



# Getting Ready for EVAR

Endovascular Abdominal Aortic Aneurysm Repair



**THE OHIO STATE UNIVERSITY**

WEXNER MEDICAL CENTER



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**Talk to your doctor or health care team if you have any questions about your care.**

For more health information, go to [wexnermedical.osu.edu/patiented](http://wexnermedical.osu.edu/patiented) or contact the Library for Health Information at 614-293-3707 or [health-info@osu.edu](mailto:health-info@osu.edu).

# Welcome

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Your doctor is recommending that you have endovascular aneurysm repair (EVAR) to treat your abdominal aortic aneurysm (AAA).

We hope that this book will help you better understand abdominal aortic aneurysm and how the EVAR procedure is done. Also, what you can expect before, during and after the procedure.

Please review this book to learn what you need to do to prepare for your procedure. Call our office if you have questions or if there is anything that you do not understand.

For driving directions, billing and visitor information, please visit [wexnermedical.osu.edu/patient-and-visitor-guide](http://wexnermedical.osu.edu/patient-and-visitor-guide). Hotel information can be found under Visitor Policies.

For a digital copy of this book, please visit [go.osu.edu/pted4729](http://go.osu.edu/pted4729).

## Contact information

Call 614-293-8536

### Before the procedure to:

- Ask questions.
- Check the arrival time for aneurysm repair procedure.
- Cancel or reschedule within 24 hours of the procedure.

### After the procedure to:

- Report problems you are having.
- Ask questions.



# Preparing for Your Aneurysm Repair

Your procedure date is \_\_\_\_\_ with Dr. \_\_\_\_\_ .

A nurse from the doctor's office will call you 1 business day before your procedure with your arrival time and surgery time.

## Weeks before your procedure

- **If you are on blood thinners or antiplatelet medicines**, please let your surgeon know in case this needs to be held before surgery. Examples are:
  - Arixtra (Fondaparinux)
  - Plavix (Clopidogrel)
  - Brilinta (Ticagretor)
  - Pletal (Cilostazol)
  - Coumadin (Warfarin)
  - Pradaxa (Dabigatran)
  - Effient (Prasugrel)
  - Savaysa (Edoxaban)
  - Eliquis (Apixiban)
  - Ticlid (Ticlopidine)
  - Lovenox (Enoxaparin)
  - Xarelto (Rivaroxaban)
- **You will be started on aspirin and a statin medicine** before your procedure, if you are not already taking these and you have no allergies to these medicines.
- You may need to have lab work, a chest x-ray or other testing before this procedure, as directed.
- Contrast dye is used during the procedure. Based on the results of your kidney function test, **you may be instructed to arrive early to be given IV fluids before the procedure**. This will help to prevent kidney injury.
- **If you have an allergy to contrast dye**, be sure to tell your surgeon because you will need to have medicine before the procedure.
- **If you smoke or use other tobacco products**, please stop right away to avoid wound healing problems. If you are not able to stop, please decrease the amount used each day to lessen your risk of wound healing problems or pneumonia after the procedure. If you would like more information on smoking cessation, please contact our smoking cessation clinic at 614-293-7677.
- **If you are feeling ill or develop a new rash during the week before**, please call the surgeon's office at 614-293-8536.
- Plan for help after you will be leaving the hospital. Refer to *Planning for Recovery* on page 8. for more information.

## The evening before your procedure

- **Wash from the neck down with the chlorhexidine (CHG) soap** you were given. Please read the instructions, *Getting Your Skin Ready for Surgery*, on the next page of this book.
- **Do NOT eat or drink anything after midnight**, including gum or mints, unless you were given other specific directions.

## Morning of your procedure

Please bring these items with you:

- Phone number for the doctors and pharmacy you use.
- List of preferred home health agencies or rehabilitation centers.
- Current copy of your medicine list or your bottles of medicines. Be sure to include any vitamins, herbals or other over the counter medicines.
- Your Living Will and Health Care Power of Attorney forms (if you have them).
- Comfortable clothing, such as a robe, slippers and toiletries.
- Do NOT bring jewelry, money or other valuables.

# Getting Your Skin Ready

## Evening Before and Morning of Procedure

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Because germs live on everyone's skin, there is a chance of getting an infection when your skin is cut during surgery. To reduce the chance of infection, clean your skin with a special soap called 4% chlorhexidine gluconate or CHG.

- **Do not shave** for at least 48 hours near the site for your surgery cut.
- Clean your skin with CHG soap the night before your surgery and again the morning of your surgery.
- CHG soap does not bubble and lather like most soaps.
- Be careful not to get CHG into your eyes, nose, mouth or ears. If you do, rinse well with clean water.

