneurysm bursting. Your surgeon may need to switch to an open repair operation (this happens in less than one in 100 procedures).

There is a small risk that you may develop problems with the blood flow to your bowel, kidneys, or legs after endovascular surgery. These problems are not common but they can be serious.

Rarely the stent can become displaced or leak. It is estimated that about one in 10 patients may need a further intervention or an operation on their graft.

Recovery

Your hospital stay following EVAR is usually about two to three days. You are initially cared for on the vascular high dependency unit. You should be able to eat and drink normally once you are fully awake following your aneurysm repair. The nurses will aim to get you sitting up and walking as soon as possible.

Once you are up and about, you should be able to leave hospital but may need painkilling tablets for up to a week. Discussions with patients who have undergone endovascular repair suggest that it can be normal to make a full recovery in about two weeks. However, some people take longer and it can take several months to return to the state of health you had before the operation.

You may have bruising and swelling around your genital area which can be extensive; however, this will settle and should not cause a problem.

Is surgery successful?

If aneurysms are successfully repaired, this prevents them blocking or bursting and there is a very high likelihood that you will return to a normal life. Full recovery takes between three and 12 months after open surgery and two to eight weeks after endovascular repair. The speed of recovery will also be affected by your age and general fitness.

It is important to remember that your surgeon will only recommend treatment for your aneurysm if he or she believes that the risk of the aneurysm bursting is higher than the risks of the operation. Your surgeon will be able to tell you the success rate for this operation in their surgical unit.

What can I do to help myself?

Smoking: If you are a smoker, the most important thing you can do to help yourself is to give up smoking. Stopping smoking will also help to protect all of your arteries, making it less likely that you will suffer from heart attacks or strokes.

Giving up is not easy but there is a smoking cessation service and support groups that can help. Your vascular specialist nurse, anaesthetist or GP practice can advise you about these. You can also contact a member of the Hospital Stop Smoking Team on 01384 456111 ext. 2783.

Exercise: Gentle exercise such as walking and cycling are recommended to help to improve your overall level of fitness. Exercise helps your body to produce healthy cholesterol and this helps to protect your arteries against bad cholesterol.

High blood pressure: High blood pressure is a known risk factor for rupture of aneurysms. It is very important that you have your blood pressure checked regularly, at least every six months. If you have been prescribed medication for high blood pressure, you must make sure that you take it according to the instructions you have been given.

Diabetes: If you have diabetes, it is important that your blood sugar levels are well controlled.

High blood cholesterol levels: It is important to reduce the level of bad cholesterol in your blood and so you will be given advice on how to do this. Your vascular nurse can refer you to a dietitian if needed. You should eat a healthy balanced diet and try to reduce any excess weight.

You will be prescribed a **statin** drug to lower your cholesterol level and low-dose **aspirin** (if you are able to take it) to help prevent blood clots from forming.

Driving with an AAA

The DVLA states the following:

Car or motorcycle licence

You must tell DVLA if your aortic aneurysm is over six centimetres in diameter despite treatment. Ask your doctor or consultant if you are not sure.

Bus, coach or lorry licence

You must tell DVLA if you have an aortic aneurysm of any size.

You can find out more from the following weblink:

<https://www.gov.uk/aneurysm-and-driving>

Flying with an AAA

If you have an aneurysm and are considering a holiday which involves flying, you will need to declare this condition to your travel insurance company, as some insurance companies will not provide cover for you. Some companies will provide cover as long as you have the permission of your consultant to fly.

Consent to store your personal information

Vascular surgeons record information about the surgery they carry out, including AAA repairs, on the National Vascular Registry (NVR). This is a secure database that is used to help monitor and improve vascular services throughout the country. Therefore, you (or your nearest relative) may be asked to give permission for your personal information to be stored on the NVR.

Although the database is a national system, strict rules on the data held mean that personal details on the NVR can only be accessed by staff involved directly in an individual's treatment.

Patient information is confidential and is not passed on to third parties other than healthcare professionals directly involved in an individual's care. You will be asked to confirm with your vascular surgeon whether you are happy for them to store your personal information on the NVR.

