

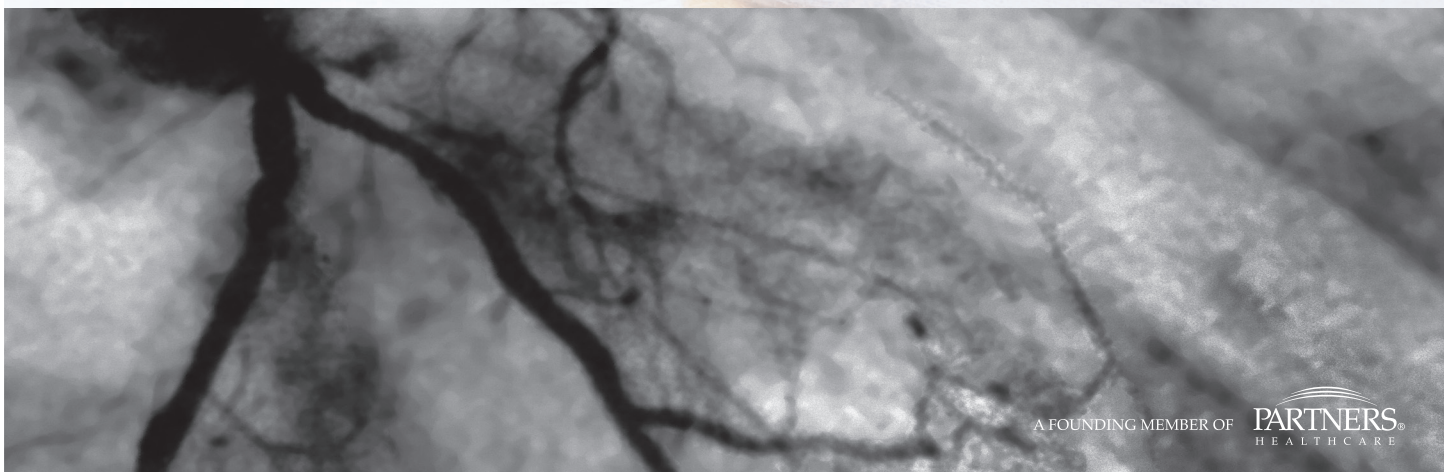


MASSACHUSETTS
GENERAL HOSPITAL

Heart Center | Vascular Center



Understanding and Preparing for a
CATHETERIZATION PROCEDURE



A FOUNDING MEMBER OF **PARTNERS**
HEALTHCARE

The Massachusetts General Hospital Heart Center and Vascular Center welcome you to the Knight Center for Interventional Cardiovascular Therapy. Chartered in 1811, Mass General Hospital was established as a general hospital serving the greater Boston area. Today, Mass General’s reputation for outstanding medical care attracts patients from all over the United States and abroad.

The practice of cardiology at Mass General Hospital began in 1914 under the leadership of Dr. Paul Dudley White. Since that time, cardiac services have flourished and expanded to include state-of-the-art diagnosis and treatment of the full spectrum of cardiovascular disorders. Our goal is to offer patients the most complete and advanced methods for diagnosis, treatment, and prevention of cardiovascular disease.

One major advance in cardiology has been the introduction of cardiac catheterization for definitive diagnosis of cardiovascular disease. Cardiac catheterization was first performed at Mass General Hospital in 1949. With significant advances in technology, it has become the leading method for both diagnosing and treating many cardiovascular diseases.

At the Knight Center for Interventional Cardiovascular Therapy, you will benefit from one of the most technologically advanced cardiovascular catheterization laboratories in the world. This facility offers a highly specialized staff and an excellent environment for both state-of-the-art cardiovascular care and innovative procedures to treat patients with a variety of heart and vascular diseases.

As you prepare for your catheterization, we want you to feel as comfortable as possible. To help you understand what to expect during your visit, this booklet describes key steps of your catheterization procedure.

Please take time to read this information and use it as a reference prior to your admission and during your hospital stay. We want you to feel comfortable at all times to express to our staff any questions or concerns regarding your procedure.