### Cleaning your skin with CHG

1. Get in the shower and wash your hair with your normal shampoo and wash your body with regular soap. Rinse your hair and body very well.
2. Wet a clean washcloth and then turn off the shower.
3. Put **4 ounces (½ cup) of CHG soap or 4 to 5 pumps of CHG foam** on the wet, clean washcloth.
4. Wash your whole body from the neck down with the CHG soap or foam the night before your surgery and then again the morning of your surgery. Continue to wash your body gently for 5 minutes, paying special attention to the part on your body where the surgery will be done. Be sure to wash the back of your neck, under your arms, your belly button, private parts and your legs down to your toes. Do not scrub too hard.
5. Turn the shower back on and rinse well to get the CHG soap off of your body.
6. Pat yourself dry with a clean, dry towel.

### After using CHG

- Do not use deodorant, lotions, powders, make-up or other products on the skin near the part of your body that will be cut for surgery.
- Put on clean clothes.

### If you are not able to shower

If you do not have a shower or if you are not able to get into the shower, do a sponge bath with CHG soap instead.

1. First, bathe with a washcloth and regular soap. Rinse with clean water.
2. Wet a clean washcloth and apply ½ cup (or 4 to 5 pumps) of CHG soap to your whole body from the neck down for 5 minutes. Pay special attention to the part of the body where the surgery will be done.
3. Rinse well with another clean washcloth and plain water.
4. Pat yourself dry with a clean, dry towel.

## How to shower with CHG soap

**1** Wash your hair as usual with your regular shampoo and then wash your body with regular soap.  
Rinse well.

**2** Wet a clean washcloth. Turn off the shower.

**3** Apply some CHG soap to the wet washcloth.

**4** Use the washcloth to wash your whole body **from the neck down**.  
Keep adding more CHG and continue to wash for **5 minutes**.

**5** Turn on the shower water and rinse your whole body well.

**6** Pat yourself dry with a **clean** towel.

**7** Put on **clean** clothes.

**8** **Note:** On the **morning of surgery** when you finish showering, **do NOT** put on hair or skin care products, deodorant or make-up. **Do NOT** wear jewelry to the hospital or surgery center.

Be sure to repeat your shower with CHG in the morning before your procedure.

# Planning for Recovery

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## Your care after leaving the hospital

Most often, patients having this procedure will stay in the hospital overnight. If there are problems or if more monitoring is needed, it may require a stay of a few days.

You should have help available to you around the clock for the first day after you leave the hospital, and then for parts of the next few days to help you as needed.

Your incision sites may be sore for a few days and you may feel some discomfort in your abdomen for a few days. You will need to limit any lifting to less than 10 pounds for 2 weeks. You may need some help to care for your incisions.

## Plan for help after your procedure

Our goal is to have our patients return home from the hospital where they can recover in the comfort of a familiar environment. However, some patients may require home health services or a short stay in a skilled nursing or rehabilitation center.

**If you do not have someone at home to help you after your procedure**, contact your insurance provider to get a list of recommended in network care providers for home health services, skilled nursing facilities, or rehab centers close to your home.

**Bring your list of 2 or 3 home health services or nursing facilities** to share with your social worker or case manager. They will help to make arrangements before you leave the hospital.

**If you do not have benefits** for home health services, skilled nursing facilities, or rehab centers, make a plan with your family and friends to help you at your home or their home for a few days.

## Talk to your insurance provider

Know your options to help you plan for your care after your aneurysm repair.

If you have Medicare A or B:

- Ask for lists of nursing homes or home health services in your area.
- You can also get the lists online at **www.Medicare.gov**.

If you have private insurance or Medicare Advantage:

- Call the phone number on the back of your insurance card. Tell them you are having surgery, and you want to know about your skilled nursing or nursing home benefits. Ask them for a list for your area.
- Review the list and call the Admissions Director at several sites. If you can, visit the sites to see which sites you prefer.

# Abdominal Aortic Aneurysm (AAA)

The **aorta** is your body's main artery that carries blood from your heart to the rest of your body. It starts at the left side of your heart with branches to the upper body. The abdominal aorta runs down through your abdomen to carry blood to the lower body.

An **aneurysm** is a weak part of a blood vessel wall that swells and bulges out. Aneurysms can happen in any blood vessel but are most common in the aorta in the abdomen.

