

# Information for Our Vascular Surgery Patients

*Preparing for your abdominal  
aortic aneurysm repair*



*UMassMemorial*



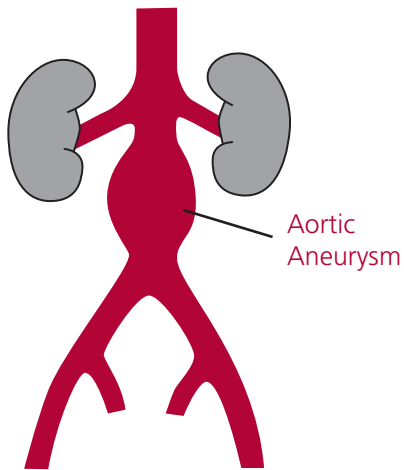
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## ***What Is an Abdominal Aortic Aneurysm?***

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An abdominal aortic aneurysm (AAA) is an abnormal widening of the aorta. The aorta is the main artery of the body. It rises from the heart and travels through the chest into the abdomen. At the level of the navel, the aorta divides into two smaller arteries, called the iliac arteries. The normal size of the aorta measures about 2.3 cm (1 inch) in men and 1.9 cm (3/4 inch) in women, however this varies with body size and age. When the aorta is dilated to more than 1 1/2 times its normal diameter it is called an aneurysm.

The simple presence of an aneurysm is not sufficient for a recommendation to repair the aneurysm. Since it is rare for an aneurysm less than 5 cm in diameter to rupture, aneurysm repair is usually reserved for aneurysms 5 cm in diameter or greater.

## ***What Are the Signs and Symptoms of an Abdominal Aortic Aneurysm?***

- Abdominal aneurysms usually produce no symptoms until they start to enlarge rapidly or rupture.
- Rupture of an aneurysm usually produces the sudden onset of severe abdominal and back pain. Since the blood pressure falls, as a result of the blood loss, patients may experience dizziness, fainting, sweating, a rapid heartbeat and sudden weakness.

## ***What Causes Abdominal Aortic Aneurysms?***

There is no known single cause of abdominal aneurysms. However, the following risk factors are known to increase one's chances of developing an AAA:

- History of heart disease or peripheral vascular disease
- Being over the age of 60
- Family history of AAA — particularly if your mother had an AAA
- Gender - Men are four times more likely than women to develop an abdominal aortic aneurysm.
- Cigarette smoking - Tobacco users are eight times more likely than nonusers to develop abdominal aortic aneurysms.
- Elevated cholesterol

## ***How are Abdominal Aortic Aneurysms Diagnosed?***

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### **History and Physical Exam**

Most abdominal aneurysms do not cause symptoms when they are first discovered. They are often found on routine physical exam of the abdomen or incidentally by an abdominal ultrasound or CT scan performed for some other reason.

Physical examination of the abdomen may reveal a pulsating mass around the level of the navel or localized abdominal tenderness suggesting the presence of an aneurysm.

### **Diagnostic Tests**

**Ultrasound (Duplex Scan)** – An abdominal ultrasound is a noninvasive test that uses sound waves to form an image on a TV monitor. Ultrasound can determine the presence, size and location of an aneurysm.

**CT Scan** – A CT scan of the abdomen is a noninvasive test that provides a two-dimensional image of the aneurysm using x-ray.

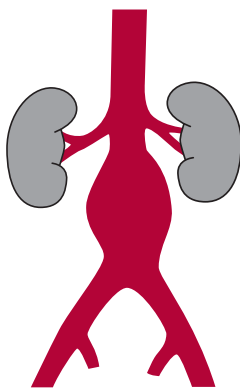
**Arteriogram (Angiogram)** – An arteriogram is an x-ray of the blood vessels that provides precise information about the size and location of the aneurysm.

## **Treatment of Abdominal Aortic Aneurysms**

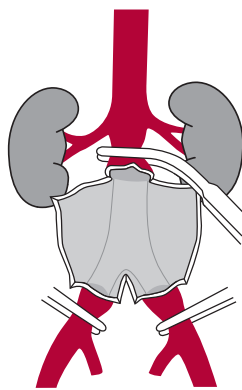
### **Open Aortic Operation**

Open aortic surgery is the traditional method for repairing abdominal aneurysms. This procedure involves an abdominal incision, and may also require an incision in one or both groins if your aneurysm extends into the lower pelvic arteries. A vascular graft is used to replace the dilated portion of the aorta.