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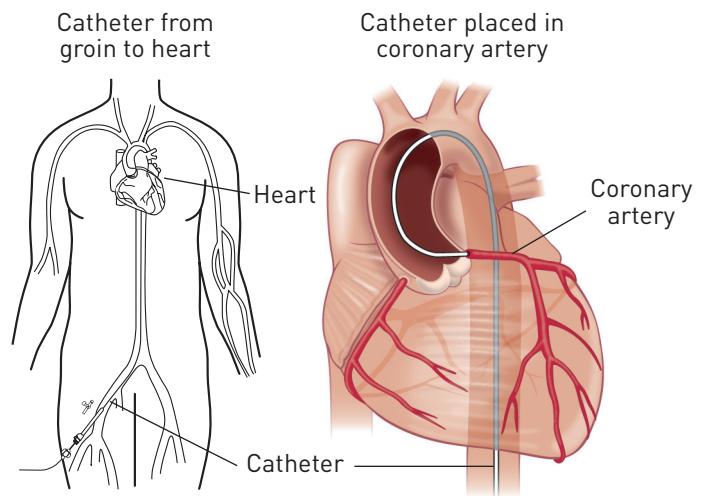
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What is a catheterization?

Catheterization is a procedure used to diagnose and treat various forms of heart and vascular disease. The procedure is performed in an area of the hospital called the catheterization laboratory, or “cath lab.” A doctor who specializes in performing this procedure will insert long, thin tubes called catheters into blood vessels in your arm, leg or neck. The catheters are then threaded up to your heart or other vessels. The catheters are used to measure pressures in different parts of the circulation and the amount of blood that the heart is pumping. Using X-ray dye and special equipment, the doctor is able to take pictures of the heart and circulation. The dye can show whether a material called plaque has narrowed or blocked any of your arteries. You will receive sedative medication and a local anesthetic to help you remain comfortable throughout the procedure.

In addition to obtaining this diagnostic information about the heart and circulation, the doctor may have to do other procedures such as balloon angioplasty or stenting of the clogged artery to open it up.

Most procedures take between one to four hours to complete, and you will need to stay in the hospital for up to eight hours after the procedure or, in some cases, overnight to be monitored before going home.



Why am I having a catheterization?

You are having a catheterization because your doctor knows or suspects that you have cardiovascular disease, affecting your heart or blood vessels or both. Catheterization is used to diagnose and/or treat various heart and/or vascular conditions.

The most common type of heart disease for which catheterization is performed is coronary artery disease (CAD). This is a condition in which plaque (atherosclerosis) builds up within the arteries that supply blood to the heart muscle. When the coronary arteries are blocked by plaque build-up (often called stenosis or occlusion) and/or a clot (thrombus), blood and oxygen do not reach the heart muscle in adequate amounts. If the heart muscle does not receive enough blood over a period of time, it may suffer permanent damage, also known as a myocardial infarction or heart attack.

Arteries in other parts of the body such as the kidneys, neck and legs are at risk for the same type of plaque (atherosclerosis) that forms in the coronary arteries, affecting circulation to different parts of the body. Peripheral veins can be affected by blood clots that may reduce the blood return to the heart and need to be treated. Other conditions for which you may be having a cardiac catheterization include leaky or narrowed heart valves, weak or thickened heart muscle, or abnormal connections between your heart chambers or blood vessels.

Preparing for your procedure

Tests needed before the procedure

Once your doctor determines that you need a cardiac cath, you need to have the following tests completed within a two week time period before your procedure date:

- A history and physical examination by a cardiologist or vascular surgeon (or, in some cases, lung specialist or heart surgeon)
- Blood tests
- Electrocardiogram (ECG or EKG)

Preparing at home (outpatient)

If you are scheduled to be admitted on the day of your procedure, follow these specific instructions to prepare:

- Stop taking Coumadin (warfarin) at least 3 days before your procedure date, or according to your doctor's instructions. In some cases, your doctor may instruct you to receive blood thinner injections into your skin.
- Continue to take your prescribed medications unless your cardiologist has told you not to. Check to see if you should take your diuretic, insulin or oral diabetes medications on the day of the procedure.
- Let your cardiologist know if you have an allergy to X-ray dye. In that case, you may need to take allergy medications before the procedure.
- Do not eat any food after midnight the night before your procedure.
- You may drink clear liquids up until two hours before you arrive at the hospital the morning of your procedure. (Black coffee and tea are fine. Do not add cream or milk.)
- You may have sips of water with your medications the morning of your procedure.

A nurse from the cath lab will call you the afternoon before your procedure. If your procedure is scheduled for a Monday, the nurse will call on Friday. He/she will give you any additional instructions and let you know when to arrive in the cath lab. Please use this opportunity to address any questions or concerns about your procedure.