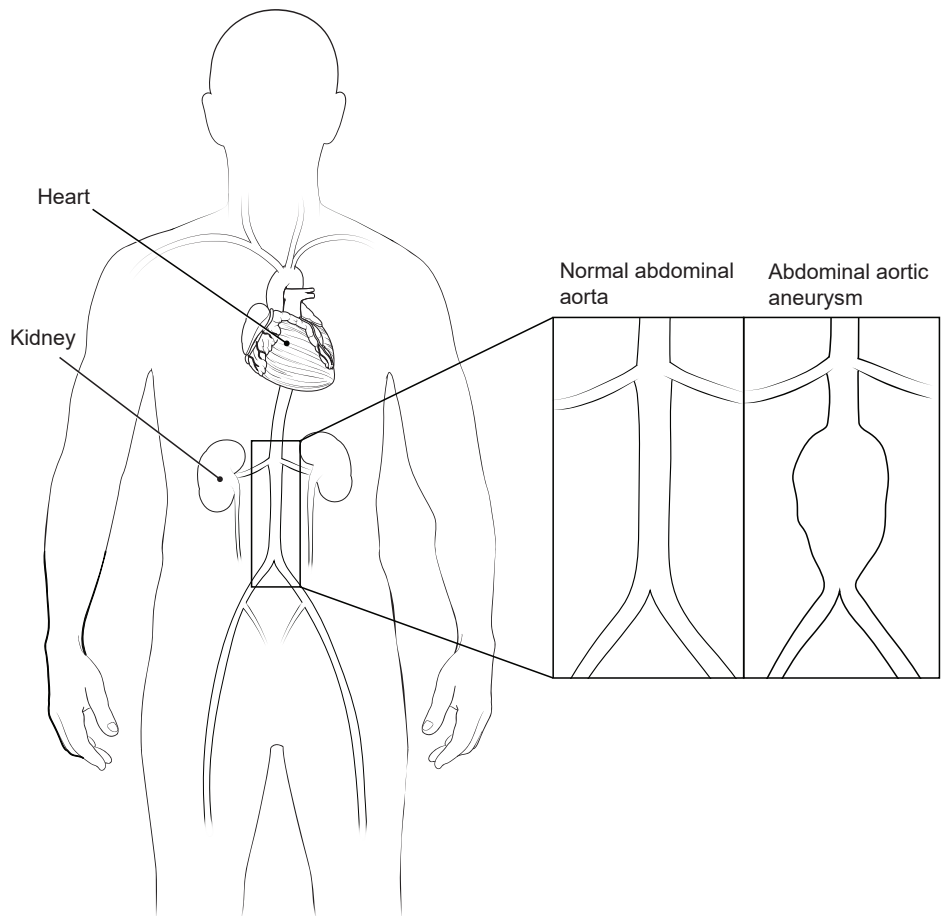
## Risk factors

### Abdominal aortic aneurysms

are more common in people over age 60, but they can occur at any age. Men are more likely to have this condition than women. Other risk factors can include:

- Smoking or other tobacco use
- High blood pressure
- Family history of abdominal aortic aneurysm
- Lung disease
- History of atherosclerosis, also known as hardening of the arteries

Aneurysms often cause no problems if they are small and do not grow. When an aneurysm grows larger, it can burst or rupture, causing severe bleeding and even death. Clots can also build up in the aneurysm that could break loose to block circulation in other parts of your body.



## Treatment

Your doctor will recommend treatment based on the size and location of your AAA, but may include:

- Lifestyle changes such as smoking cessation and lowering your blood pressure
- Regular check ups to check for changes to the AAA
- For larger AAAs that grow, repair is done by placing an endovascular stent graft or by open bypass graft surgery

# Endovascular Aneurysm Repair (EVAR)

## Endovascular Stent Graft

This is a less invasive way to treat people with AAA because it requires very small incisions, compared to an open surgery repair. This procedure requires less time in the hospital and recovery is faster. Your doctor will talk to you about why this procedure is recommended for you, as well as the risks and benefits and possible problems that could occur. Be sure to ask your doctor questions if there is anything you do not understand.

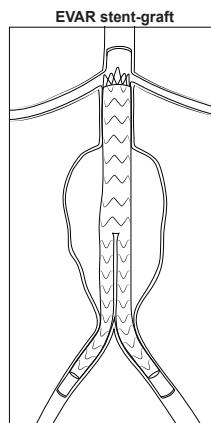
### How the procedure is done

You will have general anesthesia, so you will be asleep for this procedure. The anesthesiologist will meet with you before the procedure in the Pre-op area and have you sign a consent form.

You will have a tube, called a Foley catheter, placed to drain urine from your bladder during the procedure.