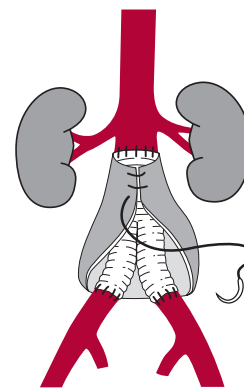
Although this method of repair is a more extensive procedure than endovascular aortic reconstruction, the long term results are excellent. For this reason, open aortic surgery is often recommended for patients who are younger and otherwise in good health.



Abdominal Aortic Aneurysm



1. The blood flow above and below the aneurysm is controlled.
2. The aneurysm sac is opened and the plaque is removed.



3. A graft is sewn in place.
4. The aneurysm sac is closed around the graft.

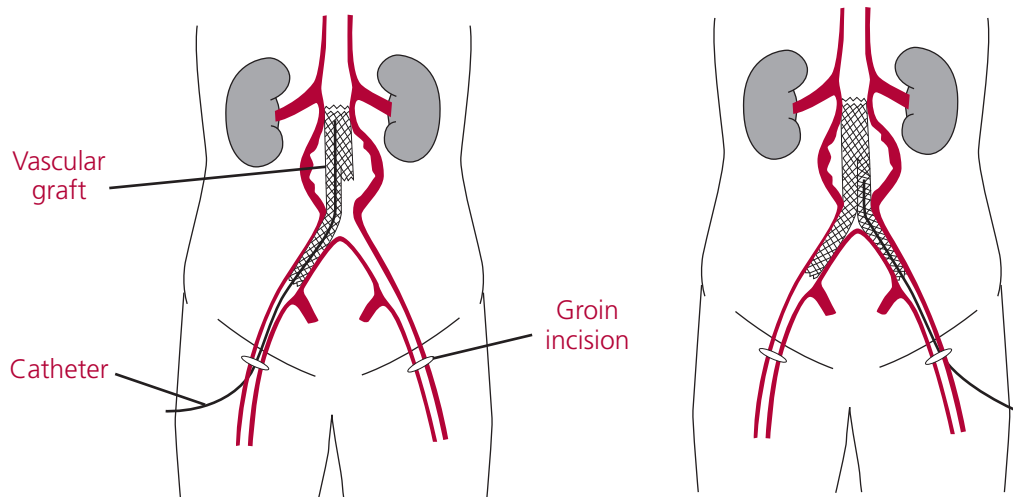
### **Endovascular Aortic Reconstruction (EVAR)**

EVAR is a procedure in which a stent graft (a tube composed of a synthetic fiber covered by a wire mesh) is placed inside of the aneurysm. The stent graft reinforces the aneurysm to prevent rupture.

Because of variations in vascular anatomy, only about 60 percent of patients with abdominal aneurysms are candidates for stent graft repair. CT scans and arteriograms are used to evaluate the anatomy and configuration of your aorta and to determine if it is suitable for EVAR.

EVAR is performed in the operating room. Through a small incision or just a needle stick in each groin, a catheter (a thin flexible tube) containing the vascular graft is guided into the aorta. The vascular graft is anchored in the aorta above and below the aneurysm. The catheter is then removed, leaving the graft in position. The groin incisions are then closed.

In the unusual circumstance that there is difficulty in placing the graft, it may be necessary to convert to the traditional open operation.



## Risks Associated with Abdominal Aortic Operations

Abdominal aortic operations are common procedures at UMass Memorial Medical Center. As with any operation, it does have some risks associated with it. The risks of abdominal aortic operations include:

- Bleeding, possibly requiring a blood transfusion
- Infection
- Colon ischemia (lack of blood flow to the large intestine)
- Retrograde ejaculation (unique to the open operation)
- Atheroembolism (tiny pieces of plaque that break off and travel to the small arteries in the feet, causing pain or the development of sores or gangrene)
- Paraplegia

Your vascular surgeon will discuss the specific risks and benefits of the operation with you.