For your same-day admission, please come to the cath lab, located on the 9th floor of the Blake building, at your

designated arrival time. This will be approximately one hour before your procedure time. A family member or friend may accompany you. Sometimes there can be an unexpected delay in your procedure start time due to an emergency or lengthy case. We appreciate your patience and understanding should this occur.

What to bring

- A 24-hour supply of your current medications and a medication list complete with medication names, dosages and the usual time of day you take each medication.
- You are welcome to bring a toothbrush, toothpaste, shaving items, deodorant, lotions or hair care products, but it is not necessary as these items will be provided for you.
- Please do not bring any valuables or jewelry.
- Wear comfortable clothing and walking shoes.
- You may want to bring a book to help pass the time in case of delays.

When you arrive at the Knight Center for Intervention Cardiovascular Therapy, a receptionist will greet you and notify the team that you have arrived. As your procedure time nears, a nurse will bring you into the pre-procedure holding area and will ask you to put on a hospital gown.

Preparing in the hospital (inpatient)

For patients already staying in the hospital, a cath lab doctor or physicians assistant will visit you the day before your procedure. The doctor will explain the procedure in detail, including its potential benefits and risks. At this time, you will have an opportunity to ask any questions that you may have, and to sign a consent form.

Adjustments may be made to the medications you are taking, and an IV will be inserted in your arm (if you do not already have one). The nurse caring for you will instruct you about any eating and drinking restrictions before the procedure. Typically, you will not be allowed to eat or drink (except for sips of water with your medications) after midnight.

On your scheduled procedure day, the cath lab will place you on call, which means you are ready to go to the cath lab for your procedure. You may receive additional medications before the procedure if you have an allergy to X-ray dye or have kidney problems. You will be brought from your room directly to the pre-procedure holding area of the cath lab.

The catheterization procedure



The Cath Lab team

Attending Physician: This is an experienced cardiologist, vascular medicine specialist or vascular surgeon who will be performing your procedure. The attending physician coordinates the team and plan of care during your stay in the cath lab. This may not be the doctor who ordered the procedure.

Fellow: The fellow is a doctor who is pursuing further training in cardiology, vascular medicine or vascular surgery. He or she will ask you for a brief history and obtain consent prior to your procedure. The fellow is responsible for starting the procedure and assisting the attending physician during the procedure.

Physician's Assistant (PA): The PA is a health care provider who has been specially trained to assist the attending physician during the catheterization procedure. The role of the PA is similar to that of a fellow.

Nurse: When you arrive to the holding area, the cath lab nurses are responsible for completing an assessment prior to your procedure; They will start an IV if you do not already have one. During the procedure, they will administer medications to make you comfortable and will do frequent assessments to monitor the effectiveness of the medications given.

Cath Lab Tech: The role of the technologists is to set up and operate the various types of equipment used by the physicians during your cath procedure. They also monitor and record vital signs and collect measurements to assist the doctor with the diagnosis of heart and vascular disease.

The cath lab nurses and techs work together to prep you for the procedure and to care for you in the recovery area after the procedure.

Pre-procedure holding area

The pre-procedure holding area is used as a staging place before moving you into the procedure room. You will be placed on a stretcher and the cath lab doctor will review your medical history and physical exam. You will be asked to sign a consent form for the procedure if you have not already been done so. An IV will be started and you may be given fluid or medication through this line. You will then be taken into the procedure room.

Procedure room

Once you are in the procedure room, you will be moved to a flat, movable exam table. One or two cameras are located above, below, and to the sides of the table; there will be many monitors visible around the room; ECG leads will be attached to your chest to monitor your heart rate and rhythm. The selected areas for insertion of the catheters—usually both the right and left side of the groin—will be shaved and washed with an antiseptic to ensure that they are clean. The team will work to ensure that your privacy and dignity are maintained at all times. The most common entry site is your right groin, but occasionally the left groin, neck, arm or wrist may be used.

You will be given sedative and pain medications through your IV. It will be necessary for us to communicate with you, and we need to know if you are experiencing any discomfort. If you are feeling anxious, you will be given additional medication. A local anesthetic (like the Novocain that you get at the dentist) is injected to numb the skin at the insertion point, and you may experience a brief burning or stinging sensation, pressure or mild discomfort.