Your doctor may make a small cut in your upper leg or groin to find your femoral artery. A tube, called a catheter, is put into the artery through the cut. Using x-ray, the catheter is guided up into the aneurysm.

The stent graft is a fabric tube on a metal frame. Your doctor puts the stent graft into the catheter and it is pushed into the aneurysm site. The stent graft is then opened up and placed to make a new path for blood to flow, taking pressure off the aneurysm to prevent rupture.



The catheter will be removed and the groin incision will be closed.

In some cases, more than one catheter may be used, so there may need to be incisions on both legs. The procedure may take 1 to 3 hours to complete.

### Care after procedure

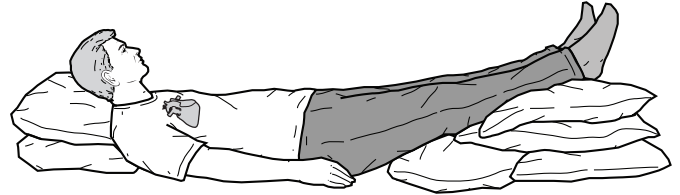
- Your blood pressure, heart rate, breathing and temperature will be checked often, including through the night.
- Your incision site(s) will be checked for bleeding and the circulation in your leg with the site will be checked.
- You may need to lay flat for several hours to prevent bleeding of the site.
- The pulses in your feet will be checked to make sure there is enough blood flow.
- **To avoid falls, you will be helped to get out of bed, to walk in your room and to walk in the hallway.** Be sure you call for staff to help you get out of bed.
- Pain at the site is often able to be managed, but medicine will be available if needed.
- The Foley catheter will remain in place until you are able to be up. The Foley is most often removed before discharge.
- You will be encouraged to use your breathing exerciser every hour or 2 while you are awake.
- If you are a male with an enlarged prostate, you may be on a medicine called Flomax. You may also be scheduled for a urology follow up visit.

## Care at home

You will be given specific discharge instructions before you leave the hospital. Care will often include:

- **Antiplatelet or blood thinner medicine** to prevent clots from forming in the stent.
- **Statin medicine**, such as Lipitor, may be ordered to keep your blood cholesterol lower to reduce plaque build up in your arteries.
- You may have sutures or glue holding your incisions closed. The nurse will teach you about caring for your incision sites before you leave the hospital.
- If you have an incision at your upper leg or groin, you will need to use **betadine solution and a gauze dressing over the site for 2 weeks.**
  - Change the dressing as directed or anytime it is wet, dirty or coming loose.
  - Remove the dressing before you shower and gently clean the site in the shower then towel dry.
  - Use a cotton ball or cotton tipped applicator to paint betadine solution over the incision.
  - Cover the site with a dry gauze dressing and use tape to hold the dressing in place.
- **You can shower 2 days after your procedure.** No tub baths, sauna or immersing your incisions in any water until 2 weeks after the procedure. This is to help reduce the risk of infection.
- You may have some tenderness or swelling at the groin site for 1 to 3 days.
- **Use your breathing exerciser every 2 hours** or as directed when you are awake. Do this for the next 2 weeks to help reduce your risk of pneumonia.
- Take it easy the first few days you are home, but **walk 3 to 4 times each day on flat surfaces.** Slowly increase your activity as your groin site heals.

- **Limit going up and down stairs** the first 2 or 3 days after your procedure.
- **Lifting will be limited to less than 10 pounds for 2 weeks.** A gallon of milk weighs about 8 pounds.
- **When resting, raise you legs up above the level of your heart** with pillows or blankets to help your blood flow.



- **You are not to drive until you have your first follow up visit and are not on pain medicine.** Your doctor will talk to you about when you can start driving again at that visit.
- Your doctor will talk to you about returning to work at the first follow up visit.

## Follow up care

**CT or duplex scans will be done for the rest of your life** to be sure the stent graft is open and working well. These tests are very important to identify any issues with your stent early.

- You will be scheduled for a CT of the abdomen and pelvic with contrast at **1 month and 1 year after your procedure.**
- If you have chronic kidney disease, a duplex or CT without contrast may be done to limit further damage to your kidneys from the contrast dye.
- If at 1 month, a leaking of blood around the graft into the aneurysm, called an endoleak, is found, more follow up would be done at 6 months. Most endoleaks do not require treatment.
- After 2 stable CT scans, duplex scans may be used to limit your exposure to radiation.

More information about this is on page 14.

## Lifestyle changes

After your recovery, talk with your doctor about your activities and diet and what changes you may need to make to help your health. These are common changes recommended:

- You should avoid smoking or use of any tobacco products.
- Eat a heart healthy diet.
- Exercise for at least 30 minutes, 5 days each week.
- Take your medicines as ordered by your doctors.
- Control your blood pressure, lower your cholesterol, and keep your blood sugar healthy if you have diabetes.