## ***Preparing for Your Surgery***

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Once you and your surgeon have decided that your aneurysm should be repaired, you may be advised to have one or more of the following tests:

- CT Scan
- Arteriogram
- Persantine thallium heart scan
- Pulmonary function test

### **CT Scan**

A CT scan of the abdomen is a noninvasive test that provides a two-dimensional image of the aneurysm using x-ray. The CT Scan will determine if EVAR is possible. This is performed on an outpatient basis.

### **Arteriogram**

An arteriogram is an x-ray of the blood vessels that provides precise information about the size and location of the aneurysm. It can determine if other blood vessels, such as those supplying the intestines or kidneys, are narrowed, blocked or involved with the aneurysm. The arteriogram will also determine if endovascular repair of the aneurysm is possible.

- This procedure is usually done on an outpatient basis with local anesthesia. It takes approximately two hours to complete.
- You will be given sedative medication to relax you and numbing medicine will be injected into your groin or arm.
- A catheter, which is a small flexible tube, will then be inserted into the artery and contrast dye will be administered into your bloodstream.
- After the contrast is injected, you may experience a temporary warm flushing sensation and/or a metallic taste in your mouth.
- The contrast dye shows up on x-ray and outlines the arteries, much like a road map.

## Before the Surgery

While some patients may already be in the hospital when informed that surgery is necessary, many people having vascular surgery come directly from home the morning of the procedure. If you are preparing for your operation from home, there are several guidelines to follow to ensure that everything goes smoothly.

- If you smoke, please stop. A past history of smoking sometimes causes problems with anesthesia and increases the risk of getting pneumonia after the surgery.
- Do not drink alcohol. If you typically drink two or more drinks daily, let your surgeon know so anesthesia and recovery medications can be adjusted to your body's needs.
- Your surgeon will discuss specific instructions about aspirin or products that contain aspirin. (Aspirin-like products include Motrin, Ibuprofen and Advil.) In most cases there is no need to stop these medications.
- You should inform your surgeon if you are taking warfarin (Coumadin) or clopidrogel (Plavix). You may be instructed to discontinue some of these medications prior to your day of surgery.
- Review all prescribed and over-the-counter medications, vitamins and herbs you are taking with your surgeon. Some nonprescription medications can have side effects.
- Continue to take all your other medications as directed until the day of surgery.
- If you have completed a health care proxy, bring a copy with you the day of your surgery.
- Contact your surgeon if you develop a cold, fever or flu-like symptoms within a week of your surgery.

## Pre-admission Assessment

People who are scheduled to be admitted to the hospital on the morning of surgery are typically seen in our Pre-admission Testing Area sometime prior to surgery. During this appointment, a nursing assessment is initiated and you will meet with a member of the Anesthesiology Department. This assessment includes taking an accurate and complete medication history. Please bring a current list of medications you take to review with the nurse and the anesthesiologist. Lab work or other testing is also done as ordered by your surgeon.

## Hibiclens Antiseptic

Normal skin is not sterile, and we need to be sure that your skin is as free of germs as possible before surgery. Hibiclens antiseptic contains chlorhexidine gluconate, which is very effective in reducing the number of germs on your skin when used before surgery.

During your pre-admission assessment you will receive four packets of the Hibiclens antiseptic for showering the night before and the morning of surgery. Be sure to read these instructions thoroughly so you understand them prior to showering with Hibiclens.

**The night before surgery:**

1. Begin by washing your hair with your regular shampoo and, if you choose, a conditioner. Wash above your neck (face, ears) and your genitals with your regular soap. Rinse your hair and genitals thoroughly with water removing all shampoo and soap residue.
2. Use Hibiclens only from the neck down. Shower (preferably) or bathe using two packets of Hibiclens applying it to wet skin. Wash your entire body, except for your head, face, genitals and deep open wounds. Wash thoroughly, paying special attention to the body region where your surgery will be.
3. Turn the water off to prevent rinsing Hibiclens off too soon. Wash your body gently for five minutes. Do not scrub your skin too hard. Do not wash with your regular soap after Hibiclens is used.
4. Do not shave the general area of your body where your surgery will be performed.
5. Turn the water on and rinse your body thoroughly. Pat dry with a clean, soft towel. Rinse washcloth after use, removing Hibiclens, then launder.