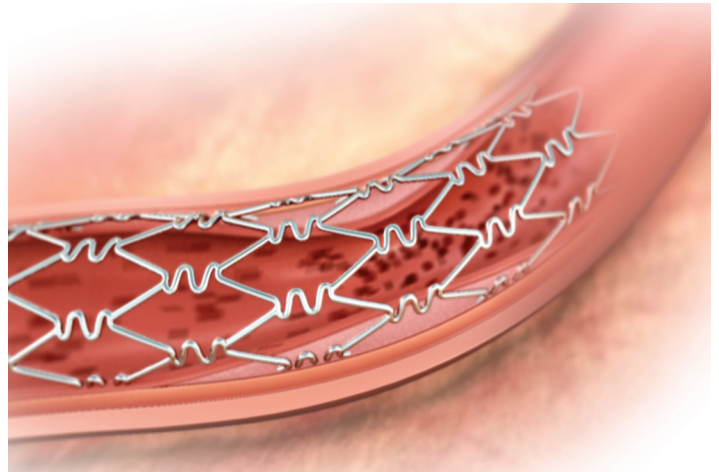
The catheterization procedure

From this point on, the lights will be dimmed periodically for viewing purposes. It is important not to talk, as pressures are recorded, because the measurements being taken should reflect your quiet resting state.

The doctor will take pictures of your arteries and/or veins. To accomplish this, the doctor will manually inject dye through a catheter into the artery that supplies blood to the heart muscle. Cameras will move around your chest, and the table will move so the dye can be followed as it travels through the vessels.

A catheter may be placed into your heart's main pumping chamber. This time, dye will be injected by a machine. Moving pictures will evaluate how the pumping chamber functions. The dye causes a hot and flushed feeling throughout your body lasting 10 to 20 seconds or so.

After all measurements are taken and images obtained, the doctor will discuss the findings with you and present options for further treatment. Your options may include no treatment, a change in medications, surgery, or another type of catheterization called an interventional procedure. If an interventional procedure is recommended, it is often done while you are still in the procedure room. The type of interventional procedure performed depends on the problem with your heart or circulation, and might include, for example, balloon angioplasty or placement of a stent.



Stent that has been expanded to open an artery

Courtesy of Cordis Corporation, © Cordis Corporation 2010

After your procedure

If no other tests or treatment are required, the staff will prepare to bring you to the post-procedure area for recovery. You will need to keep your leg (or arm) straight, particularly as you are moving from the table to a stretcher.

In the recovery area or, in some cases, back in your hospital room, your catheters will be taken out and pressure will be applied for approximately 15 to 30 minutes to help stop bleeding and to allow the puncture sites to heal.

Please tell the staff immediately if you experience any of the following after your catheterization:

- Chest, neck, jaw, or arm discomfort, or any discomfort similar to your “heart pain”
- Shortness of breath
- Weakness or dizziness
- Pain at the puncture site
- Numbness, tingling, or discomfort below the puncture site
- A warm or wet sensation around the puncture site
- Any other discomfort

If the catheterization was through the groin, bed rest (usually for 4 to 6 hours) is essential to ensure that the puncture site heals. We may raise the head of your bed slightly (up to 30 degrees), but you should not actively raise your head. You should not turn from side to side. You may bend your foot and wiggle your toes, but do not bend your knee. Please let us know if you have back discomfort; we will try to help you to get comfortable. If you have to cough or sneeze, apply firm, direct pressure over the adhesive strip on your groin.

If your arm was used for the catheterization, you should be able to get out of bed within 1 to 4 hours following the procedure.

You will be able to eat while you are in bed after the procedure.

In most cases, you will be instructed to drink extra fluid to help your kidneys eliminate the X-ray dye. Since you will not be able to get out of bed, a nurse will assist you in the use of a urinal or bedpan.

Following your resting period, a nurse will help you get out of bed. This should be done slowly and carefully. We recommend that your initial activity be limited to short trips, for example to a nearby bathroom. The following day, you may resume light activity.

If you are going home the evening of your procedure, you will be given additional written instructions before you are discharged. Please be prepared for the following:

- Plan to stay in the hospital for 2 to 8 hours after your procedure is finished
- Have an escort or family member pick you up and drive you home from the hospital
- Plan to have someone stay with you overnight after your catheterization procedure
You should not spend the first night at home alone
- Limit your activity to your trip home
- Resume light activity (around home) the next day

These are some important points your doctor should discuss with you before you leave:

- The findings of your catheterization
- Your activity level
- Your medications

We hope that you have found this handout to be helpful.

We have attempted to explain what you will experience before, during, and after your catheterization procedure. You may have other questions or require more individualized information. Your doctor or any member of your catheterization team is available to answer your questions and support you throughout your visit.