Talk to your doctor about making a plan for you.

## Call your doctor right away

Call your doctor right away if you have:

- Pain in your belly or back that does not go away.
- Bleeding from the site that does not stop if you apply direct pressure.
- Increased swelling at the site.

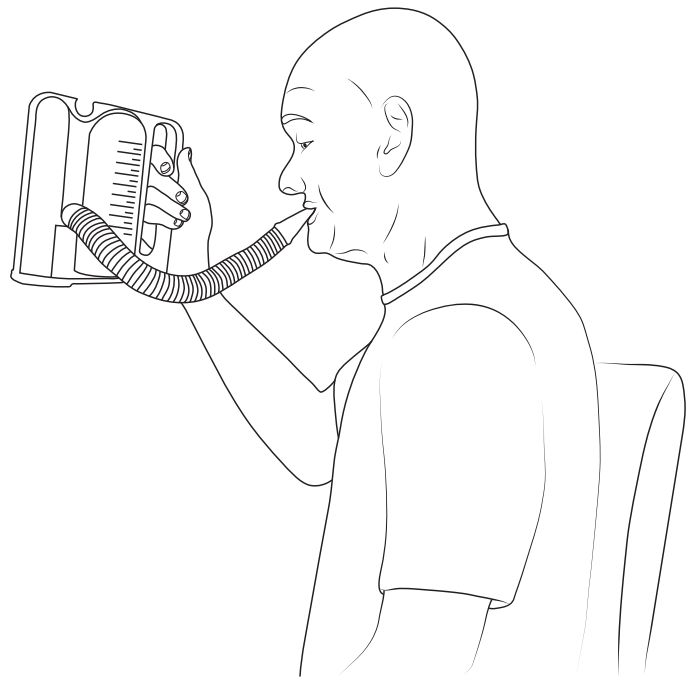
# How to Use an Incentive Spirometer

## Breathing Exerciser

Use your incentive spirometer, also called a breathing exerciser, to help you take deep breaths to open the air sacs in your lungs. This helps to reduce the chance of developing breathing problems, like pneumonia, after surgery. Use your breathing exercises every 1 or 2 hours each day. You will do these exercises in the hospital and for 2 to 3 weeks at home, as you recover from surgery.

### Steps for use

1. If possible, sit up straight. It may help to sit on the edge of a chair or your bed.
2. Hold the incentive spirometer upright.
3. Breathe out and then close your lips tightly around the mouthpiece. Take in a slow deep breath through your mouth.
4. As you take a deep breath, the piston in the clear chamber of the incentive spirometer will rise. Breathe in slowly to allow the air sacs in your lungs time to open. Your incentive spirometer has an indicator to let you know if you are breathing in too fast.
5. After you breathe in as deeply as you can, hold your breath for 3 to 5 seconds. Set the goal indicator tab at the level that you reached.
6. Take out the mouthpiece and breathe out slowly. Relax and breathe normally for a few seconds until the piston returns to the bottom of the chamber.
7. Repeat these steps a total of 10 times. If you start to feel light-headed or dizzy, slow down your breathing and give yourself more time between the deep breaths.
8. After doing the 10 deep breathing exercises, take a deep breath and cough to clear the mucus from your lungs.



# Follow Up with Vascular Surgery

## Need for Ongoing Imaging Tests

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### Risk of endoleak

An **endoleak** is a problem that can happen after an EVAR procedure that requires long-term follow up. An endoleak happens when blood leaks back into the aneurysm sac, around the stent graft. The leakage can put pressure on the aneurysm sac and could cause a rupture to occur.

Endoleaks occur in about 1 in every 5 patients who have EVAR. An endoleak does not often cause symptoms and is only found during routine follow up with the surgeon. Endoleaks can occur at any time after the stent graft is placed.

Regular follow up visits with your vascular surgeon will include imaging tests, either by ultrasound or CT scan, to look for signs of an endoleak.

### Follow up appointments

You will first be seen 4 to 6 weeks after surgery and you will have a CT scan.

Another visit will be scheduled 1 year after your procedure date. At that time, if there are no concerns and imaging shows no endoleak or sac growth, you will only need to follow up yearly with either ultrasound or CT scan.

If you have chronic kidney disease, you will have an ultrasound and a CT without contrast.

### Call if you need to reschedule

If you are not able to keep your appointment with your surgeon, please contact us at 614-293-8536. We can make other arrangements for you to have imaging and follow up.





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