**The morning of surgery:**

Repeat the process outlined above using the other two packets of Hibiclens.

**Peridex**

During your pre-admission assessment we will also provide you with a special mouthwash called Peridex. You will be given a prescription for this. We will ask you to use it on the evening before and the morning of surgery as an added step to help reduce infection.

**Evening before Surgery**

Patients coming from home to the hospital will be contacted the evening before surgery by a staff member to confirm the time of the procedure. Unfortunately, there are situations when unexpected schedule changes may occur that could result in rescheduling the time of surgery. If you have any questions about your surgery schedule, please call your surgeon's office.

**Remember:**

- Do not eat or drink anything after midnight. You may take the medications you were instructed to take with a few sips of water.
- Shower with the antiseptic skin cleaner Hibiclens
- Gargle with the Peridex gargle

## Evening before Surgery Checklist

- No food or drink after midnight
- Shower using Hibiclens
- Gargle with Peridex

**Morning of Surgery**

- Remove all makeup, and fingernail and toenail polish.
- Do not eat or drink anything. You may brush your teeth or use mouthwash to gargle only.
- You may wear eyeglasses and/or dentures. We encourage you to have a family member bring these home the day of your surgery. When you need these items, they can be brought back in for you.
- Wear comfortable clothing such as a sweat suit.
- Do not bring any clothing or toiletries on the day of surgery. Your family may bring these items to the hospital when you need them after surgery.
- Do not bring more than \$10 cash.
- Arrive at the hospital at the time given to you.
- Shower with the antiseptic skin cleaner Hibiclens.
- Do not use any powders or lotions after showering.
- Gargle with the Peridex gargle.
- If instructed, continue to take any prescribed medications with a sip of water.
- Remove all jewelry/valuables (including rings) and leave them at home.

## Morning of Surgery Checklist

- No food or drink after midnight
- Shower using Hibiclens
- Gargle with Peridex

## Arriving at the Hospital

### University Campus:

Your surgery will be performed in the operating rooms in the Lakeside Wing. Enter the hospital through the main doors of the Duddie Massad Emergency and Trauma Center. The receptionist will direct you to the Preprocedure Unit on the second floor.

### Memorial Campus:

Your surgery will be performed in the operating rooms at 119 Belmont Street. Enter the hospital through the main entrance of the Memorial Campus and take the elevator A to the second floor to the Surgical Admission Unit. The receptionist will direct you to where you will get prepared for surgery and the waiting room for your family.

Once you arrive at the Preprocedure Unit, you will change into a hospital gown. You will be asked to remove any dentures, hairpins, hairpieces, rings, nail polish, makeup, jewelry, artificial body parts and underwear. Your belongings will be secured for you or a family member may take them home for you. A nurse will complete a nursing assessment, take your blood pressure, pulse, temperature and respirations, and answer any of your questions. The anesthesiologist will conduct an assessment and insert an IV to provide you with medication.

## Notifying Your Family

Family members may wait in the waiting area. The surgeon will let them know about your progress soon after the operation is over. Alternatively, you may leave a phone number where your family or a friend can be reached.