Can I find out more?

You may like to look at the following websites for further information. However, please note that we are not responsible for the content of these websites.

NHS Shared Decision Making: Abdominal Aortic Aneurysm

<http://sdm.rightcare.nhs.uk/pda/aaa-repair/introduction/>

NHS Choices

<http://www.nhs.uk/conditions/Repairofabdominalaneurysm/Pages/Introduction.aspx>

NHS Abdominal Aortic Aneurysm Screening Programme

<http://aaa.screening.nhs.uk/>

Black Country Vascular Network Cardiopulmonary Exercise Test

<http://dudleygroup.nhs.uk/wp-content/uploads/2017/07/Cardiopulmonary-exercise-testing-V2.pdf>

References

1. (No authors listed). The UK Small Aneurysm Study Participants. Mortality results for the randomised controlled trial of early elective surgery or ultrasonographic surveillance for small abdominal aortic aneurysms. *Lancet* 1998; 352:1649-55.
2. Brewster *et al.* Guidelines for the treatment of abdominal aortic aneurysms. *Journal of Vascular Surgery*. 2003; 37(5):1106.

Contact information

If you have any questions, or if there is anything you do not understand about this leaflet, please contact your consultant or vascular nurse on the telephone numbers below:

Russells Hall Hospital, Dudley

Mrs Shiralkar	Consultant vascular surgeon	01384 244246
Mr Pathak	Consultant vascular surgeon	01384 244245
Mr Rehman	Consultant vascular surgeon	01384 244176
Mr Newman	Consultant vascular surgeon	01384 244243
Mr Wall	Consultant vascular surgeon	01384 456111 ext. 1235
Sharron Cole/Vicky Baker	Vascular nurse specialists	01384 456111 ext. 2456 (answer machine)

New Cross Hospital, Wolverhampton

Mr Garnham	Consultant vascular surgeon	01902 695977
Mr Hobbs	Consultant vascular surgeon	01902 695971
Paula Poulton/Val Isgar	Vascular nurse specialists	01902 695984

Manor Hospital, Walsall

Mr Khan	Consultant vascular surgeon	01922 721172 ext. 6669
Beth Smith	Vascular nurse specialist	01902 721172 ext. 7648

This leaflet can be made available in large print, audio version and in other languages, please call 0800 073 0510.

للحصول على هذه النشرة بحجم أكبر، وعلى شكل إصدار صوتي و بلغات أخرى، الرجاء الاتصال بالرقم 08000730510.

此宣传单可提供大字版本、音频版本和其它语言版本，请拨打电话：0800 073 0510。

Ulotka dostępna jest również w dużym druku, wersji audio lub w innym języku. W tym celu zadzwoń pod numer 0800 073 0510.

ਇਹ ਪਰਚਾ ਵੱਡੇ ਅੱਖਰਾਂ, ਬੋਲ ਕੇ ਰੀਕਾਰਡ ਕੀਤਾ ਹੋਇਆ ਅਤੇ ਦੂਸਰੀਆਂ ਭਾਸ਼ਾਵਾਂ ਵਿਚ ਵੀ ਪ੍ਰਾਪਤ ਹੋ ਸਕਦਾ ਹੈ, 0800 073 0510 ਤੇ ਫੋਨ ਕਰੋ ਜੀ।

Aceasta broșura poate fi pusă la dispoziție tipărită cu caractere mari, versiune audio sau în alte limbi, pentru acest lucru vă rugăm sunați la 0800 073 0510.

یہ کتابچہ آپ کو بڑے حروف کی لکھائی، سماعی صورت اور دیگر زبانوں میں مہیا کیا جا سکتا ہے۔ برائے مہربانی فون نمبر 08000730510 پر رابطہ کریں۔

Images provided with permission from Vascutek

This leaflet can be downloaded or printed from:

<http://dudleygroup.nhs.uk/services-and-wards/vascular-service/>

If you have any feedback on this patient information leaflet, please email dgft.patient.information@nhs.net