## ***After Your Surgery***

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- After your operation you will be brought to the intensive care unit.
- The ICU team will continually monitor you
- You will be very sedated and relaxed when you start to wake up from anesthesia but may be aware that there is a breathing tube in place. Although you will not be able to speak while the tube is in place, the nurses will be able to communicate with you and understand your needs.
- The breathing tube will be removed once you are fully awake, typically the morning after the operation.
- You may experience some discomfort around the abdominal incision. You will be given pain medication as needed.
- You will not be able to eat or drink anything for three to four days following the open aortic operation.
- You will have a nasogastric tube in place. This tube will be placed before the operation, but after you are asleep. It is inserted through your nose and drains digestive secretions. This will help to prevent nausea, vomiting and gastric distension. Once your intestinal activity has recovered, this tube will be removed. At this time you may start taking fluids by mouth.
- You will have an intravenous line (IV) in place through which you will receive fluids, nutrients and medications as needed.
- A bladder catheter will collect your urine. The catheter may give you the sensation that you need to pass your urine.
- Your vital signs and circulation to your feet will be checked frequently. The nurses and doctors will feel the pulses in your feet and measure the blood pressure at the level of your ankles.
- Following the operation, you will have an abdominal dressing in place, which will be removed on the second postoperative day.
- You will typically be transferred from the ICU to a regular hospital room on the second postoperative day.
- After the operation, you will be able to get out of bed and begin walking on the first postoperative day and will usually be discharged on the fifth or sixth postoperative day.
- To be discharged, you should be eating your normal diet and walking with little or no assistance. A physical therapist will evaluate your walking ability, make recommendations about your discharge plans (home or a rehabilitation hospital), and determine if assistive devices, such as a cane or a walker, are necessary.

- If you are not physically ready to go to your own home or if there is insufficient help at home, we may suggest a short stay at a rehabilitation hospital. A discharge coordinator will meet with you and your family to discuss your options and to assist you in choosing a rehabilitation hospital that would best suit your needs. At the rehabilitation facility you will receive physical therapy and nursing care to facilitate your recovery and prepare you for home.
- If you return to your own home, we will arrange for the visiting nurse association to provide appropriate therapy and nursing care until you are fully recovered and independent.

## **Your Discharge**

### **Care of the Surgical Incision**

The surgical incision is normally tender, slightly swollen and bruised. You should inspect your incision daily. The following are signs of infection:

- Increased redness
- Increased tenderness
- Local heat
- Drainage or pus from the incision
- Fever above 101°F

If the sutures are removed prior to your discharge, the incision will be covered by steri strips, which are small pieces of waterproof paper tape. If the steri strips do not fall off within seven days, you may remove them. You may also have incisions in your groin. These incisions are susceptible to infection due to the moist environment of the groin. You may place a gauze pad in the groin to keep the area clean and dry. If you notice an increasing amount of drainage from the groin wounds, you should contact your surgeon.

### **Leg Swelling**

Leg swelling may occur if your bypass surgery involved groin incisions. This swelling should gradually resolve within six months. To minimize the swelling you should keep your legs elevated above the level of your heart when you are not walking. Some surgeons advise the use of “TED” stockings or ace bandages wrapped from the toes to below the knee to help reduce swelling. Do not do this unless your doctor has instructed you to do so.

### **Bathing**

You may shower as soon as you leave the hospital. Let the water run over the incision (do not apply soap) and pat it dry afterward. Do not take a bath or go swimming until your incisions are healed.

## **Pain**

For mild pain, you may take regular or extra strength Tylenol every four to six hours. You will also be given a prescription for stronger pain medication. This should be used to treat pain that is not relieved with regular Tylenol. Nausea and constipation can occur as a result of taking prescription pain medication. Taking the pain medication with a meal or snack may help to prevent nausea, while drinking plenty of liquids and eating high fiber foods (fruits, vegetables and grains) can help prevent constipation. Metamucil or Milk of Magnesia may also be used to treat constipation.

## **Activity**

### **Following the Operation:**

- You should avoid strenuous activity and heavy lifting (anything greater than 10 pounds) for two months.
- You may climb stairs.
- You may drive two weeks following the operation if you are not taking prescription pain medications.
- It is normal to feel tired after this operation. Expect that it will take about two to three months to “feel like yourself” again.
- If you notice increased leg swelling you should decrease your activity and elevate your legs.

### **Following EVAR:**

- You should avoid strenuous activity or heavy lifting for seven days. After seven days you may resume your normal activities.
- You may drive after seven days if you are not taking prescription pain medications.
- Most patients find that they are back to their normal activity level two weeks after the operation.

## **You should call your surgeon if any of these symptoms occur:**

- Increased redness or tenderness of the incisions
- Local heat around the incisions
- Drainage or pus from the incisions
- Fever above 101°F
- If your leg suddenly becomes cold, painful or numb

## Preventative Antibiotics

Your vascular procedure involves the placement of a synthetic graft. A preventative dose of antibiotics prior to dental work and other surgical procedures (sigmoidoscopy, colonoscopy, bronchoscopy or another operation) is recommended to prevent the graft from potentially becoming infected.

Please inform your dentist and other physicians about the synthetic graft.

If your bypass graft has been extended to the level of the groin (as evidenced by the presence of a groin incision), you should avoid any arterial punctures through the synthetic graft, including cardiac catheterizations or arteriograms. If you need to undergo either of these procedures, please contact your vascular surgeon.

## Risk Factor Reduction

Since aneurysm formation is associated with the presence of atherosclerosis it is important for you to manage the risk factors that contribute to atherosclerosis. This includes smoking cessation, cholesterol management, weight loss (if needed), and control of diabetes and blood pressure.

## Appointments

- A follow-up appointment will be scheduled for you to see your surgeon approximately two to four weeks after your operation, or sooner if you have an open wound or sutures in place.
- You should make an appointment to see your primary care physician.

## Resources

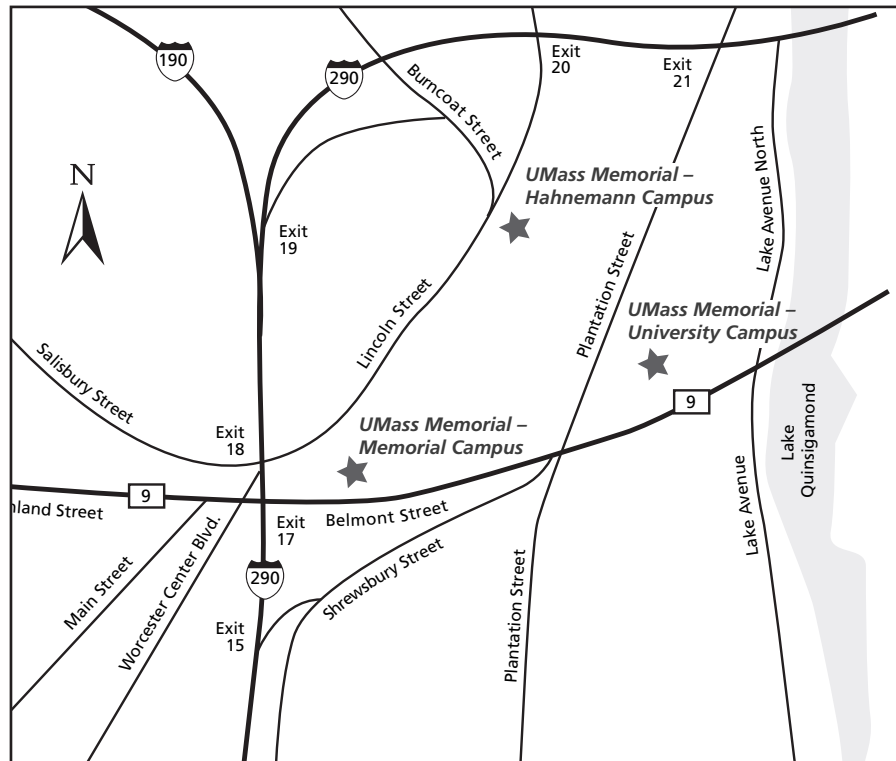
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If you have been diagnosed with a vascular condition, there are many support groups and informational web sites that serve as valuable resources.

Vascular Disease Foundation  
1075 South Yukon Street  
Suite 320  
Lakewood CO 80226  
[www.VDF.org](http://www.VDF.org)

U.S. National Library of Medicine  
National Institute of Health  
8600 Rockville Pike  
Bethesda, MD 20894  
[www.nlm.nih.gov](http://www.nlm.nih.gov)

## Directions



### University Campus

55 Lake Avenue North, Worcester 01655

Telephone connecting all campuses: 508-334-1000

**From the east:** Take the Mass. Pike (Route 90) West to Exit 11 (Route 122). Take a left off the exit ramp onto Route 122 North (Grafton Street). At the intersection with Sunderland Road, take a right. At the first set of lights on Sunderland Road, take a left onto Lake Avenue and proceed for 2.5 miles. Get into the left lane at the intersection of Route 9 (Mr. Tux will be on left) and turn left. Get into the right lane. Turn right at the traffic light onto Plantation Street. University Campus is on the right.

Or: Take the Mass. Pike (Route 90) West to Exit 10. Take I-290 East to Exit 21. Turn right off exit onto Plantation Street. Go to second traffic light. University Campus is on the left.

**From the west:** Take Mass. Turnpike East to Exit 10 (I-290 East). Take I-290 to Exit 21. Turn right off exit onto Plantation Street. Go to third traffic light. University Campus is on the left.

**From the north:** Take I-495 South to Exit 25B (I-290 West). From I-290 West, take Exit 22 and turn right off exit. At second traffic light, turn left onto Plantation Street. Go to fourth traffic light. University Campus is on the left.

Or: Take I-190 South, follow signs for I-290 East to Exit 21. Turn right off exit onto Plantation Street. Go to second traffic light. University Campus is on the left.

**From the south:** Take I-495 North to Exit 25B (I-290 West). From I-290 West, take Exit 22 and turn right off exit. At second traffic light, turn left onto Plantation Street. Go to fourth traffic light. University Campus is on the left.

Or: Take I-395 North to where it becomes I-290 East. Take I-290 to Exit 21. Turn right off exit onto Plantation Street. Go to second traffic light. University Campus is on the left.

Or: Take Route 146 North to I-290 East to Exit 21. Turn right off exit onto Plantation Street. Go to third traffic light. The University Campus is on the left.

## **Memorial Campus**

**119 Belmont Street, Worcester 01605**

**Telephone connecting all campuses: 508-334-1000**

**From the east:** Take Mass. Turnpike West to I-495 North. Take Exit 25B to I-290 West. Follow I-290 to Exit 18. Turn right off exit onto Lincoln Street. Bear left and proceed to Lincoln Square (intersection of Route 9/Belmont Street). Take left onto Belmont Street. Memorial Campus is 1/2 mile on the left.

**From the west:** Take Mass. Turnpike East to Exit 10 (I-290 East). Take I-290 East to Exit 17. Turn right off exit onto Route 9/Belmont Street. Memorial Campus is on the left.

**From the north:** Take I-495 South to Exit 25B (I-290 West). Follow I-290 to Exit 18. Turn right off exit onto Lincoln Street. Bear left and proceed to Lincoln Square (intersection of Route 9/Belmont Street). Take left onto Belmont Street. Memorial Campus is 1/2 mile on the left.

Or: Take I-190 South to I-290 West toward Auburn. Follow I-290 to Exit 18. Turn right off exit onto Lincoln Street. Bear left and proceed to Lincoln Square (intersection of Route 9/Belmont Street). Take left onto Belmont Street. Memorial Campus is 1/2 mile on the left.

**From the south:** Take I-495 North to Exit 25B (I-290 West). Follow I-290 to Exit 18. Turn right off exit onto Lincoln Street. Bear left and proceed to Lincoln Square (intersection of Route 9/Belmont Street). Take left onto Belmont Street. Memorial Campus is 1/2 mile on the left.

Or: Take I-395 North to where it becomes I-290 East. Take I-290 to Exit 17. Turn right off exit onto Route 9/ Belmont Street. Memorial Campus is on the left.

Or: Take Route 146 North to I-290 East to Exit 17. Turn right off exit onto Belmont Street/Route 9. The Memorial Campus is on the left.



UMass Memorial Health Care is the largest not-for-profit health care system in Central Massachusetts with 1,500 physicians and more than 12,000 employees. Our comprehensive network of care includes teaching hospitals, affiliated community hospitals, outpatient clinics, community-based physician practices, long-term care facilities, and home health, hospice, rehabilitation and mental health services. UMass Memorial is dedicated to promoting health and wellness in the community, and is proud to be the clinical partner of the University of Massachusetts Medical School. Contributions and memorial gifts to UMass Memorial Health Care are deeply appreciated. For information, call the UMass Memorial Foundation at 508-856-5520 or e-mail to [giving@umassmed.edu](mailto:giving@umassmed.edu).

**Department of Surgery – Division of Vascular and Endovascular Surgery**  
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